DRAFT

NORTHEAST FLORIDA REGIONAL AIRPORT

Apr-20 Airport Master Plan Update

Prepared For:
St. Augustine - St. Johns County Airport Authority

Prepared By:
Passero Associates, LLC

FAA AIP #: 3-12-0073-039-2016
FDOT Financial Number #: 428840-1-94-16
FDOT Contract #: GOB 43

Table of Contents

Table of Figures

Table of Tables

Appendices

Chapter One

Introduction, Goals, and Objectives

1. INTRODUCTION

What is the Purpose of a Master Plan and Why Update It?

A master plan is a technical document from an airport management and operation perspective to guide future growth and development. An airport master plan provides a road map for meeting aviation demand through the foreseeable future while preserving the flexibility necessary to respond to changing industry trends. To supplement the master plan document, an Airport Layout Plan (ALP) is used to graphically depict the existing and proposed conditions of an airport. An airport must have an up-to-date ALP to receive federal funding for projects.

The Federal Aviation Administration (FAA) recommends that a Master Plan be updated about every 10 years, or when significant changes occur that warrant an update. Significant changes at the Northeast Florida Regional Airport (referred to in this report as SGJ or Airport) have taken place since the previous Master Plan and Airport Layout Plan (ALP) updates in 2005. These changes include: the commercial service offering at the airport; land use constraints, including ground access; and the relationship to multi-modal development, particularly on the west side of U.S. Highway 1. and the Florida East Coast Railroad (FEC).

This Master Plan update will review the prior planning efforts conducted for the Airport, analyze market conditions and future facility requirements, and present an updated Plan to the Airport. For this study, a Master Plan Advisory Committee (MPAC) was gathered, consisting of approximately 20 members from a variety of backgrounds. These MPAC members have various ties to the Airport and the community, and will provide guidance at key milestones throughout this project.

This Plan will provide development guidelines for the Airport through 2036.

Goal Setting of the Master Plan

The overall goal of this study is to determine, through the MPAC, how to position the SGJ as a community asset by providing a safe, reliable, and efficient aeronautical facility that accommodates growing and changing aeronautical demands to better meet community needs. The preliminary meeting of the MPAC, on February 22, 2017 identified the following areas to be considered as part of this Master Plan:

- Provide a **safe** airport facility by meeting design standards;
- Provide a **secure** airfield, especially along the east side of the Airport;
- Provide **sufficient capacity** to accommodate aircraft users and development;
- Provide for **multi-modal considerations** tying the Airport to lands west of U.S. Highway 1;
- Ensure that Airport development is **financially sound**.

1.1. Airport Background

The Northeast Florida Regional Airport (referred to in this report as SGJ or Airport) is a public use airport serving the aviation needs of the City of St. Augustine and St. Johns County. The Airport is developed on approximately 710 acres of land, approximately four miles north of the City of St Augustine.

SGJ is under the jurisdiction of the St. Augustine-St. Johns County Airport Authority, consisting of five elected officials. The Airport Authority is empowered to hire an Executive Director, and conduct activities necessary to create and support a multimodal transportation system to interconnect with and support Airport activities, pursuant to House Bill (HB) No. 939 Chapter 2002-347.[1]

---

[1] For more information on House Bill (HB) No. 939 Chapter 2002-347 and all of the authorizations empowered to the St. Augustine-Johns

An Airport Executive Director, with other management staff, oversee the daily operations of the Airport. To stay apprised of activities at SGJ, the Airport Authority holds a monthly public meeting to receive updates from the Executive Director and allow for questions from the public.

1.1.1. Location

SGJ is in St. Johns County, Florida, approximately four miles north of the City of St. Augustine. The airport serves the general aviation needs of the City of St. Augustine, St. Johns County, and northeast Florida. The airport is bounded by Gun Club Road and Hawkeye View Lane to the north, the Tolomato River to the east, North Boulevard to the south, and the United States Highway 1 (U.S. 1) to the west. Situated 37 miles south of Jacksonville Port, SGJ maintains a water entrance on the east side of the Airport along the Tolomato River.

Regarding ground access to SGJ, the Airport is close to I-95 – a major north-south traffic corridor – approximately six miles west of the airport. Approximately 20 miles north, I-95 merges with I-10. Furthermore, I-295 – a major corridor for the Jacksonville metropolitan area – connects with U.S Highway 1 approximately 18 miles north of SGJ. U.S. 1 provides the primary ground access to SGJ.

Figure 1-1 identifies the general location of SGJ in the northeast region of Florida, and **Figure 1-2** identifies the vicinity and location of SGJ in relation to immediate ground access.

1.1.2. History

The Northeast Florida Regional Airport has a very rich history that includes recreational, military, commercial and general aviation activity. Dating back to 1911, the airport was established.

In 1933 the New Deal solidified SGJ as the permanent airport for the City of St. Augustine. However, in 1939 the military viewed the Airport as a viable base for military operations for World War II. In 1946, the SGJ was returned to St. Augustine for civil use again.

The airport experienced a boom until the 1950's when activity slowed to the point of closing the airport. In 1954, Fairchild Engine came to SGJ, which allowed the Airport to re-open in 1955. Demand from Fairchild required better facilities such as a longer runway to accommodate their use. To fit the needs of the company, an 8,000' runway was constructed. Furthermore, as the demands at the airport became more and more complex, the City of St. Augustine started to have difficulty meeting these demands; therefore, the City supported legislation to create an Airport Authority in 1963 and was approved in 1964.

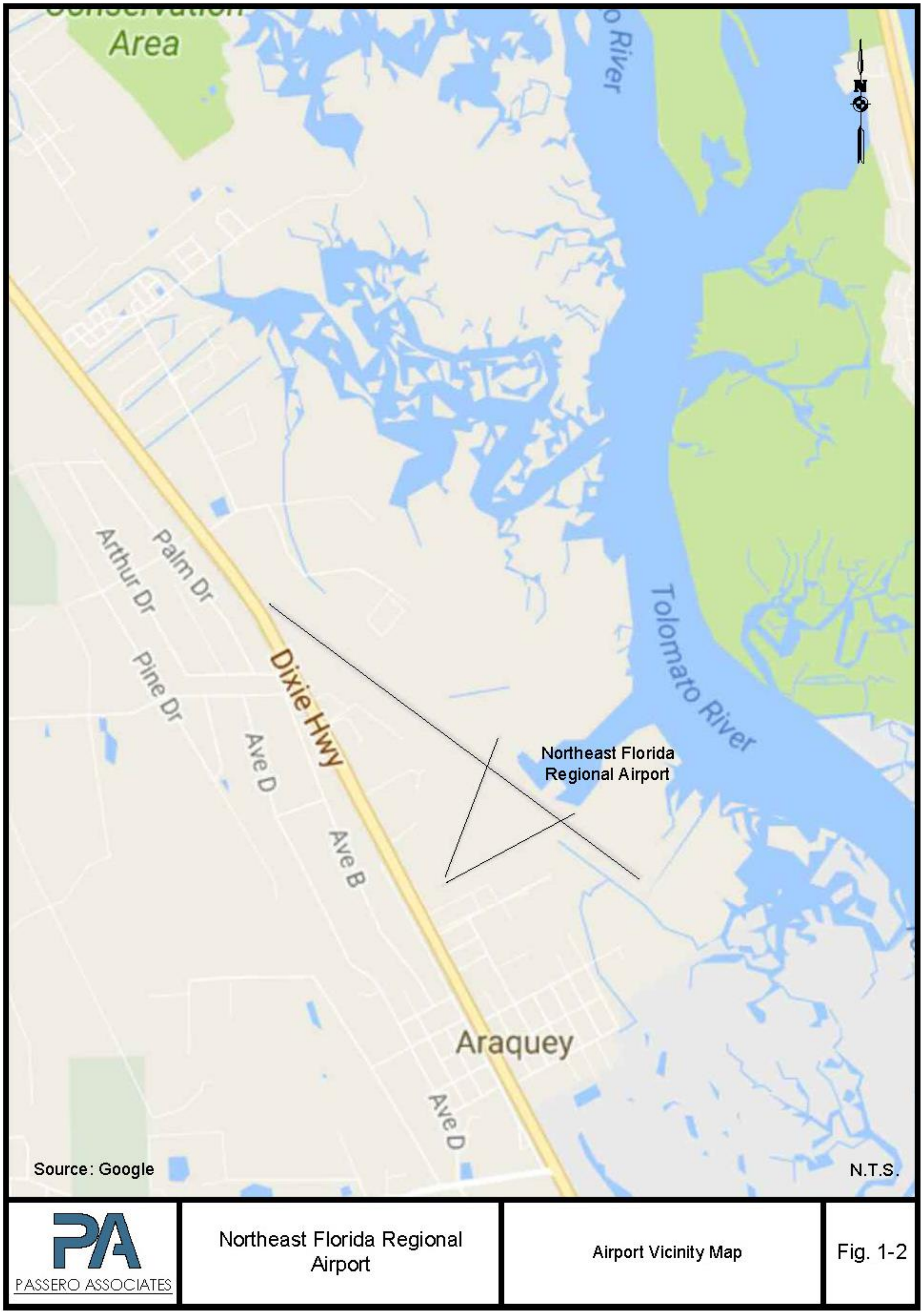
In 1976, Fairchild left the airport, but was replaced by Grumman Corporation three years later. First commercial service was offered in April of 1983 by Aero Coach (Commuter Service based in Ft. Lauderdale) providing service to Jacksonville, West Palm Beach, Ft. Lauderdale and the Bahamas. However, due to low passenger demand from the St. Augustine service area, Aero Coach discontinued service to SGJ in December of 1983.

County Airport Authority, please visit: http://archive.flsenate.gov/data/session/2002/House/bills/analysis/pdf/2002h0939z.lgva.pdf

Figure 1-1. Airport Location Map

Source: Passero Associates

Figure 1-2. Airport Vicinity Map



Source: Passero Associates

In 1986 the Airport was given Part 139 Certification. Requirements from this certification made the Airport safer, which opened opportunities for FAA funding and for the Airport to become a General Aviation (GA) reliever airport for Jacksonville International Airport (JAX). In addition, technical improvements at the Airport attracted additional activities. In 1988 the Professional Golf Association (PGA) and Aero Sport teamed up to build the first hangar to house corporate jets. In 1989 with the addition of an Automated Weather Observation System (AWOS) and significant rehabilitation to FBO ramps, Taxiways B and D, and Runway 13-31, this opened the airport up for larger aircraft operations in which FedEx could use their Boeing 727s at the Airport. In 1995, the North American Top Gun academy opened a fighter pilot school at the Airport.

An Airport Master Plan Update was completed in 2005, and in 2010 the airport was renamed Northeast Florida Regional Airport.

Today, SGJ has experienced growth and development, noting a 100-day design/build passenger terminal project in 2016. It should also be noted that in October 2016 Hurricane Matthew blew through the St. Augustine area and SGJ; however, the Airport remained resilient and there was minimal impact to the airport.

SGJ has an exciting future ahead, especially with the multi-modal opportunities with proximity to U.S. Highway 1, the FEC, and the Atlantic Ocean.

1.2. Review of Existing Studies

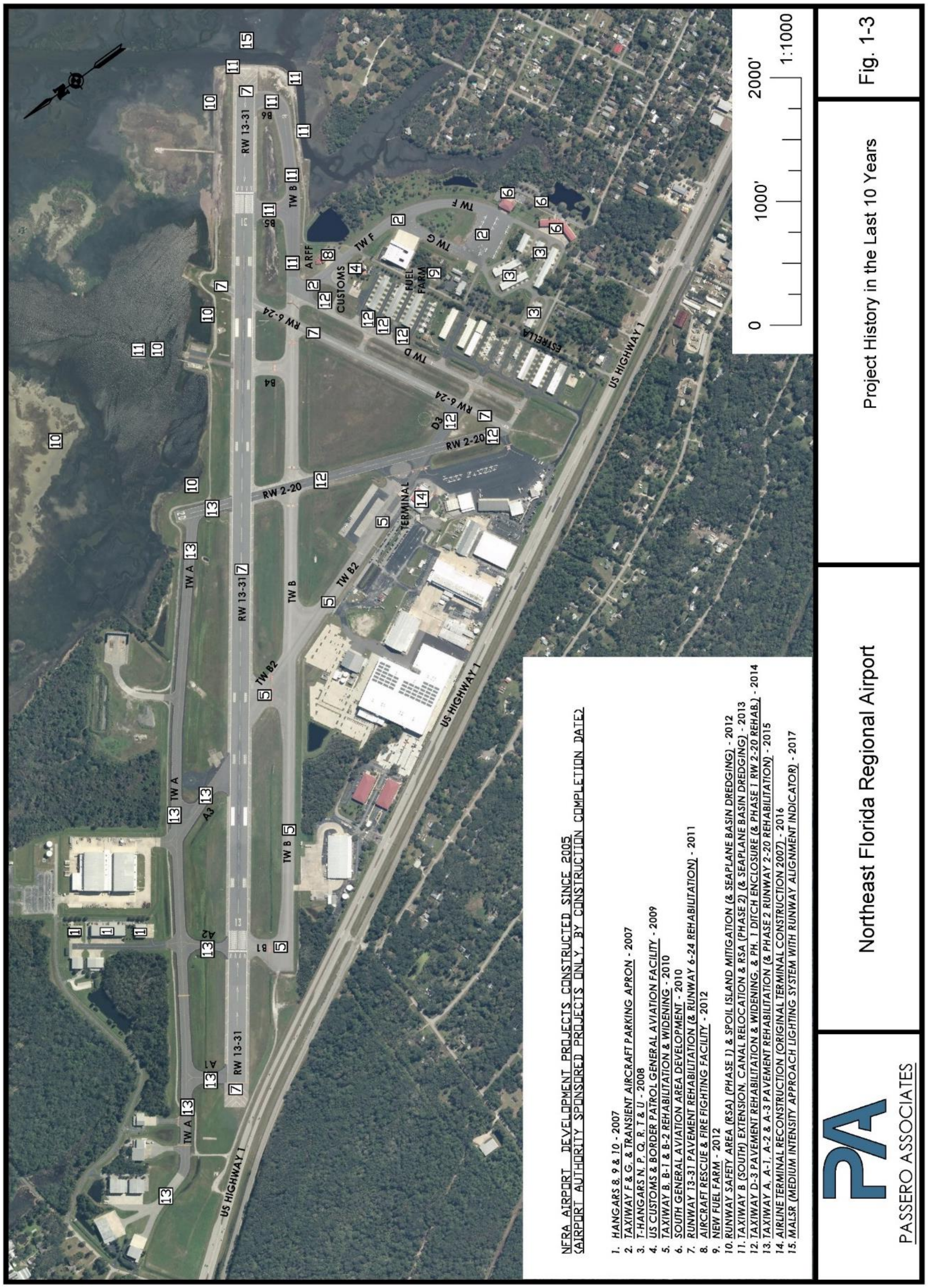
To support the effort of updating the SGJ Airport Master Plan and ALP drawings, previous studies and reports relating to the Airport and adjacent properties were referenced.

The following sections identify and discuss the most substantive elements of previous studies and reports in regard to the Airport's Master Plan.

2005 Airport Master Plan Update

The 2005 SGJ Airport Master Plan identified the need to assess the demand for airport services in the growing population of City of St. Augustine and St. Johns County. The primary goals were to identify the needs of the Airport; establish an implementation plan for feasible short-and long-term projects; identify areas of improvement based on FAA regulations; incorporate interests of the public and government in the planning process; identify and maintain sensitive environmental features around the Airport; and, recommend compatible development on land adjacent to SGJ. **Figure 1-3** graphically depicts the projects that have been completed since 2005.

Figure 1-3. 2005 Master Plan Graphic



Source: Passero Associates; Northeast Florida Regional Airport

St. Johns County Comprehensive Plan

As shown in the St. Johns County Future Land Use Map (**Figure 1-4)** included in the St. Johns County Comprehensive Plan, SGJ is located within the Airport District (AD). The AD can be defined as lands occupied by SGJ for aeronautical use, along with land adjacent to the Airport. The St. Johns County will implement land development codes to ensure that all land uses within the AD are compatible with Airport operations. The permitted land uses within the AD are as follows:

- Agriculture;
- Cultural/Institutional;
- Neighborhood Business;
- General Business;
- High Intensity Commercial;
- Highway Commercial;
- Light Industrial;
- Neighborhood Public Service;
- General Public Service;
- Regional Business and Commercial;
- Mining and Extraction; and
- Land Uses zoned Residential Single Family or Multi-Family shall not exceed 13 units per acre.

The St. Johns County's overall goals for SGJ within the St. Johns Comprehensive Plan are:

1. Coordinate aviation activities with other state, local and regional transportation and planning agencies to ensure that access to SGJ is prioritized during the development of surface transportation and transit projects.
2. Retain SGJ as a reliever airport for Jacksonville International Airport, and encourage improvements to existing facilities to ensure safety and efficiency of operations, e.g., pavement strengthening and widening, and upgrades to navigational aids (NAVAIDS).
3. Assist in any feasibility study for another airport to serve the three-county area of St. Johns, Clay, and Duval Counties.

Florida Aviation System Plan

The Florida Aviation System Plan (FASP) 2025 is a 20-year strategic planning document that identifies the deficiencies and progressive opportunities for Florida's 122 airports. In addition, this FASP will provide the Florida Department of Transportation (FDOT) with the vital information needed to respond to changing aviation and economic trends, such as: emerging technologies, projected funding shortfalls, intermodal transportation networking and impacts to existing communities, and how to meet the aviation needs of a growing population in Florida.

Seven goals were outlined in the FASP and are listed below with how SGJ can/does meet these goals. These goals are as follows:

Goal 1: Capacity – Provide a diversified system of airports that will accommodate airport specific objectives related to a wide variety of increasing airfield, terminal, parking, aircraft apron, and ground access demands. **With three surface runways, three water runways and a seaport, SGJ provides the opportunity to accommodate aviation operations from the air and sea.**

Goal 2: Ground Access – Provide a strategic planning initiative that provides an integrated system of ground access that supports air transportation services that will open opportunities for intermodal access around Florida airports. **SGJ's location relative to U.S. Highway 1 and the Florida East Coast (FEC) Railway provides the Airport with many multi-modal opportunities.**

Goal 3: Air Access – Provide an airport system with the most sophisticated approaches and NAVAIDs that are available and provide an airport system that minimizes airspace constraints to foster growth in Florida's aviation system. **At SGJ, Runway 31 has an ILS system (Localizer and Glide Slope) and a Medium Intensity Approach Lighting System (MALSR) which allows for precision approach operations. Runway 13 has a RNAV (GPS) approach, which allows for Non-Precision Approaches.[2] With instrument approaches, SGJ provides the opportunity for aircraft to land in low-visibility situations.**

Goal 4: Compatibility – Provide an airport system that is compatible with the surrounding communities by providing education on airport land use zoning restrictions pertinent to FAA guidelines, such as the 14 CFR Part 77 *Safe, Efficient Use, and Preservation of the Navigable Airspace*. **SGJ and adjacent land is in an Airport Overlay district (AD), where there are land use zoning restrictions on land adjacent to the Airport to ensure safety.**

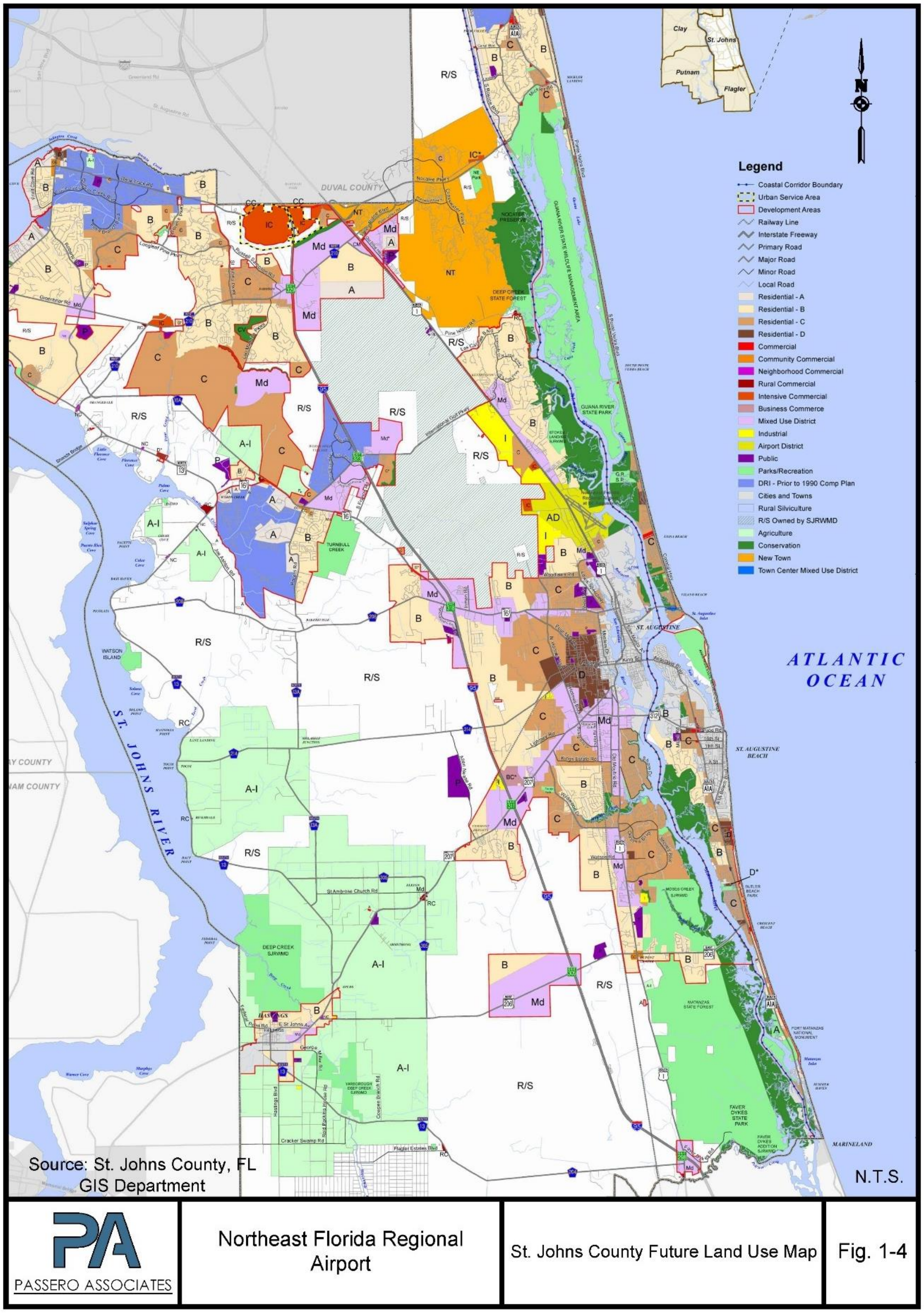
Goal 5: Safety – Provide an airport system that ensures that airport safety and security is not compromised at each of the Florida airports, along with ensuring that Florida's larger airports are staying abreast to the most current Part 139 requirements. **As part of this Master Plan, a security assessment will be carried out on the perimeter fence around SGJ to identify vulnerabilities, and come up with potential solutions for those vulnerabilities.**

Goals 6: Financially Sound – Provide an airport system where each of Florida's airports can become more financially self-sufficient, and increase revenue generating capabilities to reduce the need to borrow money. **With SGJ's commercial operations, the Airport has the potential to fund projects with available funds received through lease agreements. This is especially helpful since the Airport receives no ad-valorem taxes from the community.**

Goal 7: Well Planned – Provide an airport system that is well-planned, where airports in Florida's metropolitan areas function together as a cohesive unit; thus, maximizing the role that each airport plays in Florida's aviation system. **With the opening of the new Passenger Terminal Facility at SGJ in April 2016, the Airport continues to provide non-stop service to Charlotte, NC and Philadelphia, PA. With a more streamlined passenger experience, such as a baggage claim pickup just minutes from disembarking an airplane, passengers receive faster service; thus, improving the overall passenger experience.**

[2] Per the AC 150/5300-13A *Airport Design*, Precision Instrument Approaches provide course and vertical guidance to pilots during landing operations; whereas, Non-Precision Instrument Approaches only provide course guidance.

Figure 1-4. St Johns County Future Land Use Map



Source: St. Johns County, FL; Passero Associates

Florida Statewide Economic Impact

The Florida Economic Impact Study helps measure the economic impacts associated with the 122 (19 commercial, 103 general aviation) airports in the state of Florida. In addition, this Study measures the economic impacts associated with 11 military airfields in Florida for various off-airport aviation related activities. The results from this study concluded that aviation in Florida is responsible for an estimated $144 billion in annual economic activity and output. Regarding SGJ, the Airport's economic impact in the areas of Total Employment, Total Payroll and Total Output were 4,007 total people employed, total payroll of $125,951,000 and a total output of $409,573,000.[3]

1.3. Process

The Master Plan Update for SGJ provides planning and development guidance to address landside and airside facilities, along with land development considerations for the next 20 years. It serves as a strategic plan and marketing tool for the improvement of the Airport and is in accordance with the Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5070-6 *Airport Master Plans* and 150/5300-13A*, Airport Design*, along with the Florida Department of Transportation's Guidebook for Airport Master Planning.

Appendix A Master Plan Process, describes the process followed for this Master Plan.

The contents of the final Master Plan report will include:

Chapter	Chapter Description
1	Introduction
2	Inventory of Existing Conditions and Facilities
3	Forecast of Aviation Demand
4	Facility Analysis and Requirements
5	Airport Development Alternatives
6	Environmental Overview
7	Airport Layout Plans
8	Capital Improvement Plan/Financial Feasibility

In addition to the general components of a Master Plan, several special studies will be prepared by specialists in their respective fields. Key findings from some these special studies will be incorporated into this Master Plan Update, while other special studies will be separate from this Update, as indicated by an asterisk (*) in the table below. The special studies include:

[3] For a complete list of all economic activity listed in the Florida Statewide Economic Impact study, please visit http://www.fdot.gov/aviation/economicimpact.shtm

Firm	Study Area
Quantum Spatial	Aerial Photogrammetry, Obstruction Survey and FAA AGIS
Geomatics Corp	Exhibit A – Property Map Update
Environmental Resources Solutions, Inc	Wetlands and Environmental Sensitive Areas
Mathews Design Group (*)	Ground Access Planning
EG Solutions	Drainage/Stormwater Planning
Volaire Aviation	Passenger Forecasts and Public/Stakeholder Outreach
Hanson Professional Services, Inc (*)	Multi-Modal Planning
Stellar Security Group (*)	Airport Security Assessment

1.4. Land Use and Multi-Modal Opportunities

It is important that property adjacent to airports is compatible with airport operations and development to ensure un-interrupted service. As such, it is appropriate for a master plan to explore off-airport activities and/or initiatives which could potentially impact airport operations. The following sections detail potential compatible land uses and multi-modal opportunities.

1.4.1. Multi-Modal Opportunities: Florida East Coast Railway

The Florida East Coast (FEC) Railway is located just west of U.S. Highway 1, and is comprised of Jacksonville, St. Augustine, Halifax, and Indian River Railroads. The FEC was founded by Henry M. Flagler in 1885 and was a catalyst for the development of West Palm Beach, Palm Beach, Miami and other cities along Florida's east coast. From 1913 to today the FEC provides many services to businesses and residents along Florida's East Coast. With connections to CSX and Norfolk Southern in Jacksonville (FEC's headquarters), the FEC serves 70% of the U.S. in 1-4 days, meeting customer demands with cost-effective options without compromising the quality of goods and services. **With the proximity of the FEC, U.S. Highway 1 and SGJ, there are opportunities for domestic and international trade.**

1.4.2. Multi-Modal Opportunities: State Road 313 Connector

One of the 2017 legislative priorities in St. Johns County is to commence construction of State Road (SR) 313 which will have connections with SR 207 and SR 16. St. Johns County has viewed this project as one of their three main priorities for several years. The purpose of this bypass is to create a half-loop around St. Augustine that will relieve excessive congestion along U.S. 1 for local traffic. **This in turn will provide an improved non-local travel route throughout the County, and provide better roadway access for SGJ.**

1.4.3. Multi-Modal Opportunities: U.S. Highway 1 & Interstate 95

Interstate 95 is a major expressway that connects the state of Florida to the northeastern portion of the United States. Although Interstate 95 is located approximately 6 miles west of SGJ, the expressway connects with Interstate 295, which connects with U.S. Highway 1 approximately 18 miles north of the airport. U.S. Highway 1 is a major thoroughfare for SGJ for commercial, corporate and general aviation landside access. **With Interstate 95 providing access to the City of St. Augustine, and being near SGJ, this major expressway**

has the potential for being an element in a multi-modal network that can connect the northeast region of Florida with the rest of Florida.

1.4.4. Multi-Modal Opportunities: Intercoastal/Atlantic Ocean Availability

SGJ has three runways and three water runways, in addition to an existing sea-plane ramp located on the eastside of the Airport in the Tolomato River. With access to the Atlantic Ocean by way of the Tolomato River, SGJ can accommodate the import/export of goods. To that regard, Northrup Grumman capitalizes on this. Grumman manufactures aircraft for the U.S. military and uses the sea-plane ramp for import/export operations. These operations include the breakdown and preparation of the E2-D Advanced Hawkeye where a barge parks next to the sea-plane ramp and uses a crane to pick up the aircraft for delivery. **With existing seaport access to the Atlantic Ocean, SGJ has the potential to accommodate other import/export operations domestically and internationally.**

1.4.5. Multi-Modal Opportunities: Strategic Intermodal System

In 2003, Florida's Governor established the Strategic Intermodal System (SIS) to enhance connections between Florida metropolitan regions and enhance connections with other states and nations. The SIS has three objectives, which are defined as:

1. Interregional Connectivity, which ensures the efficiency and reliability of multi-modal transportation connectivity between Florida's economic regions and other states and nations.
2. Intermodal Connectivity, which expands transportation choices and integrates modes for interregional transportation.
3. Economic Development, which will provide a transportation system that will make Florida a global hub for trade, and foster tourism, talent, innovation, innovation, business and investment.

The SIS includes three types of facilities – hubs, corridors and connectors.

Hubs, such as airports, act as mediums for moving people and goods throughout different regions in Florida, other states and nations. Corridors are networks that provide connections to other regions by road, air, rail or sea. Connectors are highways, waterways, rail and roadways that link hubs to corridors, hubs to hubs or corridors to military operations.

With SGJ's proximity to the Tolomato River, U.S. 1, Interstate 95, proposed SR 313 and the FEC, the airport would be considered a hub, corridor and connector for other states and nations.

1.5. Airport Services

SGJ provides multiple services that include military, general aviation (GA), and commercial services. Northrop Grumman operates out of SGJ where they provide military support services, such as building the E2-D Advanced Hawkeye. In addition to Grumman, the National Guard operates at SGJ in a hangar on the northside of the Airport. On the general aviation (GA) side, the St. Johns County Sheriff's Office houses helicopters on the eastside of the Airport. Furthermore, Atlantic Aviation, which is the only fixed based operator (FBO) operating at SGJ, provides private aircraft services. This FBO provides tourists with access to beaches around St. Augustine, world class golfing, and quick access to St. Augustine.

Regarding pilot training, there are two flight schools that operate at SGJ that are located south of the passenger commercial terminal and within the Conference Center on the southern end of the Airport. On the commercial side, in 2017, Frontier operates out of SGJ with direct service to/from Philadelphia, PA, and Via Air provides direct service to/from Charlotte, NC. Frontier's service at SGJ is seasonal, and Via Air operates year-round.

1.6. Airport Grant History and Airport Role

SGJ is eligible to receive federal and state funding based on their Airport Role and Part 139 Grant Assurances.

1.6.1. Airport Grant History

To provide a recent snapshot of activities at the Airport, 10-year airport grant historical information from the FAA and FDOT are detailed in **Appendix B: Airport Grant History.** This information serves as a historical guideline for major investment in the Airport.

1.6.2. Airport Role in National Airspace System

SGJ is a publicly owned, public-use facility. Under the Airport and Airways Improvement Act, the Secretary of Transportation is required to publish a national plan for the development of public-use airports. This plan is published as the National Plan of Integrated Airport Systems (NPIAS) and includes all commercial service, reliever (high capacity general aviation airports in metropolitan areas) and select general aviation airports.

The most recent NPIAS 2017-2021 Report classifies SGJ as a **small/non-hub airport**. This designation is given to airports that provide enplanements of .05 to .25 percent of total U.S. passenger enplanements (small hub) and provide enplanements less than .05 percent of all commercial passenger enplanements, but have more than 10,000 annual enplanements (non-hub). Furthermore, non-hub airports are also heavily used by general aviation aircraft with an average of 95 based aircraft. **Figure 1-5** identifies SGJ amongst other Florida airports listed in the NPIAS.

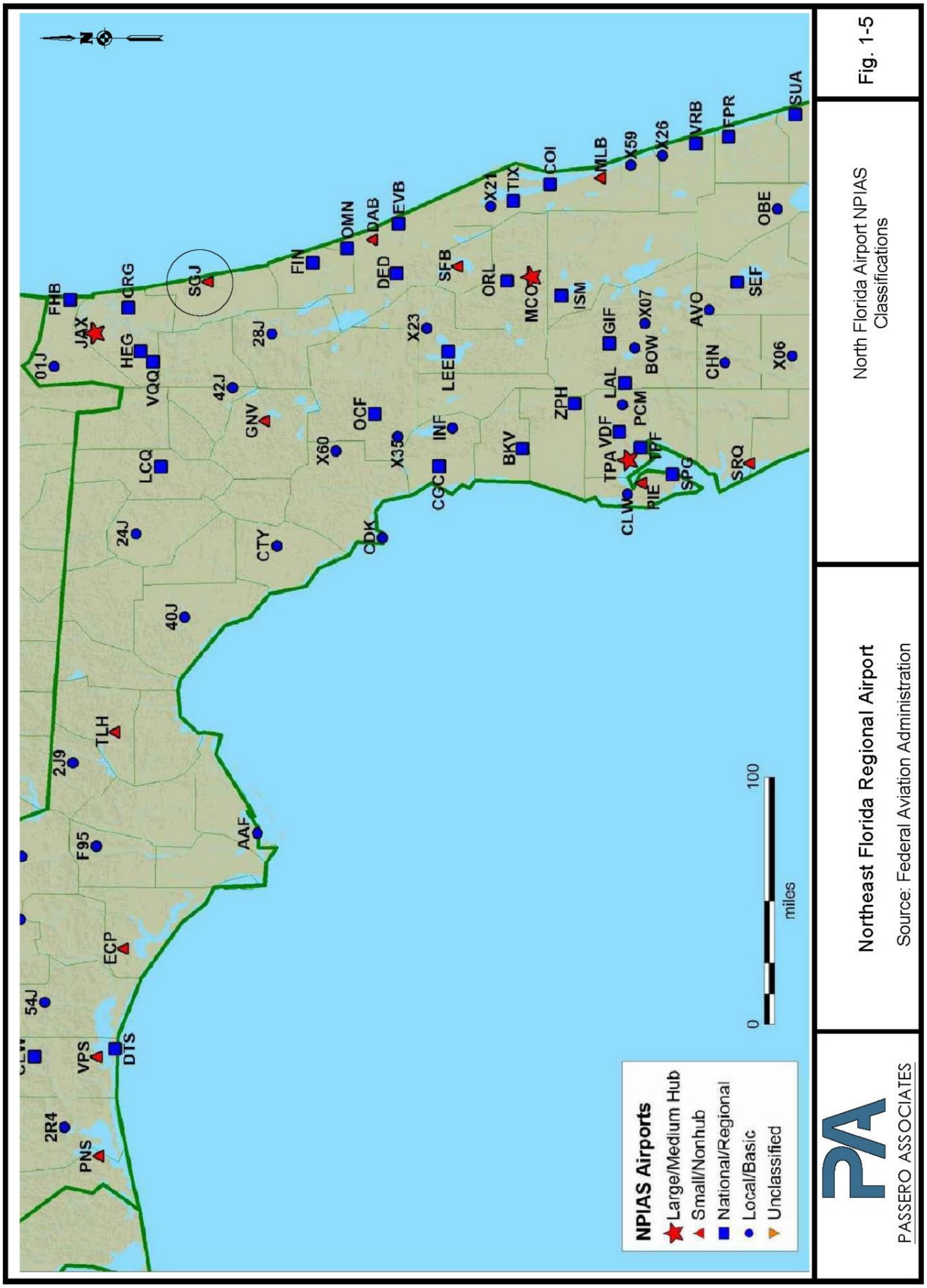
In 2012, the FAA came out with the *General Aviation Airports: A National Asset (Asset 1)* report to better identify the GA airports that make economic contributions to society. Furthermore, this report helps the FAA make better planning and project funding decisions, such as whether current or amended Part 139 certificates should be extended to higher-activity GA airports, or how to most effectively use AIP funds. Under this plan SGJ is a public use airport, with GA service level. Furthermore, SGJ is categorized as a **regional airport** in which they support regional economies by connecting communities to statewide and interstate markets.

1.6.3. 14 CFR Part 139 Certification

14 CFR Part 139 Certification is required for public use airports that provide scheduled and unscheduled services for air carriers that provide more than 30 seats. For airport sponsors to obtain Part 139 certification, they must agree to operational and safety standards described within the regulation.

SGJ has a Part 139 classification of **Class I**, with an Air Rescue and Fire Fighting (ARFF) **Index of A**. With a Class I certification, SGJ may serve scheduled and unscheduled operations of large air carriers. The ARFF Index is determined by (1) the length of the critical aircraft for air carrier operations, and (2) average daily departures of the critical air carrier aircraft. With an ARFF Index of A, SGJ has five or more average daily departures of aircraft with lengths less than 90 feet.

Figure 1-5. NPIAS Airport Map



Source: Federal Aviation Administration; Passero Associates

Chapter Two

Inventory of Existing Conditions

2. INVENTORY OF EXISTING CONDITIONS

The process of updating the Master Plan requires the collection and evaluation of baseline information relating to the Airport's property, facilities, services, tenants, access, and utilities. This information is vital in determining any expansions necessitated by the existing or anticipated future aeronautical demand. The information presented in this chapter was obtained through a variety of sources including; airport site visits, interviews with Airport management/staff, meetings with the Master Plan Advisory Committee (MPAC) organized specifically for this study; examination of airport records; and review of other public documents.

2.1. Airside Environment

This section will present the existing airside components at the airport. By documenting the existing facilities, a comparison of existing facilities against proposed forecasts, will yield future facility needs, to be prepared in subsequent sections. The airside components generally consist of movement of aircraft, particularly the runway and taxiway environment. It also includes examination of existing instrument approaches; airfield lighting; pavement markings; takeoff and landing aids (both visual and navigational); and airfield signage. **Figure 2-1** illustrates these facilities as presented in the FAA airport diagram.

2.1.1. Runways

A review of the airport diagram, and National Flight Data Center (NFDC) database, reveals the airport has three paved runways, and three water runways. Each will be described below.

Runway 13-31

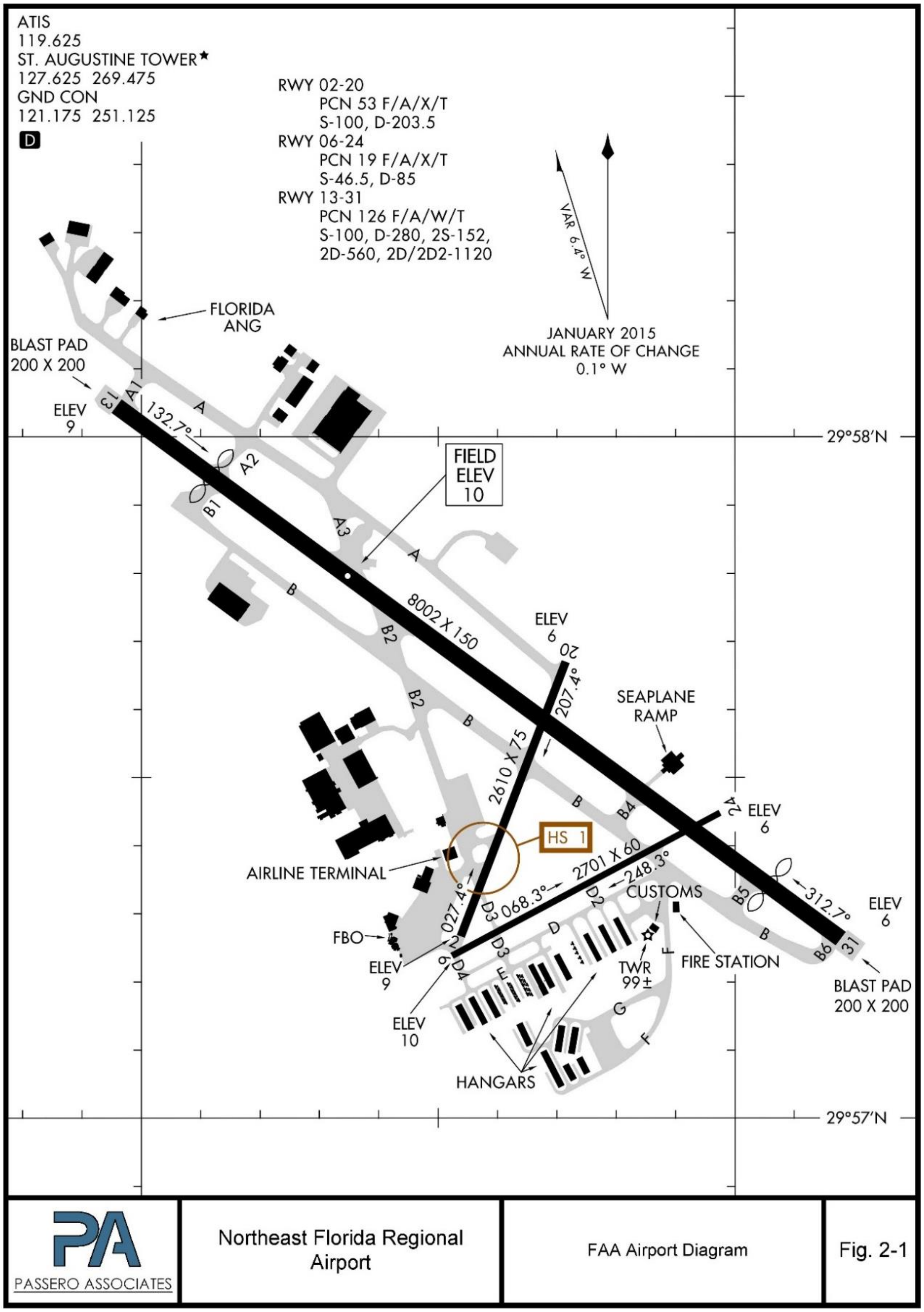
This primary runway measures 8,001 feet long by 150 feet wide, as published in the FAA database, effective dated January 5, 2017- March 2, 2017. It is an asphalt runway identified as good pavement condition, with weight bearing capacity of 100,000 pounds single-wheel, 280,000 pounds dual wheel, 560,000 pounds 2 dual wheels in tandem, and 1,120,000 pounds 2 dual wheels in tandem/2 dual wheels in double tandem. Runway 13 is currently marked with a displaced threshold of 1,058 feet, and Runway 31 with a displaced threshold of 805 feet. The proximity of U.S 1 to Runway 13 and the river at the approach end of Runway 31, the thresholds were displaced to meet the required safety areas (1,000 feet long by 500 feet wide) on both runway ends. Because of the displaced thresholds, distances are declared for accelerating/stopping and landing, and are less than the full runway length, as shown below.

Runway	Takeoff Runway Available (TORA)	Takeoff distance Available (TODA)	Accelerate-Stop Distance Available (ASDA)	Landing Distance Available (LDA)
Runway 13	8,001	8,001	7,202	6,144
Runway 31	8,001	8,001	6,730	5,925

Once equipped with an aircraft arresting gear system, for use by Northrup Grumman Corporation in support of their various military contracts, the arresting system was removed during the last rehabilitation project in 2011. Each end of the runway maintains a 200-foot-long by 200-foot-wide paved blast pad, marked with chevrons. This pavement is used to prevent erosion from jet blast.

Per previous studies this runway is designated as having a runway design code of C-III, which changed to RDC D-IV after the runway extension.

Figure 2-1. FAA Airport Diagram



Source: NFDC, Passero Associates

Runway 6-24

Runway 6-24 is recognized by the FAA as the crosswind runway at the airport. Measuring 2,701 feet long by 60 feet side, it is an asphalt runway with excellent pavement condition. The weight bearing for this runway is 46,500 pounds for single wheel configuration and 85,000 pounds for dual wheel configuration. There are no displaced thresholds on this runway, thus the entire length is available for all operations. Per previous studies this runway is designated as having a runway design code of B-I.

Runway 2-20

Runway 2-20 is another crosswind runway at the airport. Measuring 2,609 feet long by 75 feet side, it is an asphalt runway with excellent pavement condition. The weight bearing for this runway is 100,000 pounds for single wheel configuration and 203,500 pounds for dual wheel configuration. There are no displaced thresholds on this runway, thus the entire length is available for all operations. During the previous master plan this runway was used as a runway during the day, and a taxiway at night; however, this situation no longer exists, and Runway 2-20 is used exclusively as a runway today. Per previous studies this runway is designated as having a runway design code of B-I.

Water Runways

To the east of the airport lies to the Tolomato River. There are three published water runways available per the National Flight Data Center (NFDC). These runways are in the Atlantic Ocean, east of the Tolomato river. Runway 12W-30W measures 5,000 feet long by 1,000 feet wide; Runway 17W-35W measures 12,000 feet long by 1,000 feet wide; and Runway 18W-36W measures 12,000 feet long by 500 feet wide. There is a seaplane ramp on the southeast side of the airport along Tolomato River, approximately 615 feet north of Runway 24.

2.1.1.1. Magnetic Declination

Magnetic Declination = 6°33’ West changing by 0°5’ west/year

Magnetic declination, sometimes called magnetic variation, is the angle between magnetic north and true north. This angle varies relative to one's position on the earth's surface and over time. Current magnetic declination information was derived from the National Center for Environmental Information (NCEI), formerly known as National Geophysical Data Center (NGDC), database for March 2017.

Magnetic declination for the St. Augustine area was calculated to be 6°33’ West changing by 0°5’ West per year. Being that airport runways are designated based on a magnetic bearing to the nearest unit of 10, this information will be used in subsequent chapters to validate the accuracy of the current runway designations at the Airport or determine which runway designations are most appropriate for an airfield.

Existing latitude, longitude and mean sea level (MSL) elevations for all six runway ends, and runway thresholds, at SGJ are detailed in **Table 2-1.**

Table 2-1. Existing Runway End and Threshold Coordinates and Elevations

	RUNWAY 13 END	RUNWAY 31 END	RUNWAY 6 END	RUNWAY 24 END	RUNWAY 2 END	RUNWAY 20 END
LATITUDE	29° 58'02.71" N	29° 57'15.80" N	29° 57'14.33 N	29° 57'26.94" N	29° 57'16.09" N	29° 57'40.20" N
LONGITUDE	81° 21'2.54" W	81° 19'49.26 W	81° 20'28.60' W	81° 20'01.53" W	81° 20'27.79" W	81° 20'17.14" W
ELEVATION	9.5 FT. (MSL)	5.7 FT. (MSL)	9.6 FT. (MSL)	5.9 FT. (MSL)	9.1 FT. (MSL)	5.5 FT. (MSL)
	RUNWAY 13 DISPLACED THRESHOLD	RUNWAY 31 DISPLACED THRESHOLD	RUNWAY 6 DISPLACED THRESHOLD	RUNWAY 24 DISPLACED THRESHOLD	RUNWAY 2 DISPLACED THRESHOLD	RUNWAY 20 DISPLACED THRESHOLD
LATITUDE	29° 57'56.52" N	29° 57'20.53" N	SAME AS RWY END	SAME AS RWY END	SAME AS RWY END	SAME AS RWY END
LONGITUDE	81° 20'52.87" W	81° 19'56.64 W				
ELEVATION	9.6 FT. (MSL)	6.0 FT. (MSL)				

Source: NFDC, Passero Associates

2.1.1.2. Runway Safety Area Improvements

The Runway Safety Area (RSA) off Runways 20, 24 and 31 ends lie adjacent to the Tolomato River. These areas are subject to erosion from tidal flow and were non-standard. Starting in 2012, an RSA improvement project was undertaken to install articulating concrete block mat to provide standard RSA beyond Runway 20, 24 and 31 ends.

2.1.2. Taxiways

There are currently six taxiways serving the runways at SGJ. Below are descriptions of each:

Taxiway A

This partial parallel taxiway is on the east side of Runway 13-31, originally designed to accommodate a Boeing 737. It runs from the northern most corporate hangar development down to Runway 20. It measures 75-feet wide with 15-foot shoulders. It has three connector taxiways: one at Runway 13 end, with a designation A1, one at the Runway 13 displaced threshold, designation A2 and an angled taxiway, further south of A2, angled at 40 degrees to the runway, designated as A3. At its closest point near the runway 13 end, the runway centerline to taxiway centerline is offset 400 feet. The taxiway does not maintain a constant offset from Runway 13-31 centerline. This taxiway was last rehabilitated in 2015. The next rehabilitation will require full depth reconstruction. The water table is within two feet of the pavement. Taxiway hold lines are offset approximately 250 feet from Runway 13-31.

Taxiway B

This partial parallel taxiway is on the west side of Runway 13-31. During the previous Master Plan, this taxiway ran from the Runway 13 displaced threshold down to what is currently Taxiway D. In 2013, Taxiway B was extended to the end of Runway 31, providing a full-length parallel taxiway from threshold to threshold. Measuring 75-feet wide, with 15-foot shoulders, it is offset from the runway centerline 400 feet, except the area south of Taxiway D. When this taxiway was extended to the Runway 31 end, the offset was reduced because of the environmental impacts associated with the surrounding channel, and the required mitigation. Therefore, the runway centerline to taxiway centerline offset at this point is 345 feet. There are five connector taxiways. Taxiway B1 is located at Runway 13 displaced threshold. Heading south B2 connects at an angle to provide for exiting the runway, from landing on Runway 13, and continues into the terminal area. There is no Taxiway B3. Taxiway B4 connects south of Runway 2-20 and provides access to the seaplane ramp. Taxiway B5 located at Runway 31 displaced threshold and Taxiway B6 located at Runway 31 end. Taxiway B was last rehabilitated in 2009, with the extension of Taxiway B south completed in 2013. The hold lines are positioned approximately 250 feet from the Runway 13-31 centerline.

Taxiway C was removed when Taxiway B was extended.

Taxiway D

This partial parallel taxiway, located on the south side of Runway 6-24, measures approximately 40-feet wide. It has three connector taxiways. Taxiway D intersects Taxiway B. There is no connector taxiway D1. Taxiway D2 connects mid-runway. Taxiway D3, which connects through to Runway 2-20, located approximately 390 feet east of D4, which connects at Runway 6 end. This taxiway provides access to general aviation development on the south side of the airport. It should be noted that based on AC 150/5300-13A Airport Design, the separation requirements between Runway 6-24 and Taxiway D, meet B-I-Small separation standards at the existing 200 foot separation from runway centerline to taxiway centerline; however, B-I runway to taxiway separation standards requires at least 225 feet. Upgrading Runway 6-24, to B-II standards, will require examining this separation, as it increases to 240-feet. Only taxiway connector D-3 was rehabilitated in 2013, including widening it to 84.5-feet wide, to accommodate aircraft turning radius. The reminder of Taxiway D is in poor condition. Taxiway D hold lines measure 125 feet from the Runway 6-24 centerline.

Taxiway E

This taxiway is directly south and parallel of Taxiway D, providing access to T-hangar development in the southwest corner of the airport. It measures approximately 30-feet wide. This taxiway also ties into a vehicle access road along the western fence line. Taxiway E was created in 2011 to provide a secured access route for the fuel truck to the fuel farm on the south side of the airport, and secondary access to the T-hangars.

Taxiway F

This taxiway connects to Taxiway B, at its intersection with Taxiway D, near the airfield firefighting station. Constructed in 2007 it provides access to the south apron, the conference center, maintenance hangars, and several T-hangars in the southwestern most corner of the airport. It measures 50-feet wide. This taxiway was constructed around natural tree barriers, creating an open green area.

Taxiway G

This taxiway connects to Taxiway F on the north side of the open area, providing a north access to hangars in the southwestern portion of the airport. Taxiway G measures 50-feet wide and was constructed in 2007 with Taxiway F. Taxiway G terminates at Casa Cola Avenue.

Hangar Access Taxilanes

Hangar access taxilanes are different from taxiways in that they provide access to hangar facilities and not runways. Additionally, the design and safety criteria for taxilanes are slightly less restrictive than those for taxiways as taxilanes are classified as non-movement areas. Aircraft operating in these areas are expected to do so at a low rate of speed. Taxilanes exist in the northeast development area, from Taxiway A; off Taxiway B2 for the Northrup Grumman development on the west side, and to the hangars off Taxiways D, F, and G for hangar development on the southwest corner. The taxilanes in the south area measure 25-feet wide, which is consistent with Design Group I aircraft.

2.1.2.1. Airfield Hot Spot

The FAA has identified two hot spots (i.e., HS 1 and HS 2). A hot spot, defined as "*a location on an airport movement area with a history of potential risk of collision or runway incursion, and where heightened attention by pilots and drivers is necessary*." HS 1 is located at the intersection of Taxiway B2 and Runway 2-20. HS 2 is located where the FBO Apron connects to Runways 2 and 5 via taxiway connector. These areas will be reviewed during the facilities section to determine if there is an action step to be taken to rectify the situation.

2.1.3. Aprons

There are three primary apron areas on the airport, two in the south part of the airport and the other in the terminal/FBO area of the airport.

The south apron provides tie-down access primarily for the Florida Flyers European US Flight School, on the main floor of the Airport Conference Center. This apron measures about 95,000 SF (approximately 10,556 SY) and has 26 tie-downs. In front of the Customs building is a small apron area set aside strictly for clearance of aircraft by Customs. This area is approximately 17,000 SF (approximately 1,889 SY).

The terminal/FBO apron will be described separately for ease of reading. Both are in the western section of the airfield, about mid-field, but serve distinct purposes. The FBO apron measures about 165,000 SF (approximately 18,333 SY), marked with 22 tie-downs. This apron solely serves the purposes of the FBO and transient aircraft. The terminal apron, located east of the terminal building, is for the use of commercial service aircraft. This apron is scheduled for design in Fall of 2017 and construction in 2018. The apron is marked accordingly for two commercial service aircraft, to park in a "pull-in, pull-out" situation. When the commercial carrier is active, the pavement becomes a secured area and is appropriately marked with a Security Identification Display Area (SIDA), per Federal Aviation Regulation, Part 107.205.

There are miscellaneous access aprons outside hangars. These areas are for maneuverability of the aircraft into/out of the respective hangars.

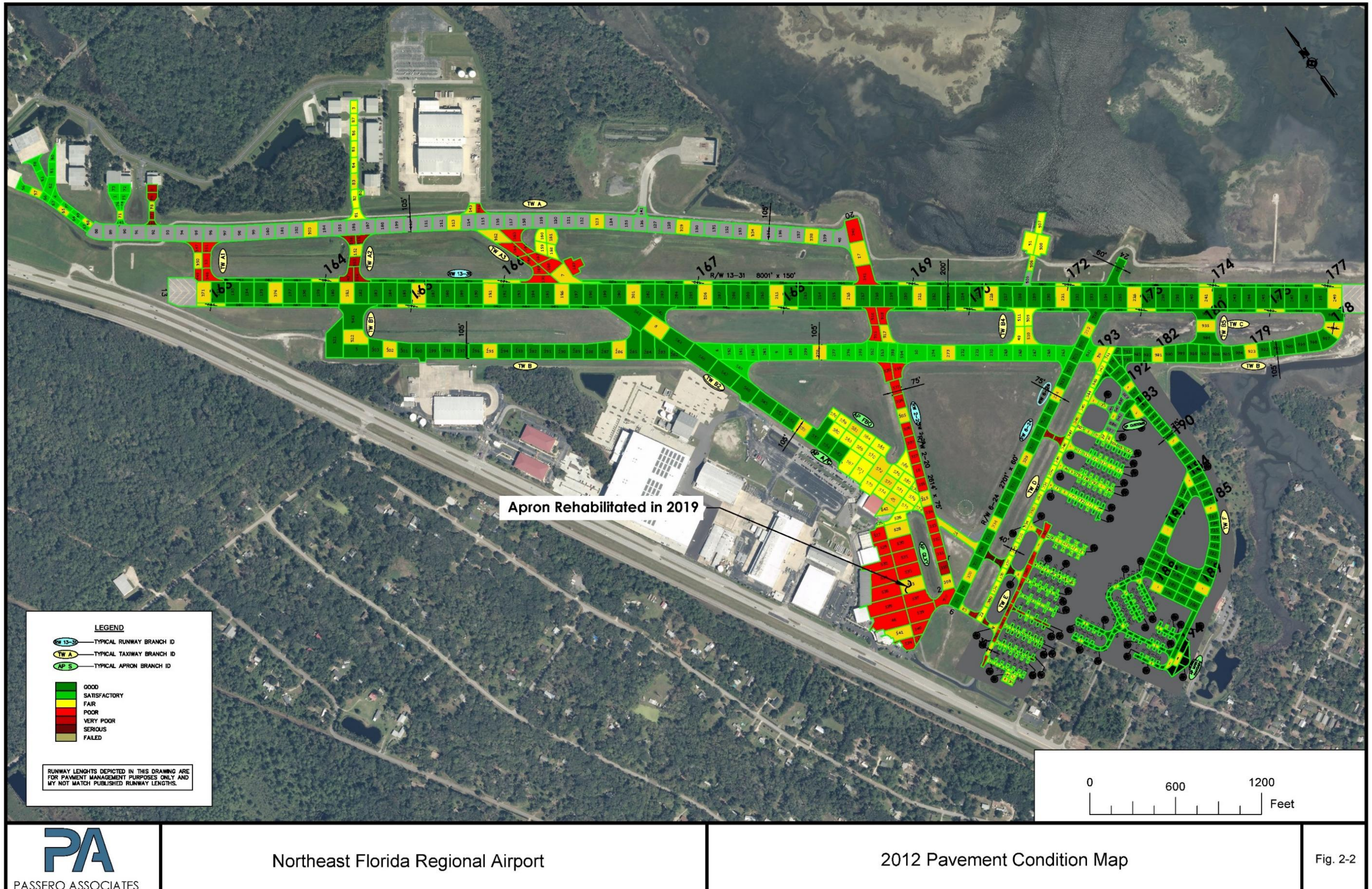
Seaplane Ramp

The 100-feet wide by 150-feet long concrete seaplane ramp, overlaid with asphalt, is located on the east side of the airport, approximately 585 feet north of Runway 6-24. This ramp is primarily used by Northrup Grumman to ship their military aircraft on barges. Occasionally this ramp is use by sea-plane aircraft. The concrete ramp extends into the Tolomato River. In 2006, a seaplane floating deck system was installed, including a 50-foot-long by 4-foot-wide aluminum gangway connecting to a composite floating dock and floating aircraft parking pad. During Hurricane Matthew, in 2016, the floating dock and aircraft parking pad were destroyed.

Pavement Condition

The Airport Authority maintains their own database of pavement conditions, in which the last pavement study was updated 2012. The key findings from the 2012 study were: Runway 2-20, Taxiway A, Taxiway D, hangar taxilanes, and the FBO/Terminal apron need rehabilitation. Since 2012 Runway 2-20, Taxiway A, and Taxiway D3 have been rehabilitated. The FBO apron pavement was rehabilitated in 2019. **Figure 2-2** contains a graphic of the pavement condition map.

Figure 2-2. Pavement Condition Map



Source: Passero Associates

2.2. Airfield Lighting/Vault

Proper airfield lighting is required at all airports that are utilized for nighttime operations. The existing lighting systems at the Airport allow for aircraft operations at night and are supported by equipment in the airfield electrical vault. The airfield electrical vault is located adjacent to the air traffic control tower. The vault, rehabilitated around 2010, is adequately sized to house the electrical needs of the airfield. A diesel-powered backup generator is installed to improve the operational reliability of the Airport in the event of a localized power outage. This generator was last used during Hurricane Matthew in 2016.

Figure 2-3. Electrical Vault Backup Generator

Identification Lighting

A rotating beacon universally indicates the location and presence of an airport at night or in adverse weather conditions. The rotation beacon at SGJ is located atop the air traffic control tower. The beacon consists of an optical rotating system which projects two beams of light, one green and one white, 180 degrees apart. The beacon operates continuously during nighttime hours, and when the airfield is under instrument conditions using a photocell trigger.

Runway Lighting

Runway lights allow pilots to identify the edges of the runway and assist them in determining the length remaining during periods of darkness or otherwise restricted visibility. These lighting systems are classified by their intensity or brightness. Presently Runway 13-31 is equipped with high intensity runway lights (HIRL), and runway centerline lights; while Runways 6-24 and 2-20 are equipped with a medium intensity runway light (MIRL). These lights are activated by air traffic control tower during attended hours, or by pilots through the common traffic advisory frequency (CTAF) at 127.625 MHz by keying the on-aircraft microphone in a sequence when the air traffic control tower is closed. Runway 31 runway centerline lights are flush mounted. Cables run between the fixtures and overall this lighting system is in good condition. The runway edge lights are white, except for Runway 13 and Runway 31, where yellow lights replace white for approximately the last 1,850 feet to indicate a caution zone for landings.

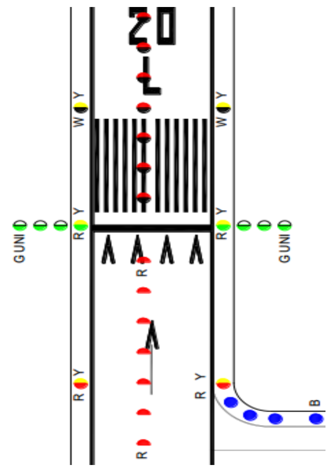


Figure 2-4. Runway Lighting Schematic

Runway 13-31 have displaced thresholds which have a specific lighting schematic to identify the usable runway and the threshold. The edge of the pavement is marked with four red lights, either side of the runway centerline. The displaced threshold is marked with four outboard lights on each side. These lights are half green, only the outboard light has the color yellow on the other side. Approaching aircraft will see green lights to indicate the threshold, while departing aircraft will see yellow lights, cautioning the end of the usable runway.

Runway 31 is also equipped with centerline lights, and a medium intensity approach lighting system with runway end identification lights (MALSR). The centerline lights are flush mounted, in pavement, and the lenses are half red, half white, interspersed with all white. This system which starts at the displaced threshold extends out 2,400 feet into the marsh. The lights are on pole stanchions in the marsh, extending the visual airport environment for use by pilots to identify the airport environment earlier during low visibility conditions.

Taxiway Lighting

The major taxiways are equipped with medium intensity taxiway lights (MITL). The taxiway near the Customs/Airport Fuel building is marked with retroflective markers.

Figure 2-5. Retrofelctive Markers

2.2.1. Pavement Markings

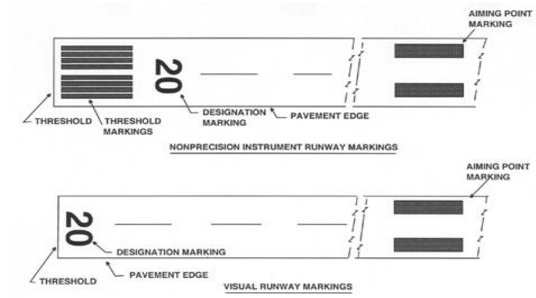


Figure 2-6. Non-Precision and Visual Runway Markings

Pavement markings delineate the various movement areas of the airfield. There are several types of runway markings based on the type of instrument approach to the runway. Because Runway 13 has precision instrument (PIR) approach procedures, Runway 13-31 has PIR markings. Besides PIR markings, Runway 13-31 is also marked with white displaced thresholds, runway designation numbers, centerline striping, and aiming point markings. The Runway is also marked with white edge markings and yellow hatch shoulder markings, to delineate the usable runway width from the total pavement that exists. The blast pad off each runway end is marked with yellow chevrons. The blast pad purpose is to prevent erosion due to jet blast.

Runways 6-24 and 2-20 are marked with basic markings, consisting of runway designation markings and centerline striping. Basic markings on these runways result from the lack of instrument approaches to the runway. Runway 2-20 also has white edge markings to delineate the pavement edge.

All taxiways have visible yellow centerline stripes with holding position markings located before any runway intersection. A runway hold position marking consists of 2 solid yellow lines, on the taxiway side, and two dashed yellow lines, on the runway side. These marking ensure that aircraft have proper wingtip clearances. Taxiways A, B, F and G provide taxiway edge markings with double yellow lines. When the pavement exceeds the required dimensions of the taxiway, edge markings are added to inform pilots of the usable taxiway width. There is also a hold line from the seaplane ramp prior to Runway 13-31.

The taxiways have enhanced markings on them, consisting of runway numbers in white paint, on a red background at the runway hold lines. The taxiway centerline leading up to the hold line is enhanced to raise pilots' awareness about the upcoming hold line. The marking on Taxiway B, at the intersection of Runway 2-20 is widely expansive, and creates a hotspot, movement issue, where aircraft may enter a runway without stopping. Where a taxiway intersects another taxiway the hold line consists of a single solid yellow line and a single dashed yellow line.

A compass calibration pad located on the east side of Runway 13-31, near Taxiway A3 is in poor condition, and needs resurfacing and repainting. A compass calibration pad is used for calibrating an on-board aircraft compass. The aircraft magnetic compass, which is used for navigation, must be calibrated to ensure there are no errors in the compass. One method for calibrating the compass is to use a compass calibration pad to align the aircraft on known magnetic headings and make adjustment to the compass and/or placards to indicate the required correction. The pad consists of a series of 36 radials painted on the pavement with non-metallic paint.

Additional markings on Taxiway A include the ILS marking, two solid yellow horizontal lines the width of the taxiway and shoulder, connected by vertical markings. This ILS critical area is to ensure that the area between the markings remain clear of aircraft, vehicles, persons and obstructions to protect against signal interference when the instrument landing system is in use.

2.2.2. Airfield Signage

Connected to the airfield lighting system are several internally illuminated airfield signs. These include location, direction, designation, and distance to go signs. The runway signs identify to a pilot the limits of the runway environment. Runway signs are white text on a red background, matching the enhanced pavement markings. These signs are located on both sides of each taxiway abeam runway hold lines.

Directional signs are yellow backgrounds with black text. Designation signs, which convey the taxiway the pilot is actively using, are black with yellow text. Distance to go signs, only exist on Runway 13-31, and provide the number of feet (in thousands) remaining before the runway ends.

Two additional "no-entry" signs exist at the airport, one at Taxiway G for aircraft, where it intersects Pine Ridge Road, and the other for vehicles at the end of Estrella Road.

Table 2-2 is a summary of the airside inventory.

Table 2-2. Existing Airside Facility Information

	RUNWAY					
	13	31	6	24	2	20
RUNWAY DESIGN CODE (RDC)	D-IV	D-IV	B-I	B-I	B-I	B-I
LENGTH	8001		2701		2609	
WIDTH	150		60		75	
LANDING PATTERN	Left		Left		Left	
SURFACE	Asphalt		Asphalt		Asphalt	
STRENGTH:						
SINGLE WHEEL	100,000 lbs.		46,500 lbs.		100,000 lbs.	
DUAL WHEEL	280,000 lbs.		85,000 lbs.		203,500 lbs.	
2 DUAL TANDEM	560,000 lbs.		-		-	
2 DUAL WHEELS IN TANDEM/2 DUAL WHEELS IN DOUBLE TANDEM	1,120,000 lbs.		-		-	
PCN	126 /F/A/W/T		19 /F/A/X/T		53 /F/A/X/T	
INSTRUMENT PROCEDURES	NP	PIR	-	-	-	-
LIGHTING	HIRL		MIRL		MIRL	
APPROACH LIGHTING	-	MALSR	-	-	-	-
END IDENTIFIER	-	-	-	-	-	-
VGSI	4-Box VASI	4-light PAPI	2-light PAPI	-	-	-
MARKINGS	Precision Instrument		Basic		Basic	
RUNWAY HOLD LINE DISTANCE	250'		125'		125'	
DISPLACED THRESHOLD	1,058 ft	805 ft	-	-	-	-

Source: FAA NFDC

2.2.3. NAVAIDs

There are several navigational aids at the airport that aid in landing operations. Some are visual aids, while others are electronic.

Wind Indicators

Figure 2-7. Windsock

Perhaps the most basic takeoff and landing aid is the windsock which informs pilots of wind direction and speed and suggests an operational pattern. An internally lighted windsock exists within the center of the segmented circle, located near the intersection of Taxiway D3 and Runway 6-24. Supplemental wind cones are adjacent to the Runway 13 end, Taxiway B, Grumman property, and the hush house on the east side of runway 13-31.

Visual Glide Slope Indicators

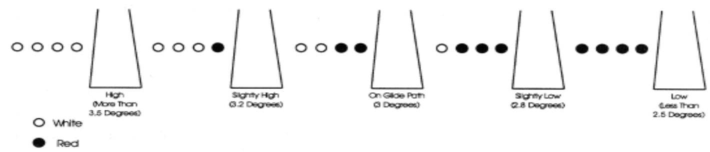


Figure 2-8. 4-Box PAPI Schematic

There are two types of visual glide slope indicators: visual approach slope indicator (VASI) and precision approach path indicator (PAPI). SGJ has both types on the airport. Both systems function the same – each system provides visual light clues to a pilot if they are on glide slope, and above or below on their approach to landing. Runways 6, 13 and 31 are equipped with PAPIs, which are the current glide slope indicators for these runways. **Table 2-3** provides a summary of the type of equipment, the approximate location down the runway and the approach angle.

Table 2-3 Visual Glide Slope Indicator

Runway	Type (Direction of centerline)	Distance from Threshold	Angle	Threshold Crossing Height
6	2-light PAPI (left)	835 ft	3.25°	47’ AGL
13	4-Box VASI (left)	850 ft	3.00°	44’ AGL
31	4-light PAPI (left)	1037 ft	3.00°	54’ AGL

Source: FAA NFDC.

Instrument Landing System/Approach Lighting System

Runway 31 is equipped with an instrument landing system (ILS), which provides for improved approaches to the primary runway. The ILS system at SGJ consists of several components: the localizer antennae and the end-fire glideslope antennas. The localizer antenna is located beyond the Runway 13 end, approximately 450 feet off the runway threshold location, while the end-fire glide slope antennae are on the east side, mid-field, of Runway 13-31, just north of Runway 6-24.

VOR

The airfield is equipped with a terminal Very high frequency Omni direction Range antennae, that aids in providing non-precision approaches to the airport environment through radio signals on direct bearings. Only Runway 13 utilized the VOR. The VOR is located approximately 118 feet east of Runway 31 on a small marsh island in the Tolomato River, accessible by a gravel road.

Automated Weather Observing System

The Airport has an automated weather observing system (AWOS) III P/T located south of Taxiway B2, west of Taxiway A, before the terminal area. The AWOS III P/T is an All Weather Inc. unit which report airfield altimeter setting, wind data, temperature, dew point, and cloud/ceiling data, as well as the time the data was collected. In addition, the AWOS III P/T also provides information to the National Weather Service. Pilots can receive this information on the assigned radio frequency (119.625 MHz) or through the dedicated telephone number 904-824-7084. The AWOS communication antennae and support shelter, are located near the Administration Building. This facility is owned and maintained by the FAA.

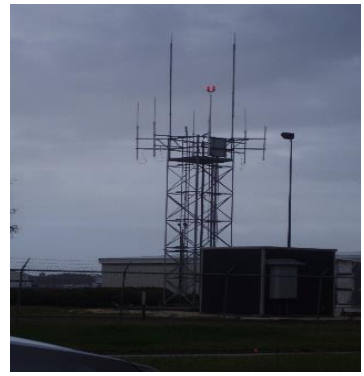


Figure 2-9. AWOS

2.3. Meteorological Conditions

The climatic conditions commonly experienced at an airport can play a large role in the layout and usage of the facilities. Weather patterns characterized by periods of low visibility and cloud ceilings often lower the capacity of an airfield, and wind direction and velocity dictate runway usage.

Meteorological data was obtained through the National Climatic Data Center (NCDC) consisting of 10 years of hourly observation and environmental conditions as reported by the 3rd generation Automated Weather Observing System (AWOS-III) located at Northeast Florida Regional Airport for period 2007-2016. Utilizing the FAA's airport GIS windrose generator, this data was analyzed to explore ceiling, visibility, and wind conditions at the Airport, for all weather, visual flight rule (VFR) conditions, and instrument flight rule (IFR) conditions.

2.3.1. Ceiling and Visibility

Total reports for all weather conditions were 122,773 during the 10-year period. FAA Advisory Circular (AC) 150/5060-5, *Airport Capacity and Delay*, identifies categories of ceiling and visibility minimums. These categories include Visual Flight Rules (VFR) and Instrument Flight Rules (IFR). Based on the reported data, following is the percent of time each weather condition exists at the airport:

- VFR conditions, when the ceiling is equal to or greater than 1,000 feet above ground level (AGL) and when visibility is equal to or greater than three (3) statute miles, occur at the Airport approximately 88 percent of the time.
- IFR conditions, when the ceiling is less than 1,000 feet AGL and/or when visibility is less than three (3) statute miles, but when ceiling is greater than 200 feet AGL and visibility is greater than 0.5 statute miles, occur at the Airport approximately 12 percent of the time.

2.3.2. Wind Coverage

The orientation of runways for takeoff and landing operations is primarily a function of wind velocity and direction taken together with the ability of aircraft to operate under adverse conditions. Generally, the primary runway at an airport is oriented as closely as practical in the direction of the prevailing winds. The most desirable runway configuration will provide the largest wind coverage for a given maximum crosswind component. The crosswind component is the vector of wind velocity and direction, which acts at a right angle to the runway. Further, runway wind coverage is that percentage of time in which operations can safely occur because of acceptable crosswind components. The FAA has set the criterion for desirable wind coverage for a runway system at 95% based on different allowable crosswind components based on the runway design code (RDC) for each runway with: 10.5 knots (12 mph) for smallest aircraft categorized as A-I and B-I; 13 knots (15 mph) for A-II and B-II; 16 knots (18 mph) for A-III and B-III and C-I through D-III; and 20 knots (23 mph) for A-

IV through D-IV. If 95 percent wind coverage is not provided at an airport for the maximum crosswind component for the critical aircraft, then the addition of a crosswind runway should be considered.

Based on the previous Master plan, Runway 13-31 was classified as RDC D-IV, Runways 2-20 was classified as RDC B-I and Runway 6-24 was classified as RDC B-II. **Table 2-4** presented percent wind coverage for each runway individually, and then combined, for varying wind speeds. **Figures 2-10**, **2-11**, and **2-12** present the All Weather, VFR, and IFR windroses as required by the FAA, assuming Runway 13-31 has a wind speed of 20 knots, and Runways 2-20 has a wind coverage of 10.5 knots and Runway 6-24 has wind coverage of 13 knots, based on the representative RDC for each runway based on the previous Master Plan.

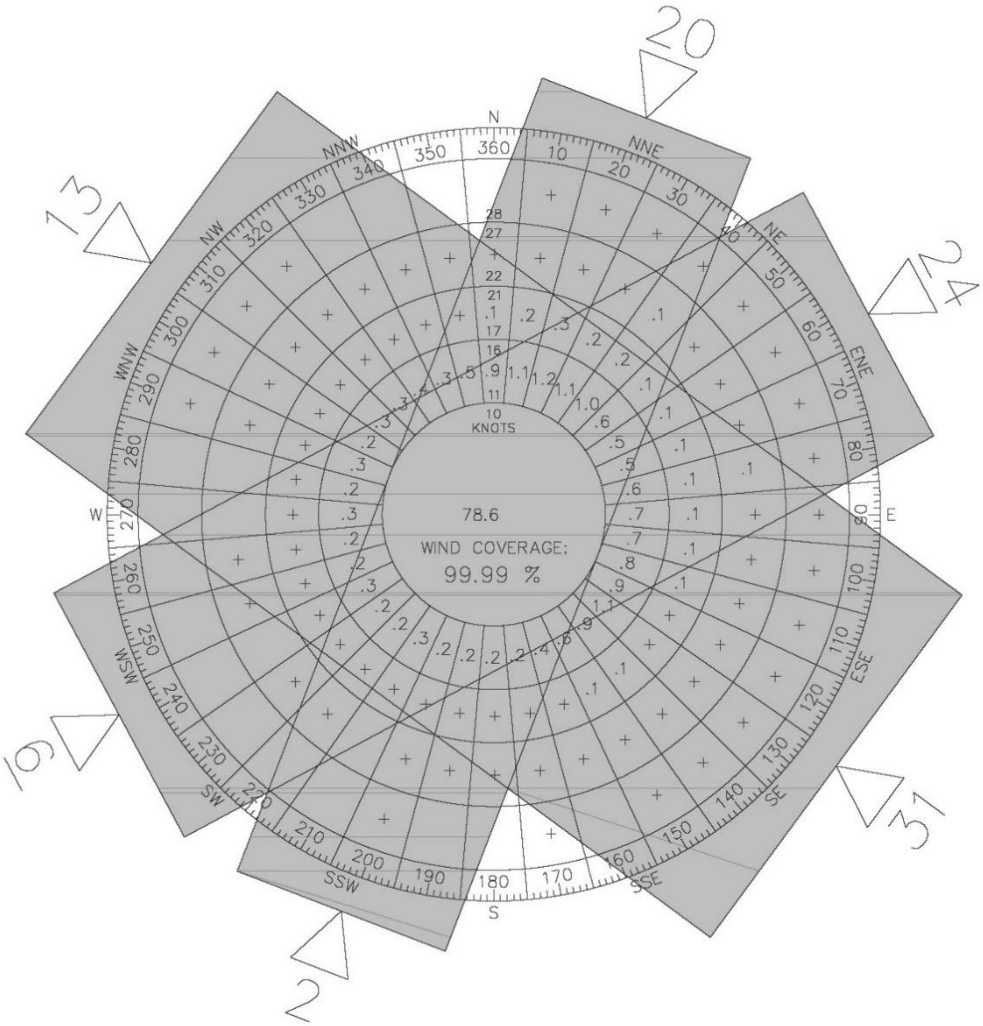
Table 2-4. Percent Wind Coverage

	Crosswind Component			
Airfield Configuration	**10.5 knots (12 mph)**	**13 knots (15 mph)**	**16 knots (18 mph)**	**20 knots (23 mph)**
All-Weather				
Runway 13-31	89.64%	94.05%	98.17%	99.51%
Runway 2-20	90.84%	95.08%	N/A	N/A
Runway 6-24	90.40%	95.28%	N/A	N/A
Runway 13-31/2-20	98.53%	99.55%	99.84%	99.96%
Runway 13-31/6-24	97.04%	99.15%	99.80%	99.96%
All Runways	**99.86%**	**99.79%**	**99.99%**	100.00%
VFR Conditions (Ceiling >1,000 feet; visibility > 3 statute miles)				
Runway 13-31	89.90%	94.19%	98.31%	99.59%
Runway 2-20	90.47%	94.96%	N/A	N/A
Runway 6-24	90.95%	95.65%	N/A	N/A
Runway 13-31/2-20	98.61%	99.65%	99.89%	99.98%
Runway 13-31/6-24	97.57%	99.35%	99.87%	99.99%
All Runways	**99.90%**	**99.99%**	**100.00%**	**100.00%**
IFR Conditions (Ceiling between 250 feet and 1000 feet; visibility between 0.75 and 3 statute miles)				
Runway 13-31	86.18%	92.22%	96.87%	98.98%
Runway 2-20	93.45%	95.89%	N/A	N/A
Runway 6-24	84.96%	91.94%	N/A	N/A
Runway 13-31/2-20	97.86%	98.73%	99.42%	99.87%
Runway 13-31/6-24	92.25%	97.44%	99.32%	99.86%
All Runways	**99.51%**	**99.88%**	**99.99%**	**100.00%**

Source: National Climatic Data Center, 2007-2016, SGJ, Wind coverage calculated from FAA AGIS wind rose generator

Individually none of the runways provide 95% coverage for 10.5 knots.

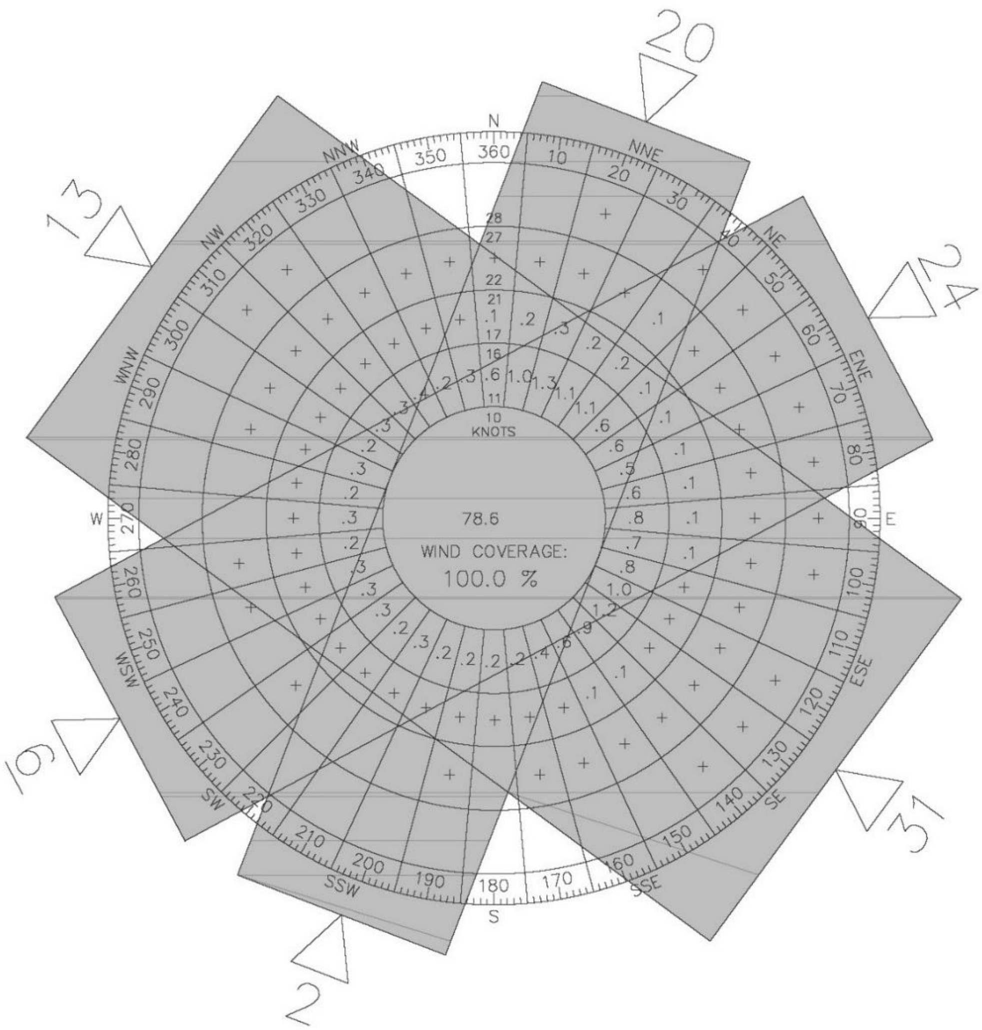
Figure 2-10. All Weather Wind Rose



PASSERO ASSOCIATES	Northeast Florida Regional Airport	All Weather Wind Rose Diagram	Fig. 2-10

Source: Federal Aviation Administration

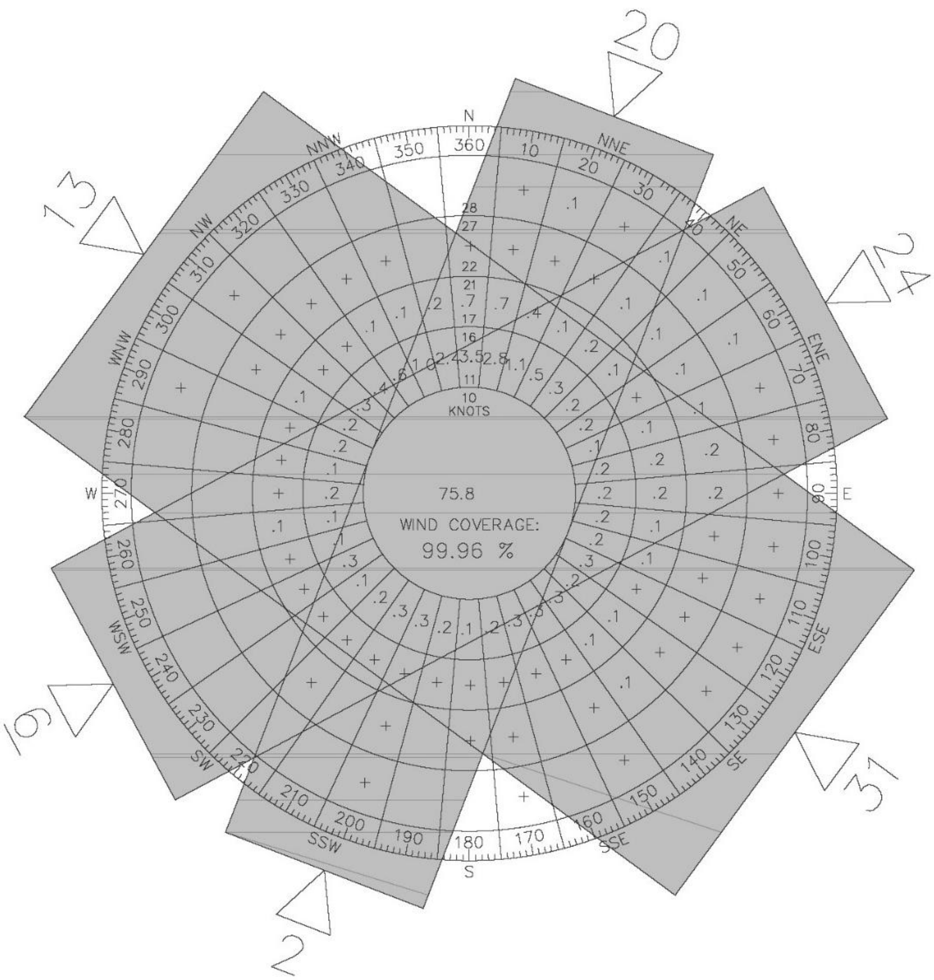
Figure 2-11. VFR Weather Wind Rose



PASSERO ASSOCIATES	Northeast Florida Regional Airport	VFR Weather Wind Rose Diagram	Fig. 2-11

Source: Federal Aviation Administration

Figure 2-12. IFR Weather Wind Rose



PASSERO ASSOCIATES	Northeast Florida Regional Airport	IFR Wind Rose Diagram	Fig. 2-12

Source: Federal Aviation Administration

2.4. Air Traffic Management, Airspace and Obstructions

2.4.1. Air Traffic Management

SGJ has a contracted Air Traffic Control Tower, located to the west of Runway 13-31, south of Runway 6-24, operating between the hours of 7: 00 a.m. to 9:00 pm daily.

2.4.2. Airspace

The International Civil Aviation Organization (ICAO) airspace classes were adopted by the U.S. in 1993. The airspaces are identified as controlled airspace: Class A, B, C, D or E, requiring two-way communication, and uncontrolled airspace: Class G.

Class A: All airspace above 18,000 feet mean sea level (MSL) and up to 60,000 feet MSL. Class A airspace contains high altitude airways, known as jet routes.

Class B and C: The airspace surrounding major commercial airports. Within Class B and C airspace. Aircraft are required to communicate with air traffic control (ATC). To enter this airspace, communication and/or clearances must be received from ATC. Class B and C airspace is denoted on a sectional map with the words "Class B or C". Jacksonville International Airport is a Class C airport.

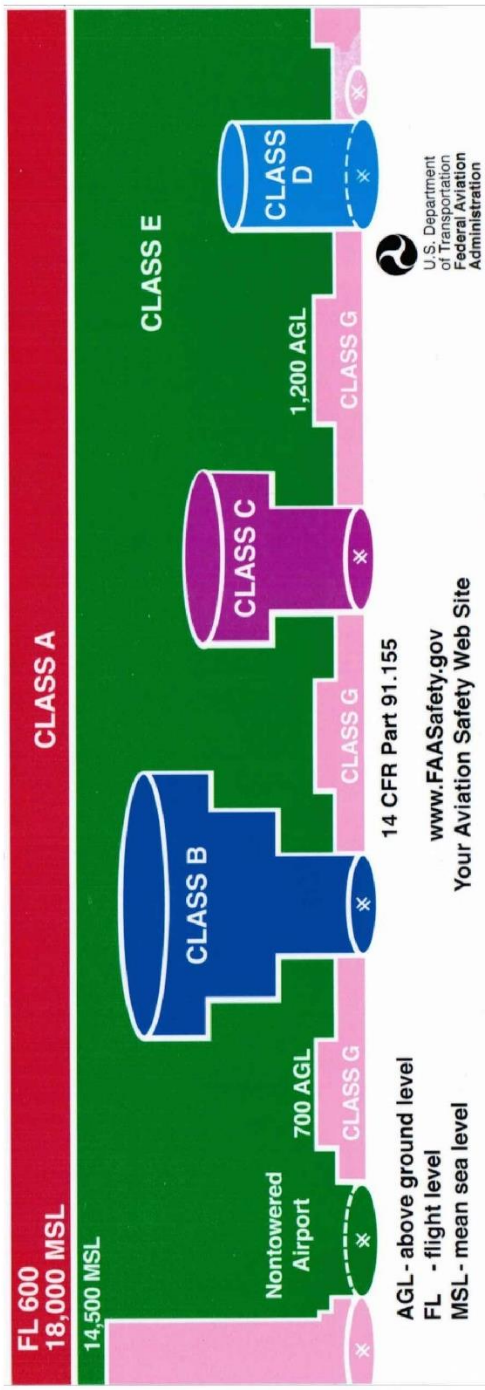
Class D: Identified on a sectional map by blue dashed line. The terminal airspace surrounding towered and military airports with a radius of 5 statute miles. When the air traffic control tower is operational, the airspace around SGJ is considered Class D, when it is not operational then Class E is in effect. The ceiling of the Class D airspace is 2,500 feet for SGJ. See **Figure 2-13** for a graphic presentation of classes of airspace.

Class E: General controlled airspace that includes most of the remaining airspace. This airspace contains the low altitude airways. Aircraft operating in Class E must follow the general regulations for controlled airspace. Class E airspace extends upwards from Class C airspace to the overlying Class A airspace. Beyond the boundaries of Class C airspace, Class E airspace may extend to the ground for un-towered certified airports, but generally begins at 700 feet for SGJ.

Class G: All airspace that has not been designated as controlled or special use, and within which ATC has neither the authority nor the responsibility to control. This airspace typically extends beyond the limits of Class C airspace, from the ground up to 700 feet or 1,200 feet.

Special Use Airspace: An area of special concern or restriction due to unusual hazards (e.g., military activity). Special use airspace includes designated Prohibited Areas, Restricted Areas, Warning Areas, Military Operating Areas (MOA), and alert Areas. Special use airspace near SGJ includes warning areas to the east, specifically W-136E. There is a special military activity route around the airport. Denoted in black numbers, over the water the area starts at 500 feet AGL and continues to 6,000 feet AGL. There is a military activity route, denoted by "IR32", that passes the airport to the north, connecting the water military activity are to another area inland, west of the airport, which starts at 3,000 feet AGL and continues to 6,000 feet AGL.

Figure 2-13. Airspace Graphic



Airspace Class	Entry Requirement	Pilot Certificate or Rating	Two-Way Communication	Altitude Decoding Transponder	VFR Min. Visibility Below 10,000 MSL	VFR Min. Visibility 10,000 MSL and Above	VFR Cloud Clearance Below 10,000 MSL	VFR Cloud Clearance 10,000 MSL and Above
A	ATC Clearance	Instrument	Yes	Yes	N/A	N/A	N/A	N/A
B	ATC Clearance	Private Certificate or student with endorsement	Yes	Yes within 30 nm of the class B primary airport[1]	3 miles	3 miles	Clear of Clouds	Clear of Clouds
C	VFR: Radio Contact IFR: Clearance	Student Certificate	Yes	Yes within C space and above lateral limits of C space[1]	3 miles	3 miles	500 below 1,000 above 2,000 horizontal	500 below 1,000 above 2,000 horizontal
D	VFR: Radio Contact IFR: Clearance	Student Certificate	Yes	No unless required by other airspace	3 miles	3 miles	500 below 1,000 above 2,000 horizontal	500 below 1,000 above 2,000 horizontal
E	VFR: None IFR: Clearance	Student Certificate	IFR only	No unless required by other airspace	3 miles	5 miles	500 below 1,000 above 2,000 horizontal	1,000 below 1,000 above 1 mile horizontal
G	None	Student Certificate	No	No unless required by other airspace	Day: 1 mile Night: 3 miles	5 miles[2]	500 below 1,000 above 2,000 horizontal[2]	1,000 below 1,000 above 1 mile horizontal[2]

PASSERO ASSOCIATES

Northeast Florida Regional Airport

U.S. Airport Airspace

Fig. 2-13

Source: Federal Aviation Administration

Airports in the Region

When conducting a master plan study, it is critical to consider the proximity of other airports and services provided within the region. Not only is air traffic directly affected by regional activity, but airports in near proximity to each other often compete for market share of based aircraft, fuel sales, and other services. Furthermore, there is a potential for airspace conflict with nearby airports. Often airspace interaction requires adjustments to operating procedures to ensure the safe and efficient flow of traffic at all facilities. **Table 2-5** lists public use airports within 30 nautical miles of the airport**. Figure 2-14** shows the sectional map around SGJ.

Table 2-5. Airports in the Region

LOCATION ID	NAME	HEADING FROM SGJ	DISTANCE
KNOP	Jacksonville Naval Air Station (Towers Field)	NW	24 nm
KCRG	Jacksonville Executive Airport at Craig	N	24 nm
K28J	Palatka Municipal Airport – Lt Kay Larkin Field	SW	26 nm
KNRM	Mayport Naval Station (Adm David L McDonald Field)	N	26 nm
KFIN	Flagler Executive Airport	S	30 nm

Source: Airnav

2.4.3. Instrument Approaches

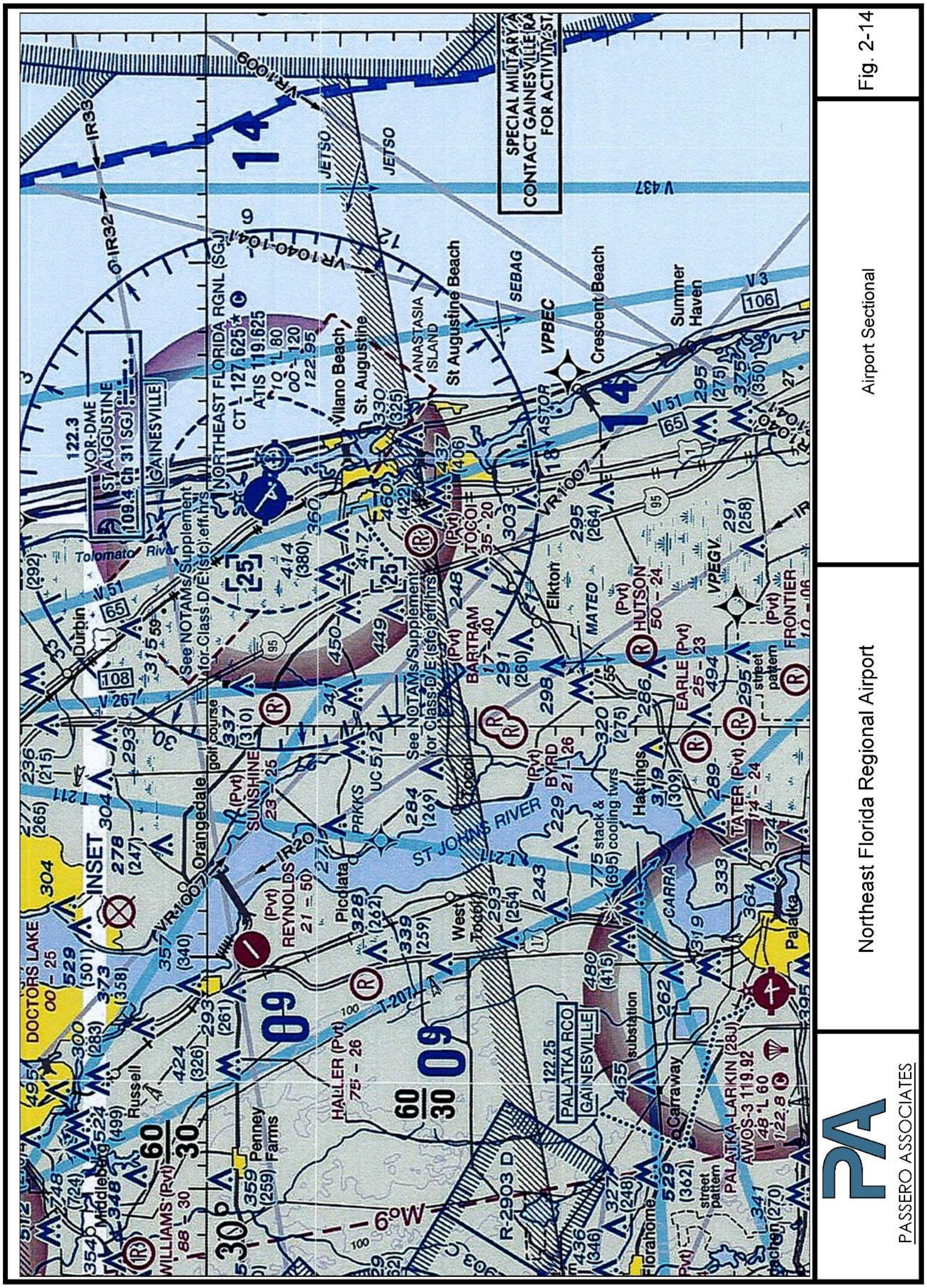
During times of inclement weather, instrument approaches enable pilots to safely descend into the airport environment for landing. There are several different instrument approaches that can be established, each with specific limitations. As the height of clouds and visibility deteriorate, the necessity for instrument approaches increases. When the cloud ceiling is greater than 1,000 feet above ground level (AGL) and the visibility is greater than three statute miles, the conditions are considered visual and pilots can operate under visual flight rules (VFR). In VFR conditions, no published approaches are required for an aircraft to safely land at an airport. However, once the cloud ceiling is less than 1,000 feet AGL and/or the visibility is less than three statute miles, pilots must operate under instrument flight rules (IFR). Additional air traffic control services are provided to pilots during IFR conditions. During the arrival phase, instrument approaches are what allow a pilot to safely navigate to and land on a runway using on-board instrumentation.

Categories of Instrument Approaches

There are two basic categories for instrument approaches: precision and non-precision. Both precision and non-precision approaches provide course guidance to the runway centerline they serve. The degree of horizontal guidance increases with the sophistication of the instrument approach aid, which is reflected through the minimum operating parameters for each approach. The primary difference between a precision and non-precision approach is that the precision approach will also have vertical guidance in additional to horizontal guidance for a specific runway end. This allows an aircraft to descend safely on a fixed glideslope signal, even when the runway environment is not yet in sight.

All instrument approaches have heights published that dictate how low a pilot can descend without the runway environment in sight before having to abandon the approach and try again. For precision approaches this is called the decision altitude (DA) and for non-precision approaches, it is referred to as the minimum descent altitude (MDA). Both heights are published in the number of feet above the intended runway's touchdown zone elevation. In addition, every instrument approach has minimum visibility requirements, measured in feet or miles, at which an instrument approach can be attempted. For either type of approach, if visual contact cannot be made before the decision height or missed approach point, then the aircraft must execute a missed approach and either try again or go to an alternate airport.

Figure 2-14. Sectional Graphic



Source: Federal Aviation Administration

Published Approaches for Northeast Florida Regional Airport

Presently, SGJ has published straight-in, non-precision instrument approaches to the Runway 13 end and the Runway 31 ends. Both are area navigation (RNAV) procedures based on global positioning satellites (GPS). For both Runway 13 and Runway 31 multiple types of RNAV GPS-based approaches exist, including: lateral navigation (LNAV), and circling. The more sophisticated lateral/vertical navigation (LNAV/VNAV) and localizer performance with vertical guidance (LPV) based approaches take advantage of the refined accuracy of GPS information provided by a wide area augmentation system (WAAS) - a system of ground based receivers across the United States which provide regular correction to GPS signals for WAAS-enabled GPS equipment to utilize for improved accuracy. LNAV and Circling procedures are like historic GPS approaches prior to the initiation of WAAS in 2003. These approaches can be flown by aircraft with or without WAAS enabled GPS equipment. Because of the potential loss of accuracy however, these types of approaches typically have higher approach minima. Additionally, Runway 13 has a very high frequency omni-directional range (VOR) non-precision approach, which works off the VOR located near the Runway 31 end. Lastly, Runway 31 is equipped with a precision instrument approach, through an instrument landing system (ILS), or localizer with distance measuring equipment (LOC/DME). This approach provides vertical guidance to an aircraft through use of radio signals, allowing the aircraft to continue a descent to the runway during low visibility conditions. The remaining runways are visual, and do not have instrument approach capabilities with straight-in procedures.

Approach minima consist of either a decision height (DA) or a minimum decent altitude (MDA) and a visibility condition. The DA and MDA essentially provide a pilot with a floor in the airspace he/she must remain above until making visual conformation of the runway end. The visibility condition expresses how poor the visibility can be before the approach is not available to any pilot and the airport is closed to all traffic. The **Table 2-6** tabulates the approach minima for all types of approaches to both Runway ends. **Appendix** C contains the FAA instrument approach charts for Runway 13 and 31.

Table 2-6. Instrument Approach Minima

		RUNWAY 13		RUNWAY 31	
		DA/MDA	VISIBILITY	DA/MDA	VISIBILITY
GPS BASED[1]	LPV	357' AGL	1 ¼ Mile	258' AGL	7/8 Mile
	LNAV/VNAV	391' AGL	1 ¼ Mile	292' AGL	7/8 Mile
	LNAV	460' AGL	1 Mile	520' AGL	1 Mile
	CIRCLING	480' AGL	1 Mile	520' AGL	1 Mile
VOR APPROACH[2]		620' AGL	1 Mile	-	-
CIRCLNG		-	-	620' AGL	1 Mile
ILS (S-31)		-	-	258' AGL	¾ Mile
LOC (S-31)		-	-	520' AGL	1 Mile
CIRCLING		-	-	520' AGL	1 Mile

Source: FAA published instrument approach charts valid 02-MAR 2017 to 30-MAR 2017.

Notes: 1) Runway 13 LNAV is 460' AGL with 1 mile visibility for Category A/B, increasing to 460' AGLs with 1 ¼ mile visibility for Category C and 460' AGLS with 1 ½ mile visibility for Category D. Circling is 480' AGL with 1 mile visibility for Category A, increasing to 580' AGL with 1 mile visibility for Category B, increasing to 580' AGL with 1 ½ mile visibility for Category C, and 580' AGL with 2 mile visibility for category D.

2) RNAV Rwy 31, LNAV increases to 520' AGL with 1 3/8 Mile visibility for Categories C and D; Circling increases to 580" AGL with 1 mile visibility for Category B, increasing to 580' AGL with 1 ½ mile visibility for Category C and 2 mile visibility for Category D.

3) VOR Rwy 13 Cat A/B is 620 AGL with 1 mile visibility, increasing to 620 AGL with 13/4 mile visibility for Category C and D; circling is 620' AGL with 1 mile visibility for Category A/B aircraft, increasing to 620' AGL with 1 ¾ mile visibility to Category C and 620' AGL with 2 mile visibility for Category D aircraft

4) S-LOC 31 Cat A/B is 520' AGL with 1 mile visibility, increasing to 520' AGL with 11/2 mile visibility for Category C, and 520' AGL with 13/4 mile visibility for Category D

5) Circling from the ILS or LPC/DME Rwy 31: Cat A is 520' AGL with 1 mile visibility, increasing to 580' AGL with 1 mile visibility for Category B, and 580' AGL with 1 ½ mile visibility for Category C, and 580' AGL with 2 mile visibility for Category D aircraft

2.4.4. Obstructions (To Air Navigation)

The sectional chart identifies obstructions around the airport. The towers around the airport measure 300' above ground level or higher. If two or more peaks exist, the obstruction is a group. These obstructions exist to the north, northwest and southwest.

Published Obstructions

Obstructions near the Airport that cannot be removed must be marked or lighted to alert pilots of their location with respect to the Airport. The obstructions are identified on approach charts and on the Jacksonville Sectional Chart, published by the FAA National Aeronautical Charting Office. Per these charts, several objects of height exist around the airport, particularly to the north, northwest and southwest. Per the FAAs digital obstacle file (DOF) there are 42 towers reported within St. Augustine, ranging in heights from 143-feet to 460-feet above mean sea level (AMSL). Overall, the average height of these 42 structures is roughly 288-feet AMSL.

These objects of height will be mapped on the Part 77 Airspace sheet of the Airport Layout Plan (ALP) drawing set in a subsequent chapter of this report.

Surveyed Obstructions

Some airspace obstructions are not tall communications towers located miles from the airport, but rather buildings, trees, light/utility poles, etc., near a runway or runway end and may not present an apparent airspace concern. However, these objects are often the most critical when determining the operational utility of an airfield. To begin to explore the known obstructions near the Airport's runway ends, **Appendix C** presents the takeoff and departure procedure minimums published for pilots operating from SGJ. As part of this Master Planning effort new aerial photogrammetry was acquired to better understand if there are objects near the runway end that may adversely affect the instrument procedures to Runway 13-31. These obstructions will be identified in later sections of this report aiding in evaluating operational utility.

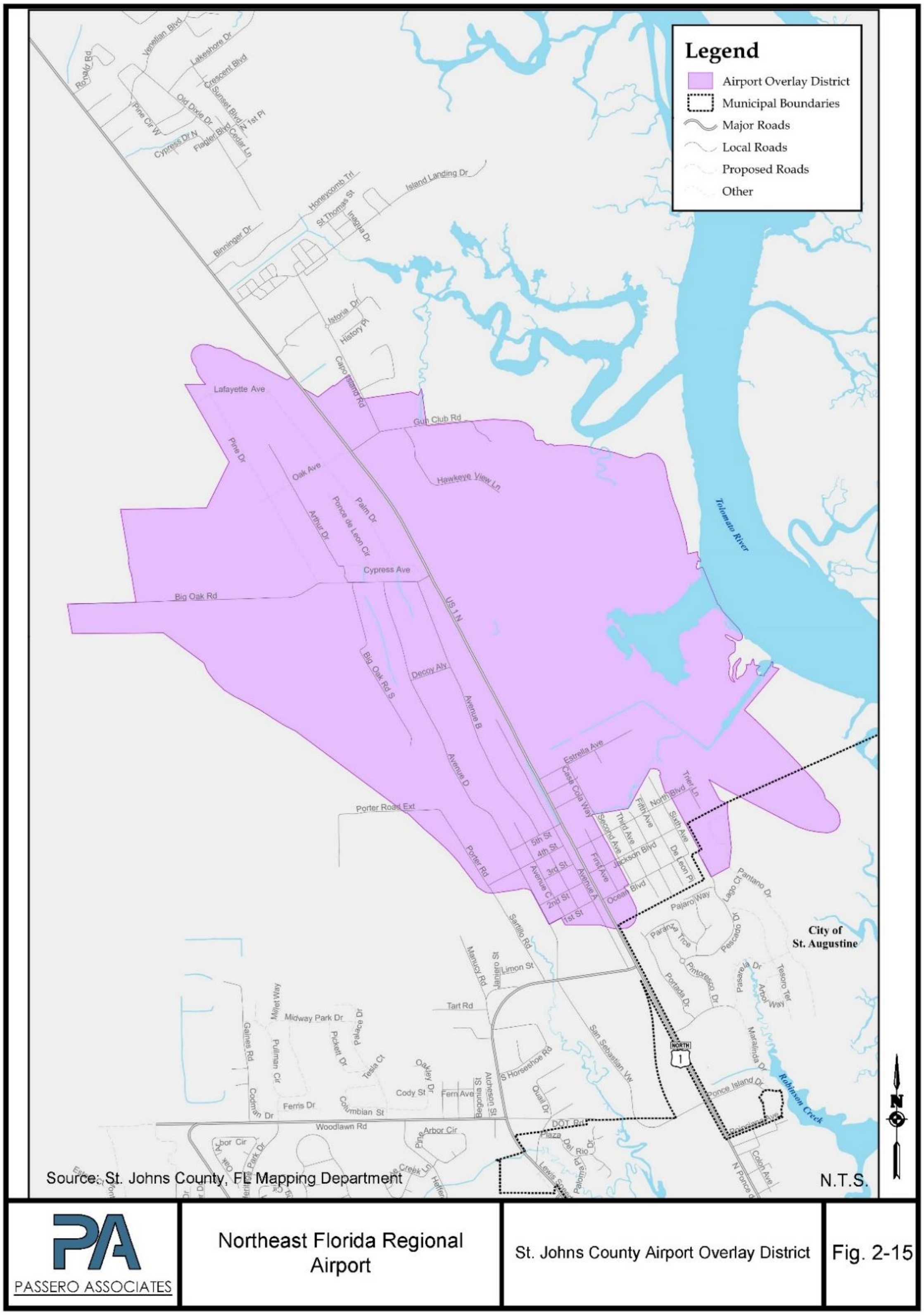
Airspace Protection

Airspace protection is required to preserve and protect public airports, as well as the navigable airspace necessary to operate them safely and efficiently. *Federal Aviation Regulation, Part 77, Safe, Efficient Use, and preservation of the Navigable Airspace*, along with Florida Legislature *Chapter 333, Airport Zoning* outline guidelines to help control the loss of navigable airspace to non-aviation uses, through regulating the height of man-made objects. By preventing objects from becoming obstructions to airspace, operational safety of the airport facility can be preserved.

St. Johns County included, as Objective B.1.12, Airport Compatibility, in their Comprehensive Plan 2025 to "*ensure that all new development is consistent and compatible with the Airport District Future Land Use Map designation and the St. Augustine Airport through the implementation of the Land Development code*." St. Johns County established an airport overlay district for the airport, see **Figure 2-15** for a graphic.

The Florida Department of Transportation maintains an *Airport Compatible Land Use Guidebook* to aid in protection of airspace. These will be references further in subsequent chapters to ensure future development will be compatible with land uses.

Figure 2-15. St. Johns County Overlay District



Source: St Johns County, FL

2.5. Commercial Service/Airline Facilities

2.5.1. Commercial Service

Commercial passenger service is provided by Frontier Airlines and Via Air. Frontier Airlines, re-convening service on April 21, 2017, is scheduled to provide service four days a week, Monday, Wednesday, Friday and Saturday, using Airbus 319 aircraft. The route served will be non-stop from St. Augustine to Philadelphia, PA. Via Air provides two flights per week, on Sunday and Thursday, non-stop service between St Augustine and Charlotte, NC using Embraer 145 regional jet aircraft.

2.5.2. Terminal/Security

After the 2005 Master Plan a terminal expansion was suggested. In 2007 a 10,000-square foot terminal building was constructed. This building quickly was not capable of handling the increased passenger service, and in 2016 a new 23,305 square foot terminal building was constructed. This facility can accommodate four passenger gates. It is equipped with rollers for baggage check-in, and loading, and has a separate outside area, under a canopy for baggage claim upon deplaning. A new canopy is being installed outside the terminal building at curbside to provide additional protection from the elements for passengers using curbside access.

The terminal building has car rental counters within the facility for Avis, Enterprise and Hertz. TSA provides passenger security screening at the airport. As of this Master Plan, TSA is equipped with metal detector arches, but per Airport Authority personnel, the system is scheduled to be updated to full body scanners.

2.5.3. Aircraft Parking Apron

The apron area outside the terminal building is presently designed to accommodate two large aircraft within the Security Identification Designation Area (SIDA), an area on the pavement marked with red outline, which is in effect when a commercial service aircraft is using the apron. The aircraft markings are situated that the aircraft park parallel to the terminal building, in a pull-in/pull-out, under their own power, with the nose of the aircraft situated to the north.

2.5.4. Auto Parking and Access

Terminal building auto parking is north of the building, along the airport fence line, offering approximately 186 parking spots. Access to the terminal building is through a narrow roadway, with access to U.S. 1. The terminal building cannot be seen from U.S. 1. There is a counter-clockwise entrance road for the terminal buildings allowing curbside drop-off or pick-up.

2.6. Ground Access, Circulation, and Vehicle Parking

2.6.1. Ground Access

Direct access to the airport is from U.S. 1. To access the western portion of the airport, an entrance exists north of the FBO building. To access the southern portion of the airport, entrances are via Estrella Ave, Araquay Ave or Indian Bend Rd, directly off U.S. 1. Turning right onto Casa Cola Ave leads to the entrance to the SGJ's Conference Center. Access to the west-side of the airfield is off Gun Club Rd then right onto Hawkeye View Lane.

2.6.2. Vehicle Parking

East side of airport has parking set aside outside the FBO building along U.S. 1. The south area has automobile parking outside the conference center with 46 parking spots available, and an additional 7 spots outside the existing maintenance hangar in the south portion of the airport. The west side has parking set aside outside the fence for Northrup Grumman employees. There is no vehicle parking outside the fence for hangars in the northern most section of the airport.

2.7. Rental Car Facilities

The rental car counters are located within the terminal building for airline passengers. The actual rental car facility is a surface lot outside the terminal building, about 600 feet from the terminal building. Avis, Enterprise and Hertz provide car rentals at the airport. The FBO also has car rental counters inside the FBO building for business passengers. There are approximately 26 parking spaces set aside for the car rental companies.

2.8. General Aviation Buildings/Leaseholds

Support buildings and structures typically accessible to the airfield, that were not discussed under the airside facilities section can include general aviation buildings, including aircraft storage or offices, both aviation and non-aviation facilities. Given the runway configuration, three sections of the airport will be examined separately.

An on-site facility inspection was performed in March 2017 by an architect to determine the existing condition of on-airport buildings. Such information provides an indication of the remaining useful life of on-airport buildings and allows for recommendations regarding any upgrades necessary to appropriately improve or preserve the structure to support airfield demands throughout a 20-year planning horizon. All tenants, on the airport, except Nimbus and Florida Army National Guard, are under leaseholds with the Airport Authority. **Figure 2-16** provides a graphic of each building, its square footage and existing condition as determined by an architect. It should be noted that in 2019, Buildings 23, 24 and 25 (i.e., six port-a-port units) were demolished. These buildings were in poor condition.

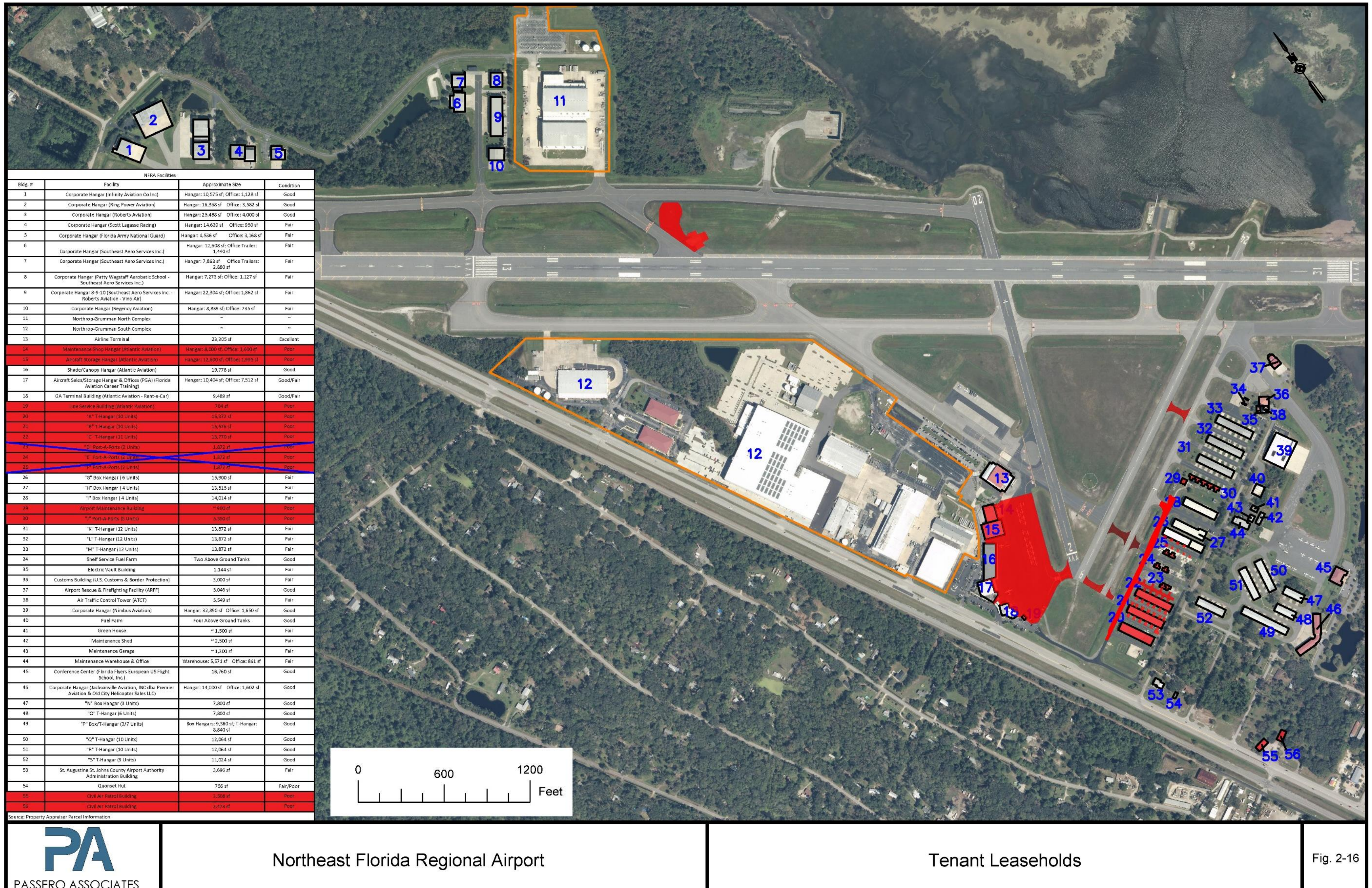
2.8.1. West Side

This refers to the area west of Runway 13-31 and north of Runway 2-20. Consisting of the Fixed Base Operator, the terminal building and the main apron, it also supports Northrup-Grumman's main facility. Atlantic Aviation is the Fixed Base Operator at the airport. In its 9,489 SF building, this FBO provides tie-down services, hangar space, oxygen services, pilot's lounge, conference room, fuel services and Hertz rental cars. There is also a flight school located in this area.

Northrup Grumman (NGC) houses a major manufacturing facility in this section. Their main facility is on adjacent property to the airport, but they also lease lands from Airport Authority for airside access. NGC supports military contracts for E-2 Hawkeye aircraft. NGC maintains and operates an aircraft rescue and firefighting facility (ARFF), located on their property, to respond to aircraft incident that arise while they are working on an aircraft.

The main terminal building to support commercial service aircraft is near the FBO. The terminal was expanded in 2016 to 23,305 SF, providing 2-4 passenger gate positions, improved luggage handling facilities and providing passenger access from the terminal to the aircraft through portable jetways. Frontier Airlines and Via Air provide commercial, scheduled airline service.

Figure 2-16. General Aviation Buildings/Leaseholds



NFRA Facilities

Bldg. #	Facility	Approximate Size	Condition
1	Corporate Hangar (Infinity Aviation Co Inc)	Hangar: 10,575 sf; Office: 1,128 sf	Good
2	Corporate Hangar (Ring Power Aviation)	Hangar: 16,368 sf Office: 3,582 sf	Good
3	Corporate Hangar (Roberts Aviation)	Hangar: 25,488 sf Office: 4,000 sf	Good
4	Corporate Hangar (Scott Lagasse Racing)	Hangar: 14,639 sf Office: 950 sf	Fair
5	Corporate Hangar (Florida Army National Guard)	Hangar: 4,536 sf Office: 3,168 sf	Fair
6	Corporate Hangar (Southeast Aero Services Inc.)	Hangar: 12,608 sf; Office Trailer: 1,440 sf	Fair
7	Corporate Hangar (Southeast Aero Services Inc.)	Hangar: 7,863 sf Office Trailers: 2,880 sf	Fair
8	Corporate Hangar (Patty Wagstaff Aerobatic School - Southeast Aero Services Inc.)	Hangar: 7,273 sf; Office: 1,127 sf	Fair
9	Corporate Hangar 8-9-10 (Southeast Aero Services Inc. - Roberts Aviation - Vino Air)	Hangar: 22,304 sf; Office: 1,862 sf	Fair
10	Corporate Hangar (Regency Aviation)	Hangar: 8,839 sf; Office: 735 sf	Fair
11	Northrop-Grumman North Complex	~	~
12	Northrop-Grumman South Complex	~	~
13	Airline Terminal	23,305 sf	Excellent
14	Maintenance Shop Hangar (Atlantic Aviation)	Hangar: 8,000 sf; Office: 1,600 sf	Poor
15	Aircraft Storage Hangar (Atlantic Aviation)	Hangar: 12,600 sf; Office: 1,995 sf	Poor
16	Shade/Canopy Hangar (Atlantic Aviation)	19,778 sf	Good
17	Aircraft Sales/Storage Hangar & Offices (PGA) (Florida Aviation Career Training)	Hangar: 10,404 sf; Office: 7,512 sf	Good/Fair
18	GA Terminal Building (Atlantic Aviation - Rent-a-Car)	9,489 sf	Good/Fair
19	Line Service Building (Atlantic Aviation)	704 sf	Poor
20	"A" T-Hangar (10 Units)	15,372 sf	Poor
21	"B" T-Hangar (10 Units)	15,576 sf	Poor
22	"C" T-Hangar (11 Units)	13,770 sf	Poor
~~23~~	~~"D" Port-A-Ports (2 Units)~~	~~1,872 sf~~	~~Poor~~
~~24~~	~~"E" Port-A-Ports (2 Units)~~	~~1,872 sf~~	~~Poor~~
~~25~~	~~"F" Port-A-Ports (2 Units)~~	~~1,872 sf~~	~~Poor~~
26	"G" Box Hangar (6 Units)	15,900 sf	Fair
27	"H" Box Hangar (4 Units)	13,515 sf	Fair
28	"I" Box Hangar (4 Units)	14,014 sf	Fair
29	Airport Maintenance Building	~ 900 sf	Poor
30	"J" Port-A-Ports (5 Units)	5,550 sf	Poor
31	"K" T-Hangar (12 Units)	13,872 sf	Fair
32	"L" T-Hangar (12 Units)	13,872 sf	Fair
33	"M" T-Hangar (12 Units)	13,872 sf	Fair
34	Shelf Service Fuel Farm	Two Above Ground Tanks	Good
35	Electric Vault Building	1,144 sf	Fair
36	Customs Building (U.S. Customs & Border Protection)	3,000 sf	Fair
37	Airport Rescue & Firefighting Facility (ARFF)	5,046 sf	Good
38	Air Traffic Control Tower (ATCT)	5,549 sf	Fair
39	Corporate Hangar (Nimbus Aviation)	Hangar: 32,890 sf Office: 1,650 sf	Good
40	Fuel Farm	Four Above Ground Tanks	Good
41	Green House	~ 1,500 sf	Fair
42	Maintenance Shed	~ 2,500 sf	Fair
43	Maintenance Garage	~ 1,200 sf	Fair
44	Maintenance Warehouse & Office	Warehouse: 5,571 sf Office: 861 sf	Fair
45	Conference Center (Florida Flyers European US Flight School, Inc.)	16,760 sf	Good
46	Corporate Hangar (Jacksonville Aviation, INC dba Premier Aviation & Old City Helicopter Sales LLC)	Hangar: 14,000 sf Office: 1,602 sf	Good
47	"N" Box Hangar (3 Units)	7,800 sf	Good
48	"O" T-Hangar (6 Units)	7,800 sf	Good
49	"P" Box/T-Hangar (3/7 Units)	Box Hangars: 9,360 sf; T-Hangar: 8,840 sf	Good
50	"Q" T-Hangar (10 Units)	12,064 sf	Good
51	"R" T-Hangar (10 Units)	12,064 sf	Good
52	"S" T-Hangar (9 Units)	11,024 sf	Good
53	St. Augustine St. Johns County Airport Authority Administration Building	3,696 sf	Fair
54	Quonset Hut	756 sf	Fair/Poor
55	Civil Air Patrol Building	3,508 sf	Poor
56	Civil Air Patrol Building	2,473 sf	Poor

Source: Property Appraiser Parcel Information

Source: Passero Associates

2.8.2. East Side

This refers to the area east of Runway 13-31, and north of Runway 2-20. This area consists of several private bulk hangars off Gun Club Road or Hawkeye View Lane. The northern most tenants are Infinity Aviation Co, Ring Power Roberts Aviation and Scott Lagasse Racing. These hangars are under lease from the Airport Authority. Taxilanes off Taxiway A provide airside access to these facilities. The Air National Guard hangar, also in this area, is not under lease to the Airport Authority.

Heading further south on Hawkeye View Lane there is a combination of hangars, ramps and vehicular parking spaces. There are seven hangars in this area, all under lease to the Airport Authority. Hangars to the north are Southeast Aero Services, Inc and Patty Wagstaff Aerobatic School, along with Southeast Aero Services, Roberts Aviation and Vino Air, all bulk hangars, with direct airside access. The last tenant in this area is Northrup Grumman, who is fenced off from main airside, given the sensitive nature of their business. The automobile parking area in this area is primarily for use by Northrup Grumman.

Taxiway A provides airside access to these facilities. Further south along the east side is a run-up ramp used by Northrup Grumman to test jet engines on their aircraft. This pad, commonly referred to as "hush house", is located north of Runway 20 end, leased from the Airport Authority.

2.8.3. South Side

This refers to the area south or Runway 6-24, west of Runway 13-31. This area supports general aviation activities at the airport. It also houses the air traffic control tower, U.S. Customs, self-service fuel facility, airport maintenance facility, Airport Authority's Administrative offices, a Conference Center and the newly constructed Aircraft Rescue and Firefighting (ARFF) building.

The air traffic control tower, directly located off Estrella Avenue, stands about 100 feet above ground. Access to the tower is through a secured gate. It operates 7:00 a.m. to 9:00 pm daily. The self-service fuel station is adjacent, north, of the tower. Access to the fuel tank is via Taxiways F or D. To the east of the tower is the Customs building. As a port of entry to the airport, Customs services are available for aircraft flying to and from foreign countries. Vehicle access to the Customs office is off Estrella Avenue. Across Taxiway F from the customs office is the ARFF Facility. Vehicular access is through a secured gate on Estrella Avenue. Direct airside access to the ARFF is from Taxiway F, with direct connection to Taxiway D and B. The ARFF is manned only when commercial service is active, typically for a three-hour window.

Taxiway D and E provide access to the T-hangars that are near Runway 6-24. In this area, there are approximately 92 aircraft storage areas between T-hangars, Box hangars and Port-A-Ports. Most of these hangars are in fair to poor condition.

Casa Cola Way provides access to the new Conference Center, maintenance hangar and flying school. The Conference Center building, a 2-floor 16,760 SF building with 46 automobile parking spaces, provides a home to the Florida Flyers European US Flight School, and several companies. Airfield access to the building is provided from Taxiway F. The two meeting rooms upstairs in the conference center are leased out for events. There are approximately 48 aircraft storage areas in this portion of the airport, all in good condition.

2.9. Airport Support Facilities

2.9.1. Airport Security and Access Control

The airport property is fenced on all sides but the inner coastal area. The fence is 8 feet with 3 rows barbed wire. There are several access (electric and manual) control points around the perimeter fence. The electric gates are controlled through an electronic badge providing access to the airside. Airport management maintains a database of all users that have badge access. The fence does not extend along the east side of the airport along the Tolomato River.

2.9.2. Air Traffic Control Tower

The air traffic control is a contracted tower, meaning Federal Aviation Administration (FAA) personnel do not man the tower. The air traffic controllers are contractors to the FAA, who work the tower from 7:00 a.m. to 9:00 p.m. daily. They provide positive control over the intensive flight environment at the airport, and control all aviation activity at the airport. Access to the control tower is at the end of Estrella Avenue.

2.9.3. Airport Maintenance Facilities

Airport maintenance is conducted by Airport Authority employees. Their maintenance structure is located on the south side of the airfield, and consists of a greenhouse, shed, garage, warehouse and office. Combined this accounts for approximately 6,500 SF.

2.9.4. U.S. Customs

The U.S. Customs facility is located on the south side of the airfield. Constructed in 2009, this 3,000 SF facility is manned Thursdays thru Mondays from 12:00 p.m. to 8:00 p.m., and upon request, providing clearance for internationally arriving aircraft. There is an apron area outside the Customs building for use by Customs when processing aircraft.

2.9.5. Aircraft Rescue and Fire Fighting Facilities (ARFF)

The 5,046 SF aircraft rescue and firefighting facility was constructed in 2012. Per Federal Aviation Regulation Part 139, regulations set forth for an airport that offers commercial service, the airport must have dedicated ARFF equipment, and training to combat a fire with the scheduled air service provider. Based on the commercial service aircraft that use the airport, the designated ARFF Index is A. The ARFF equipment consists of one 300-gallon water tank, two 20-gallon foam concentrate tank, and one 450 lb. dry chemical tank.

The ARFF is manned for three- hour blocks when commercial service is scheduled. When no one is working in the ARFF, the airport authority has a relationship with the St. Johns County Fire Rescue to provide service to the airport. There are designated entrances for the outside fire department to use to access the airside.

2.9.6. Aviation Fuel and Aircraft Servicing Systems

There are two fueling facilities at the airport. The FBO maintains, through lease agreement with Airport Authority, a fuel system off Estrella Avenue, beyond a controlled access point, that is used as its supply chain for its various fuel trucks. This facility offers 100LL, Jet A and automobile gas. The second facility, which is maintained by the airport authority, is located adjacent to the US Customs Building and the air traffic control tower. This self-service facility offers both 100LL and Jet A.

2.9.7. Aircraft Wash Racks

To protect the contaminated runoff from infiltrating the grass, the airport is equipped with two wash racks. These paved areas are equipped with oil/water separator grates, and solids are emptied out periodically from the self-contained system. These wash racks are used by aircraft and rental car companies, accessed through the badge system. One wash rack is on the south side of the field closest to the airport's administration building, west of the T-hangars. The other wash rack is in the south general aviation apron area, off Taxiway G, near the airport maintenance shop.

2.10. Adjacent Development

Adjacent to the airport, along U.S. 1, is Northrup Grumman, who provides repair and sale of military grade aircraft. They are also a tenant on the airport, with a separate facility both on the west and east side of the airport. Northrup Grumman utilize the seaplane ramp to ship aircraft via barge.

The Airport Authority maintains ownership of approximately 969 acres of land on the west side of U.S. 1 that can be developed for aviation and non-aviation development, including multi-modal opportunities.

2.11. Utilities

The existing utility infrastructure serving the airport includes electric power, sanitary sewer, water and gas.

Existing utility providers on the airfield are identified in **Table 2-7**.

Table 2-7. Existing Utility Providers

UTILITY	PROVIDER
Electric	Florida Power and Light
Water/Sewer	City of St. Augustine
Gas	Florida Power and Light

Source: Passero Associates

Electric power ties into the main electric power lines along U.S. 1. The airport's electrical vaults redistribute the electricity to the airfield and supporting facilities. Sanitary sewer is provided by City of St Augustine. The main eight-inch force main runs along U.S. 1 with branches to pump stations, including one in the north area, one by the main GA terminal and another near the intersection of Araquay Avenue and U.S. 1. The remaining lines on airport property are considered private lines. Discharges from the aircraft wash rack, located in the south area, are fed into the sewer system. Water supply comes from City of St Augustine's main eight-inch lines along the eastside of U.S. 1. Facilities in the west area tie into this main. Facilities in the east area are serviced by an eight and twelve-inch sections along Gun Club Road and Hawkeye View Lane. South area facilities are supplied by an eight-inch service line that runs from U.S. 1 along Estrella Avenue.

2.12. Land Use/Zoning

Most of the airport land, between U.S. 1 and the inter-coastal area is developed. Airport lands are used to support aviation activity.

Since the last master plan was completed in 2005, the Airport Authority has been actively purchasing properties, both on the southern portion of the airport property, east side of U.S. 1, as well as on the west side of U.S.1 for future development. The property map is being updated as part of this master plan, and will be presented in a later chapter. For now, the airport maintains approximately 710 contiguous acres on the east side of U.S. 1, as calculated from the St. Johns county property assessment tool, for all aeronautical activity today. The airport is bordered by U.S. 1 to the west, Gun Club Road to the north, Tolomato River to the east and marsh and residential development to the south. Airport property interest will be presented in detail as part of the ALP set developed as part of this study.

St. Johns County identifies the zoning for the airport property on the east side of U.S. 1 as AD (Airport District) while on the west side of U.S. 1 as AD, RS-3 (Residential) or IW (Industrial-Warehousing) as shown in **Figure 2-17.** The physical land use of the airport property east of U.S. 1 is to support aeronautical activity. Lands on the west side are a mix of residential properties, that are not owned by the Airport authority, and lands that have been purchased by the Airport Authority, but have not been developed yet.

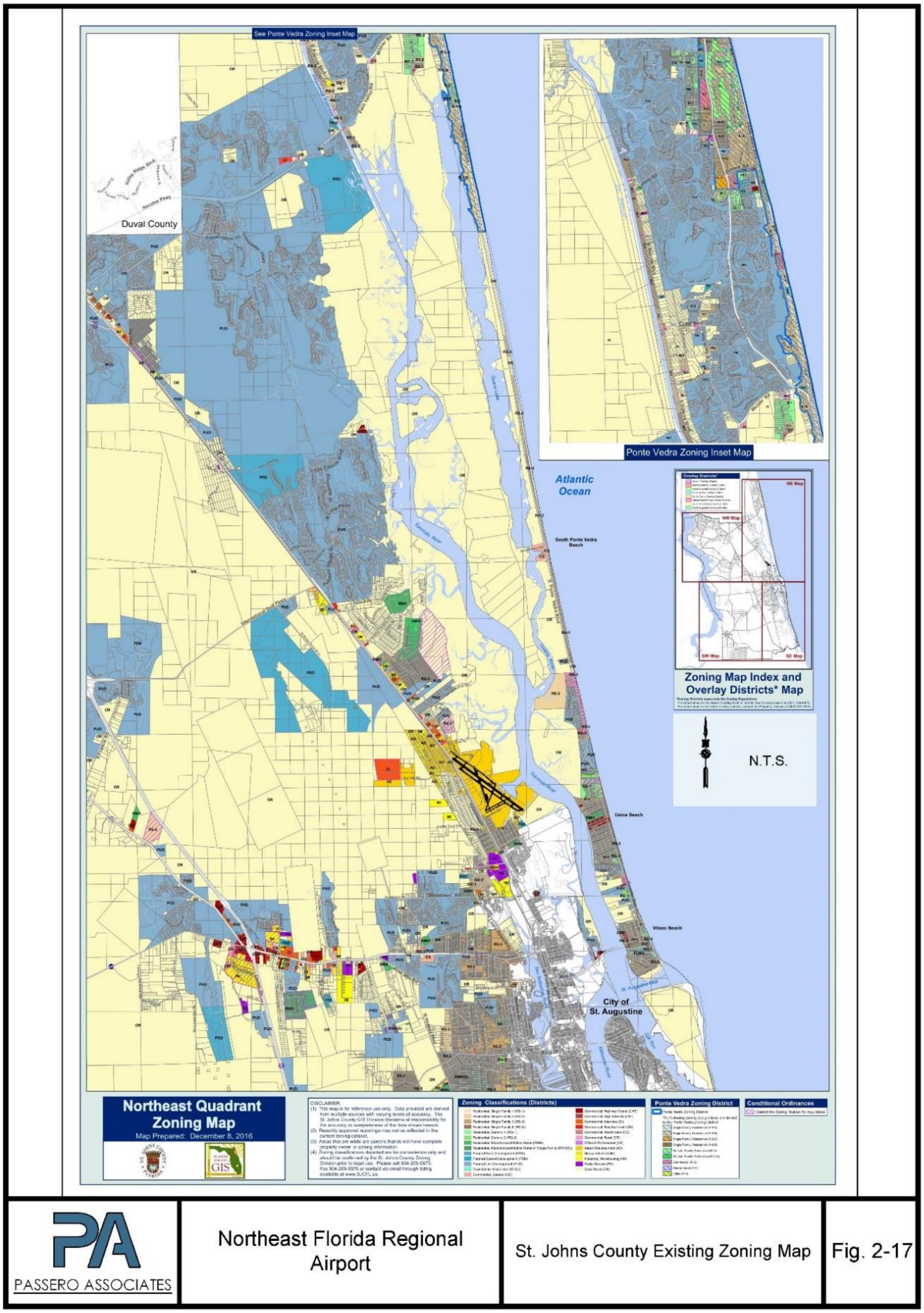
Future development of these lands will be discussed in later chapters of this report. Per St. Johns County Interactive Maps (iMAP), the area on the west side of U.S. 1 has been identified to have a future land use of

Airport District. AD has a maximum impervious surface ratio of 0.70, with a floor area ratio of 70 percent. Further governance for development within AD is through the Land Development Code of St. Johns County. As identified in the *St Johns County Comprehensive Plan*, "St Johns County shall coordinate intergovernmental planning efforts with the St. Augustine-St. Johns County Airport Authority on the Airport Master Plan, as required by 163.3177 (6)(a) on compatibility with adjacent lands." Permitted uses, as defined in the Comprehensive Plan, shall include:

- Agriculture;
- Neighborhood Business and Commercial;
- General Business and Commercial;
- High Intensity Commercial;
- Highway Commercial;
- Light and Heavy Industrial;
- Cultural/Institutional;
- Office and Professional;
- Neighborhood Public Service;
- General Public Service;
- Regional Business and Commercial;
- Mining and Extraction
- Residential uses on land zoned Residential Single Family or Multi-family not to exceed the density allowed by the existing zoning as defined by the Land Development Code subject to the Airport Overlay District requirements of the county land development regulations

The Florida East Coast Railroad (FEC), which runs from Miami to Jacksonville, runs parallel to U.S. 1 near the airport. There is a dual lane rail immediately adjacent to the airport owned lands on the west side of U.S. 1.

Figure 2-17. Zoning Map



Source: St. Johns County, FL

2.13. Environmental Data

To form a baseline understanding of environmental sensitivities prior to engaging in any future development planning, the following sections discuss several environmental factors on and around airport properties to be considered. These include hydrologic features such as wetlands and floodzones; social features such as archaeological or historically significant properties, and geotechnical features such as soil data obtained through the USDA's Natural Resource Conservation Service. This section is a snapshot of key environmental considerations. More in-depth examination of proposed development on the environment will be conducted later in this master planning effort.

Biological Resources (Including Fish, Wildlife and Plants)

A review of the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) website for the airport within St. Johns County, Florida yielded nine endangered/threatened species and 39 migratory birds (see **Appendix D** for list). There are no critical habitats at the project location. The migratory birds are species of conservation concern, and any activity that result in the take of migratory birds is prohibited unless authorized by the USFWS. There are no wildlife refuges at this location, nor are there any fish hatcheries. **Table 2-8** lists the species of concern and their status.

Table 2-8. Existing Endangered/Threatened Species

SPECIES	STATUS	CRITICAL HABITAT
Piping Plover	Threatened	Project outside critical habitat
Red Knot	Threatened	No critical habitat designated for species
Red-Cockaded Woodpecker	Endangered	No critical habitat designated for species
Wood Stork	Threatened	No critical habitat designated for species
Anastasia Island Beach Mouse	Endangered	No critical habitat designated for species
West Indian Manatee	Endangered	Project outside critical habitat
Eastern Indigo Snake	Threatened	No critical habitat designated for species
Hawksbill Sea Turtle	Endangered	Project outside critical habitat
Leatherback Sea Turtle	Endangered	Project outside critical habitat

Source: USFWS IPAC

Compatible Land Use

Immediately to the west of the airport property is U.S. 1, a north-south roadway that runs 545 miles, connecting Key West up the east coast to the Georgia border, north of Boulogne. In St. Johns County U.S. 1 runs east of Interstate 95. This roadway is maintained by the Florida Department of Transportation. Immediately west of U.S. 1 is the Florida East Coast (FEC) Railway. This railway provides access from south Florida north for 351 miles to Jacksonville. The FEC serves five intermodal terminals. Near the Northeast Florida Regional Airport there is a dual rail. As the railway heads south, toward the City of St. Augustine, it becomes a single rail. To the east of the airport is the Tolomato River and the Atlantic Ocean. The Florida Department of Transportation is starting the construction of the new State Route 313, which will connect the City of St Augustine (south of the airport) to a new intersection on U.S. 1 (slightly north of the airport.). The lands on the west side of U.S. 1 are designated as future airport district, capable of commercial development.

Drainage

Most of the drainage from the airport flows toward the Tolamato River. There are five ponds along the south and east side of the airport to control water quality. A master drainage study, which is included as part of this Master Plan, will review the drainage of the airport and any future development that may occur on the airport. The findings of this drainage study will be included in later sections of this report.

Floodplains

Floodplains are defined by the U.S. Environmental Protection Agency (EPA) and delineated by the Federal Emergency Management Agency (FEMA) which produces flood insurance rate maps for communities participating in the National Flood Insurance Rate Program. These detailed maps illustrate the 100-year flood. Descriptions of zones identified on these maps include: Zone A – area of 100-year flood with no base flood elevation determined. Zone X - areas outside the 100-year floodplain. Some of these areas have a chance of average depths of less than 1 foot, while other areas are outside the floodplain. **Figure 2-18** provides the latest FEMA classification of floodplains on and around the Airport. The primary floodplain maps covering the Northeast Florida Regional airport are 12109C0304H and 12109C0301H. Floodplain map 12109C0303H covers lands on the west side of U.S. 1. Floodplain 12109C0304H and 12109C0301H shows the eastern portion of the airport, east of Runway 13-31, and north of Runway 6-24, and the southern portion, below Runway 6-24 are Zoned AE, with a base flood determined to be 80 feet; while the remainder of the airport is Zoned X, outside the 0.2% annual chance floodplain. Floodplain 12109C0301H covers portions of lands on the west side of U.S. 1 are Zone A, having potential for flooding but no base elevation has been determined. The remainder of the area is Zone X, outside the 0.2% annual chance floodplain.

Historic and Archaeologically Significant Properties

The Archaeological and Historic Preservation Act of 1974 provides for the preservation of historic American sites, buildings, objects, and antiquities of national significance by providing for the survey, recovery, and preservation of historical and archaeological data which might otherwise be destroyed or irreparably lost due to a federally licensed, or federally funded action. A review of St. Johns County iMAP, the airport lands have a high probability for archaeological sites, while the lands on the west side of U.S. 1, owned by the airport, have a medium to low probability of archaeological sites. U.S. 1 is considered a historic road.

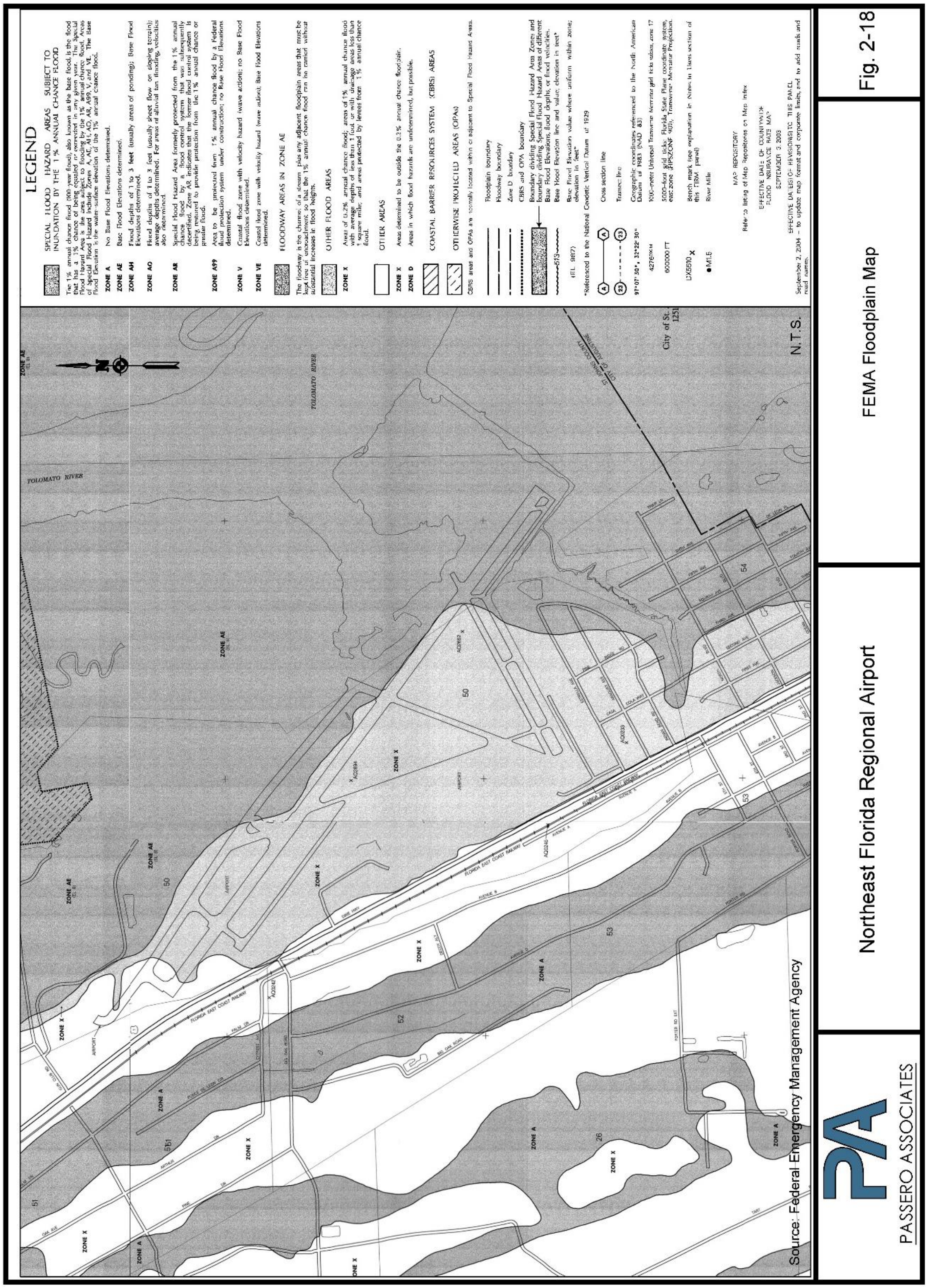
Wetland/Marshlands

The U.S. Fish and Wildlife Service (FWS) is the principal Federal agency that provides information to the public on the extent and status of the Nation's wetlands. This is accomplished through the National Wetlands Inventory (NWI) program which produces geospatial wetlands data. The FWS NWI map for the airport is depicted in **Figure 2-19.**

The entire eastern portion of SGJ, along the Tolomato River are wetlands, and directly north of the SGJ lies the Guana Tolomato Matanzas (GTM) National Research Reserve. The GTM Reserve covers 74,000 acres of coastal lands in northeast Florida, spanning from Ponte Vedra Beach to the Palm Coast. Furthermore, the GTM Reserve is one of 28 National Estuarine[4] Research Reserves around the country that focus on on-site educational training.

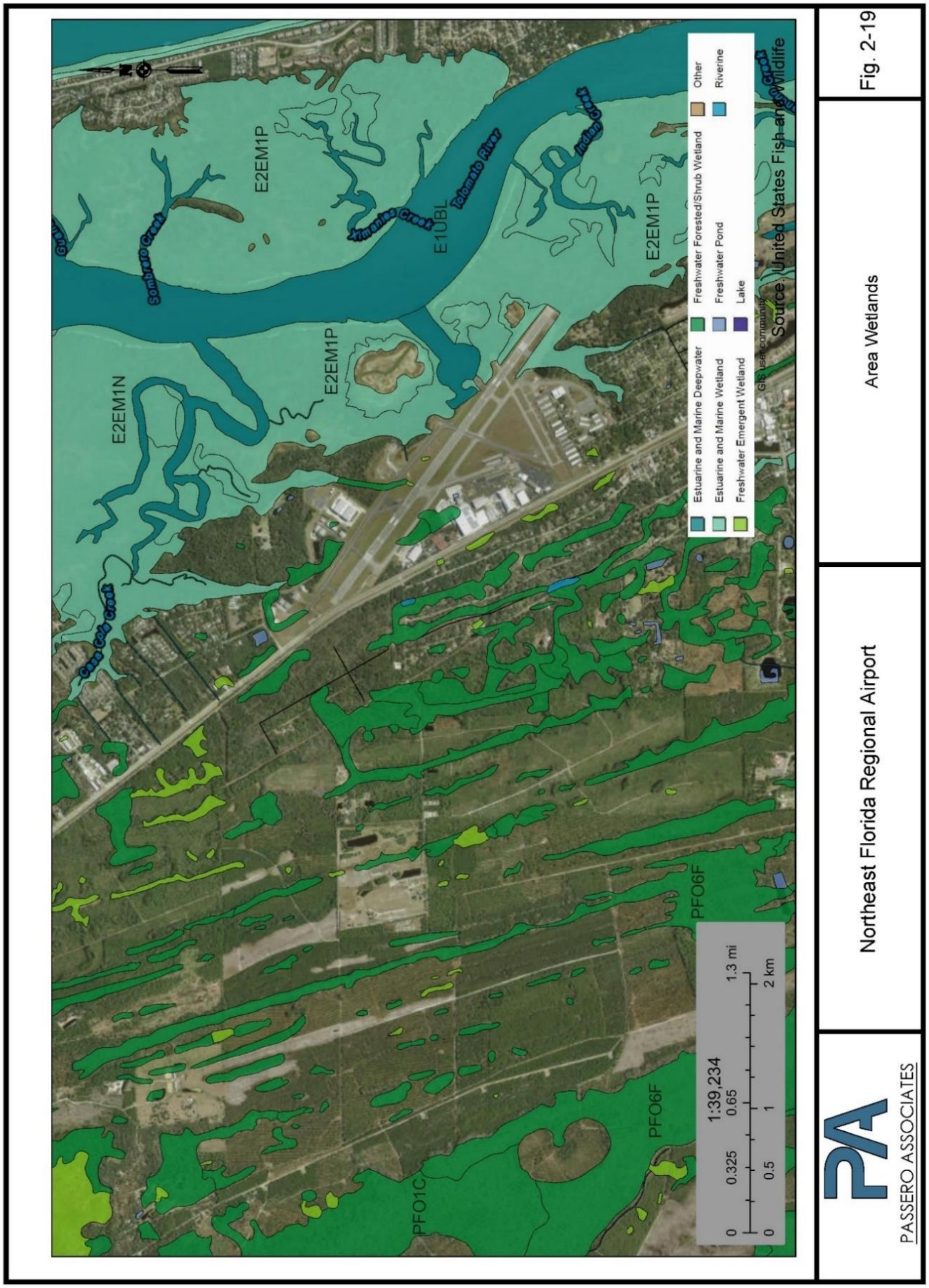
[4] Estuaries and surrounding wetlands are bodies of water usually found where rivers meet the sea, and are home to unique plant and animal life that have adapted to brackish water – mixture of fresh and salt water. https://coast.noaa.gov/nerrs/

Figure 2-18. Floodplain Map



Source: FAA TAF 1990-2045, issued January 2017

Figure 2-19. Wetland Map



Source: FAA TAF 1990-2045, issued January 2017

There are scattered wetlands around the airport property that need to be considered as part of any future development action. There are various wetlands scattered throughout the property on the west side of U.S. 1 that will be considered during later sections of this master plan.

The Tolomato River, and airport lands on the eastside of Runway 13-31, contain marshland. Development within marshland and wetlands require review by the St. Johns River Water Management District (SJRWMD) and U.S. Army Corps of Engineers (USACE) for any impacts to wetlands and/or waters of the State and U.S. Uniform Mitigation Assessment Method (UMAM) is used to determine the amount of mitigation required for a wetland and/or surface water impact.

2.14. Financial Data

The St. Augustine-St. Johns County Airport Authority adopted its 2016-2017 fiscal year budget, with a zero increase in taxes on property resolution. The final budget is $12,089,261 for the upcoming fiscal year. Nearly two-thirds of the budget are several capital and planned projects. These projects will be funded mainly by the FAA and the FDOT through grants from aviation user trust fund. The projects outlines include:

- Land acquisition and trade ($4.3 million)
- Airline terminal improvements ($1.08 million),
- Airport Master plan ($820,000)
- Barge/Seaplane Basin Construction – Phase III ($370,000)
- Apron Rehabilitation Design ($200,000), and
- Capital Equipment ($140,000)

Per budget meeting minutes, revenues are anticipated to be $3,871,027 versus expenses at $2,584,204.

2.15. Aviation Activity

The number of takeoff and landings at an airport make up the total operations, or aviation activity at the airport. The FAA Terminal Area Forecast lists the historic activity at the airport. Activity is composed of air carrier, air taxi/commuter, military operations and general aviation. Air carrier and military are forecast to remain stable, while air taxi/commuter and general aviation are forecast to increase their operations.

Table 2-9. Aviation Activity

Year	Air Carrier	Air Taxi/Commuter	Military	General Aviation	Total
2002		300	10,000	144,000	154,300
2003		3,287	5,053	97,328	105,668
2004	1	4,775	6,377	116,654	127,807
2005	386	4,878	8,527	116,353	129,773
2006	48	6,880	5,939	101,821	114,649
2007	8,106	7,441	6,647	90,372	104,617
2008	33,286	6,689	6,212	88,615	102,129
2009	2	4,548	5,047	83,351	92,947
2010	3	4,913	4,194	88,848	97,957
2011	0	5,606	3,900	107,612	117,117
2012	61	5,617	3,330	113,552	122,502
2013	1	5,468	3,215	122,708	131,383
2014	9,630	6,088	3,376	126,439	136,079
2015	24,604	8,945	3,160	123,603	134,598

Forecast					
2022	30,377	10,606	3,142	137,652	150,533
2027	30,377	11,085	3,142	142,090	155,450
2032	30,377	11,585	3,142	146,715	160,575
2037	30,377	12,114	3,142	152,426	165,924
CAGR 2022-2037					

Source: FAA TAF 1990-2045, issued January 2017

2.16. Socioeconomic Data

St. Johns County encompasses 821 square miles, bordered by Duval County to the north, Flagler County to the south; the Atlantic Ocean to the east; and Clay and Putnam Counties to the west. The Jacksonville Metropolitan Statistical Area (MSA) incudes Baker, Clay, Duval, Nassau, and St. Johns Counties. An MSA is based upon U.S. Census data and is used in many federally funded programs to determine the affected population. St. Johns County includes the communities of City of Augustine, St. Augustine Beach, Ponte Vedra Beach, and the City of Hastings.

Socioeconomic factors influence a community's need for airport services, specifically population, income, and employment. Population can influence the demand for air travel within the area. Per capita income is also a strong driver of aviation demand as it reflects a community's level of discretionary income and ability to afford air travel. Employment levels are often direction associated with per capita income.

Population

Table 2-10 shows the historic and projected populations and corresponding annual growth rates (AAGR) for St. Johns County, Jacksonville MSA and State of Florida. St. Johns County has been outpacing the Jacksonville MSA and the State of Florida for population.

Table 2-10. Historic Population Growth

Year	St. Johns County	Jacksonville MSA	State of Florida
2005	159,235	1,223,882	17,382,511
2006	169,224	1,276,856	18,089,889
2007	175,446	1,296,676	18,251,243
2008	181,540	1,315,218	18,328,340
2009	187,436	1,327,812	18,537,969
2010	191,323	1,350,198	18,843,326
2011	195,823	1,358,593	19,057,542
2012	202,188	1,377,850	19,317,568
2013	209,647	1,394,624	19,552,860
2014	217,919	1,419,127	19,893,297
2015	226,640	1,449,481	20,271,272
CAGR 2005-2015	3.59%	1.71%	1.55%

Source: U.S. Census Bureau, 2005-2015 American Community Survey

Total Employment

Table 2-11 shows the historic and projected number of persons employed and percent of population employed (persons employed divided by total population) for St. Johns County, Jacksonville MSA and State of Florida.

Table 2-11. Employment

Year	St. Johns County	Jacksonville MSA	State of Florida
2005	N/A	811,971	10,925,676
2006	114,901	856,955	11,513,053
2007	117,434	862,375	11,590,241
2008	121,739	876,696	11,605,453
2009	121,768	883,769	11,744,569
2010	122,427	903,158	12,054,783
2011	125,935	905,145	12,186,117
2012	129,004	913,782	12,275,536
2013	132,735	920,958	12,352,418
2014	136,065	930,358	12,517,831
2015	141,314	943,840	12,694,963
CAGR 2005-2015	2.33%[1]	1.08%	1.09%

Source: U.S. Census Bureau, 2005-2015 American Community Survey
1/ Due to no data being available in 2005 for St. Johns County, the CAGR period is from 2006-2015.

Per Capita Income

Table 2-12 shows the historic and projected per capita income for St. Johns County, Jacksonville MSA and State of Florida, annualized, and not seasonally adjusted.

Table 2-12. Per Capita Personal Income

Year	St. Johns County	Jacksonville MSA	State of Florida
2005	$36,349	$25,420	$24,611
2006	$35,200	$25,838	$25,297
2007	$36,316	$27,461	$26,696
2008	$36,888	$27,934	$26,694
2009	$33,706	$26,143	$24,692
2010	$33,767	$25,758	$24,272
2011	$38,212	$26,946	$24,905
2012	$35,901	$26,088	$25,428
2013	$36,369	$27,958	$25,834
2014	$35,255	$27,439	$26,582
2015	$39,745	$29,284	$27,697
CAGR 2005-2015	0.90%	1.43%	1.19%

Source: U.S. Census Bureau, 2005-2015 American Community Survey

2.18. Conclusion

The above descriptions do not provide an exhaustive account for every specific detail and facet of the SGJ. The purpose of this inventory is to provide general facility data for subsequent analyses pertinent to this study effort. The following sections of this report will seek to project future aeronautical demand which will then be compared to existing facility data to analyze future facility requirements and provide context for future facility improvement decision making.

Chapter Three

Historical Aviation Activities

3. FORECAST OF AERONAUTICAL DEMAND

This chapter presents the forecasts of aviation demand for the Northeast Florida Regional Airport (SGJ). Forecasts of aviation activity are the key elements in the Airport's future planning as they are used as the basis for demand/capacity and facility requirements analyses that identify Airport development needs. The two major elements of this Chapter are the forecasts of aviation activity and the selection of a design aircraft. Aviation activity refers to the annual service of aircraft operations, which includes takeoffs and landings. The design aircraft is the most demanding aircraft, or family of aircraft, in terms of approach speed and wingspan that is anticipated to use the airport on a regular basis, which the FAA defines as at least 500 annual operations. Together approach speed and wingspan provide a basis for determining the type and size of aviation facility development. The forecasts predict aviation demand over a 20-year period, as required by the Federal Aviation Administration (FAA) for Airport Master Plans. All Master Plan recommendations for facility needs, both airside and landside, will be directly impacted by the projected aviation activity levels presented in this chapter. To develop the most realistic forecasts possible, a solid understanding of current and historic Airport operations, industry trends, and socioeconomic conditions is vital.

The forecasts presented throughout this chapter align with the guidance provided in FAA Advisory Circular (AC) *150/5070-6, Airport Master Plans*, and Florida Department of Transportation (FDOT), *Guidebook for Airport Master Planning*, to predict future levels of aviation activity at the airport.

The assumptions, methodologies, and data used to create the forecast scenarios are presented and analyzed in the following sections. The specific activity elements for which forecasts were prepared include:

- Enplaned Passengers
  - Seasonal and Year-Round Activity/Enplanement Fluctuations
  - Total
- Operations
  - Itinerant
    - Air Carrier
      - Air Cargo
    - Air Taxi and Commuter
    - General Aviation
      - Seaplane
      - Helicopter
    - Military
  - Local
    - General Aviation
      - Seaplane
      - Helicopter
    - Military
    - Aircraft
      - Based Aircraft
      - Aircraft Mix
- Peak Activity
  - Operations
- Instrument Operations
  - Total
  - Approaches

This chapter will terminate in the identification of critical/design aircraft determination.

3.1. Baseline Forecasts Data

To prepare forecasts for this Master Plan, 2016 will be used as the base year for the following projections:

- Short-Term: 2017-2021
- Intermediate-Term: 2022-2026
- Long-Term: 2027-2036

Data provided from the FAA Terminal Area Forecasts (TAF), FAA's Operations Network (OPSNET) and the most current data statistics will serve as the baseline for the 20-year planning horizon. Data collected includes aircraft operations by activity type (air carrier, air taxi, military and general aviation), passenger enplanements, fleet mix, load factors, and based aircraft. The following sources were used to verify and provide additional information:

- *FAA Terminal Area Forecast (TAF)* – TAF activity estimates area derived by the FAA from national estimated of aviation activity. These estimates are then assigned to individual airports based on multiple market and forecast factors. The FAA looks at local and national economic conditions, as well as trends within this aviation industry to develop each forecast
- *FAA Traffic Flow Management System Counts (TFMSC)* – The FAA's Traffic Flow Management System Counts contains air traffic activity data and fleet mix data for the National Aerospace System
- *FAA Air Traffic Activity System (ATADS)* – The Air Traffic Data System contains the official air traffic operations data available for public release
- *FAA Operations Network (OPSNET)* – Official source of National Airspace System air traffic operations and delay data is sent daily from the air traffic control facility to OPSNET.
- *FAA Air Carrier Activity Information system (ACAIS)* – Airport reported data on enplanements and cargo within a calendar year.
- U.S Census Bureau
- *2016 Airlines Reporting Corporation Data*
- *OAG Data*

3.1.1. Historic Aviation Activity

Historical aviation activity at an airport can be broadly evaluated using two primary metrics – airfield operations and based aircraft. An airfield operation is defined as either a takeoff or a landing by an aircraft, and a based aircraft is an operational and airworthy aircraft that is based at the airport. Presently, the FAA Terminal Area Forecast (TAF) provides data on airfield operations and based aircraft back to 1990. The TAF is an economic model prepared by the FAA for its planning, budget and staffing purposes, and is based on statistical interpretation of local and national trends. The FAA prepares TAF forecasts for individual airports, the state, the region, and the Nation. The TAF includes historical data for passenger enplanements, airport operations, and based aircraft. The TAF serves as the benchmark against which the FAA compares airport activity forecasts.

Socioeconomic data was obtained from the U.S. Census Bureau, while baseline and historic activity data was collected from previous planning efforts, the Florida Aviation System Plan (FASP), FAA TAF and FAA OPSNET data.

3.1.1.1. Previous Aviation Activity Forecasts

As identified in FAA Advisory Circular 150/5370-6B, *Airport Master Plans*, one step in the planning process is to review history reports for the airport.

2005 Master Plan Forecast

The previous Airport Master Plan, dated August 2005, identified forecasts for based aircraft and operations, as shown in **Table 3-1.** This Master Plan showed an increase in aircraft and operations over the planning horizon. Comparing forecast with actual data from 2013, concludes that based aircraft were forecasted to be 367, while the actual count was 167, as obtained from the FAA Terminal Area Forecasts, for a difference of 200 aircraft. Comparing operations, the forecast was 126,500 versus actual 140,417, as taken from FAA OPSNET data, for a difference of 14,867 operations or 11% higher than forecast**.**

Table 3-1. SGJ Master Plan: 2005

FORECAST YEAR	BASED AIRCAFT	TOTAL OPERTIONS	ACTUAL BASED AIRCAFT	ACTUAL TOTAL OPERTIONS
2002	321	105,800	321	-
2008	345	115,910	227	100,558
2013	367	126,550	167	140,417
2018	380	137,944	-	-
2023	394	150,884	-	-
AAGR 2002-2013	1.22%	1.54%	-	-
AAGR 2013-2023	0.70%	1.54%	-	-

Source: 2005 Airport Master Plan for Based Aircraft and Total Operations; TAF data for Actual Based Aircraft and OPSNET data for Actual Total Operations

Florida Aviation System Plan

The Florida Aviation System Plan was prepared published in 2012. **Table 3-2** provides the forecast of based aircraft and operations that were outlined from that report. This report shows an increased in based aircraft and operations over the planning horizon. Comparing forecast with actual data from 2014, concludes that based aircraft were forecasted to be 297, while the actual count was 202, as obtained from the FAA Terminal Area Forecasts, for a difference of 95 aircraft. Comparing operations, the forecast was 104,934 versus actual 138,446, as taken from FAA OPSNET data, for a difference of 33,512 operations or 32% higher than forecast**.**

Table 3-2. Florida Aviation System Plan: 2012

YEAR	BASED AIRCAFT	TOTAL OPERTIONS	ACTUAL BASED AIRCAFT	ACTUAL TOTAL OPERTIONS
2009 (BASE YEAR)	180	101,951	154	93,210
FORECAST				
2014	297	104,934	202	138,446
2019	328	118,145	-	-
2029	400	149,767	-	-

Source: 2012 State Aviation System Plan Report for Northeast Florida Regional Airport; TAF data for Actual Based Aircraft and OPSNET data for Actual Total Operations

The state undergoes a continuous update to the system plan, with the most recent for Northeast Florida Regional Airport published using 2014 historic data, as shown in **Table 3-3.** This plan shows an increase in based aircraft and operations for Northeast Florida Regional Airport.

Table 3-3. SGJ Florida Aviation System Plan: 2012

YEAR	BASED AIRCAFT	TOTAL OPERTIONS
HISTORIC		
2002	321	154,300
2008	323	100,396
2013	202	140,417
2014	190	131,856
FORECAST		
2017	202	138,042
2021	218	146,744
2026	241	158,397
2031	266	170,975
AAGR 1995-2014	-2.09%	1.26%
AAGR 2015-2034	2.01%	1.54%

Source: Florida Department of Transportation (www.fdot.gov/avaiation/flpubs.shtm)

FAA Terminal Area Forecasts (TAFs) are prepared on an annual basis so various divisions within the FAA can prepare and budget for air traffic at airports and within the national airspace system. With a few exceptions, an airport must have at least one of the following attributes to be included in the annual TAF process:

- Have an existing FAA or contract tower or be a candidate for a tower
- Current or expected scheduled air carrier service
- At least 60,000 itinerant operations or at least 100,000 total operations or report at least 10 based aircraft on the most recent FAA Form 5010

The TAF includes enplanements, operations and based aircraft. For Northeast Florida Regional Airport, historical TAF data dates back to 1990.

FAA OPSNET data is gathered from the air traffic control tower on the field. Various reports are available, but the *Airport Operations: Standard Report* was obtained for this analysis. This data dates to 2002, when the air traffic control tower commenced operations at the airport. This data is for operations only; therefore, for this analysis the TAF is used as the basis for based aircraft analysis; while the OPSNET data will be used for operational analysis.

3.1.2. Based Aircraft

A based aircraft is defined as an active aircraft that is stored at an airport on a permanent basis, either in a hangar or tied down on an apron. The number of based aircraft at an airport is an indicator of general aviation activity and contributes to the revenue generation from tie-down, hangar rentals, and fuel sales. By developing a based aircraft forecast, the anticipated growth of general aviation activities and associated facility needs (e.g., hangars, apron space, fueling), can be more accurately projected. The TAF provides historical and forecast based aircraft data for SGJ as well. **Table 3-4** shows the historic based aircraft for SGJ versus total aircraft in the State, Region and Nation.

Table 3-4. Historic Based Aircraft

YEAR	NORTHEAST FLORIDA REGIONAL AIRPORT	STATE OF FLORIDA	FAA SOUTHEAST REGION	NATION
1995	284	10,666	26,519	157,757
2000	321	12,157	31,946	179,719
2005	323	13,152	36,013	197,214
2010	256	10,931	30,853	165,472
2015	210	11,360	30,814	171,664
AAGR 1995-2015	-1.43%	0.30%	0.72%	0.40%
AAGR 2010-2015	-3.25%	0.64%	-0.02%	0.62%

Source: FAA TAF 2002-2015, issued January 2017

Based on FAA TAF data, based aircraft were on the rise from the mid 1990's through 2007. However, between December 2007 to the height of the Great Recession in 2009, the general aviation manufacturing industry was significantly impacted which aided in the reduction of based aircraft at SGJ. From 2007-2010 the global production of general aviation aircraft dropped 52.8%, while in the U.S. there was a 59.3% drop in production. Deliveries remain below their 2007 peak levels because of costs.[5]

Based aircraft include those owned by individuals, businesses or organizations that are stored at SGJ on a regular basis. Based aircraft include private- and corporate-use aircraft as well. The types of aircraft based at SGJ varies. **Table 3-5** provides the base fleet mix, based on the recent Airport Master Record, dated 12/08/2016, and an additional six jet aircraft, as identified by airport management.

Table 3-5. Historic Based Aircraft Fleet Mix

YEAR	SE	% TOTAL	ME	% TOTAL	JET	% TOTAL	HELI	% TOTAL	GLIDER	% TOTAL	MILITARY	% TOTAL	ULTRA-LIGHT	% TOTAL	TOTAL
2016	155	71.8%	24	11.1%	17	7.9%	5	2.3%	1	0.4%	12	5.6%	2	0.9%	216

Source: Airport Master Record and Airport Management

The number of based aircraft have fluctuated over the last 20 years and are currently increasing. Airport administration maintains a waiting list of aircraft owners that seek to base their aircraft at the airport; however, there is an insufficient number of facilities to meet this demand. As of March 2017, there are over 150 requests on a waiting list from aircraft owners who want to base aircraft at SGJ.

3.1.3. Aircraft Operations

An aircraft operation is defined as a takeoff or landing, where each is counted as a separate operation. Operations are further divided into local operations and itinerant operations. A local operation is one where the aircraft departs and returns to the same airport, and flies within 20 miles of the Airport.[6] Local operations are usually associated with pilot training and recreational flying. An itinerant operations is one where an aircraft is either going to or arriving from another airport.

Table 3-6 provides a summary of the TAF total operations, inclusive of commercial service, general aviation and military.

5 General Aviation Manufacturers Association data

6 FAA Air Traffic Activity System (ATADS) glossary

Table 3-6. Historic TAF Operations

YEAR	NORTHEAST FLORIDA REGIONAL AIRPORT	STATE OF FLORIDA	FAA SOUTHEAST REGION	NATION
1995	104,000	7,963,917	21,164,477	109,034,447
2000	137,310	9,380,273	25,713,871	121,873,201
2005	129,773	9,886,918	25,442,183	115,393,011
2010	97,957	7,654,274	22,416,675	101,296,452
2015	134,598	8,142,070	22,506,817	97,617,927
AAGR 1995-2015	1.24%	0.151	0.29%	-0.53%
AAGR 2010-2015	5.44%	1.04%	0.07%	-0.62%

Source: FAA TAF 2002-2015, issued January 2017

Much like the decrease in based aircraft, operations also decreased between 2007 to 2010. Local operations are increasing faster than national operations, attributable to local flight training. The introduction of commercial service also contributed to additional operations.

The airport control tower monitors the operational split at the airport. Reviewing OPSNET Airport Operations data for the years 2005-2016 indicate the total operational split is approaching a 50.5% itinerant and 49.5% local, inclusive of air carrier and air taxi operations for all reported years. **Table 3-7** provides a highlight of the operations split for cardinal years starting in 2005, while **Table 3-8** shows the historic split by the type of aircraft operation.

Table 3-7. Historic Operational Split: Local vs. Itinerant

YEAR	TOTAL OPERATIONS	ITINERANT OPERATIONS	% TOTAL	LOCAL OPERATIONS	%TOTAL
2005	126,799	67,703	53.4%	59,096	46.6%
2010	110,212	57,773	57.7%	42,439	42.3%
2015	129,338	66,086	51.1%	63,252	48.9%
2016	141,398	71,396	50.5%	70,002	49.5%

Source: OPSNET, Airport Operations: Standard Report

Table 3-8. Historic Operational Split by Aircraft Type

	ITINERANT								LOCAL				
YEAR	AIR CARRIER	% TOTAL	AIR TAXI	% TOTAL	GA	% TOTAL	MIL	% TOTAL	CIVIL	% TOTAL	MIL	% TOTAL	TOTAL
2005	15	0.1	4,877	3.8	59,872	47.2	2,939	2.3	53,845	42.5	5,251	4.1	126,799
2010	0	0.0	5,214	5.2	50,374	50.3	2,185	2.2	40,676	40.6	1,763	1.7	100,212
2015	323	0.3	8,015	6.2	55,632	43.0	2,116	1.6	62,127	48.0	1,125	0.9	129,338
2016	327	0.2%	8,472	6.0	60,391	42.7%	2,206	1.6%	69,215	49.0%	787	0.5%	141,398

Source: OPSNET, Airport Operations: Standard Report

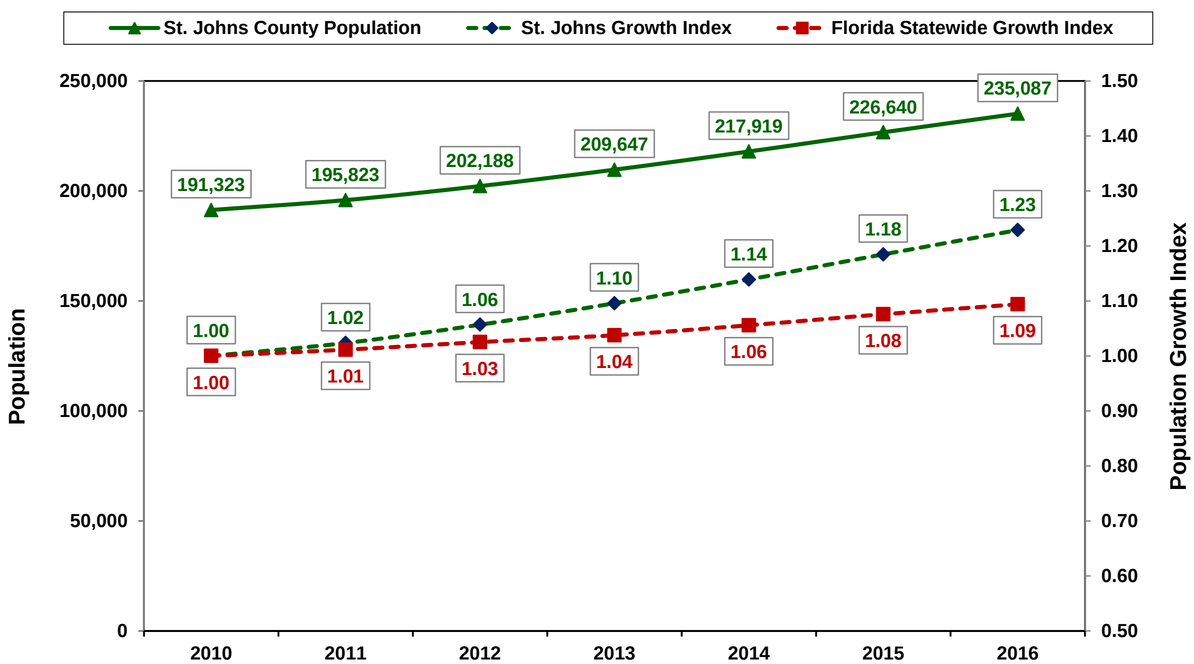
3.2. Socioeconomic Trends Affecting Aviation

Scio-economic characteristics of a community can play an important role in the determination of future aviation demand. In certain regions, these characteristics can have a positive relationship to both airport operations and based aircraft. This section explores socio-economic conditions for St. Johns County, the State of Florida and the U.S.

3.2.1. Population

The population of St. Johns County has grown by 43,764 residents or 22.9% since 2010 (i.e., the population grew from 191,323 residents to 235,087 residents in St. Johns County). **Figure 3-1** illustrates the population growth in St. Johns County from 2010 to 2016, in addition to the population growth index comparison between St. Johns County and the state of Florida. As can be seen by the Population Growth Index in Figure 3-1, the population in St. Johns County has grown at a higher rate than the population in the state of Florida within the same time period.

Figure 3-1. St Johns County Population Growth Index and Florida Statewide Population Growth Index



Source: U.S. Census Bureau

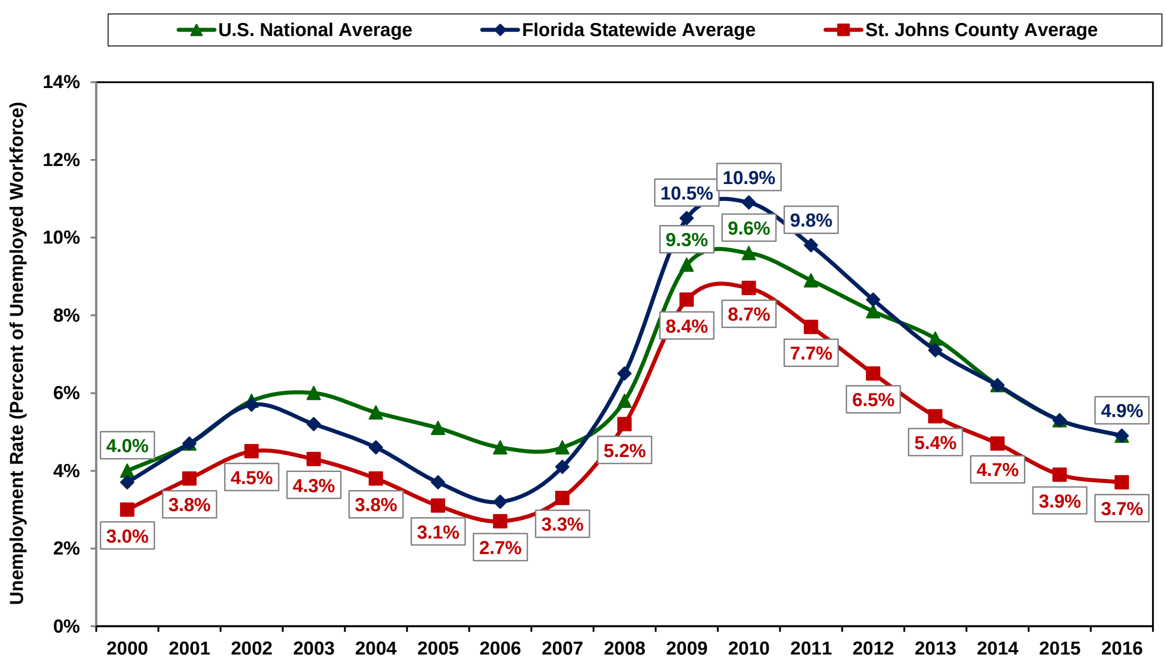
St. Johns County is one of five counties in Florida, that is within the Jacksonville Metropolitan Statistical Area (MSA). In 2016, the population of the Jacksonville MSA was 1,498,212 residents and the St. Johns County population accounted for 15.9% of the Jacksonville MSA. Furthermore, since 2010 the population of St. Johns County has been outpacing the overall Jacksonville MSA by more than twice the rate.

3.2.2. Employment

The size of the St. Johns County workforce was estimated to be 116,071 people in 2016, and the employed portion of the workforce was estimated to be 111,768 people. Dividing the unemployed population by the total workforce population results in the unemployment rate. As illustrated in **Figure 3-2**, the unemployment rate in St. Johns County was relatively low at 3.7% on an annualized basis in 2016. Furthermore, the 2016 unemployment rate was a slight decline from the unemployment rate of 3.9% in 2015 and well below the unemployment rate of 8.7% experienced in 2010. While down considerably since the peak in 2010, the 2016 unemployment rate is still higher than the unemployment rate of 2.7% (low point) experienced in 2006, which was prior to the economic downturn that ultimately lead to the Great Recession of 2008-2009. The 2016 rate was also higher than the 3.0% rate experienced in 2000.

Figure 3-2 also illustrates that St. Johns County has had a lower unemployment rate than both the U.S. national and the Florida statewide unemployment rates in every year since 2000. In 2016, the St. Johns unemployment rate was 1.2 percentage points lower than the national and statewide average of 4.9%

Figure 3-2. U.S. National, Florida and St Johns County Unemployment Rate Annual Trends 2000-2016



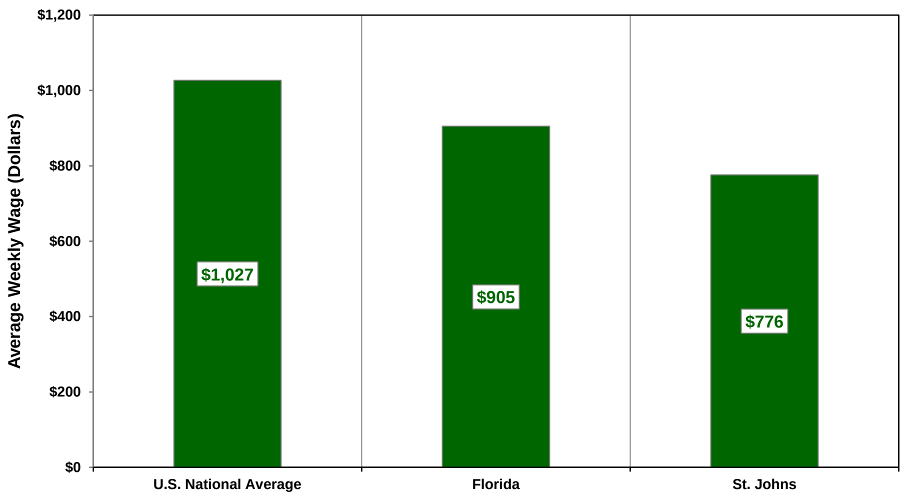
Source: U.S. Bureau of Labor Statistics

3.2.3. Income

Average Weekly Wage

As illustrated in **Figure 3-3**, the average third quarter 2016 weekly wage of $776 in St. Johns County fell below the U.S. national wage of $1,027 and Florida statewide wage of $905.

Figure 3-3. Third Quarter 2016 U.S. National, Florida and St. Johns County Average Weekly Wage



Average Florida statewide weekly wages tend to be skewed higher in counties with the largest populations with large cities serving as Source: U.S. Bureau of Labor Statistics

Table 3-9 illustrates the average weekly wage for St. Johns County. In 2016, St. Johns County is ranked as having the 20th highest average weekly wages among all 67 counties in Florida. The highest average weekly wages in Florida are in primary counties within large metro areas such as Tampa, Miami, West Palm Beach, Jacksonville, Ft. Lauderdale and Orlando.

Table 3-9. Third Quarter 2016 Average Weekly Wage in 24 Florida Counties with the Highest Weekly Wages

Rank	County	Principal City	Average Weekly Wage	Rank	County	Principal City	Average Weekly Wage
1	Hillsborough	Tampa	$993	13	Leon	Tallahassee	$841
2	Miami-Dade	Miami	$983	14	Sarasota	Sarasota	$838
3	Palm Beach	West Palm Beach	$973	15	Manatee	Bradenton	$816
4	Duval	Jacksonville	$967	16	Escambia	Pensacola	$809
5	Broward	Ft. Lauderdale	$951	17	Lee	Ft. Myers	$806
6	Brevard	Melbourne	$932	18	Polk	Bartow	$783
7	Orange	Orlando	$904	19	Martin	Stuart	$781
8	Pinellas	St. Petersburg	$900	20	St. Johns	St. Augustine	$776
9	Alachua	Gainesville	$880	21	Monroe	Key West	$767
10	Collier	Naples	$869	22	Glades	Moore Haven	$758
11	Okaloosa	Ft. Walton Beach	$855	23	Indian River	Ft. Pierce	$756
12	Seminole	Sanford	$852	24	Bay	Panama City	$754

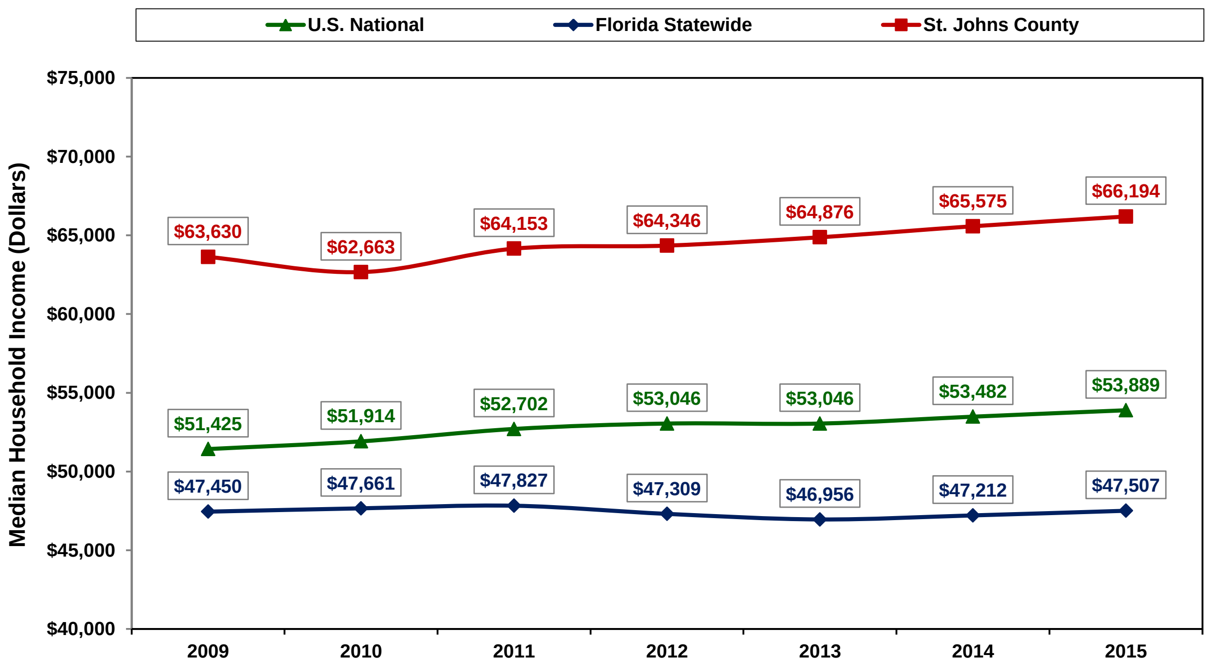
Source: U.S. Bureau of Labor Statistics

Median Household Income

Although St. Johns County's average weekly wages fall below the U.S. national and Florida statewide averages, St. John County has a high median household income. The median household income in St. Johns County was $66,194 based on 2015 U.S. Census Bureau data. As illustrated in **Figure 3-4**, the median household income in St. John County was 22.8% higher than the national average of $53,389, and 39.3% higher than the statewide average of $47,507 in 2015. In fact, St. Johns County has the highest median income of all 67 counties in Florida, and exceeds the second highest median household income, in Santa Rosa County, of $58,923 by 12.3%. **Table 3-10** illustrates median household income for the 15 wealthiest counties in Florida.

Because St. Johns County is part of the Jacksonville MSA, a relative comparison for median household income of St. Johns County is Duval County. In this case, St. Johns County's median household income exceeds Duval County's median household income of $47,690 by 38.8%.

Figure 3-4. 2009-2015 U.S. National, Florida and St Johns County Median Household Income



Source: U.S. Bureau

Table 3-10 2015 Median Household Income of the 15 Wealthiest Florida Counties

Rank	County	Median Household Income
1	St. Johns	$66,194
2	Santa Rosa	$58,923
3	Clay	$58,290
4	Collier	$57,452
5	Monroe	$57,290
6	Seminole	$57,010
7	Okaloosa	$55,880
8	Nassau	$54,116
9	Palm Beach	$53,363
10	Broward	$51,968
11	Sarasota	$51,766
12	Martin	$51,593
13	Hillsborough	$50,579
14	Sumter	$50,350
15	Wakulla	$50,340

Source: U.S. Bureau

This information will be used in the quantitative analyses in subsequent sections to identify potential statistical relationships regarding activity at SGJ.

3.3. Aviation Demand Forecasts

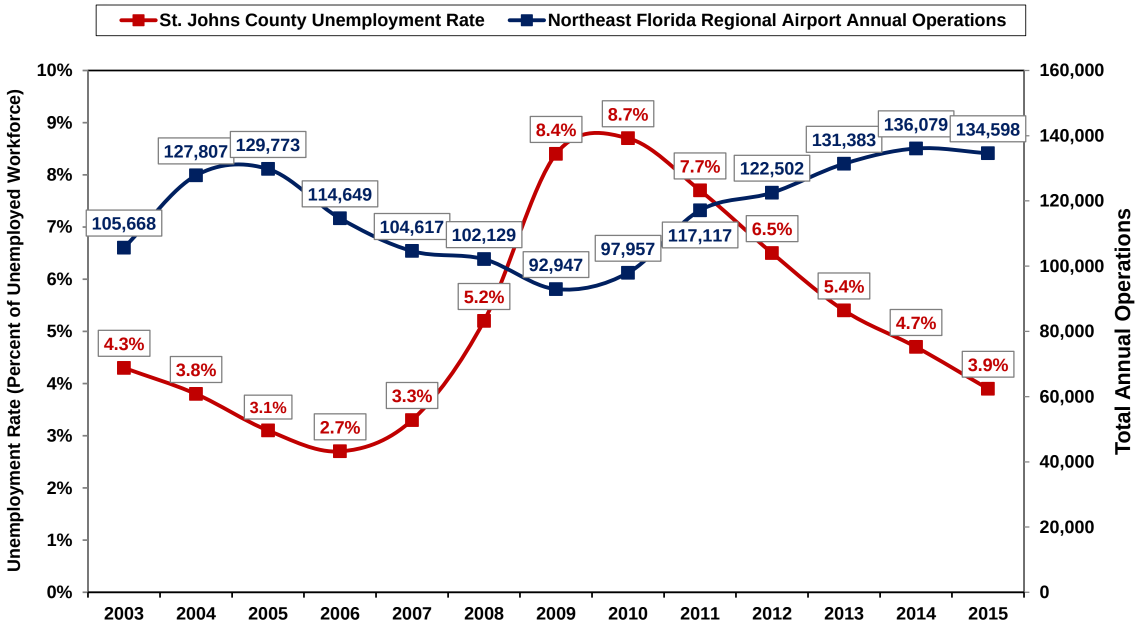
As a general aviation airport, with commercial service activity, the aviation demand forecast section of this report will examine forecasts for commercial service separate from forecasts for general aviation. Commercial enplaned passengers drive passenger terminal sizing requirements, while commercial operations influence the requirements for passenger terminal and airside infrastructure. General aviation forecasts will aid in identifying needed support facilities throughout the airport to support all aviation activity, other than commercial service.

There are a variety of analytical techniques used in the industry to forecast aviation demand. These include regression analysis, trendline analysis, market share analysis, and projecting along national growth rates. The methodology applied to each service activity will be identified below, with the first section focusing on forecasts of commercial enplanements and operations at SGJ.

The federal control tower at SGJ began operations in late 2002. Full year annual operations have been recorded and published beginning in 2003 through 2015 at the time of the preparation of this Airport Master Plan in May 2017. 13 years of historic data would typically be an adequate amount of data to use traditional regression/time series methodologies to forecast future airport operations, but there are some caveats regarding SGJ's historical data.

The period from 2003 to 2015 included significant national (and worldwide) economic events including the financial crisis of 2007-2008, the sub-prime lending crisis of 2007-2009 and the Great Recession beginning in December 2007 lasting through June 2009. The economic downturn resulting from these events is best reflected and illustrated at the national, statewide and local levels in this report, and illustrated in **Figure 3-5**. This figure clearly illustrates an increase in the unemployment rate beginning in 2007 with a peak in 2010 and annual improvements in each subsequent year. Furthermore, Figure 3-5 illustrates the relationship and correlation between St. Johns County's economic health and the number of total operations at the airport. As the economy worsened through 2009 (illustrated by the unemployment rate increasing), the number of annual operations decreased; as the economy improved, beginning in 2010, annual operations trended up and essentially plateaued in 2015, the last full report year for annual operations.

Figure 3-5. 2003-St Johns County Unemployment Rate and Northeast Florida Regional Airport Annual Operations



Source: U.S. Bureau of Labor Statistics and FAA Terminal Area Forecast Historic Data

3.3.1. Airline Industry Trends

Developing and maintaining air service in communities is extremely challenging in today's environment given consolidation of the airline industry and a shortage of qualified pilots. Consolidation, and the "capacity discipline" that has emerged over the last nine years in the most recent round of consolidation, is causing airlines to operate both fewer flights and fewer seats in many small communities and non-hub airports. The pilot shortage is further constraining airline capacity growth because there are simply not enough pilots to fulfill the capacity airlines wish to operate given relatively strong passenger demand.

Since the Airline Deregulation Act of 1978, 18 airlines have consolidated to form the four largest airlines in the United States – American, Delta, United and Southwest. These four airlines operate 84% of domestic capacity, with six other airlines (JetBlue, Spirit, Frontier, Alaska, Hawaiian and Allegiant) operating most of the remaining capacity. The airline industry was extremely unprofitable from 2001 through 2010; however, the industry has been extremely profitable in the last three years because fares have increased, the cost of fuel has declined and because the industry has limited capacity growth as demand and load factors increased. In the most recent 12-month period, the cost of jet fuel has increased nearly 50% (albeit from 15-year lows not experienced since the early 2000s), labor costs have increased approximately 10% and fares have declined to put pressure on year-over-year profitability. This financial pressure places higher hurdles on operating additional capacity, especially in developmental markets, because incremental capacity is generally less profitable than existing capacity.

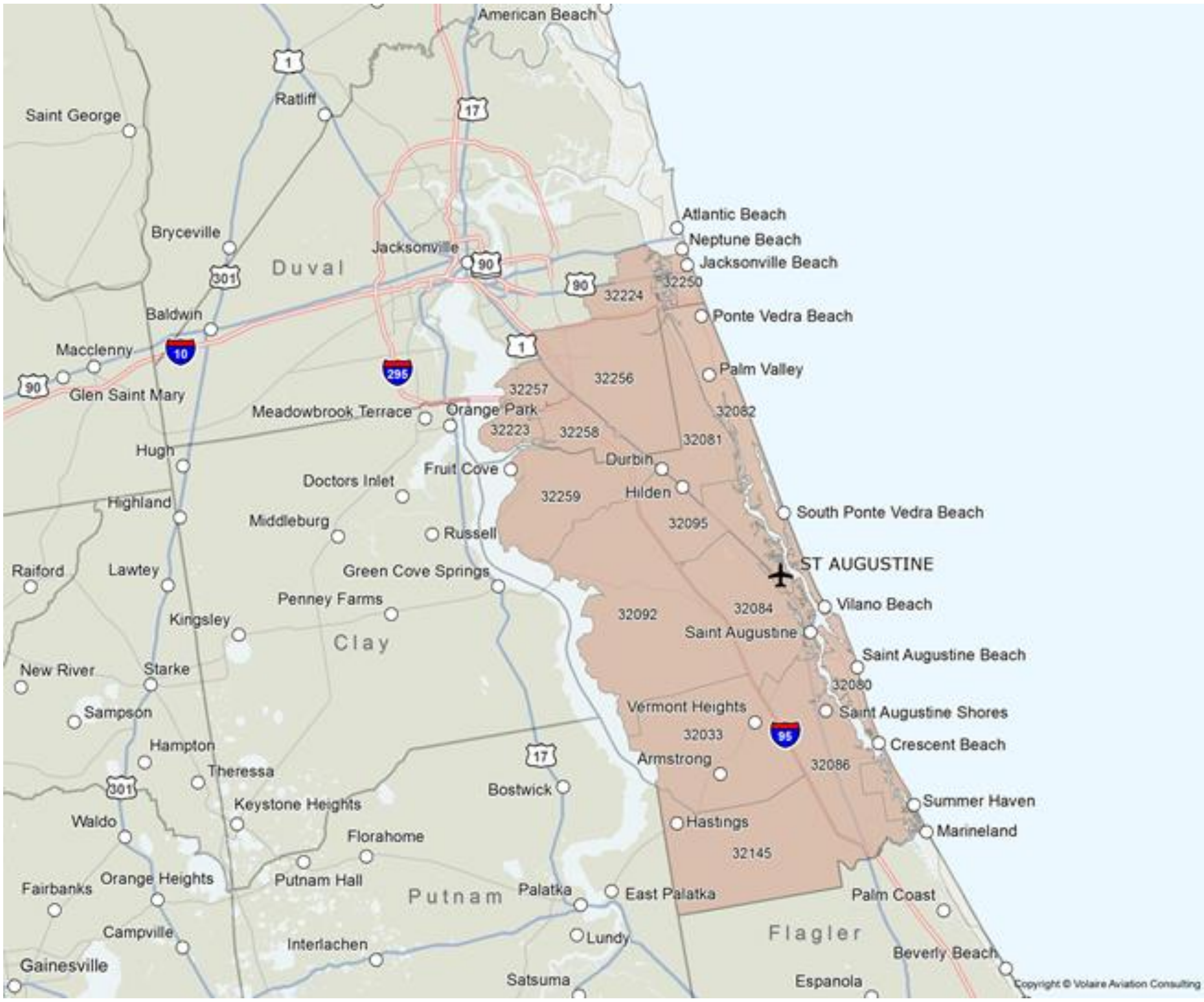
A shortage of qualified airline pilots has emerged over the last three years and has caused many airlines to operate fewer flights and less capacity in smaller communities and at non-hub airports. The pilot shortage is the result of an increase in the minimum number of flight hours needed to operate commercial airliners, reduced rest requirements and accelerated retirements. In 2014, the "1,500 Hour Rule" increased the minimum number of hours needed to operate a commercial airliner from 250 to 1,500 hours for most pilots. Overnight, pilots close to qualification suddenly needed 1,250 additional hours to be hired as a commercial airline pilot. The additional flight time requirement has caused the number of pilots qualifying to operate airliners to fewer than 1,000 per year, but more than 3,000 pilots are expected to retire in 2017. According to the Regional Airline Association, in the six-year period from 2017 through 2022, the cumulative number of pilots expected to retire will exceed 14,000 – a gap of more than 8,000 pilots. While regional airlines will face most of the pilot shortage burden, larger airlines will also experience some shortages, requiring airlines to increase salaries as the supply of pilots tighten. This will put pressure on airlines to begin service on new routes. Airlines will be forced to initiate fewer new routes and exit the least profitable routes in favor of maintaining capacity on existing profitable routes.

SGJ's service on Frontier began just as the pilot shortage began in 2014 and was somewhat of an anomaly. Since 2005, non-hub airports lost 14.3% of capacity between 2005 and 2015. While Frontier increased capacity at SGJ from 2014 through 2016, Frontier's published capacity will decline by two-thirds in 2017. This is likely a function of Frontier's profitability in the market and Frontier's desire to constrain capacity growth. Commercial service at SGJ is in a precarious position. With just seasonal less-than-daily service, there is little room for Frontier to reduce capacity further without exiting the market. If Frontier were to exit the market, recruiting service to replace Frontier will be difficult given the industry's capacity discipline, the pilot shortage and SGJ's relative proximity to Jacksonville International Airport.

3.3.2. Passenger Leakage and Retention at Northeast Florida Regional Airport

Volaire Aviation produced a leakage and retention study for SGJ to determine the true demand for the airport's catchment area, to quantify the airports and the airlines used, the markets flown and average fares paid. While the airport has commercial airline service on Frontier Airlines and Via Air, the limited capacity offered by these airlines does not satisfy the demand for air service in St. Johns County; therefore, the overwhelming majority of airline traffic generated in the county "leaks" to other airports in the region. The airport's catchment area is relatively small and includes only St. John's County and seven zip codes in the southeastern portion of Duval County. Surrounding counties, including most of Duval County, are not included in the SGJ's catchment area because other airports in the region serve as the primary airport for the counties and communities in which they are located. A sample of 18,511 airline tickets purchased for travel in 2016 was analyzed and extrapolated to determine the true demand for SGJ's catchment area.

Figure 3-6. Catchment Area Map



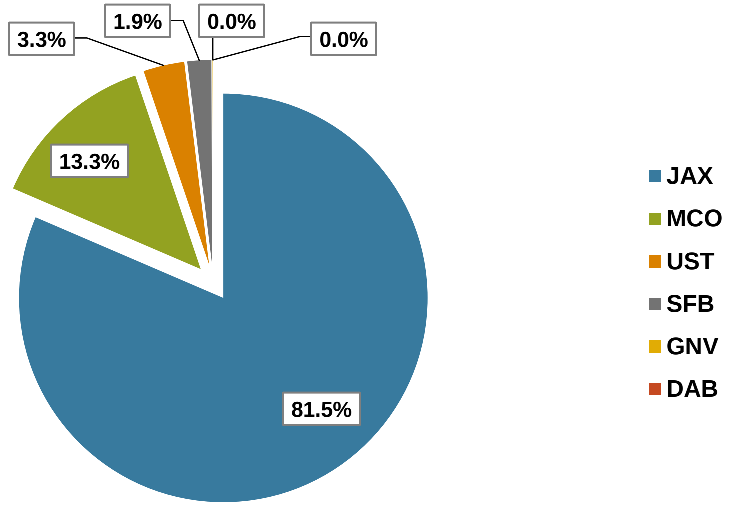
Source: Volaire Aviation Consulting

Rank	Zip Code	City	Sample Tickets	Share	Extrapolated Market Size
1	32256	JACKSONVILLE	2,531	13.7%	235,425
2	32082	PONTE VEDRA BEACH	2,337	12.6%	217,381
3	32259	SAINT JOHNS	2,282	12.3%	212,256
4	32224	JACKSONVILLE	1,789	9.7%	166,452
5	32258	JACKSONVILLE	1,403	7.6%	130,471
6	32257	JACKSONVILLE	1,274	6.9%	118,513
7	32250	JACKSONVILLE BEACH	1,098	5.9%	102,178
8	32092	SAINT AUGUSTINE	1,050	5.7%	97,693
9	32081	PONTE VEDRA	930	5.0%	86,483
10	32223	JACKSONVILLE	921	5.0%	85,628
11	32080	SAINT AUGUSTINE	825	4.5%	76,767
12	32086	SAINT AUGUSTINE	730	3.9%	67,905
13	32084	SAINT AUGUSTINE	696	3.8%	64,702
14	32095	SAINT AUGUSTINE	363	2.0%	33,739
15	32033	ELKTON	83	0.4%	7,687
16	32004	PONTE VEDRA BEACH	65	0.4%	6,086
17	32085	SAINT AUGUSTINE	44	0.2%	4,057
18	32240	JACKSONVILLE BEACH	37	0.2%	3,417
19	32145	HASTINGS	22	0.1%	2,029
20	32241	JACKSONVILLE	20	0.1%	1,815
21	32260	JACKSONVILLE	13	0.1%	1,174
	Totals		18,511	100.0%	1,721,858

Source: 2016 Airlines Reporting Corporation Data

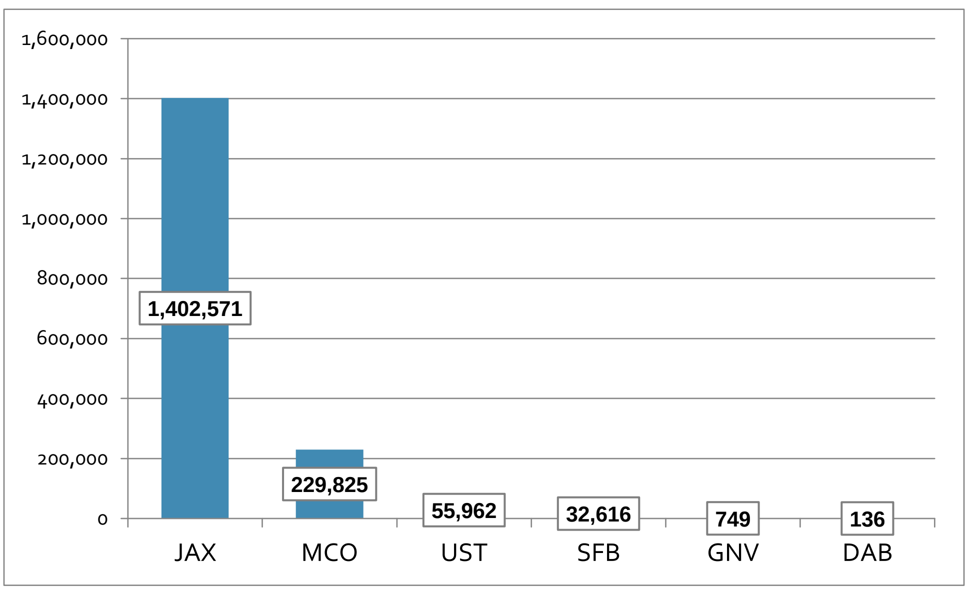
While SGJ generated 55,962 origin and destination (O&D) passengers in 2016, analysis and extrapolation of the sample ticket data estimated the true market size to be nearly 1,694,000 O&D passengers in 2016, with only 3.3% of the traffic using SGJ. Jacksonville International Airport, Orlando International Airport and Orlando/Sanford International Airport captured virtually all other traffic in the sample (i.e., Jacksonville captured 81.5%, Orlando captured 13.3%, and Sanford captured 1.9% of the traffic). Gainesville and Daytona Beach captured virtually no traffic. **Figure 3-7** illustrates the distribution of traffic by airport, and **Figure 3-8** illustrates the number of O&D passengers by airport.

Figure 3-7. Distribution of Airline Traffic Demand Generated in SGJ's Catchment Area by Airport



Source: Year End Fourth Quarter 2016 Domestic and International Data

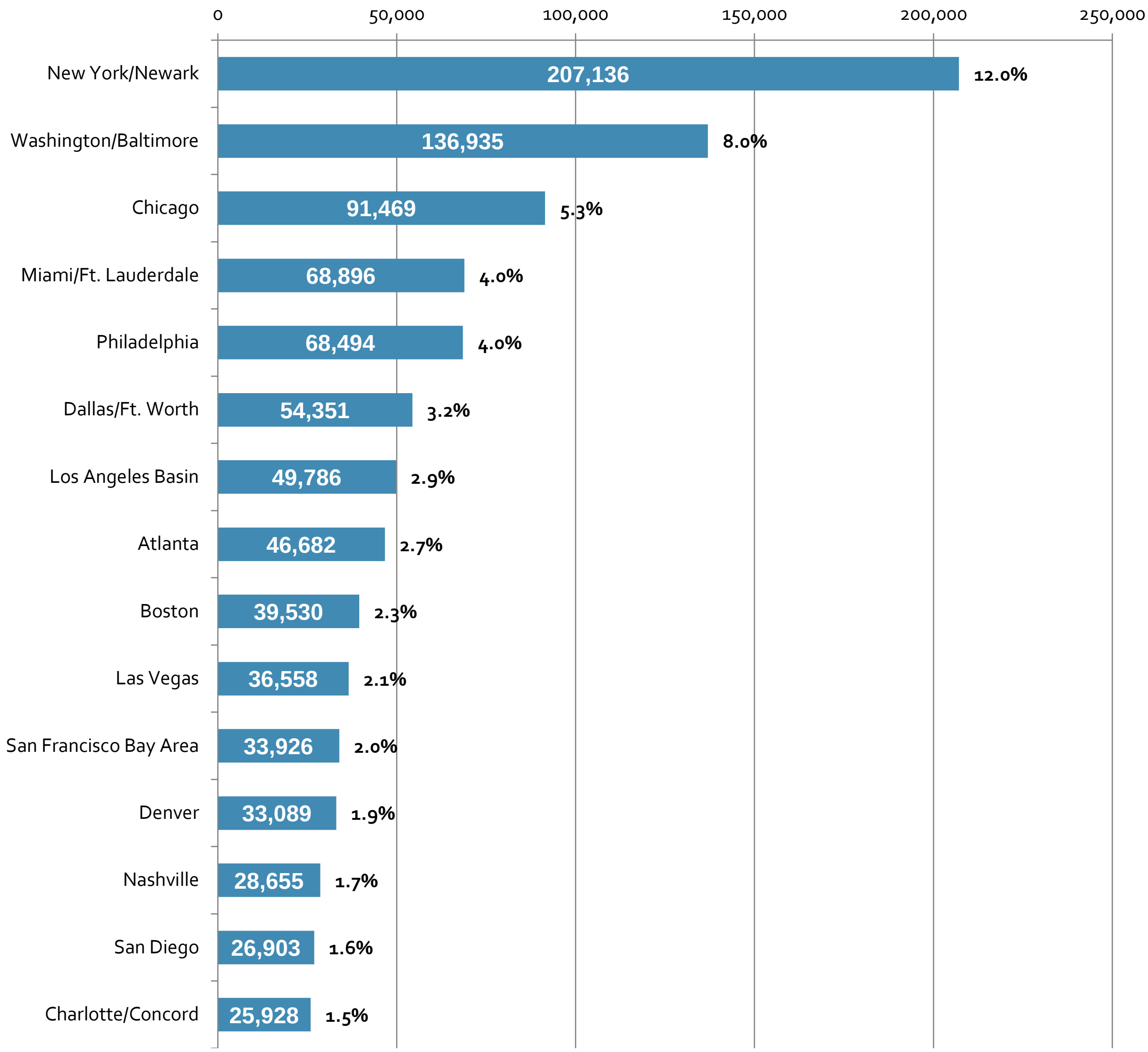
Figure 3-8. Origin and Destination Passengers Generated in SGJ's Catchment Area by Airport



Source: Year End Fourth Quarter 2016 Domestic and International Data

In addition to estimating the total number of O&D passengers for SGJ's catchment area, O&D market sizes were estimated by market. New York/Newark, Washington/Baltimore, Chicago, Miami/Ft. Lauderdale, and Philadelphia rank as the five largest O&D markets, and account for exactly one-third of all traffic. The 15 largest markets illustrated in **Figure 3-9** account for 55.1% of all traffic.

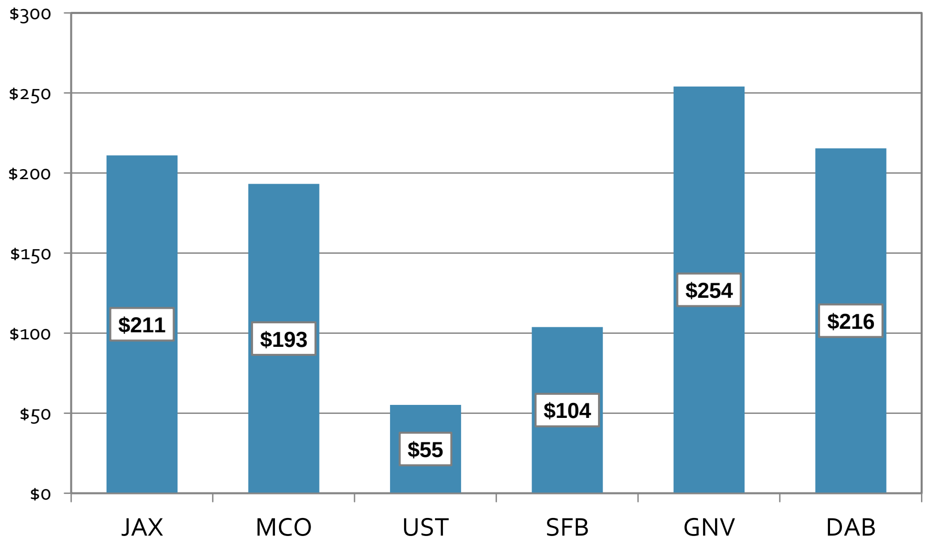
Figure 3-9. Origin and Destination Passengers and Percentage of total O&D Passengers in the 15 Largest Markets in SGJ's Catchment Area



Source: Year End Fourth Quarter 2016 Domestic and International Data

As illustrated in **Figure 3-10**, the average one-way fare paid by passengers generated in SGJ's catchment area was calculated for each of the six airports included in the leakage and retention study. The average fare paid at SGJ was $55; the average Jacksonville fare was $211; the average Orlando fare was $193; and the average Sanford fare was $104 (all fares exclude ancillary fees and taxes).

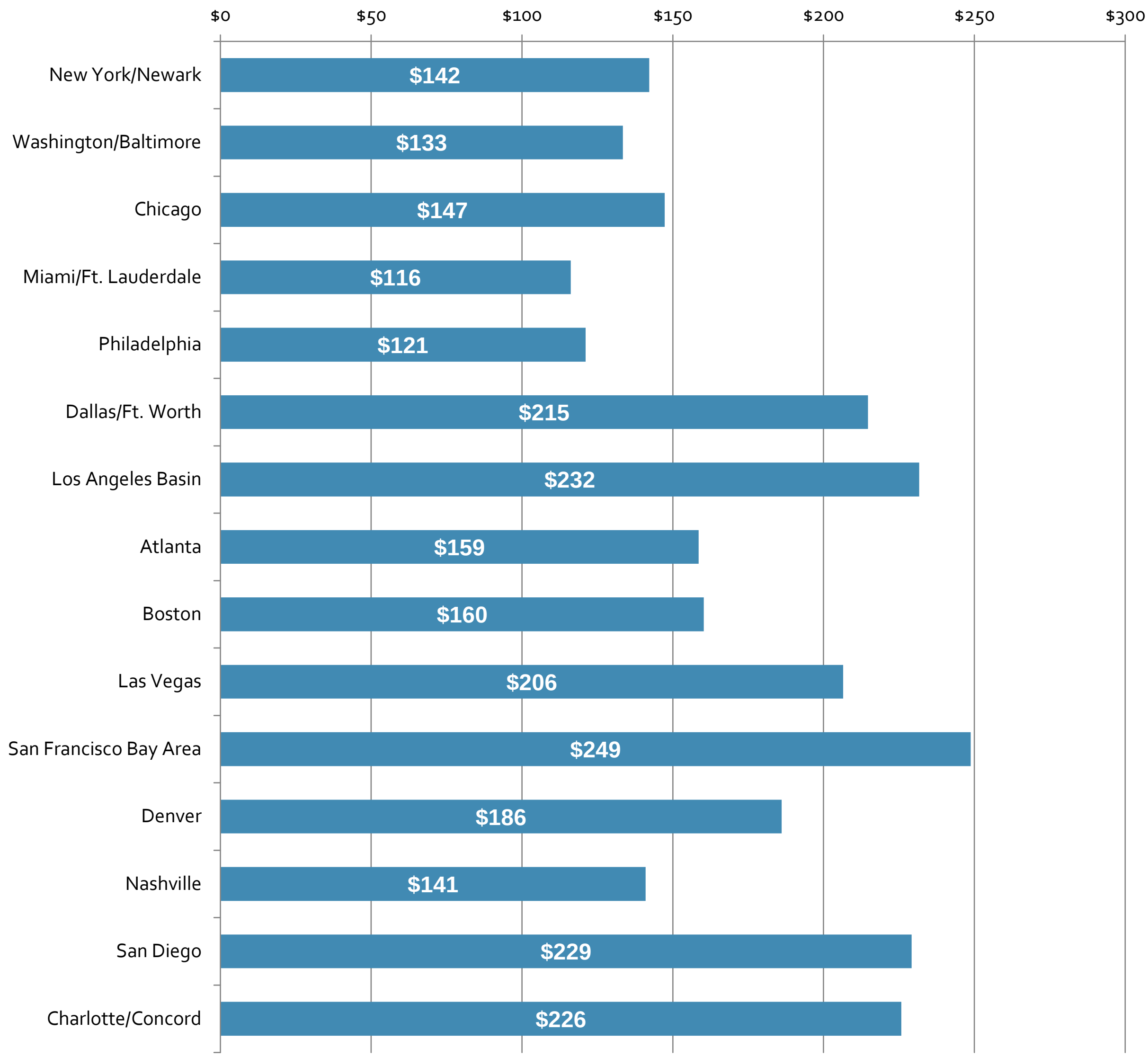
Figure 3-10. Average One-Way Fares by Airport



Source: Year End Fourth Quarter 2016 Domestic and International Data

As illustrated in **Figure 3-11**, the average fare paid in the 15 largest O&D markets ranged from a low of $116 in the Miami/Ft. Lauderdale market to $249 in the San Francisco Bay Area market. The average fare in all 15 of the largest markets was $161, and the average fare for all markets was $202.

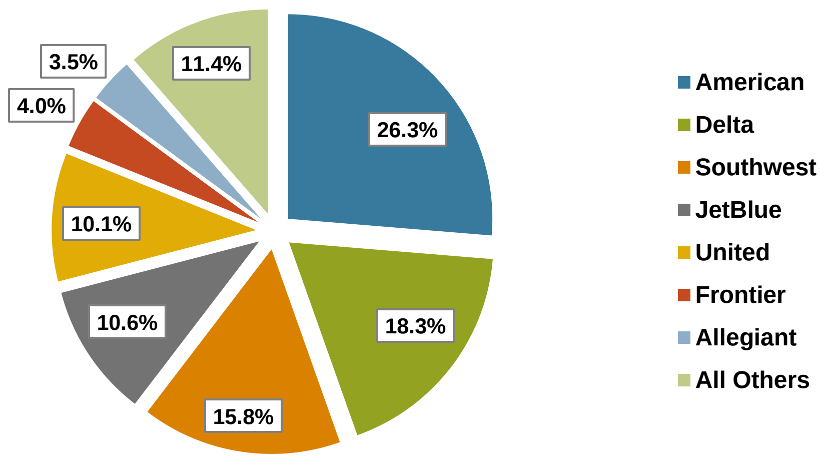
Figure 3-11. Origin and Destination Passengers and Percentage of total O&D Passengers in the 15 Largest Markets in SGJ's Catchment Area



Source: Year End Fourth Quarter 2016 Domestic and International Data

The airline share of traffic generated in SGJ's catchment area is illustrated in **Figure 3-12.** American captured 26.3% of traffic, Delta captured 18.3%, Southwest captured 15.8% and JetBlue captured 10.6%. Together, the four airlines with the largest shares captured 71.0% of the traffic.

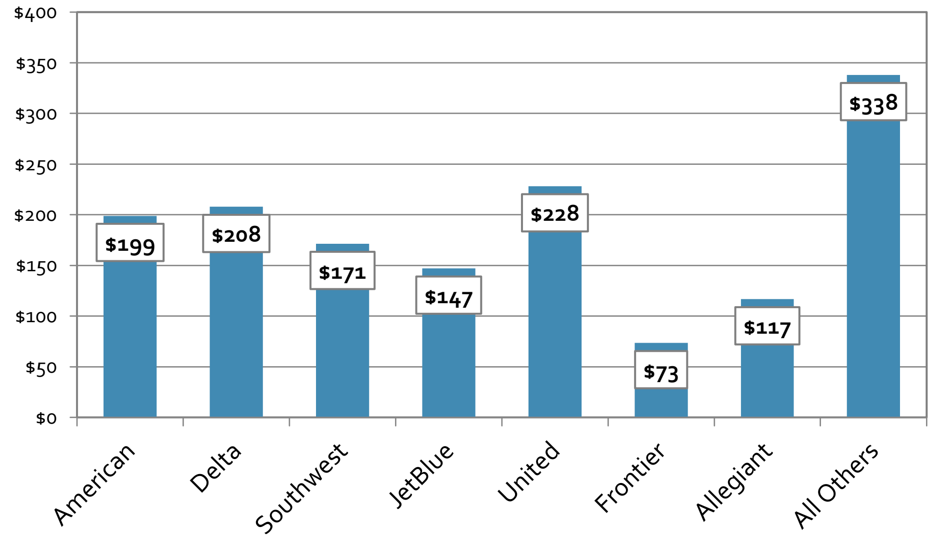
Figure 3-12. Airline Market Share for Traffic Generated in SGJ's Catchment Area



Source: Year End Fourth Quarter 2016 Domestic and International Data

As illustrated in **Figure 3-13**, the average one-way fare paid on Allegiant, Frontier and JetBlue was below $150. The average fare paid on American, Delta, Southwest and United was greater than $150, with United generating the highest average one-way fare of $228. The average fare paid on all other airlines combined was $338 (almost all of this traffic was international traffic, which explains the differential from the seven named airlines because these seven airlines carried mostly domestic traffic at lower fares).

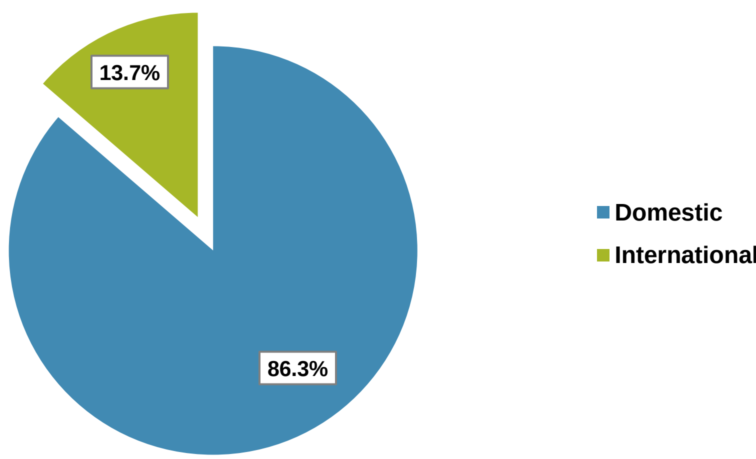
Figure 3-13. Average One-Way Fare by Airline of Traffic generated in SGJ's Catchment Area



Source: Year End Fourth Quarter 2016 Domestic and International Data

As illustrated in **Figure 3-14**, Domestic traffic accounted for 86.3% of the traffic generated in SGJ's catchment area, and international traffic accounted for 13.7%.

Figure 3-14. Domestic versus international Traffic in SGJ's Catchment Area



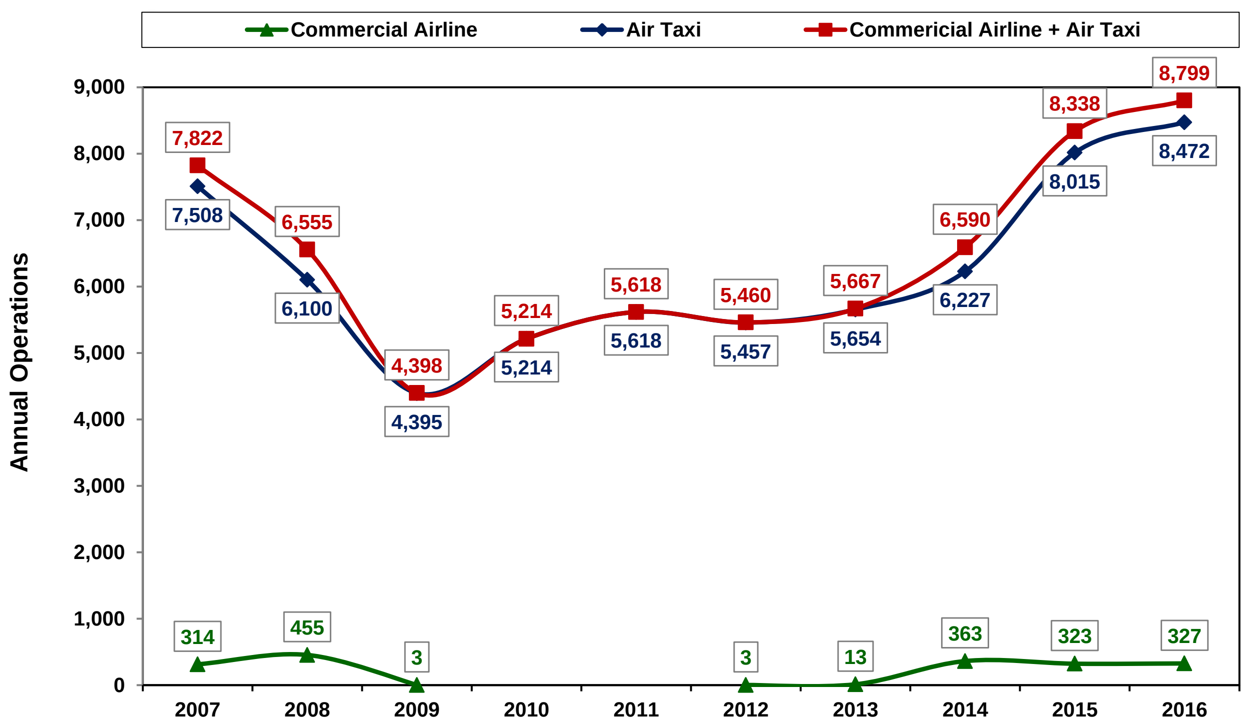
3.3.3. Commercial Airline and Air Taxi Operations

OPSNET ATC commercial airline and air taxi operations from 2007 through 2016 are illustrated in **Figure 3-15**. Air taxi operations declined in 2008 and 2009, with a decline of 41.5% in the two-year period from 2007 to 2009. From 2009 through 2016, air taxi operations increased 92.8% to 8,472 and declined only in 2012.

Much less data exists for airline operations and is a function of three commercial airlines operating at SGJ since 2007. SkyBus operated service from May 2007 through April 2008 to Columbus, Ohio and Greensboro, North Carolina; the airline operations shown in Figure 3-15 represent SkyBus' operations at SGJ. The service ended when SkyBus filed for bankruptcy and discontinued service. More recently, Frontier Airlines began service to SGJ in May 2014 with service to Trenton, New Jersey. The Trenton service was operated continuously through early January 2016, along with service to Washington Dulles for a brief period from September 2014 through early January 2015. Frontier returned to SGJ in April 2016 on a seasonal basis through August 2016 with service to Philadelphia and Chicago. In 2017, Frontier is scheduled to return to SGJ in May with seasonal service to Philadelphia through August 2017.

Via Air began service to St. Augustine with service to Charlotte, North Carolina in February 2015, and it has operated almost continuously in every month since service began.

Figure 3-15. 2007-2015 Commercial Airline and Air Taxi operations



Source: OPSNET ATC Data

Table 3-11 illustrates scheduled airline operations for Frontier and Via Air at SGJ by destination and year. The data illustrates Frontier scheduled 352 operations in 2014, 336 in 2015, 390 in 2016 and 132 in 2017. Via Air scheduled 148 operations in 2015, 142 in 2016 and 168 in 2017 (through September). In 2017, Frontier and Via Air have scheduled a total 300 commercial airline operations.

Table 3-11 2014-2017 Scheduled Commercial Airline Operations Scheduled by Frontier and Via Air

Airline	Destination	2014	2015	2016	2017
Frontier	Washington	142	6		
	Chicago			170	
	Philadelphia			214	132
	Trenton	210	330	6	
	Frontier Total	352	336	390	132
Via Air	Charlotte		148	142	168
	Via Air Total		148	142	168
	Frontier + Via Air	352	484	532	300

Source: OAG Data

Scheduled airline service operations at SGJ have not been consistent or predictable since commercial service was restored by Frontier in 2014. The number of scheduled operations decreased slightly in 2015, increased in 2016 and are scheduled to decrease significantly in 2017. Time series analysis cannot be used to forecast the number of commercial operations since the four years of data is inconsistent. The best method to forecast the number of commercial airline operations is to simply project the latest known data forward through the end of the forecast period. This is illustrated in **Table 3-12** with 300 operations per year through 2035.

Substantial historical data exists for air taxi operations at SGJ and time series analysis can be used to forecast future operations. Using time series analysis to forecast historical operations through 2035 results in an increase in operations of 96.1%, or a CAGR of 3.7% per year. This results in the number of operations increasing from 7,206 in 2016 to 14,924 in 2036. The FAA Terminal Area Forecast (TAF) shows an increase of 45.1% from 8,816 operations in 2016 to 10,758 operations in 2036. The more conservative and more reasonable forecast of air taxi operations over the 20-year period of the forecast is the FAA TAF and will be used as the selected forecast.

Combining the selected commercial airline operations forecast with the selected air taxi operations forecast results in total operations increasing 34.2%%, a CAGR 1.5% from 9,348 operations in 2016 to 12,549 operations in 2036.

Table 3-12 Commercial Airline Operations and Air Taxi Operations Forecast Scenarios and Selected Forecast

Year	Airline Conservative Growth	Air Taxi Historical Growth	Air Taxi OPSNET ATC	Air Taxi Selected	Total Operations
Base Years					
2015*	484	7,413	8,015	8,015	8,499
2016*	532	7,206	8,472	8,472	9,004
2017*	300	7,592	8,519	8,519	8,819
Forecast					
2021**	851	9,136	10,641	10,641	11,492
2026**	1,164	11,065	13,294	13,294	14,458
2031**	1,478	12,994	15,947	15,947	17,425
2036**	1,791	14,924	18,600	18,600	20,391
2015-2036 Change	270.0%	107.1%	119.5%	119.5%	126.5%
CAGR	6.3%	3.7%	4.0%	4.0%	4.2%

Airline Data Sources

** OAG data*

*** 2021-2036 forecasted enplanements divided by 2017 enplanements per departure*

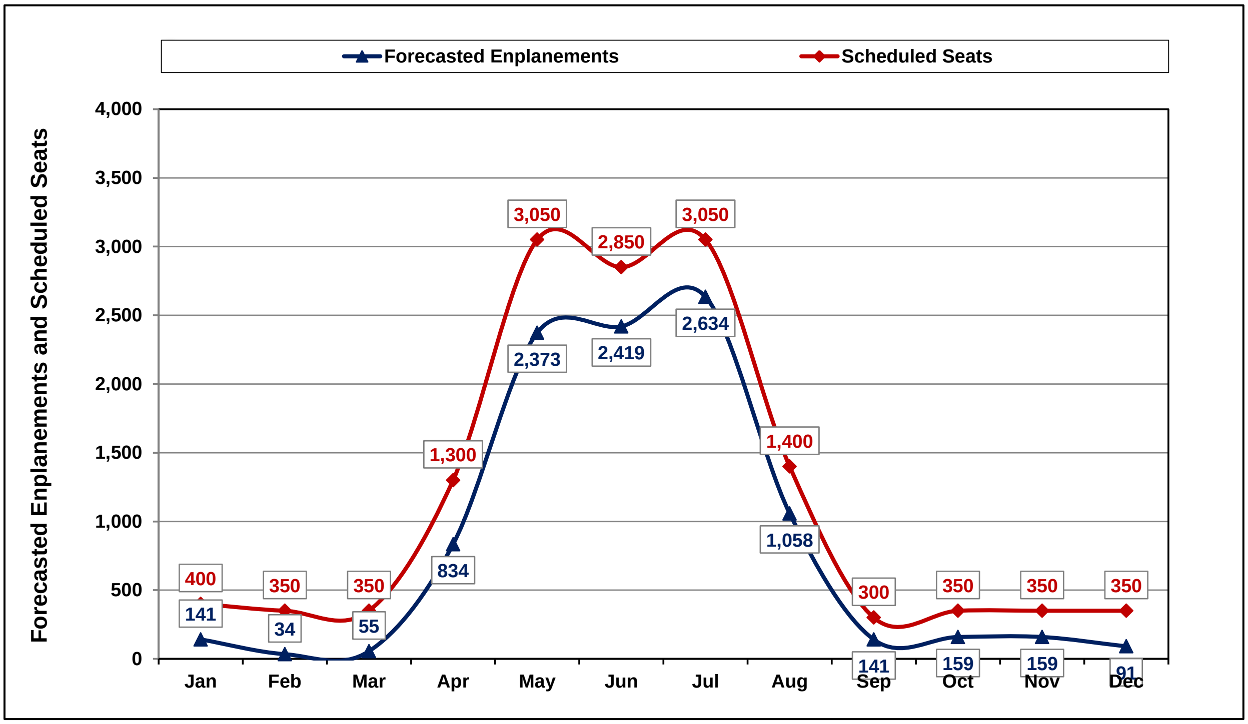
Commercial Carrier Fleet Mix

The aircraft fleet for Via Air consists of Embraer 145 (50 seats), while Frontier consists of Airbus 319 (150 seats). It is anticipated this fleet will remain throughout the planning horizon. No commercial passenger aircraft are currently based at SGJ, and no commercial aircraft are known to be based at the airport in the future; thus, all operations are itinerant.

Seasonal and Year-Round Activity/Enplanement Fluctuations

Airline enplanements are a function of airline capacity. As capacity increases, enplanements increase; as capacity decreases, enplanements decrease. While Via Air is expected to continue service at SGJ on a year-round basis, Frontier will likely continue serving the airport on a seasonal basis with flights operating from April through August (as they are scheduled in 2017). Because Frontier operates large mainline aircraft on a seasonal basis, SGJ's are expected to vary considerably based on the months Frontier operates its service. The chart in **Figure 3-16** illustrates capacity (scheduled seats) and traffic at SGJ will increase to their highest levels in May through July, the three months when Frontier operates service for the full month. Frontier will operate service for part of April and part of August, so these months will also have relatively high levels of capacity and traffic relative to months without any Frontier service (January through March and September through December).

Figure 3-16 Northeast Florida Regional Airport 2017 Forecasted Enplanements and Scheduled Seats per Month



Source: Volaire Aviation Forecast of 2017 Enplanements and Scheduled Seats

3.3.4. Enplanement Forecast

Enplanements are a function of air carrier operations and aircraft seating capacity. While the number of seats per departure has been relatively constant on both Frontier and Via Air (because the type of aircraft has not varied significantly since either airline began operations at SGJ), the number of operations has changed. As illustrated in Table 3-14 in the three years from 2014 through 2016, operations increased from 176 in 2014 to 502 in 2016; Table 3-15 illustrates enplanements increased from 9,454 in 2014 to 28,145 in the 2016 (the baseline year).

Combined, Frontier and Via Air have scheduled 300 operations (150 arrivals and 150 departures) in 2017, a decline of 40.2% versus the 532 scheduled operations in 2016, with Frontier's scheduled operations declining 66.2% from 390 to 132 and Via Air's scheduled operations increasing 18.3%from 142 to 168. Assuming Frontier can maintain its 2016 load factor of 85.4% in 2017, Frontier will enplane 8,454 passengers in 2017. Assuming Via Air can maintain its 2016 load factor of 41.1% in 2017, Via Air will enplane 1,645 passengers. Total enplanements for Frontier and Via Air are expected to be 10,099 in 2017, a decline of 64.1 from the 28,144 enplanements in 2016.

Four operations and enplanement scenarios were forecasted for this master plan update:

1. Loss of All Service
2. 2017 Flatline
3. Conservative Growth
4. Aggressive Growth

Loss of All Service. Frontier's operations will decline 40.2% and Frontier will operate St. Augustine service only on a seasonal basis with flights operating just four days a week from April through August. Although Via Air's operations will increase 18.3% in 2017 versus 2016, Via Air will operate just 168 operations at SGJ on a less-than-daily basis, and it is possible neither airline will operate any service in St. Augustine in 2018. While the airport will aggressively market its commercial airline service, there is no guarantee either airline will find St. Augustine an attractive market beyond 2017; either carrier may allocate its assets to other airports in their respective route networks and exit the St. Augustine market entirely. **Table 3-13** and **Table 3-14** reflect this scenario with no commercial airline operations and no enplanements in the "Loss of Service" column in each table.

2017 Flatline Forecast. The 2017 Flatline Forecast assumes the 300 scheduled operations and the 10,099 forecasted enplanements for 2017 are carried forward in each year through 2036. Given the decline in published operations and forecasted enplanements from 2016 to 2017, it is somewhat rational neither operations nor enplanements will increase (or decrease) significantly beyond 2017; both could remain *relatively* constant through 2036.

Conservative Growth. The Conservative Growth Forecast uses time series analysis for growth observed from 2015 to 2016, ignores the 2017 decline in operations and enplanements, and assumes growth resumes in 2018 using 2016 as the baseline year for growth. The result is a forecast of 2,652 operations in 2036, an increase of 236.6%, and 94,750 enplanements in 2036, an increase of 398.5%.

Aggressive Growth. The fourth forecast is the most optimistic and uses time series analysis for growth observed from 2014 to 2016 – a period where operations increased 185.2% and enplanements increased 197.7%. Like the Conservative Growth Forecast, the declines in forecasted operations and enplanements from 2016 to 2017 are ignored in this forecast scenario. The result is a forecast of 6,084 operations in 2036, an increase of 1,043.7%, and 217,360 enplanements in 2036, an increase of 672.3%.

Table 3-13 Selected Commercial Airline Operations Forecasts

Year	Loss of All Service	2017 Baseline	Conservative Growth	Aggressive Growth
Base Years				
2014*	352	352	352	352
2015*	484	484	484	484
2016*	532	532	532	532
2017*	300	300	300	300
Forecast				
2021	0	300	851	1,459
2026	0	300	1,164	2,342
2031	0	300	1,478	3,225
2036	0	300	1,791	4,109
2016-2036 Change	-100.0%	-43.6%	236.6%	672.3%
CAGR	N/A	-2.8%	6.3%	10.8%

** OAG data*

Table 3-14 Selected Commercial Airline Enplanement Forecasts

Year	Loss of All Service	2017 Flatline	Conservative Growth	Aggressive Growth
Base Years				
2014*	9,454	9,454	9,454	9,454
2015*	25,714	25,714	25,714	25,714
2016**	28,145	28,145	28,145	28,145
2017***	10,099	10,099	10,099	10,099
Forecast				
2021	0	10,099	45,017	77,177
2026	0	10,099	61,595	123,905
2031	0	10,099	78,172	170,632
2036	0	10,099	94,750	217,360
2016-2036 Change	-100.0%	-64.1%	236.6%	672.3%
CAGR	N/A	-5.0%	6.3%	10.8%

** FAA Terminal Area Forecast data*

*** Bureau of Transportation Statistics data*

**** Volaire Aviation Consulting Forecast*

Selected Airline Operations and Enplanement Forecasts

The conservative growth forecasts were chosen for both the airline operations and airline enplanement forecasts. These forecasts use time series forecast methodology with actual 2015 and 2016 operations and enplanement data as the basis for the forecast and result in compound annual growth rates of 6.3% for both operations and enplanements. Forecasted 2036 operations are 1,791 and forecasted 2016 enplanements are 94,750.

3.3.5. Air Cargo

There is no history of cargo activity at SGJ; therefore, no air cargo forecast will be conducted for this Master Plan Update.

3.3.6. Forecast of General Aviation and Military Activity

FAA publication, *Forecasting Aviation Activity by Airport*, dated July 2001, identifies several methodologies for forecasting activity. General aviation activity forecast methodologies usually consist of national growth rate, trend analysis, market share analysis, and operations per based aircraft, as described below.

3.3.6.1. National Growth Rate

The FAA prepares national forecasts of general aviation activity annually, publishing the results in the FAA Aerospace Forecast Fiscal Years 2017-2036. The Aerospace Forecast is based on economic models that are consistent with emerging trends in the aviation industry.

Supported by lower oil prices, the industry continues its recovery from the economic recession experienced between 2007 and 2010. The 2017 Aerospace Forecast anticipates that the active fleet forecast will increase 0.1% per year for the duration of the planning period. The primary drivers of operations will be from turbine and experimental aircraft.

Projections of growth in general aviation hours flown are shown in **Table 3-15** and provides an indication of the overall activity of operational and airworthy aircraft within the National Airspace System (NAS). Looking at the long-term trend, activity by piston engine aircraft are expected to decline slightly while turbine, rotorcraft, experimental, and sport aircraft are all expected to become more active within the NAS. Overall, **hours flown** by the GA fleet is anticipated to increase modestly through 2037 at an approximate **growth** of **0.8%** annually.

Details of the FAA's projection of aircraft in the general aviation fleet are tabulated in **Table 3-16** which identifies that no growth is anticipated in single and multi-engine piston aircraft activity, and in fact, very modest reductions could be realized over the forecast period. Conversely, the forecast projects strong growth in most all other categories of aircraft, to include turbojet, rotorcraft, experimental, and sport aircraft. Overall the entire **GA fleet** is anticipated to grow very modestly at **0.1%** annually through 2037.

For forecasting efforts, the national growth rates were applied to the based aircraft and aircraft operations numbers for 2016 to generate a forecast of activity, as shown in **Tables 3-21 (Based Aircraft)** and **3-24 (Operations)** under column heading FAA National Forecasts.

Table 3-15. FAA's Hours Flown Growth Rates

	Fixed Wing						Rotorcraft			Experimental	Sport Aircraft	Other	Total General Aviation Fleet	Total Pistons	Total Turbines
	Piston			Turbine											
	Single Engine	Multi-Engine	Total	Turbo Prop	Turbo Jet	Total	Piston	Turbine	Total						
Average Annual Growth															
2010-16	-1.4%	-2.1%	-1.5%	1.5%	3.6%	2.8%	-0.2%	-0.3%	-0.3%	1.4%	N/A	-1.8%	-0.2%	-1.4%	1.9%
2016-17	1.6%	-0.4%	-1.5%	0.0%	6.5%	4.0%	-0.8%	2.7%	1.9%	2.8%	6.8%	0.4%	0.8%	-1.4%	3.7%
2016-26	-1.3%	-0.4%	-1.2%	0.6%	3.8%	2.7%	1.8%	2.3%	2.2%	2.3%	5.5%	0.1%	0.7%	-1.0%	2.6%
2016-37	-0.9%	-0.1%	-0.8%	1.6%	3.0%	2.5%	1.7%	2.1%	2.0%	2.0%	4.6%	0.1%	0.9%	-0.6%	2.4%

Source: FAA 2017-2037 Aerospace Forecast.

Table 3-16. FAA's Active Fleet Growth Rates

	Fixed Wing						Rotorcraft			Experimental	Sport Aircraft	Other	Total General Aviation Fleet	Total Pistons	Total Turbines
	Piston			Turbine											
	Single Engine	Multi-Engine	Total	Turbo Prop	Turbo Jet	Total	Piston	Turbine	Total						
Average Annual Growth															
2010-16	-1.6%	-3.1%	-1.7%	0.2%	3.1%	1.8%	-1.2%	2.1%	1.0%	2.3%	N/A	-2.3%	-1.0%	-1.7%	1.9%
2016-17	-0.8%	-0.3%	-0.8%	-1.8%	2.4%	0.7%	1.3%	2.0%	1.8%	1.7%	6.1%	0.1%	-0.1%	-0.7%	1.0%
2016-26	-0.9%	-0.3%	-0.8%	0.1%	2.3%	1.5%	1.3%	1.8%	1.6%	1.2%	5.0%	0.0%	0.0%	-0.8%	1.6%
2016-37	-0.9%	-0.5%	-0.8%	1.4%	2.3%	1.9%	1.3%	1.8%	1.6%	1.0%	4.1%	0.1%	0.1%	-0.8%	1.9%

Source: FAA 2017-2037 Aerospace Forecast.

3.3.6.2. Trend Analysis

Trend line analysis examines historical patterns of an activity and projects this trend into the future. Trend line analysis assumes that activity, and the factors which have historically affected activity, will continue to influence demand levels at similar rates over an extended period. **Table 3-17** below presents the trend analysis results for short-, medium-, and long-term scenarios.

Table 3-17. Trend Line Growth Rates

	SHORT-TERM	MID-TERM	LONG-TERM
	(2-year)	(5-year)	(10-year)
BASED AIRCRAFT (AAGR)	1.4%	-4.2 %	-3.9%
OPERATIONS (AAGR)	4.9%	4.1%	4.1%

Source: FAA Historical FAA TAF and OPSENT

Based aircraft data was obtained from the FAA TAF. This data shows a significant fluctuation of based aircraft, and an r^2 trendline factor of 0.24; thus, the trend line analysis was deemed to be unreliable to forecast based aircraft and was dismissed. Operational levels were examined from the FAA OPSNET Airport operations standard report, resulting in a r^2 trendline factor of 0.81. An r^2 factor close to 1.00 is deemed reliable. Since the regression trendline is low the trendline analysis was dismissed for operations as well.

3.3.6.3. Market Share Analysis

Market share analysis is a method for projecting future aeronautical activity and can be applied to any measure for which a reliable higher-level forecast is available. Using this methodology, historical shares are calculated and used as a basis for projecting future shares. This approach is a "top-down" method of forecasting since local forecasts are a market share (percentage) of regional forecasts, which are a market share (percentage) of national forecasts. This is a reliable technique when the historic shares of the airport to the larger aggregate are relatively constant through the years. For performing market share analysis for SGJ, data relative to the State of Florida, the FAA's Southern Region, and the entire Nation was reviewed for both general aviation operations and based aircraft. Based aircraft were obtained from the FAA Terminal Area Forecasts (TAF), while operations compared historic OPSNET operations from 2003-2016 with the State, Region and Nation data from TAF.

Table 3-18 presents SGJs based aircraft market share related to TAF projections for the State of Florida, the FAA Southern Regional, and Nation.

Table 3-18. Market Share percentages for Based Aircraft

YEAR	SGJ	FLORIDA	% FLORIDA	SOUTHERN REGION	% REGION	NATION	% NATION
2005	323	13,152	2.5%	36,013	0.89%	197,214	0.16%
2010	256	10,931	2.3%	30,853	0.83%	165,472	0.15%
2015	210	11,360	1.8%	30,814	0.68%	171,664	0.12%
2016	216	11,534	1.9%	31,094	0.69%	173,218	0.13%
AVERAGE 2005-2016			2.12%		0.77%		0.14%
AVERAGE 2012-2016			1.85%		0.69%		0.13%

Source: FAA TAF data.

For based aircraft planning purposes, the following market shares will be applied: **1.85%** for the state, **0.69%** for the region and **0.13%** for the nation, with the results shown in **Table 3-21.**

Table 3-19 presents SGJs general aviation operations market share for the State of Florida, the FAA Southern Regional, and Nation. General aviation in this case does not include air carrier and air taxi or military, as they will each be forecast separately in this report.

Table 3-19. Market Share percentages for General Aviation Operations

YEAR	SGJ	FLORIDA	% FLORIDA	SOUTHERN REGION	% REGION	NATION	% NATION
2005	113,717	6,944,765	1.6%	17,553,939	0.65%	81,125,555	0.14%
2010	91,050	5,799,356	1.6%	15,439,990	0.59%	71,230,624	0.13%
2015	117,759	6,135,264	1.9%	15,625,588	0.75%	68,248,167	0.17%
2016	129,606	6,109,590	2.1%	15,660,151	0.83%	68,502,131	0.19%
AVERAGE 2005-2016			1.75%		0.68%		0.15%
AVERAGE 2012-2016			2.1%		0.82%		0.18%

Source: SGJ OPSNET data, FL, Region, Nation FAA TAF data

It is noted that in the last 5 years the market share has increased. For operational planning purposes the following market shares will be applied: **2.1%** for the state, **0.82%** for the region and **0.18%** for the nation, with the results shown in **Table 3-24.**

Table 3-20 presents SGJs military market share related to TAF projections for the State of Florida, the FAA Southern Regional, and Nation.

Table 3-20. Market Share percentages for Military Operations

YEAR	SGJ	FLORIDA	% FLORIDA	SOUTHERN REGION	% REGION	NATION	% NATION
2005	8,190	324,914	2.5%	1,656,834	0.49%	5,048,249	0.16%
2010	3,948	322,731	1.2%	1,701,538	0.23%	4,960,948	0.08%
2015	3,241	255,820	1.3%	1,630,092	0.20%	4,756,541	0.07%
2016	2,993	272,403	1.1%	1,632,402	0.18%	4,757,590	0.06%
AVERAGE 2012-2016			1.3%		0.2%		0.06%

Source: SGJ OPSNET data, FL, Region, Nation FAA TAF data

Given the uncertainty of military operations, the TAF flat-lines military operations for the planning horizon. The market share of military operations at SGJ has decreased over the last five years, and given the uncertainty of military operations, the five-year average market share will be applied: **1.3%** for the state, **0.2%** for the region and **0.06%** for the nation to the FAA TAF forecasts, with results shown in **Table 3-25**.

3.3.6.4. State Aviation System Plan

The Florida Department of Transportation (FDOT) continuously updates its forecast of based aircraft and operations at airports throughout the state. Review of the latest based aircraft and operations from the FASP yields AAGR rates at **2.01% for based aircraft**, and **1.54% for operations** for SGJ, exceeding the state averages of 1.1% for based aircraft and 0.9% for operations. For forecasting efforts, these rates were applied to the existing 2016 based aircraft and operations to yield the results found in **Tables 3-21 (Based Aircraft)** and **3-24 (Operations)**.

3.3.7. Potential General Aviation Forecasts

To prepare for future facility projections, appropriate forecasts are required, namely based aircraft and operations. Based aircraft directly impact the type and number of aircraft storage facilities and apron space that is needed at the airport. These forecasts will also indicate the potential for flight training growth that may occur at the airport. Applying the methodologies outlined in the above sections, forecasts for based aircraft were produced. These based aircraft projections are depicted in **Tables 3-21.**

Table 3-21. Based Aircraft Projections across All Methodologies

YEAR	FAA NATIONAL FORECAST	FL MARKET SHARE	SOUTH REGION MARKET SHARE	NATIONAL MARKET SHARE	FL SASP
2017	216	216	215	220	220
2018	216	219	216	222	225
2019	217	222	218	223	229
2020	217	225	220	225	234
2021	218	228	222	227	239
2022	218	231	224	229	243
2023	218	235	226	231	248
2024	218	238	228	233	253
2025	218	241	229	235	258
2026	218	244	231	237	264
2027	219	247	233	239	269
2028	219	250	235	241	274
2029	219	254	237	243	280
2030	220	257	239	245	285
2031	220	260	240	247	291
2032	220	264	242	249	297
2033	220	267	244	251	303
2034	220	270	246	253	309
2035	220	274	248	255	315
2036	221	277	250	257	322
CAGR					
'17-'21	0.1%	1.08%	0.66%	0.67%	1.6%
'17-'26	0.1%	1.22%	0.74%	0.75%	1.8%
'17-'36	0.1%	1.25%	0.77%	0.79%	1.9%

Source: Passero Associates

3.3.8. Selection of Preferred Based Aircraft Forecast

The northeast sector of Florida continues to show a boom in population. Historically this boom has resulted in the regional aviation growth rate significantly outpacing the average state aviation growth rates. The National growth does not represent the boom in the northeast sector of Florida, increasing the based aircraft by five over the planning period. As noted in the 2004 Florida Aviation System Plan (FASP) between 1988 and 2002, the northeast region of Florida outpaced the state with based aircraft growing at 4.4% annually, versus the State's average of 1.1%. The regional share and national share only show an increase of 35-37 aircraft over the FASP planning period, or fewer than two aircraft per year, and in the last year, there was an additional six based aircraft. These forecasts are low given the growth projected for the surrounding area, and the waiting list of aircraft owners seeking to base at the SGJ.

Given the recent additional six aircraft for the regional and national share of based aircraft, and the extensive waiting list of over 150 aircraft owners seeking to base their aircraft at the SGJ, the FASP share is chosen to represent the based aircraft forecasts. This forecast increased the based aircraft by 106 aircraft over the 20-year planning period, or an average of 5 aircraft per year. This increase could accommodate about 66% of the waiting list and would be in line with previous levels that occurred between 2000 and 2008.

After the second meeting with the MPAC on June 21, 2017, the Committee agreed to using a **2% growth rate** for the preferred based aircraft forecast, as shown in **Table 3-22**.

Table 3-22. Preferred Forecast of Based Aircraft

YEAR	BASED AIRCRAFT
2017	220
2021	239
2026	264
2031	291
2036	322

Sources: Passero Associates, Master Plan Technical Advisory Committee.

3.3.9. Based Aircraft Fleet Mix

The forecast of based aircraft presented in Table 3-19, was used to project the types of based aircraft (the fleet mix) that should reasonably be expected at the Airport in the future. The current fleet mix is identified by aircraft class: single-engine piston (SE), multi-engine piston (ME), jet, helicopters (HE), military (MIL) and Other (including ultra-light, and gliders). The future fleet mix projects the historic trends, considering the national trends and the general aviation aircraft anticipated to be operational within the national airspace over the coming decades. **Table 3-23** shows the projected fleet mix.

Table 3-23. Based Aircraft Fleet Mix Forecast

YEAR	SE	ME	JET	HE	MIL	OTHER	TOTAL
2016	155	24	17	5	12	3	216
FORECAST							
2017	158	25	17	5	12	3	220
2021	172	27	19	5	13	3	239
2026	190	29	21	6	14	4	264
2031	209	32	23	7	16	4	291
2036	231	35	26	7	18	5	322

Sources: Passero Associates, Master Plan Technical Advisory Committee.

3.4. General Aviation Operation Projections

Utilizing the baseline methodologies outlined in the preceding sections, multiple forecasts of general aviation operations were developed. The methodologies employed present a range of potential general aviation activity. The baseline year is 2016, and the general aviation operations data was obtained from the FAA OPSNET.

Table 3-24 tabulates general aviation operations projections across all methodologies employed, while **Table 3-25** tabulates market share for military operation.

Table 3-24. Aeronautical General Aviation Operations Projections across All Methodologies

YEAR	FAA NATIONAL FORECAST	FL MARKET SHARE	SOUTH REGION MARKET SHARE	NATIONAL MARKET SHARE	FL SASP	OPBA (600)
2017	130,643	129,791	129,102	130,609	131,602	132,205
2018	131,688	130,570	129,460	131,071	133,629	134,862
2019	132,742	131,362	129,824	131,539	135,687	137,573
2020	133,803	132,165	130,193	132,013	137,776	140,338
2021	134,874	132,981	130,568	132,493	139,898	143,159
2022	135,953	133,809	130,947	132,980	142,052	146,037
2023	137,041	134,650	131,333	133,474	144,240	148,972
2024	138,137	135,504	131,723	133,974	146,461	151,966
2025	139,242	136,371	132,119	134,482	148,717	1550,21
2026	140,356	137,251	132,522	134,998	151,007	158,137
2027	141,479	138,145	132,929	135,522	153,332	161,315
2028	142,611	139,053	133,343	136,053	155,694	164,558
2029	143,751	139,975	133,763	136,594	158,091	167,865
2030	144,901	140,912	134,189	137,141	160,526	171,239
2031	146,061	141,864	134,622	137,698	162,998	174,681
2032	147,229	142,830	135,060	138,263	165,508	178,192
2033	148,407	143,813	135,506	138,837	168,057	181,774
2034	149,594	144,811	135,958	139,421	170,645	185,428
2035	150,791	145,825	136,417	140,014	173,273	189,155
2036	151,997	146,855	136,883	140,617	175,941	192,957
CAGR						
'17-'21	0.6%	0.49%	0.23%	0.29%	1.2%	1.6%
'17-'26	0.7%	0.56%	0.26%	0.33%	1.4%	1.8%
'17-'36	0.8%	0.62%	0.29%	0.37%	1.5%	1.9%

Sources: Passero Associates. FAA OPSENT using2003- 2016 data

Table 3-25. Aeronautical Military Operations Projections

YEAR	FL MARKET SHARE	SOUTH REGION MARKET SHARE	NATIONAL MARKET SHARE
2017	3,541	3,265	2,855
2018	3,541	3,265	2,855
2019	3,541	3,265	2,855
2020	3,541	3,265	2,855
2021	3,541	3,265	2,855
2022	3,541	3,265	2,855
2023	3,541	3,265	2,855
2024	3,541	3,265	2,855
2025	3,541	3,265	2,855
2026	3,541	3,265	2,855
2027	3,541	3,265	2,856
2028	3,541	3,265	2,856
2029	3,541	3,265	2,856
2030	3,541	3,265	2,856
2031	3,541	3,265	2,856
2032	3,541	3,265	2,856
2033	3,541	3,265	2,856
2034	3,541	3,265	2,856
2035	3,541	3,265	2,856
2036	3,541	3,265	2,857
CAGR			
'17-'21	0.00%	0.00%	0.00%
'17-'26	0.00%	0.00%	0.00%
'17-'36	0.00%	0.00%	0.00%

Sources: Passero Associates. FAA OPSENT using 2003- 2016 data

3.4.1. Operations per Based Aircraft (OPBA)

To check the reasonableness of the general aviation forecasts, not including military and air carrier and air taxi, the Operations per Based Aircraft (OPBA) were reviewed for the historic period. The data is provided below in **Table 3-26**.

Table 3-26. General Aviation Operations per Based Aircraft

YEAR	TOTAL OPERATIONS	BASED AIRCRAFT	OPBA
2005	113,717	323	352
2010	91,050	256	355
2015	117,759	210	561
2016	129,606	216	600

Sources: General Aviation Operations & Based Aircraft from TAF through 2015, 2016 numbers from Airport management. Passero Associates

Based on historic values, the operations per based aircraft have increased significantly over the years. FAA *Order 5090-3C – Field Formulation of the National plan of Integrated Airport Systems (NPIAS)* presents guidelines for typical OPBA values for different types of airports. **Table 3-27** lists different OPBA forecasts. The range of 450 OPBA for busier reliever airports, up to 750 OPBA for airports with a high level of itinerant operations are typical. The current levels of 600 OPBA are within these ranges; however, based on the second meeting with the MPAC on June 21, 2017, the Committee believed that 600 OPBA is skewed and shouldn't be used.

Table 3-27. Operations per Based Aircraft Comparison

YEAR	FAA NATIONAL FORECAST	FL MARKET SHARE	REGIONAL MARKET SHARE	NATIONAL MARKET SHARE	FASP
2017	594	590	567	594	598
2021	564	556	546	554	585
2026	532	520	502	511	572
2031	502	488	461	473	560
2036	472	456	425	437	546
Average	533	522	500	514	572

Sources: Table 3-21 for operations, Table 3-18 for based aircraft. OPBA is total operations divided by based aircraft. Passero Associates

3.4.2. Selection of Preferred General Aviation Operational Forecast

The FASP methodology percent share is selected as the preferred alternative for general aviation operations. The forecasts of air carrier and air taxi operations will be added to these general aviation operational forecasts to provide an overall level of anticipated forecasts for SGJ over the planning horizon.

Based on discussion from the second meeting with the MPAC on June 21, 2017, the Committee found the GA operations forecast from the FASP to be the most reasonable; therefore, the FASP GA operations forecast was chosen as the preferred GA operations forecast.

Table 3-28 presents the preferred operational forecast for cardinal forecast years.

Table 3-28. Preferred Forecast of General Aviation and Military Operations

YEAR	FORECASTED GA OPERATIONS	FORECASTED MILITARY OPERATIONS	TOTAL FORECASTED OPERATIONS
2017	131,602	3,265	134,867
2021	139,898	3,265	143,163
2026	151,007	3,265	154,272
2031	162,998	3,265	166,263
2036	175,941	3,265	179,206

Sources: Passero Associates, Master Plan Technical Advisory Committee

3.4.3. Other Operational Projections

Airport Utilization Forecast - Local/Itinerant Split

The level of local and itinerant operations at an airport can influence a variety of facility recommendations to include such things as hangar and apron space considerations. A local operation is one that is conducted within the airport traffic pattern or stays within 20 miles of the takeoff airport without landing anywhere else. Typically, local general aviation operations are associated with training activities and flight instruction; while itinerant operations are arrivals and departures other than local operations performed by either based or transient aircraft, and that do not remain in the traffic pattern. Per FAA OPSNET and FAA TAF information all commercial airline and air taxi are considered itinerant operations. Utilizing this information, **Table 3-29** provides local/itinerant split applied to the operations forecast method.

Table 3-29. Utilization Forecast – Local vs. Itinerant by Type

	ITINERANT (50.5%)								LOCAL (49.5%)				
YEAR	AIR CARRIER	% TOTAL	AIR TAXI	% TOTAL	GA	% TOTAL	MIL	% TOTAL	GA	% TOTAL	MIL	% TOTAL	TOTAL
2017	300	0.21	8,519	5.9	61,427	42.8	2,315	1.6	70,175	48.8	950	0.66	143,686
2021	851	0.55	10,641	6.9	64,294	41.6	2,315	1.5	75,604	48.9	950	0.61	154,655
2026	1,164	0.69	13,294	7.9	68,436	40.6	2,315	1.4	82,571	48.9	950	0.56	168,730
2031	1,478	0.80	15,947	8.7	73,022	39.8	2,315	1.3	89,976	49.0	950	0.52	183,688
2036	1,791	0.90	18,600	9.3	78,090	39.1	2,315	1.2	97,851	49.0	950	0.48	199,597

Sources: Passero Associates and Volaire, Historic Local vs itinerant Split

Table 3-30 presents operations by fleet mix, with the percentage of fleet mix obtained from the FAA Aerospace Forecast years 2016-2036. Multiplying the total operations by the percentage per fleet mix yields the number of operations per fleet type.

Table 3-30. Operations by Fleet Mix

YEAR	SE	% TOTAL	ME	% TOTAL	JET	% TOTAL	HELI	% TOTAL	OTHER	% TOTAL	TOTAL
2017	88,080	61.3	15,949	11.1	8,765	6.1	7,328	5.0	23,565	16.4	143,686
2021	91,710	59.3	16,703	10.8	10,362	6.7	8,970	5.8	26,910	17.4	154,655
2026	96,007	56.9	18,392	10.9	12,655	7.5	10,799	6.4	30,878	18.3	168,730
2031	99,559	54.2	20,389	11.1	15,613	8.5	12,858	7.0	35,268	19.2	183,688
2036	102,593	51.4	22,954	11.5	19,161	9.6	15,169	7.6	39,720	19.9	199,597

Sources: SE = single engine; ME = multi-engine, Heli = helicopter, Other = military, gliders, and ultralights
FAA Projected National Active Fleet Mix (FAA Aerospace Forecast Fiscal Years 2016 2036 for percentage, for operations

3.4.3.1. Seaplane Ramp Operations

Seaplane operations can be conducted by local or itinerant operations. There is a seaplane aircraft based at the airport. In addition to aircraft operations Northrup Grumman use the seaplane ramp for barge activities when they ship their aircraft overseas to Asia. Information from Northrup Grumman indicates that the use of the seaplane ramp for barge activity is limited, and contingent to military contracts. Because of the uncertainty of the military contracts, Northrup Grumman's use of the seaplane ramp is not included in the forecasts. Discussions with air traffic control indicate that seaplane operations are very limited and included in the general aviation numbers identified in the FAA OPSNET information, and is not collected individually. There is no reliable information to use to ascertain the number of seaplane ramp operations, and thus there are no individual forecasts prepared for it.

3.4.3.2. Peaking Characteristics

Annual projections provide a good overview of activity at an airport but fail to reflect operational characteristics of the facility. In many cases, facility requirements are not driven by annual demand, but rather by the capacity shortfalls and delays experienced during times of peak operational activity. Therefore, forecasts are developed for the peak month, the average day in the peak month, and the peak hour of the peak day. The values for these metrics were calculated using the methodology in FAA Advisory Circular 150/5360-13, *Planning and Design Guidelines for Airport Terminal Facilities*. Peak month calculations are based on historic OPSNET records for peak day reports. Specifically, peak hour operations, depicted in **Table 3-31**, were calculated using the following approach:

- **Peak Month Operation:** This level of activity is defined as the calendar month when peak aircraft operations occur, assuming 10% increase of total annual operations within that month.
- **Average Day/Peak Month:** This level of operation is defined as the average day within the peak month determined by dividing peak month operations by number of days within the peak month (in this case 31, based on historic OPSNET peak reports, the peak months has been in March).
- **Peak Hour Operation:** This level of operation is defined as the peak hour within the design day, assuming 15% of daily operations in the design hour.
- **Peak Hour Passengers:** Using 2.5 people, for pilots and passengers, per design hour operation for general aviation, is used to develop an understanding of the demand on facilities such as passenger terminals, auto parking, restrooms, meeting space, etc. (refer to ACRP 113)

Table 3-31. Peak Hour General Aviation Operations

YEAR	ANNUAL OPERATIONS	PEAK MONTH	PEAK DAY	DESIGN HOUR			PEAK HOUR PASSENGERS
				LOCAL	ITINERANT	TOTAL	
2017	131,602	12,064	389	31	28	59	146
2021	139,898	12,824	414	33	29	62	155
2026	151,007	13,842	447	35	32	67	167
2031	162,998	14,941	482	38	34	72	181
2036	175,941	16,128	520	41	37	78	195

Source: Passero Associates

3.4.3.3. Annual Instrument Approaches

The Airport has several published instrument approach procedures to both runway 13 and 31. The FAA historic OPSNET information was referred to for the number of IFR versus VFR operations that were handled at the airport. The historical average from 2003-2016 data indicates that IFR operations account for 12.6% of total operations. All air carrier operations are instrument operations, but air taxi and general aviation are subject to the IFR operations percentage. To arrive at annual instrument operations, air carrier operations were subtracted from total operations, and the difference was multiplied by the IFR operations factors, then total air carrier operations were added in.

An instrument approach is equivalent to ½ total instrument operations. **Table 3-32** identifies the projected number of instrument approaches across the cardinal forecast years. All air carrier arrivals are counted as instrument approaches.

Table 3-32. Projection of Annual Instrument Approaches

YEAR	AIR CARRIER OPERATIONS	TOTAL OPERATIONS LESS AIR CARRIER	ANNUAL INSTRUMENT OPERATIONS	ANNUAL INSTRUMENT APPROACHES
2017	300	143,386	18,367	9,183
2021	851	153,804	20,230	10,115
2026	1,164	167,566	20,277	11,139
2031	1,478	182,210	24,436	12,218
2036	1,791	197,806	26,715	13,357

Sources: OPSNET IFR operations as percentage of total operations. All air carrier operations are instrument, but air taxi may be either instrument of visual. Passero Associates

3.6. Forecast Summary

Table 3-33 below presents a summary of aviation demand forecasts for SGJ for the 2017 through 2036 planning horizon as discussed in the preceding sections.

Table 3-33. Summary of Preferred Forecasts

ELEMENT	FORECAST YEAR					
BASED AIRCRAFT	**2016**	**2017**	**2021**	**2026**	**2031**	**2036**
SINGLE ENGINE	155	158	172	190	209	231
MULTI ENGINE	24	25	27	29	32	35
JET	17	17	19	21	23	26
HELICOPTER	5	5	5	6	7	7
MILITARY	12	12	13	14	16	18
OTHER	3	3	3	4	4	5
TOTAL	216	220	239	264	291	322
ANNUAL OPERATIONS: TOTAL	141,398	143,686	154,655	168,730	183,688	199,597
COMMERCIAL	327	300	851	1,164	1,478	1,791
AIR TAXI	8,472	8,519	10,641	13,294	15,947	18,600
MILITARY	2,993	3,265	3,265	3,265	3,265	3,265
GENERAL AVIATION	129,606	131,602	139,898	151,007	162,998	175,941
AIRCRAFT OPERATIONS SPLIT	141,398	143,686	154,655	168,730	183,688	199,597
LOCAL	69,709	71,125	76,554	83,521	90,926	98,801
ITINERANT	71,689	72,561	78,101	85,209	92,762	100,796
ENPLANED PASSENGERS	28,140	10,099	45,017	61,595	78,172	94,750
GENERAL AVIATION DESIGN HOUR OPERATIONS	58	59	62	67	72	78
GENERAL AVIATION DESIGN HOUR PILOTS/PASSENGERS	145	146	155	167	181	195

Source: Passero Associates

3.8. Comparison to FAA Terminal Area Forecast

If an airport is included in the FAA Terminal Area Forecasts, any new aviation activity forecast needs to be reviewed and approved by the agency before they can be applied to further analyses. During this review, the FAA looks to see if the based aircraft and annual operations forecast differ from the TAF by less than ten percent in the first five-year period and 15 percent in the first 10-year period.

The FAA's Orlando District Office (ADO), and Florida Department of Transportation, reviewed these forecasts, and the FAA forecast approval was received on September 22, 2017 (see **Appendix E**). **Table 3-34** compares each for both based aircraft and operations.

Table 3-34. FAA Comparison Forecast

	BASED AIRCRAFT			AIRPORT OPERATIONS		
	AMPU FORECAST	TAF FORECAST	% DIFFERENCE	AMPU FORECAST	TAF FORECAST	% DIFFERENCE
2016	216	216	0.0%	141,398	140,581	0.6%
2017	220	221	-0.5%	143,686	145,820	-1.5%
2021	239	242	-1.2%	154,655	149,574	3.4%
2026	264	273	-3.3%	168,730	154,450	9.2%
2031	291	303	-4.0%	183,688	159,533	15.1%
2036	322	335	-3.9%	199,597	164,837	21.1%

Source: Passero Associates.

3.9. Design Aircraft

Review of FAA Traffic Flow Management System Counts (TFMSC) data from 2016 for SGJ, determined that each runway serves a different class of aircraft. For planning purposes, the design aircraft, or class of aircraft, serving the runways have been defined as: Runway 13-31: C/D-III, Runway 6-24: B-I-Small and Runway 2-20 B-I-Small. Detailed information about the design aircraft and design standards will be discussed in the following chapters. The overall Airport Reference Code (ARC) is the highest critical demand aircraft for the airport, in this case the Boeing 737.

NFRA
Northeast Florida Regional Airport
Fly Smart!

Chapter Four

Demand/Capacity Analysis & Facility Requirements

4. DEMAND/CAPACITY ANALYSIS & FACILITY REQUIREMENTS

When airport owners/sponsors accept funds from the FAA's financial assistance programs they agree to certain obligations (or assurances) which require their facilities to operate in a safe and efficient manner, and to accommodate existing and future demand. In that regard, the previous chapters have described existing facilities at Northeast Florida Regional Airport (SGJ) and forecasted aviation demand of future growth in activity. This information is pivotal in determining the facility requirements needed to meet the projected demand for both airside and landside areas of the Airport.

FAA Advisory Circular (AC) 150/5060-5 *Airport Capacity and Delay* will be referenced to determine the adequacy of total airfield capacity, along with FAA ACs 150/5300-13A *Airport Design* and 150/5324-4C *Runway Length Requirements for Airport Design,* to determine if existing airfield geometries and runway length requirements will meet existing and future demand by the critical aircraft. In addition, landside requirements and multi-modal requirements will also be analyzed for SGJ.

Table 4-1 lists facility recommendations from the previous master plan, with the completed recommendations crossed-out in red.

Table 4-1. Summary of Facility Recommendations from SGJ 2005 Master Plan Update

RUNWAYS	**1. Undertake needed improvements to increase the overall ASV.** ~~**2. Provide a primary runway length of 8,000 feet.**~~ ~~**3. Provide 25-foot paved shoulders on Runway 13-31.**~~ ~~**4. Consider grooving Runway 13-31.**~~ ~~**5. Construct blast pads (200 feet x 200 feet) on both ends of Runway 13-31.**~~ ~~**6. Undertake RSA improvements for Runways 20, 24, and 31.**~~ **7. Provide a B-II crosswind runway with a minimum length of 3,060 feet.** **8. Rehabilitate Runway 2-20/Taxiway A-4 east of Runway 13-31.** **9. Conduct routine pavement maintenance on all runways.**
TAXIWAYS	1. Undertake needed improvement to increase the overall ASV. 2. Widen Taxiway A-2 to 75 feet. ~~3. Extend Taxiway B (Phase II) from Runway 6-24 to the Runway 31 pavement end.~~ ~~4. Widen Taxiway B north of Taxiway B-2.~~ ~~5. Provide the appropriate OFA clearances along Taxiway B-2.~~ ~~6. Increase Taxiway B pavement strength to accommodate Design Group IV aircraft.~~ 7. Provide a designated run-up area at each runway end. 8. Conduct routine pavement maintenance on all taxiways.
AIRFIELD FACILITIES	1. Implement a non-precision or better approach on a crosswind runway. ~~2. Install an approach lighting system to Runway 31.~~ 3. Improve signage at the intersection of Runways 13-31 and 2-20. ~~4. Periodic remarking of all airfield pavements.~~ 5. Install PAPIs on designated crosswind runway. 6. Relocate existing wind cone or install new ones along Runway 13-31.
AIRIFIELD SUPPORT FACILITIES	1. Upgrade security fencing to current Part 139 standards. 2. Install a self-serve Jet A fuel tank for corporate hangar tenants. ~~3. Construct an onsite ARFF facility.~~

COMMERCIAL PASSENGER FACILITIES	~~1. Construct commercial passenger terminal (approximately 24,000 SF)~~ **2. Construct 12,750 SY aircraft apron.** **3. Provide 698 parking spaces (public, employee, and rental car).**
SEAPLANE BASE	1. Provide life preservers, tow rope, and motorized boat. 2. Provide appropriate signage regarding water depths. 3. Construct access road to the facility. 4. Construct a self-fueling station. 5. Construct aircraft storage (apron/moorings/dockings) to accommodate 8 to 30 seaplanes.
GENERAL AVIATION FACILITIES	~~1. Construct at least 48 t-hangar units.~~ ~~2. Construct 8 corporate or clearspan hangars.~~ ~~3. Construct approximately 4,250 SF of additional GA terminal space.~~ 4. Add at least 158 vehicle parking spots at GA terminal. 5. Construct at least 31,880 SY of additional aircraft storage apron.

Source: LPA Group, 2005, Passero Associates

4.1. Airfield Demand/Capacity Analysis

The purpose of the airfield demand/capacity analysis is to determine when operational demand exceeds airport capacity during the planning period. Airfield improvements may be required for SGJ in order to ensure that operational capacity meets future demand. To aid the completion of this analysis, the most current version of the FAA Advisory Circular (AC) 150/5060-5 *Airport Capacity and Delay* was used. The results of this analysis are defined in the sections below.

4.1.1. Airfield Capacity

An analysis is performed which considered meteorological conditions, airfield configuration, frequency of touch-and-go operations, and aircraft fleet mix. These factors are used to generate capacity calculations during periods of both visual and instrument meteorological conditions. Furthermore, these allow the airfield capacity to be expressed in terms of the annual service volume of the runway system.

4.1.1.1. Operating Characteristics

Each of the characteristics described below have impacts on how aircraft operate to and from the runway environment. For the capacity analysis, each characteristic was based on a typical day at the airport, given the current physical features.

Airfield Configuration

The number of runways at airports, along with the orientation of those runways, determine the number of arrivals and departures that occur within an hour. For example, parallel runways can allow for simultaneous arrivals and departures, whereas operations are restricted on intersecting runways when one of the runways is in use. SGJ has three runways (i.e., Runways 13-31, 2-20 and 6-24) that intersect. The orientation of these runways combined provides the required 95% wind coverage; however, not all aircraft that use SGJ have adequate wind coverage on one runway. Aircraft with a runway design code (RDC) of A/B-I and A/B-II would not have adequate wind coverage without a second runway. Therefore, SGJ requires a primary and cross-wind runway to provide adequate wind coverage to aircraft operating at the Airport.

Runways 6-24 has a partial parallel taxiway, connecting from Runway 6 end to Taxiway B. Taxiway A, is a partial parallel taxiway on the east side of Runway 13-31, while Taxiway B is a full-length parallel taxiway to Runway 13-31. The extension of Taxiway B to Runway 31 end improved airfield capacity by allowing aircraft to taxi directly to the end of Runway 31 for departure operations.

Aircraft Mix Index

The operational fleet influences an airfield's capacity based upon differing aircraft requirements. As an aircraft's size and weight increase, operational capacity decreases, mainly due to separation criteria. Therefore, the hourly runway capacity decreases as the fleet index increases. Therefore, aircraft classifications are used to determine the mix index, which is a component used in calculating the airfield capacity elements. The mix index is broken down into classes (i.e., Class A, B, C, and D aircraft) based on maximum takeoff weight, number of engines and wake turbulence classification. **Table 4-2** shows the aircraft class based on each of the characteristics mentioned.

Table 4-2. Aircraft Classification

Aircraft Class	Max. Cert. T.O. Weight (lbs.)	Number Engines	Wake Turbulence Classifications
A	12,500 or less	Single	Small (S)
B		Multi	
C	12,500-300,000	Multi	Large (L)
D	Over 300,000	Multi	Heavy (H)

Source: AC 150/5060-5 Table 1-1

It should be noted that these capacity classes differ from the Aircraft Approach Categories described in subsequent sections of this chapter.

In the FAA calculations, Class C and D aircraft are used to determine the aircraft mix index, defined as %(C+3D). A detailed review of the FAA Traffic Flow Management System (TFMSC) data for 2016 was completed to determine the aircraft fleet mix for SGJ. Based on this research there were no aircraft greater than 300,000 pounds using the airport, thus the fleet mix calculation is comprised of Class C aircraft only. From the forecasts prepared in Chapter 3 of this Master Plan, the following assumptions were applied to the fleet mix:

- 100 % Air Taxi Operations
- 100% Commercial Operations
- 100% Military Operations
- 25% General Aviation Operations

Percentage of Touch-and-Go Operations

Students from the flight schools routinely practice takeoff and landings by performing touch-and-go operations. These operations involve an aircraft landing, then immediately taking off again without coming to a complete stop. These training exercises take less time to perform than normal arrival operations; therefore, touch-and-go operations at SGJ have minimal impact on hourly runway capacity.

Throughout the planning period, it is projected that SGJ will have up to 40% touch-and-go operations.

Percentage of Aircraft Arrivals

Arriving aircraft occupy runways longer than departing aircraft; therefore, as arrival operations increase, runway capacity decreases. At SGJ, the percentage of existing aircraft arrivals are anticipated to be 50% throughout the planning period.

Meteorological Conditions

Operations conducted when the cloud ceiling is greater than 1,000 feet above ground level and visibility is at least three statute miles operate under Visual Flight Rules (VFR). Instrument flight conditions occur when ceiling cloud height is less than 1,000 feet and/or visibility less than three statute miles.

During instrument conditions only Runway 13-31 is equipped with the necessary instrumentation. As weather conditions deteriorate, pilots must rely on instruments to define their position both vertically and horizontally. Capacity is reduced during such conditions because aircraft are spaced further apart when they cannot see each other. Using the meteorological data collected from 2003-2016, the St. Augustine area experiences VFR conditions approximately 87.4 percent of the time, and IFR conditions approximately 12.6 percent of the time.

4.1.1.2. Airfield Geometry and Operating Configuration

The FAA methodology for capacity analysis involves a step-by-step process that addresses the factors discussed above. From these factors, various measures of the airfield's capacity can be determined, including the hourly capacity of the runways and the annual service volume.

While the airport has three runways, discussions with air traffic control personnel indicate most operations occur on Runway 13-31, with some occurring on Runway 6-24 and Runway 2-20 when a special request is made. Because of the "hot-spot" issue at Runway 2-20 and the terminal apron intersection, this runway is infrequently used for takeoff and landing operations. During IFR conditions Runway 13-31 is used 100% of the time due to lack of instrumentation on the other runways. Applying the runway alignment choices from AC 150/5060-5, *Airfield Capacity and Delay*, the layout of two intersecting runways was used to obtain the airfield capacity, defined as the maximum number of operations that the airfield can accommodate in one hour.

Applying the fleet mix methodology, the percent of Class C aircraft, yields a fleet mix of 21 to 50 percent for the intersecting runway configuration illustrated in AC 150/5060-5, which equates an estimated annual service volume of 200,000 operations per year. The resulting hourly capacity is 77 operations per hour under VFR conditions and 57 operations per hour under IFR conditions. Based on the forecasted increase in air taxi and commercial service operations over the planning period, the proposed fleet mix will remain in the range of 21 to 50 percent, thus, the ASV will remain at 200,000 annual operations.

4.1.1.3. Aircraft Delay

AC 150/5060-5 *Airport Capacity and Delay,* defines delay as the difference between constrained and unconstrained operating time. To that regard, the average anticipated delay is based on the ratio of the forecasted demand to the calculated ASV.

Annual aircraft delay is expressed in minutes per aircraft operation and can guide an airport's ability to accommodate projected aircraft operations. The relationship between the ratio of annual demand and the average annual aircraft delay is shown in **Table 4-3,** as obtained from AC 150/5060-5.

Table 4-3. Ratio of Annual demand to annual Service Volume

Ratio of Annual Demand to Annual Service Volume	Estimated Average Annual Aircraft Delay (Minutes per Operation)
0.1	-
0.2	0.1
0.3	0.2
0.4	0.3
0.5	0.4
0.6	0.5
0.7	0.7
0.8	0.9
0.9	1.4
1.0	2.4

Source: AC 150/5060-5, Airport Capacity and Delay, Figure 2-2

The percent at which an airfield is operating can be shown by comparing the calculated ASV to the existing or forecast level of operations. The average annual aircraft delay is shown based on the ratio of the annual demand to the annual service volume, as shown in **Table 4-4**.

Table 4-4. Airfield Capacity Levels and Delay

Year	Annual Demand	Annual Service Volume	Ratio of Demand to ASV	Estimated Delay (Minutes per Operations) Low	Estimated Delay (Minutes per Operations) High	Estimated Delay (Minutes per Operations) Average
2016	141,398	200,000	0.71	0.3	1.1	0.7
Forecast						
2017	143,686	200,000	0.72	0.3	1.1	0.7
2021	154,655	200,000	0.78	0.4	1.4	0.9
2026	168,730	200,000	0.87	0.5	1.7	1.1
2031	183,688	200,000	0.92	0.7	2.2	1.5
2036	199,597	200,000	1.00	1.0	3.5	2.3

Source: Passero Associates, AC 150/5060-5 Calculations

Airfield Demand/Capacity Summary

FAA Order 5090.3B, "*Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)*," recommends airport capacity improvement planning start when aircraft activity reaches 60 to 75 percent of an airport's airfield capacity.

Currently, Northeast Florida Airport (SGJ) is operating at 70% of its ASV. Over the planning period the ASV will reach approximately 100%. When aircraft capacity reaches 100% of its ASV, significant operational/aircraft delays are expected. Alternative analysis should consider how to address the capacity issue.

Recommendation:

- Examine alternatives to increase airfield capacity and ASV.

4.2. Airfield Facility Requirements

This section identifies deficiencies and compares projected demand to operational capacity to identify shortfalls. Various aforementioned FAA ACs were used to help determine these deficiencies. The sections below will provide an analysis of requirements for runways, taxiways, airfield facilities, airport support facilities, commercial passenger terminal, sea plane base, and general aviation facilities.

4.2.1. Airport Classification

In accordance with FAA Order 5090.3C, *Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)*, dimensional standards (such as runway length and width, separation standards, surface gradients, etc.) are needed for the critical aircraft that will make substantial use of the airport in the 20-year planning period. Substantial use is defined as 500 or more annual itinerant operations (or 250 arrivals or departures), or scheduled commercial airline service. The critical aircraft may be a single aircraft or a composite of the most demanding characteristics of several aircraft. As identified in FAA AC 150/5300-13A, *Airport Design,* airport design standards provide basic guidelines for safe, efficient, and economic airport systems. Design standards are comprised of two components - Aircraft Approach Category (AAC) and Airplane Design Group (ADG). These classifications are defined below in **Tables 4-5** and **4-6.**[7]

Table 4-5. Aircraft Approach Category (AAC)

AIRCRAFT APPROACH CATEGORY	APPROACH SPEED
A	Approach speed less than 91 knots
B	Approach speed 91 knots or more but less than 121 knots
C	Approach speed 121 knots or more but less than 141
D	Approach speed 141 knots or more but less than 166 knots
E	Approach speed 166 knots or more

Source: FAA AC 150/5300-13A, Table 1-1

Table 4-6. Airplane Design Group (ADG)

GROUP #	TAIL HEIGHT (FT)	WINGSPAN (FT)
I	<20 feet	<49 feet
II	20 feet - <30 feet	49 feet - < 79 feet
III	30 feet - < 45 feet	79 feet - < 118 feet
IV	45 feet - < 60 feet	118 feet - < 171 feet
V	60 feet - < 66 feet	171 feet - < 214 feet
VI	66 feet - < 80 feet	214 feet - < 262 feet

Source: FAA AC 150/5300-13A, Table 1-2

A runway design code (RDC) is comprised of an aircraft approach category (AAC) and airplane design group (ADG). For example, an RDC of D-IV represents an aircraft with an approach speed of 141 knots but less than 166 knots, with a wingspan between 45 feet but less than 60 feet.

At SGJ, Runway 13-31 is the longest runway, with Runway 6-24 and 2-20 as the second and third longest runways, respectively. **Table 4-7** lists sample aircraft that can use Runway 13-31, obtained from 2016 FAA TFMSC data.

[7] A grouping of aircraft based on a reference landing speed (V_{ref}), if specified, or if V_{ref} is not specified, 1.3 times stall speed (V_{so}) at the maximum certificated landing weight is defined as the Aircraft Approach Category (AAC). A classification of aircraft based on wingspan and tail height is defined as the Aircraft Design Group (ADG).

Table 4-7. Aircraft Types using Runway 13-31

TYPE	RDC
GA/COMMERCIAL SERVICE AIRCRAFT	
AIRBUS A319, A320	C-III
BOEING 737-700	C-III
BOEING 757--200	D-IV
BOMBARDIER CHALLENGER 300/600/601/602	C-II
BOMBARDIER GLOBAL EXPRESS	B-III
CESSNA CITATION X	C-II
GULFSTREAM G200	C-II
GULFSTREAM G300	C-II
GULFSTREAM G400	D-II
GULSTREAM G500	D-III
HAWKER 800	C-II
MILITARY AIRCRAFT (AT NORTHRUP GRUMMAN)	
LOCKHEED 130 HERCULES	C-IV
E-2 HAWKEYE	B-III
NORTHRUP F-5 FREEDOM FIGHTER	E-I
BOEING POSEIDON	*-IV

Source: FAA AC 150/5300-13A, Table 1-2

Runway 13-31 is the only runway with sufficient length to accommodate small business jet aircraft, commercial aircraft and large military aircraft manufactured/serviced by Northrup Grumman.

For civil operations, Runway 13-31 accommodates C-III aircraft, with the Boeing 737 as the critical aircraft. Aircraft with similar characteristics, such as the Gulfstream G500 utilizes the airport. Although the G500 has an RDC D-III standard, D-III and D-IV standards are the same; therefore, a Boeing 757 (D-IV) is recommended as the **ultimate** critical aircraft for the Airport.

Figure 4-1. Runway 13-31 Critical Aircraft - B737

Because Northrup Grumman is a tenant at the airport, and given the uncertainty of the government contracts, it is recommended that Runway 13-31 remain at the existing design standards to accommodate potential future needs.

In the past, Runways 6-24 and 2-20 have been designed to RDC B-I/ small standards, for aircraft weighing less than 12,500 pounds. The existing dimensions of Runway 6-24 is 2,701 feet x 60 feet, and Runway 2-20 has the dimensions of 2,609 feet x 75 feet. **Table 4-8** is a sample list of aircraft that may use Runway 6-24 or 2-20.

Table 4-8. Aircraft Types using Runway 6-24 & 2-20

TYPE	RDC	WEIGHT	TOTAL OPERATIONS
BEECH 200 SUPER KING *	B-II	12,500	930
BEECH SUPER KING AIR 350	B-II	15,000	281
BEECH BEECHJET 400T	B-I	15,780	493
BEECH BONANAZA 35/36	A-I	3,400	238
BEECH BARON 50	A-I	6,000	150
BEECH 58	B-I	5,500	111
BEECH KING AIR 90	B-II	10,900	110
CESSNA 182	B-I		180
CESSNA 172 *	A-I		2,743
CIRRUS SR-20, SR-22	A-I	3,000	811
MOONEY M-20	A-I	2,450-3,368	130
PILATUS PC-12	A-II	10,450	529
PIPER CHEROKEE (PA-28)	A-I	2,150	665
PIPER CHEROKEE SIX (PA-32)	A-I		132
PIPER MALIBU MERIDIAN (P46T)	A-I	6,000	203
PIPER SEMINOLE (PA-44)	A-I	3,800	133
SOCATA TBM-850	B-I	7,400	100
Sources: FAA TFMSC 2016. RDC and weight from FAA Characteristics Database			

Figure 4-2. Runway 2-20 Existing and Forecasted Critical Aircraft - Cessna 172

Figure 4-3. Runway 6-24 Forecasted Critical Aircraft - Beech 200 Super King Air

Table 4-9 identifies the recommended RDC, and critical aircraft for each runway.

Table 4-9. Proposed Design Standards by Runway/Critical Aircraft

RUNWAY	EXISTING RDC	ULTIMATE RDC	EXISTING CRITICAL AIRCRAFT
13-31	C-III	D-IV	Boeing 737
6-24	B-I	B-II	Beech 200 Super King
2-20	A/B-I/Small	A/B-I/Small	Cessna 172

Sources: Forecast: FAA TFMSC data 2016

Wind Coverage

The FAA recommends that a runway provide 95% wind coverage. When a primary runway doesn't provide the 95% wind coverage on its own, a crosswind runway is considered and eligible for funding, per the FAA Airport Improvement Handbook. Runway 13-31 has a wind coverage of 89.64% for the existing RDC of B-I (10.5 knots) and 94.05% for proposed RDC of B-II (13 knots). Neither provide the recommended 95% wind coverage thus, a crosswind runway should be available for the smaller aircraft that are not able to operate while a strong crosswind component is present. Note that there are two additional runways available as crosswind runways, and only one is needed to provide the 95% wind coverage. Under current FAA guidance, only one crosswind runway will be funded under AIP funding.

Recommendations:

- Maintain one crosswind runway.

4.2.2. FAR Part 139 Certification

FAR Part 139 requires the FAA to issue airport operating certificates to airports that: (1) serve scheduled and unscheduled air carrier aircraft with more than 30 seats; or (2) serve scheduled air carrier operations in air carrier aircraft with more than 9 seats but less than 31 seats. SGJ is a FAR Part 139 certificated airport. SGJ is classified as a Class I airport, defined as an airport serving all types of scheduled operations of air carrier aircraft designed for at least 31 passenger seats and any other type of air carrier operations. In 2017, Frontier Airlines provided daily service to different destinations from SGJ using Airbus A320 aircraft and ViaAir provided service using Embraer ERJ 145 and ERJ 120 aircraft. In 2018 Frontier ceased operations at SGJ.

In addition to scheduled airline service, a corporate aviation customer flies a Boeing Business Jet, which is equivalent to a Boeing 737.

As a condition of SGJ supporting passenger service, the Airport must also comply with 49 CFR Part 1542, security regulations, providing the safety and security of persons and property on an aircraft operating in air transportation. The Transportation Security Administration (TSA) maintains a presence at the airport during airline operations to meet this regulation. U.S. Customs for all international operations that may take place at the Airport, as identified earlier in this Master Plan.

4.2.3. Runway Design Criteria

This section discusses runway length, runway orientation, markings, and design standards criteria, including runway safety areas, object free areas, object free zones, protection zones and visibility zones. Runway 13-31 is the primary runway, and designed to RDC D-IV standards, while both crosswind Runway 2-20 and Runways 6-24 are currently designed to RDC B-I/small standards. It should be noted that AAC category C/D share the same design standards for ADG III and IV.

4.2.3.1. Runway Length Requirements

Utilizing the similar characteristics of the aircraft using the airport, based on 2016 TFMSC data, FAA AC 150/5325-4B *Runway Length Requirements for Airport Design* was referenced to determining runway length. This AC outlines procedures to determine recommended runway lengths for a selected list of critical design aircraft. It is important to note that the findings are to be used for airport design only. The critical elements and findings will be presented below:

At SGJ, the primary runway length required was determined based on the following conditions:

- Airport Elevation 10 feet
- Mean Daily Maximum Temperature of the Hottest Month 91.9°F
- Maximum Difference in Runway centerline Elevation 4 feet

For the primary Runway 13-31, a runway length analysis was performed. General aviation is based on the various business jet aircraft that use the airport.

Military Operations at Northrup Grumman (A Civilian Contractor)

Northrup Grumman is a tenant at the airport providing military aircraft maintenance, repair and overhaul (MRO) services. Pursuant to their contracts, Northrup Grumman staff have indicated their contracts require a runway length of 8,000 feet to provide federal contract services on aircraft such as the T-38. The recommended runway lengths are sourced in National Aerospace Standards 3306, *Facility Requirements for Aircraft Operations*. The previous Master Plan recommended extending Runway 13-31 to 8,000 feet. The current runway length provides this length.

Northrup Grumman also performs retrofitting work on Boeing aircraft. Per the TFMSC data the Boeing 737 has used the airport. As this aircraft is over 60,000 pounds, the aircraft manufacturer's performance curves were analyzed. Various engine types are available for this aircraft. Each takeoff curve was examined for takeoff at maximum gross weight, for dry pavement, and adjusting it for runway differential, as required in the advisory circular, yields lengths 6,200 feet. It is assumed that these aircraft would not likely be operating at maximum takeoff weight because the aircraft would be flying into SGJ for retrofitting, and not carrying full loads. At reduced load factors the runway length is reduced. Therefore, the current length is adequate to meet this aircraft's demand.

Commercial Aircraft Analysis

The air carrier aircraft consist of Embraer 145 regional jets, CRJ 100, 200 & 701, and formerly the Airbus 319 and 320. The advisory circular requires that manufacturers performance manuals be reviewed for these aircraft. Assuming maximum gross takeoff weight, and an average mean temperature of 91.9°F, the Embraer 145 requires at least 6,900 feet; the CRJ 100, 200 and 701 requires 6,300 feet – 7,500 feet; and the Airbus 319 requires 6,400-7,500 feet:

The existing Runway 13-31 length is sufficient to meet this fleet of aircraft.

General Aviation Analysis

The general aviation fleet of aircraft is vast. The corporate aviation customer that flies a Boeing Business Jet (equivalent to a Boeing 737) aircraft were analyzed for Runway 13-31 length, while the smaller aircraft were reviewed for a crosswind-runway length.

The advisory circular provides guidance in Chapter 3 for business jet aircraft. Utilizing TFMSC data from 2016 and referencing the applicable tables and figures from AC 150/5325-4B yielded the following lengths:

Large airplanes of 60,000 pounds or less	
75 percent of these large airplanes at 60 percent useful load	4,700 feet
75 percent of these large airplanes at 90 percent useful load	6,900 feet
100 percent of these large airplanes at 60 percent useful load	5,500 feet
100 percent of these large airplanes at 90 percent useful load	8,200 feet

Source: FAA AC 5325-4B, Runway Length Requirements, Chapter 3

Since these aircraft are operating on the runway length currently at the airport (although the recommendation is for 8,200 feet for 100 percent of large aircraft) further analysis was completed for various aircraft using the airport. The aircraft manufacturers performance manuals were used to determine the runway length of these various aircraft, and are summarized below:

Aircraft	Published Manufacturer's Runway Length (dry, ISA, SL)	Density Altitude Adjustment X 1.14	Runway End Differential +40'	Recommended Runway Length for SGJ
Airbus A319	6,070'	6,920'	6,960'	7,000'
Boeing 737-700	5,700'	N/A	5,740'	5,800'
Boeing 757-200	7,900'	N/A	7,940'	8,000'
Bombardier Global Express	6,300'	7,182'	7,212'	7,200'
Bombardier Global 5000	5,450'	6,213'	6,253'	6,300'
Citation X	5,140'	5,860'	5,900'	5,900'
Gulfstream G200	6,083'	6,934'	6,974'	7,000'
Gulfstream G400	5,450'	6,213'	6,253'	6,300'
Gulfstream G500	5,150'	5,871'	5,911'	5,900'
Hawker 800	5,032'	5,736'	5,776'	5,800'

Sources: Manufacturer's Recommended Runway Lengths at ISA, SL; Boeing based on manufacturers FAR Takeoff Runway Length charts: B757 uses different engine types, length adjusted for average length; B737 based on performance chart adjusted for weight
Density altitude 7% increase per 1,000'. Density altitude for SGJ based on elevation and mean temp = 2,281 = 14% increase
Runway end differential is +10' for each foot differential. There is 4' differential from Runway 13-31 end, therefore add 40'.

This analysis determines that the existing primary runway length is enough to accommodate the critical aircraft.

Regarding the analysis for small general aviation aircraft, Chapter 2 of the AC 150/5325-4B was referenced. Based on the TFMSC data, and the recommendations in Chapter 2 of the AC, the following runways lengths were determined for small aircraft:

Small Airplanes with less than 10 passenger seats	
75 percent of these small airplanes	2,520 feet
90 percent of these small airplanes	3,100 feet
100 percent of these small airplanes	3,700 feet
Small airplanes with 10 or more passenger seats	4,200 feet

Source: FAA AC 5325-4B, Runway Length Requirements, Chapter 3

This analysis concludes that a crosswind runway should have a length of at least 3,700 feet to accommodate the smaller general aviation aircraft. The airplanes with 10 or more passenger seats are likely to use Runway 13-31.

Charts and explanations from the runway length analysis is included in **Appendix F**.

Recommendation:

- Maintain Runway 13-31 at minimum 8,000 feet in length.
- Extend a crosswind runway to at least 3,700 feet in length.

4.2.3.3. Runway Width

Based on the FAA 150/5300-13A, *Airport Design*, runway width standards are based on the RDC and approach visibility minimums. The width requirements have a margin of error factored in which account for wind effects during runway takeoff and landing operations. Runway 13-31 has a runway width of 150 feet, which meets D-IV requirements.

Runway 6-24 is 60 feet wide meeting existing standards, but not the proposed RDC B-II standards of 75 feet. Runway 2-20 is 75 feet wide because it is primarily used for aircraft taxiing operations from the commercial service terminal and FBO area between Taxiway B and Runway 13-31. In terms of width, Runway 2-20 meets the proposed RDC B-II standards.

Recommendation:

- Maintain Runway 13-31 width at 150 feet.
- For extended crosswind runway, upgrade width to 75 feet.

4.2.3.4. Runway Shoulders

Based on Appendix III of AC 150/5300-13A, *Airport Design*, paved shoulders are required for runways, that serve ADG IV aircraft. Runway shoulders should provide erosion protection from jet blasts and should also have enough strength to accommodate occasional aircraft taxi operations, and emergency vehicles that may travel on them during dry conditions. ADG I and II runways should have stabilized shoulders in the form of turf or stabilized soil. Each runway meets the shoulder design standards. However, as pavement and marking wear, rehabilitation will be necessary.

Recommendation:

- Rehabilitate pavement and markings as needed on Runway 13-31.

4.2.3.5. Blast Pads

Based on FAA AC 150/5300-13A, *Airport Design*, runway blast pad width and length requirements are based on RDC, and approach visibility minimums. Paved runway blast pads are required on runways that are designed to ADG IV or higher aircraft, otherwise blast pads can be in the form of turf or stabilized soils for ADG I and II aircraft. Runway blast pads provide blast erosion protection beyond runway ends during jet aircraft operations.

Only Runway 13-31 has paved blast pads. The blast pad should measure 200 feet in length. The pad prior to Runway 13 end is truncated in the northwest corner because of a major electrical trunk line. No changes are recommended. As pavement and marking wear, rehabilitation will be necessary.

Recommendation:

- Rehabilitate pavement and markings as needed.

4.2.3.6. Runway Pavement Strength and Condition

TFMSC data was reviewed against the published weights, shown earlier in **Table 2-2.** The runways pavement strength is in excess of the weight of the design aircraft for each runway, and all runway pavements are in good condition. **Table 4-10** shows the condition of each runway, the year it was last rehabilitated, and the recommended period of rehabilitation.

Table 4-10 Runway Pavement Condition

Pavement Name	PCI	Year Completed	Period Rehabilitation is Needed (Short, Mid, Long Term)
Runway 13-31	Good	2011	Short Term/Mid-Term
Runway 6-24	Good	2011	Short-Term/Mid-Term
Runway 2-20	Good	2014	Mid-Term

Source: Passero Associates, Construction records, PCI Index

Recommendation:

- Maintain pavement strengths and routine maintenance program.
    - When PCI drops to fair condition, rehabilitation of the runway should be considered.
    - Only one crosswind runway will eb eligible for AIP funding for rehabilitation

4.2.3.7. Declared Distances

Declared distances are distances the airport sponsor declares available for a turbine powered aircraft's takeoff run available (TORA), takeoff distance available (TODA), accelerate stop distance available (ASDA) and landing distance available (LDA). This design concept is employed when standard safety clearances cannot efficiently be obtained. **Table 4-11** shows the published distances for Runway 13-31.

Declared distances can be applied to a runway to obtain additional runway safety area and/or object free area prior to the runway threshold (the start of the LDA) and/or beyond the stope end of the LDA and ASDA, to mitigate unacceptable incompatible land uses in the RPZ. They are applicable to Runway 13-31 because the entire length of the safety area is not provided beyond the runway end before encountering an object.

Table 4-11. Published Declared Distances

DECLARED DISTANCE	RUNWAY 13	RUNWAY 31
TORA	8,001	8,001
TODA	8,001	8,001
ASDA	7,202	6,730
LDA	6,144	5,925

Source: Airport Master Record, NFDC

4.2.3.8. Runway Safety Clearances

FAA Advisory Circular 150/5300-13A, *Airport Design*, outlines the design standards for runways and runway safety areas including the runway safety area, object free area, object free zones, and runway protection zones. Each surface was examined for the three paved runways.

Runway Safety Area (RSA)

The runway safety area (RSA), a defined surface surrounding the runway for reducing the risk of damage to aircraft in the event of an undershoot, overshoot, or excursion from the runway. Based on the FAA RSA Program, established in 1999, federally obligated airports and Part 139 airports are required to meet the design standards identified in AC 150/5300-13, *Airport Design*, requiring the RSA to be cleared of obstacles and NAVAIDs that are not fixed-by-function. This surface must meet design standards and if not subject to Modifications to Standards, as previously considered in the past.

As identified in the 2005 Master Plan, RSA encroachments were identified on Runways 13, 31, 20 and 24. These encroachments included U.S. 1 and the salt marshes that channel into the Tolomato River, in which these encroachments were addressed in separate ways. Review concluded that with the declared distances applied to Runway 13-31 the safety area meets design standards. Runway 24 meets standards as a result of the 2012 installation of articulated concrete block mat.

The Runway 6 and 2 RSAs overlap, which is not recommended based on FAA design standards. The Runway 20 end does not meet standards because of the location of the salt marsh within the RSA. **Table 4-12** summarizes these RSA conditions and projects.

Table 4-12. SGJ Runway Safety Area (RSA) Conditions

DESCRIPTION	EXISTING DESIGN STANDARD	REASON FOR NON-STANDARD CONDITION	RESOLUTION OR ACTION NEEDED TO BE TAKEN	YEAR
Runway 13 Safety Area	500’ x 1000’	U.S. 1 Encroachment	Revised declared distances	2012, 2013
Runway 31 Safety Area	500’ x 1000’	Saltwater Canal	Fill added for a width of 250 feet from runway centerline, installed articulated concrete block mat, displaced threshold and implement declared distances	2012, 2013
Runway 24 Safety Area	120’ x 240’	Salt Marsh	Fill added to RSA area at-grade to the Runway for a width of 120’, installed articulating concrete block mat	2012
Runway 20 Safety Area	120’ x 240’	Salt Marsh	Approximately 51 feet x 120 feet of fill needs to be added from 189 feet off the end of runway to meet RSA standards	

Source: 2005 Master Plan, Passero Associates

The RSA dimensions are based on RDC for each runway. Runway 13-31 requires 1,000 feet length beyond departure end, and 600 feet prior to threshold, for a width of 500 feet. This standard is met through the declared distances. When applying declared distances, runway safety area is applicable to the ASDA and LDA operations only, thus the RSA meets standards.

Historically Runway 6-24 and 2-20 have been designed to RDC A/B-I/small standards, which require 240 feet length beyond departure end and prior to threshold for a width of 120 feet. Based on recently acquired aerial survey, and prior projects, Runway 2-20 only maintains an approximate length of 189 feet off runway 20 end, before it encounters the salt marsh, as shown in **Figure 4-4**. Runway 6-24, which underwent an RSA improvement project in 2012, measures 120 feet wide off Runway 24, for a length of 240 feet; therefore, Runway 6-24 meets the design criteria.

With the extension of a crosswind runway, upgrading the chosen crosswind runway to B-II will be considered. The dimensions for B-II are 150 feet in width, with 300 feet in length beyond departure end and prior to threshold. Currently this is not met by either crosswind runway. As such, the alternative section of this report will examine the implications of each runway being upgraded, to aid in determining the proposed crosswind runway to develop with an extension.

It should be noted that the Runway 6 threshold lies within the Runway 2 runway safety areas, see **Figure 4-5**. Based on standards outlined in AC 150/5300-13A, RSAs from two runways should not overlap. This configuration impacts operations, as no aircraft may be on the other runway to avoid incursions. Furthermore, the existing layout of the FBO apron presents a direct connection to the Runways 2 and 6 environments which is not compliant to standards outlined in AC 150/5300-13A.

Table 4-13 provides a list of the proposed RSA for each runway.

Table 4-13. SGJ Proposed Runway Safety Area (RSA) Dimensions

Runway Safety Area	Runway 13-31 D-IV	Preferred Crosswind Runway B-II
Length Beyond Departure End	1,000'	300'
Length Prior to Threshold	600'	300'
Width	500'	150'

Source: FAA AC 150/5300-13A

***Recommendations**:*

- Provide additional fill material off Runway 20 (51 feet long x 120 feet wide) to comply with RDC B-I RSA standards (if maintained as a runway).
- Explore alternatives to meet RSA requirements for one crosswind runway.
- Explore alternatives to mitigate direct connection from FBO apron to Runways 2 and 6.
- Upgrade one crosswind runway to B-II RSA standards.

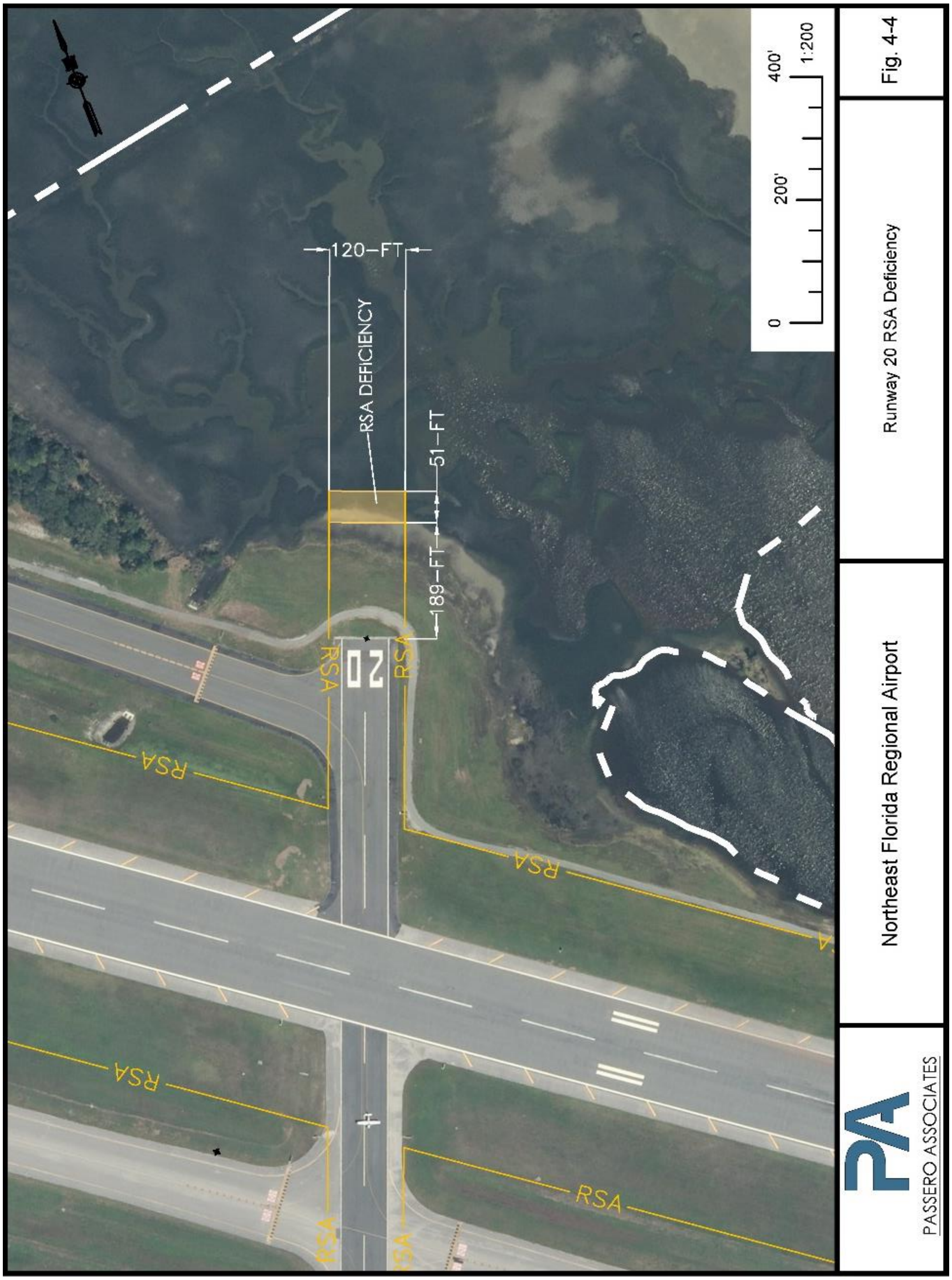
Obstacle Free Zones

Obstacle Free Zones (OFZ) precludes aircraft and other object penetrations, except for frangible navigational aids (NAVAIDs) that need to be located in the OFZ because of their function. This area consists of the runway obstacle free zone, precision obstacle free zone (POFZ), and the inner-approach OFZ. This surface is both a design and operational surface, and as such the modification to standards process is not applicable.

Runway Obstacle Free Zone (ROFZ)

The Runway Obstacle Free Zone (ROFZ), a defined volume of airspace centered above the runway centerline. The elevation at any point is the same as the elevation of the nearest point on the runway centerline. This surface is a design surface and operational surface, thus the modification to standards process does not apply. The ROFZ extends 200 feet beyond each end of the runway. The ROFZ width, however, is contingent upon the visibility minimums. At SGJ, the width of the ROFZ for Runway 13-31 is 400 feet, while both Runway 2-20 and 6-24 have a width of 250 feet. On the Runway 13 end, the existing security fence and U.S. Highway 1 penetrate the ROFZ (see **Figure 4-6**). The approach lighting system off Runway 31 is considered a NAVAID, as such it is exempt from this criterion. There are no penetrations to the ROFZ to Runways 2-20 and 6-24.

Figure 4-4. Runway 20 RSA Deficiency

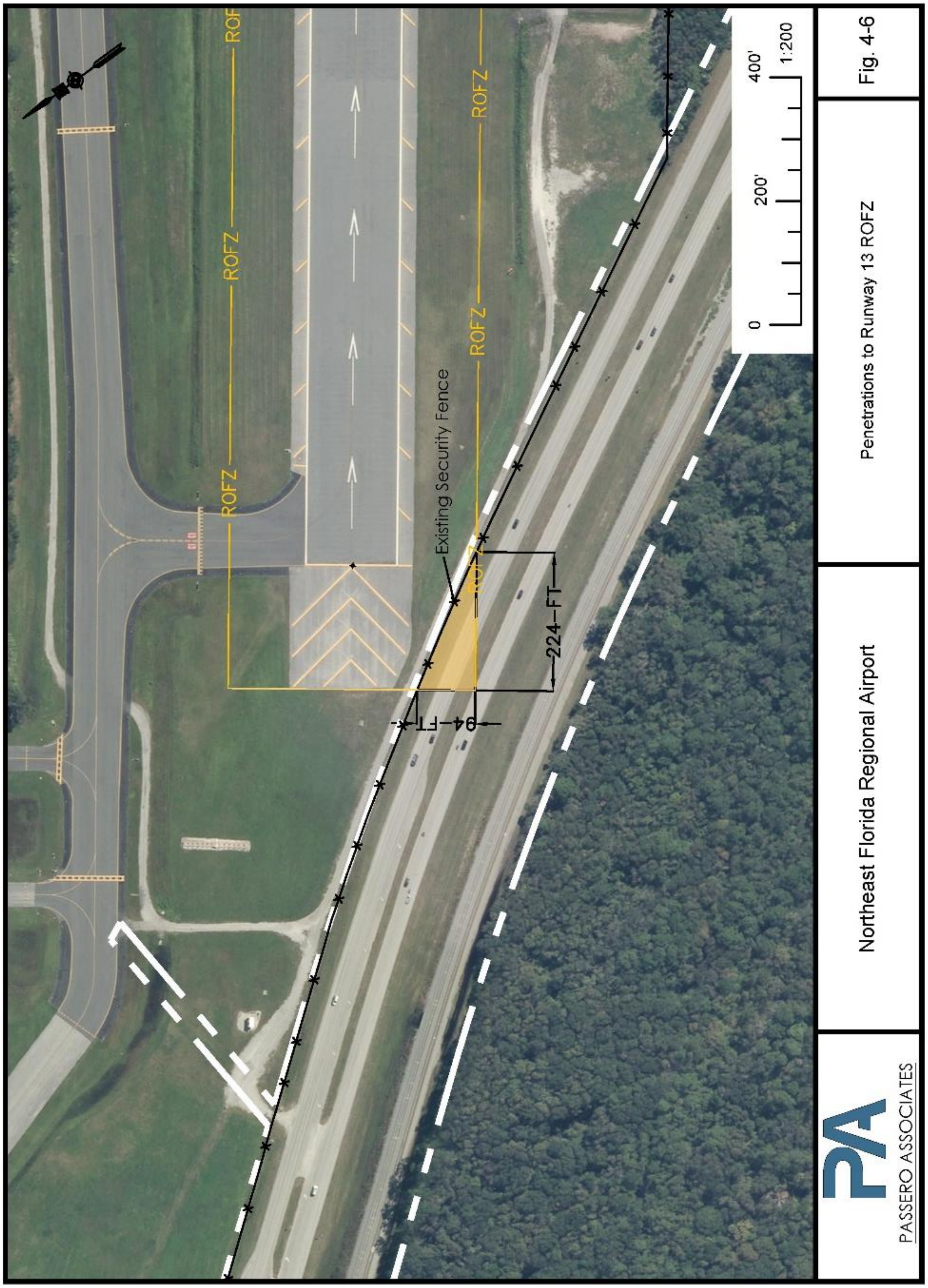


Source: Passero Associates

Figure 4-5. GA Apron and Runways 2 and 6 RSA Deficiency

Source: Passero Associates

Figure 4-6. Penetrations to Runway 13 ROFZ



Source: Passero Associates

It should be noted that the relocation of the fence adjacent to Runway 13 is not feasible, based on the proximity to U.S. Highway 1.

Recommendation:

- Install fence posts with frangible breakaway couplings.
- Light and mark the fence similar to a FAR Part 77 Obstruction.
- Submit an FAA Form 7460 to study the fence and road within the Runway 13 obstacle free zone.
- Request MOS.

Inner Approach Obstacle Free Zone

As stated in the AC 150/5300-13A *Airport Design*, the Inner Approach Obstacle Free Zone (OFZ) is a defined volume of airspace centered on the approach area to protect the approach lighting system (ALS). The Inner Approach OFZ starts 200 feet from the runway threshold at the same runway elevation and extends 200 feet beyond the last light in the ALS. Its width is the same as the ROFZ and the surface rises at a ratio of 50 feet (horizontal) to 1 feet (vertical) from the beginning of the surface.

Runway 31 is the only runway at SGJ with an approach lighting system. There are no penetrations to the Inner Approach OFZ.

Precision Obstacle Free Zone (POFZ)

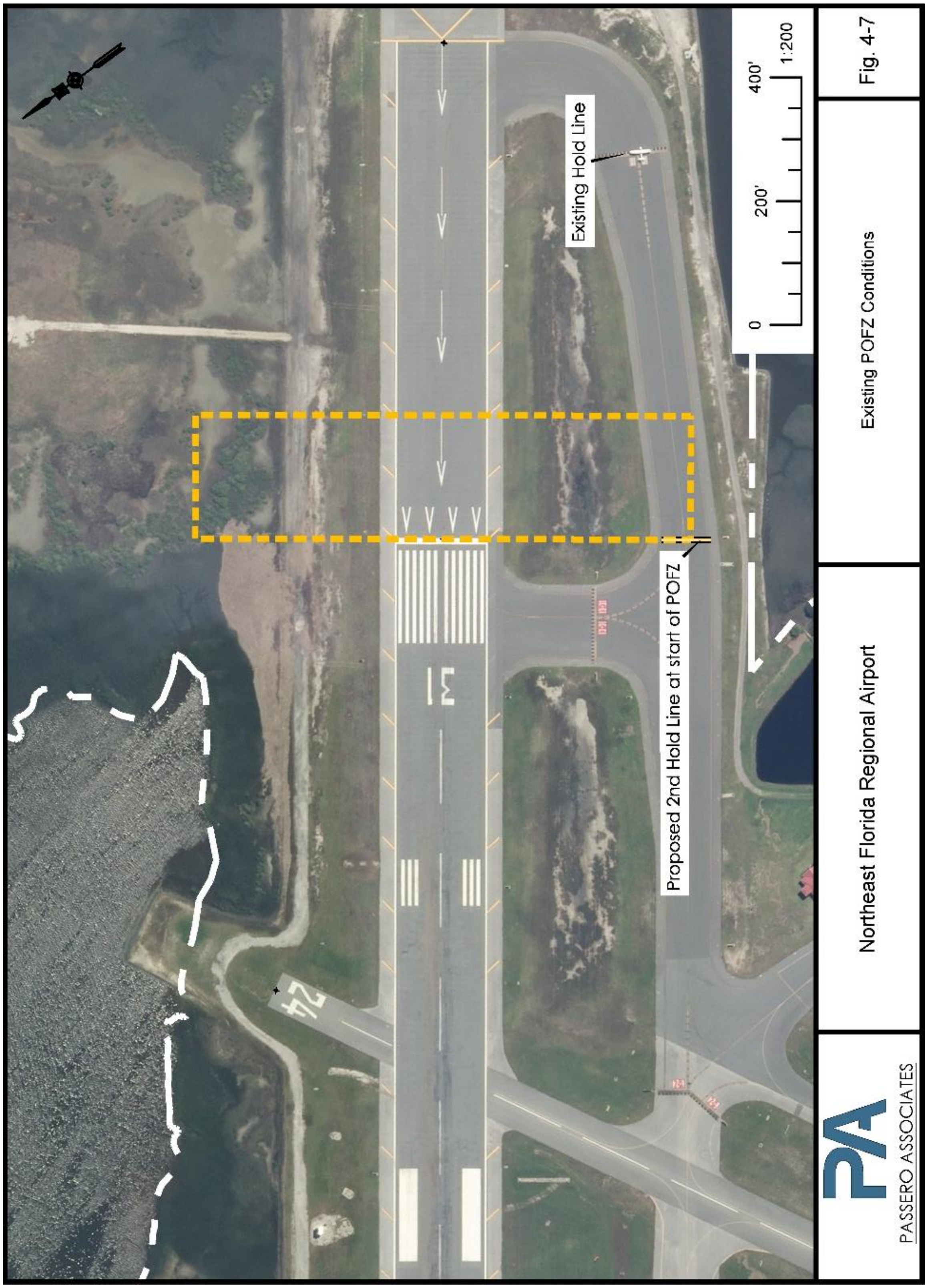
The Precision Obstacle Free Zone (POFZ) is defined as a volume of airspace above an area beginning at the threshold at the threshold elevation and centered on the extended runway centerline. The dimensions are 200-feet long by 800-feet wide. The surface is in effect only when <u>all</u> of the following operational conditions are met:

1. The approach includes vertical guidance.
2. The reported ceiling is below 250 feet or visibility is less than ¾ statute mile (Runway Visual Range is below 4000 feet)
3. An aircraft is on final approach within two miles of the runway threshold

As stated in the AC 150/5300-13A *Airport Design*, when the POFZ is in effect, a wing of an aircraft holding on a taxiway waiting for runway clearance may penetrate the POFZ; however, neither the fuselage nor the tail may penetrate the POFZ. Furthermore, in cases where there are displaced thresholds, aircraft must hold short on the parallel taxiway at the front edge of the POFZ. Vehicles up to 10 feet in height necessary for maintenance are also permitted in the POFZ.

When the POFZ is in effect, there may be no penetrations within this surface. The existing ceiling and visibility is 250 feet with ½ mile visibility, thus the POFZ is in effect. Since the POFZ is applicable a critical area hold line should be painted on Taxiway B south, as shown in **Figure 4-7**.

Figure 4-7. Existing POFZ Conditions



Source: Passero Associates

Recommendations:

- Mark a POFZ critical area hold line on southern portion of Taxiway B

Runway Object Free Area (ROFA)

The Runway Object Free Area (ROFA) is a clear area centered about the runway centerline. The ROFA clearing standards requires clearing the ROFA of above-ground objects higher than the RSA. Except where precluded by other clearing standards, it is acceptable for objects that need to be located in the ROFA for air navigation or aircraft ground maneuvering purposes, and to taxi and hold aircraft in the ROFA. To the extent practicable, objects located in the ROFA should meet the same frangibility requirements of those within the RSA. Objects non-essential for air navigation or aircraft ground maneuvering purposes must not be placed in the ROFA, including parked aircraft. **Table 4-14** outlines the proposed ROFA standards.

Table 4-14. SGJ Proposed Runway Object Free Area (ROFA) Dimensions

Runway Object Free Area	Runway 13-31 D-IV	Preferred Crosswind Runway B-II
Length Beyond Departure End	1,000’	300’
Length Prior to Threshold	600’	300’
Width	800’	500’

Source: AC 150/5300-13A

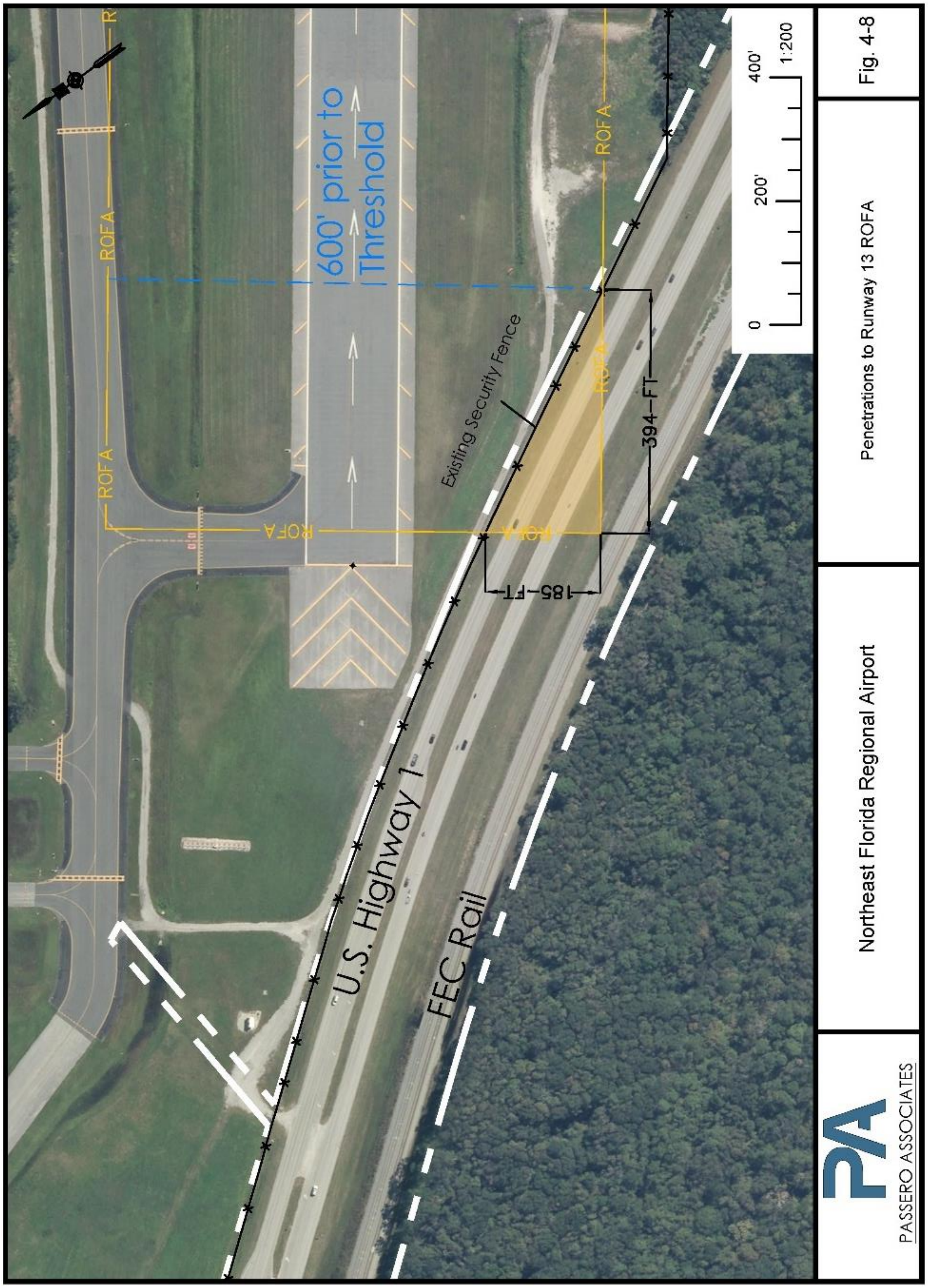
The Runway 13-31 ROFA extends off into the Tolomato River to the east, providing only 250 feet from the runway centerline to the east, from Runway 31 end all the way north to Runway 20. Since the surface is below the RSA surface elevation no action is required. The glideslope antennae are permitted within the OFA as it is required for air navigation. Applying declared distances to Runway 13-31 length, as published, a portion of the airport fence along U.S. 1 near Runway 13 threshold is within the ROFA by 185 feet, see **Figure 4-8**. This surface is available to the modification to standards process. A modification to standards should be sought.

Similar to the RSA, Runways 6-24 and 2-20 have overlapping ROFAs. Runway 2-20 is capable of meeting the RDC B-I/small criteria without impacting the main terminal parking apron and the FBO apron, see **Figure 4-9**.

Runway 6-24 ROFA for RDC B-I/small encompasses a small area of the FBO apron, which should not have fueling vehicles parked in.

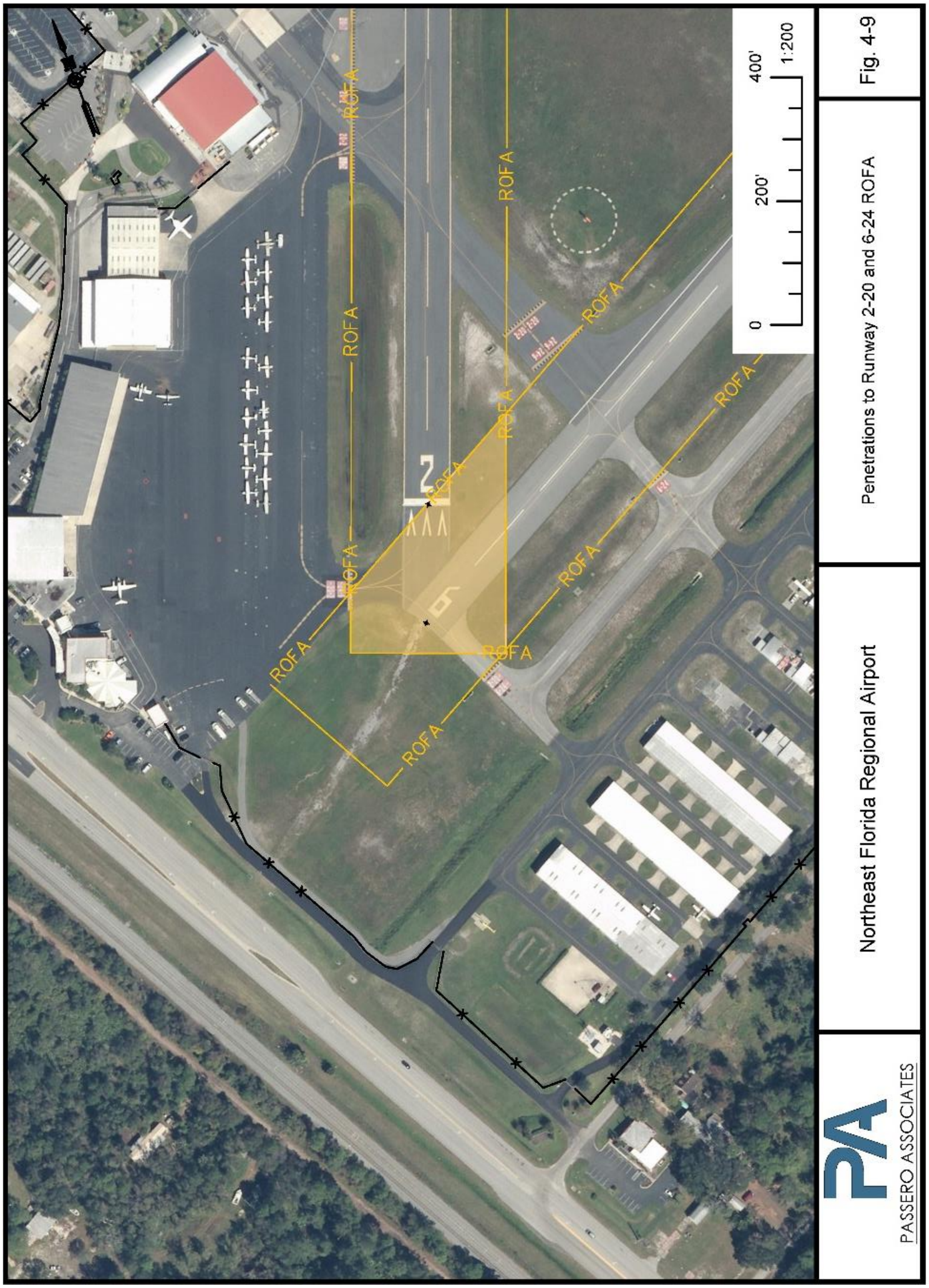
When a crosswind runway is upgraded to B-II standards there will be impacts to the main terminal apron, FBO apron and segmented circle, which need to be considered in the future alternatives section. As such the ROFA requirements will need to be included in the analysis section to determine which crosswind runway to develop.

Figure 4-8. Penetrations to Runway 13 ROFA



Source: Passero Associates

Figure 4-9. Penetrations to Runway 2-20 and 6-24 ROFA (B-I/Small Standards)



Source: Passero Associates

Recommendations:

- Install fence posts with frangible breakaway couplings adjacent to Runway 13-31.
- Light and mark the fence adjacent to Runway 13-31 similar to a FAR Part 77 Obstruction.
- Request MOS for Runway 13-31 ROFA width.
- Relocate the fuel trucks on the FBO apron in the ROFA when the crosswind runway is upgraded to B-II standards.
- Relocate windsock and segmented circle outside of ROFA when the crosswind runway is upgraded to B-II standards.

Runway Protection Zone

The purpose of the Runway Protection Zone (RPZ) is to enhance the protection of people and property on the ground adjacent to runways. This is best achieved through airport ownership of land that falls within RPZs. This control is preferably exercised through the acquisition of sufficient property interest. Airports can then ensure that non-compatible objects and activities can be cleared. The size of RPZs is contingent upon the visibility approach minimums for each runway.

Only Runways 13 and 31 have published instrument approaches, whereas Runways 2, 20, 6 and 24 have visual circling approaches. When instrument visibility minimums decrease on Runway 31 to less than ¾ mile the RPZ will increase in size. The existing and anticipated Runway 31 RPZ will be over the salt-water marsh and canal and will not impact any residences. The departure and approach RPZ off Runway 13 ends extend over U.S. 1, see **Figure 4-10**. The RPZ off Runway 13 will not change size. Runway 20 and 24 RPZ are located over the Tolomato River and will not impact any residences. The RPZs for both Runway 6 and 2 extend over U.S. Highway 1, and the F.E.C Railroad onto properties west of U.S. 1 (property not owned by the Airport Authority), see **Figure 4-11** for existing condition. Additional land acquisition should be pursued over these lands.

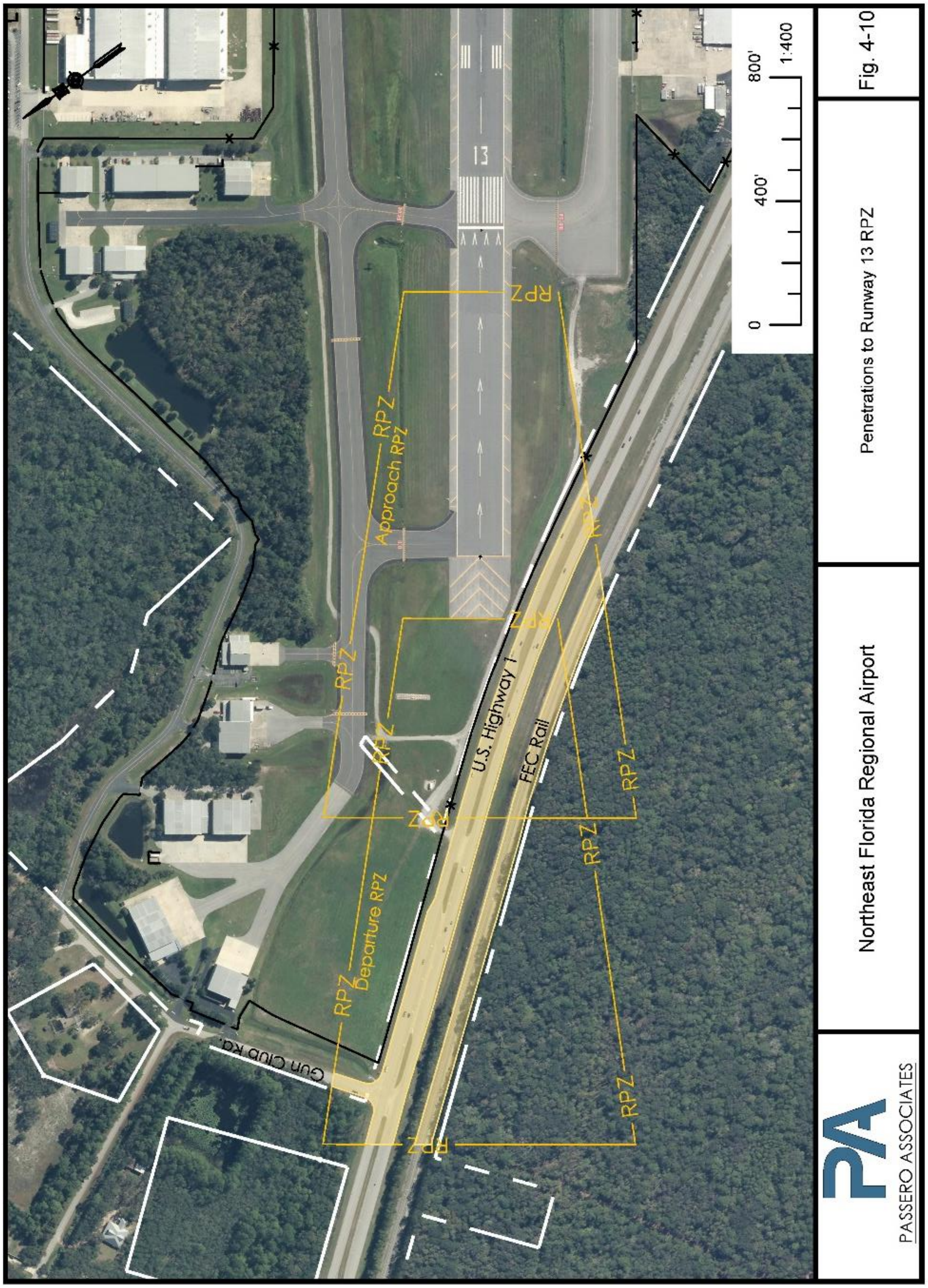
Table 4-15 highlights the proposed RPZ dimensions to be applied in the alternatives section. Based on this the RPZ size for the preferred crosswind runway will increase in size and include additional lands across U.S. 1 or impacts to the fuel trucks parked on the FBO apron.

Table 4-15. SGJ Proposed RPZ Dimensions

	Preferred Crosswind Runway B-II		Runway 13/31 D-IV		
	Visual	>1 mile	Runway 13 (>1 mile) Approach	Runway 31 (<3/4 mile) Approach	Departure
Inner Width (IW)	500’	500’	500’	1,000’	1,000’
Outer Width (OW)	700’	700’	1,010’	1,750’	1,010’
Length (L)	1,000’	1,000’	1,700’	2,500’	1,700’

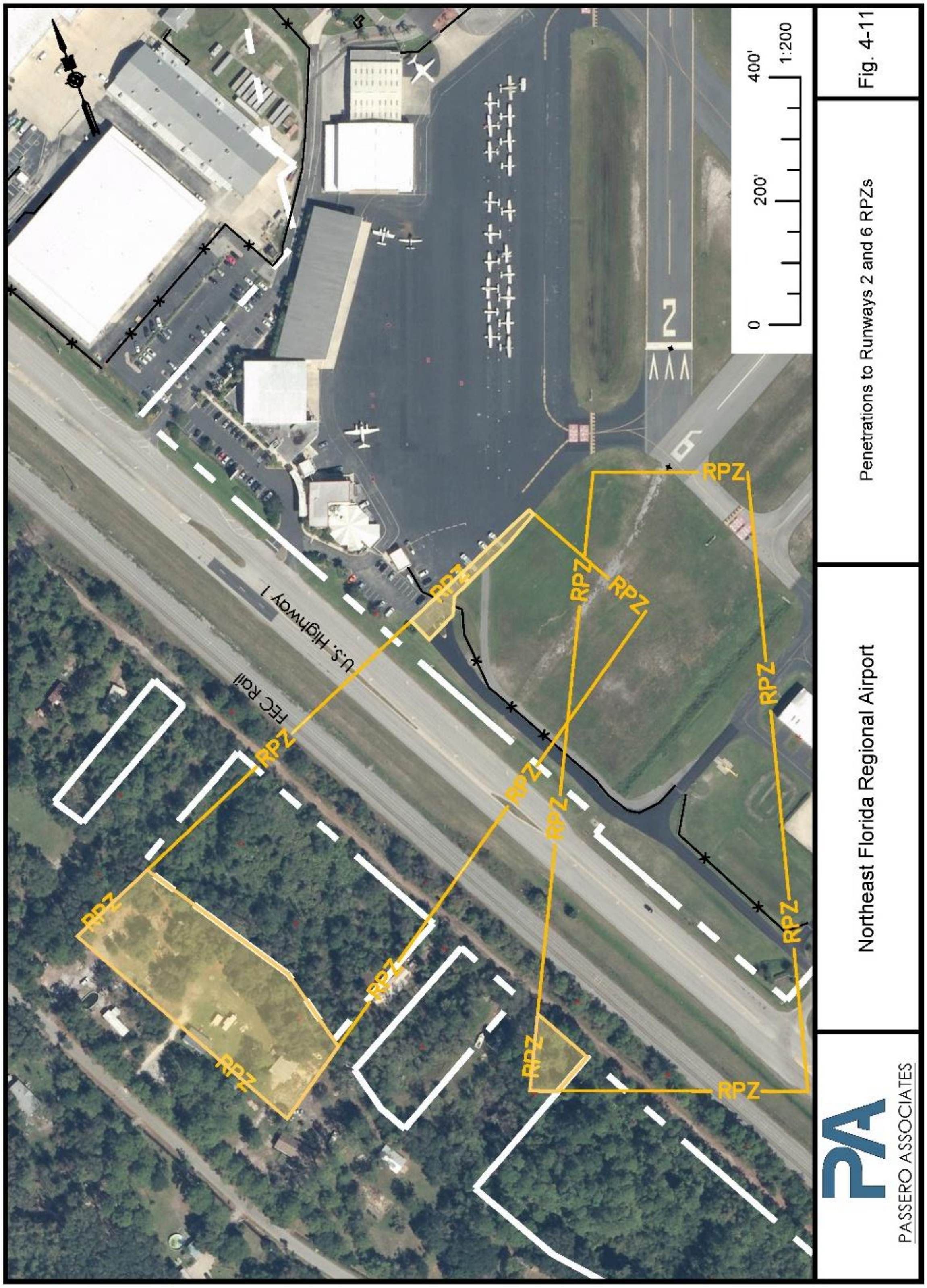
Source: Passero Associates

Figure 4-10. Penetrations to Runway 13 RPZ



Source: Passero Associates

Figure 4-11. Penetrations to Runways 2 and 6 RPZ



Source: Passero Associates

Recommendations

- Acquire easement control over lands west of U.S. 1 within the RPZ;
    - Approximately 1.8 acres of property west of U.S. 1 lie within the Runway 2 and 6 RPZ
- Acquire additional lands across U.S. 1 and relocate the fuel trucks parked on the FBO apron, resulting from an upgraded crosswind runway.

Runway Visibility Zone

The Runway Visibility Zone (RVZ) has runway line of sight requirements that facilitate coordination among aircraft, and between aircraft and vehicles that are operating on active runways. This allows departing and arriving aircraft to verify the locations and actions of other aircraft on the ground which could create a conflict.

When runways intersect, the RVZ is used to define an area within which an object 5 feet above the ground should be mutually visible at any other point within the RVZ. Visual obstructions should be removed from these areas entirely.

At SGJ the RVZ covers approximately 100 acres of land. There are no obstructions to the RVZ at SGJ. The RVZ will change when a crosswind runway is extended.

Recommendations:

- Adjust RVZ and ensure visibility if crosswind runway is extended.

4.2.3.9. Runway Designation

A runway is identified by the whole number nearest the magnetic azimuth of the runway when oriented along the runway centerline, as if on approach to that runway end, and designated as such through painted markings. This number is then rounded off to the nearest unit of ten. Magnetic azimuth is determined by adjusting the geodetic azimuth associated with a runway to compensate for magnetic declination. Magnetic declination is defined as the difference between true north and magnetic north which varies over time and is relative any specific location on earth. Magnetic declination is a natural process and does periodically require the re-designation of runways and change over time.

The current magnetic declination for the St. Augustine area was derived from the National Oceanic and Atmospheric Administration (NOAA) National Centers for Environmental Information in March of 2017 and calculated to be 06°33’ West changing by 0° 05' West per year. The true bearing for Runways 2-20, 6-24 and 13-31 are depicted in **Table 4-16**.

Table 4-16 Runway Designation Calculation

RUNWAY	TRUE BEARING	MAGNETIC DECLINATION	MAGNETIC BEARING	RUNWAY DESIGNATION REQUIRED
2	21° 01' 58.8000”	+ 06°33’ West	27° 34' 58.8000"	3
20	201° 02' 02.4000"	+ 06°33’ West	207° 35' 02.4000"	21
6	61° 52' 01.2000"	+ 06°33’ West	68° 25' 01.2000"	7
24	241° 52' 15.6000"	+ 06°33’ West	248° 25' 15.6000"	25
13	126° 18' 36.0000"	+ 06°33’ West	132° 51' 36.0000"	13
31	306° 18' 36.0000"	+ 06°33’ West	312° 51' 36.0000"	31

Source: FAA 5010, Passero Associates

As a result, Runway 2-20 and 6-24 should be re-designated to accurately reflect the magnetic heading of each runway.

Recommendation:

- Maintain one crosswind runway
  - Re-designate Runway 6-24 as 7-25, or
  - Re-designate Runway 2-20 as 3-21

4.2.3.10. Approach and Departure Reference Codes

In addition to RDC, each runway at an airport will also have an approach reference code (APRC) and departure reference code (DPRC). The APRC and the DPRC were added in Change 1 of the AC 150/5300-13A (replacing the runway reference code requirement) to better determine the operational capabilities of runways and parallel taxiways during approach and landing operations. These codes can change over time as improvements are made to runways, and taxiways. The APRC considers visibility and runway to taxiway separations, while the DPRC considers runway to taxiway separation only.

Based on current standards, since Runway 2-20 doesn't have a parallel taxiway there is no APRC or DPRC associated with the runway. Runway 6-24 presently has visual minimums with a taxiway that is offset 200 feet from the runway centerline. As such its APRC is B/I(S)/VIS. It is anticipated that an improved extended crosswind runway upgraded to B-II standards, would have at least an APRC of B/II/VIS, or if an instrument approach is considered, an APRC of B/II/5000. The DPRC for Runway 6-24 is presently at B/I(S). Similar to APRC, an improved crosswind runway designed to B-II standards, would have a DPRC of B/II.

Runway 13 has visibility of greater than 1 mile, with a taxiway separation of greater than or equal to 400 feet, thus its APRC is D/IV/5000 and D/V/5000, while Runway 31 has visibility currently at ¾ mile with separation of 400 feet, beyond the threshold, thus its APRC is D/IV/4000. In the future it is anticipated that the visibility for Runway 31 will drop lower than ¾ mile, but not lower than ½ mile, so the APRC is anticipated to be D/IV/2400 and D/V/2400. The DPRC for Runway 13-31 presently and in the future will be D/IV and D/V.

The alternatives section will address what the future APRC and DPRC may be for a crosswind runway.

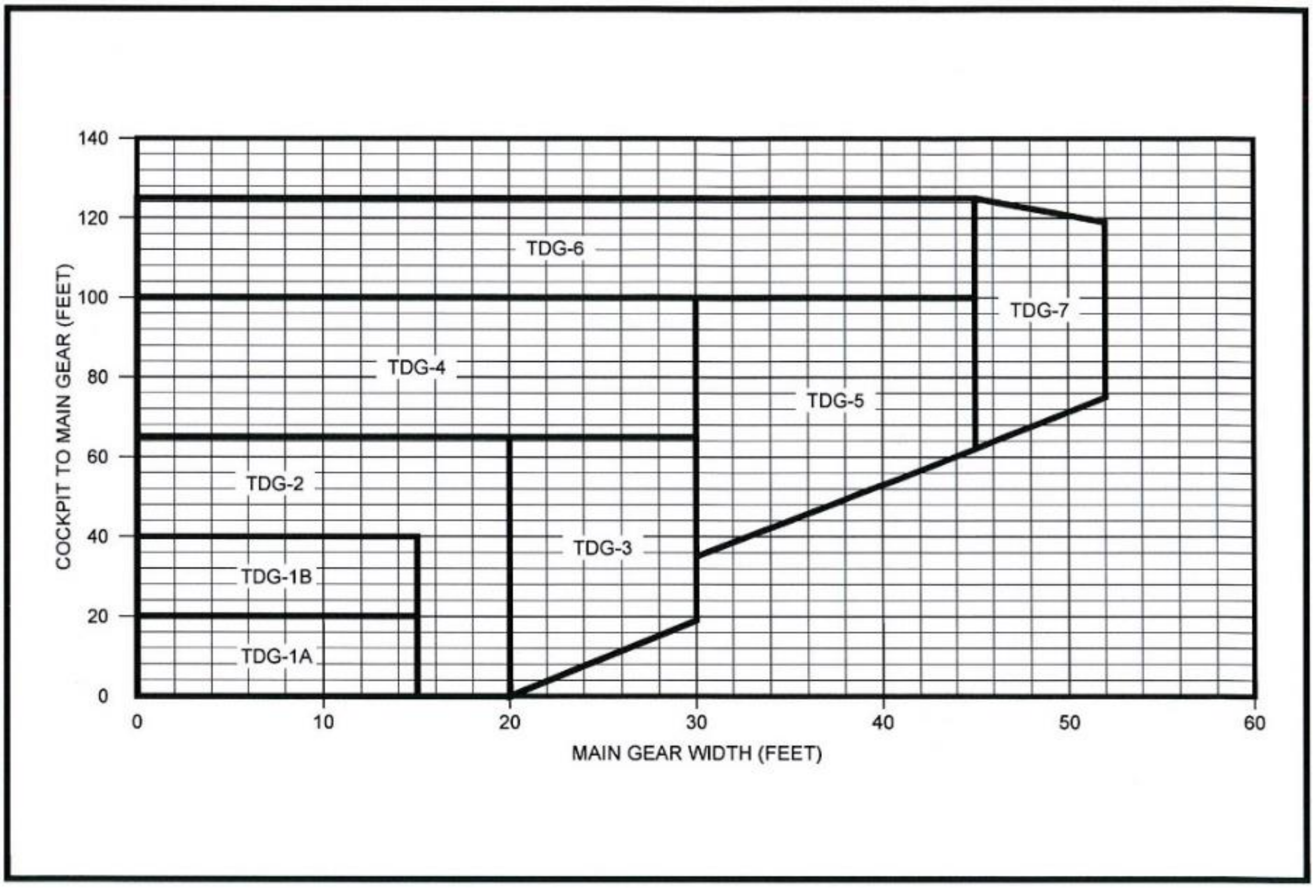
Recommendation:

- Update APRC and DPRC for crosswind runway.

4.2.4. Taxiway/Taxilane System and Apron Requirements

Much like the runway requirements taxiway design criteria are contingent on the critical aircraft. The FAA implemented an additional taxiway design requirement based on the critical aircraft main gear width and the cockpit to main gear length – referred to as the taxiway design group (TDG). The FAA added the TDG requirement when it was determined that ADG does not consider the undercarriage dimensions of the critical aircraft, and became effective with AC 5300-13A, in 2012. This dimension is critical when determining the proper taxiway fillet radii. If a taxiway is not designed with the critical aircraft TDG in mind, the pilot taxiing the critical aircraft risks running off the taxiway during turns. Taxiway A and B are designed to TDG 5 standards, Taxiways F and G are designed to TDG 3, while Taxiway D is designed to TDG 2. **Figure 4-12** is used to help determine the correct TDG based on the critical aircraft specifications. As pavement and markings wear, rehabilitation will be necessary.

Figure 4-12. Taxiway Design Group



Source: FAA AC 150/5300-13A, Table 1-2

4.2.4.1. Taxiway/Taxilane System Requirements

The purpose for any taxiway system is to support the operational activity and enhance the safety of aircraft ground movements.

Taxiway A

Taxiway A is a partial parallel taxiway east of Runway 13-31. This taxiway has paved taxiway shoulders. This taxiway is 75 feet wide, with a runway centerline to taxiway centerline of 400 feet, meeting design standards. The Taxiway pavement is in good condition. Reconstruction will be required in long-term development phase.

Like a runway, a taxiway also has a safety area and object free area. There are no impacts to these surfaces.

Taxiway B

Taxiway B is a full parallel taxiway west of Runway 13-31. This taxiway is 75 feet wide, with a runway centerline to taxiway centerline of 400 feet, north of Runway 31 threshold, meeting design standards. South of Runway 31 threshold, the separation is less because of its location to an environmentally sensitive area. Rehabilitation of Taxiway B will be required in the mid-term development phase.

Taxiway B2 connects to Runway 2-20 which presents one of two FAA published Hot Spots. The other hot spot is located is located where the FBO Apron meets Runways 2 and 6 via taxiway connector, see **Figure 4-13**. According to the FAA, a "hot spot" is a runway safety related problem area or intersection on an airport. Within this area or intersection, pilots can become confused and miscommunicate with each other;

thus, increasing the probability of aircraft collisions. The alternatives section will examine methods to address these hot spot.

Taxiways B, B1 and B2 underwent pavement rehabilitation in 2010. Furthermore, in 2013, Taxiway B was extended to the Runway 31 end alongside the canal relocation for the RSA standardization and sea plane basin dredging projects.

Taxiway D

Taxiway D is the parallel to Runway 6-24 and has a width of 35 feet, meeting design standards for TDG 2. The taxiway has four connectors, as shown in **Figure 4-14**. The separation from Runway 6-24 to Taxiway D is 200 feet, exceeding design standards for B-I/small, but less than design standards for 240 feet for B-II, if Runway 6-24 is chosen as the preferred crosswind runway. Presently the separation limits operations on this taxiway to aircraft less than 12,500 pounds. Currently, connector taxiways are in poor to failing condition based on pavement history, except connector D3 between Runway 6-24 and Runway 2-20, which is in fair condition.

Besides the Taxiway D separation issue, there are no impacts to the TSA or TOFA.

Increasing the runway-taxiway separation should be considered during the alternatives section of this Master Plan.

Taxiway E

Taxiway E is parallel to Taxiway D and has a width of 25 feet, meeting TDG 1 criteria. The Taxiway connects to Taxiway D and provides direct access to 9 rows of T-hangars. The existing taxiway-taxiway separation from Taxiway D to Taxiway E is approximately 150 feet, meeting design standards. When Taxiway D is relocated south to meet B-II standards the taxiway to taxiway separation still meets standards. Currently, Taxiway E is in poor condition. This taxiway may be eliminated as part of a current Taxiway D rehabilitation project in 2018.

Taxiway F

Located southeast of Taxiways D, E and G, Taxiway F measures 50-feet wide. This taxiway provides access to Taxiway B, the U.S. Customs, ATCT and the ARFF. Currently, Taxiway F meets separation standards with the hangars to the west and northwest. The movement area of Taxiway F ends at the apron within the south general aviation area. Rehabilitations of Taxiway F will be required in the short to mid-term development phase.

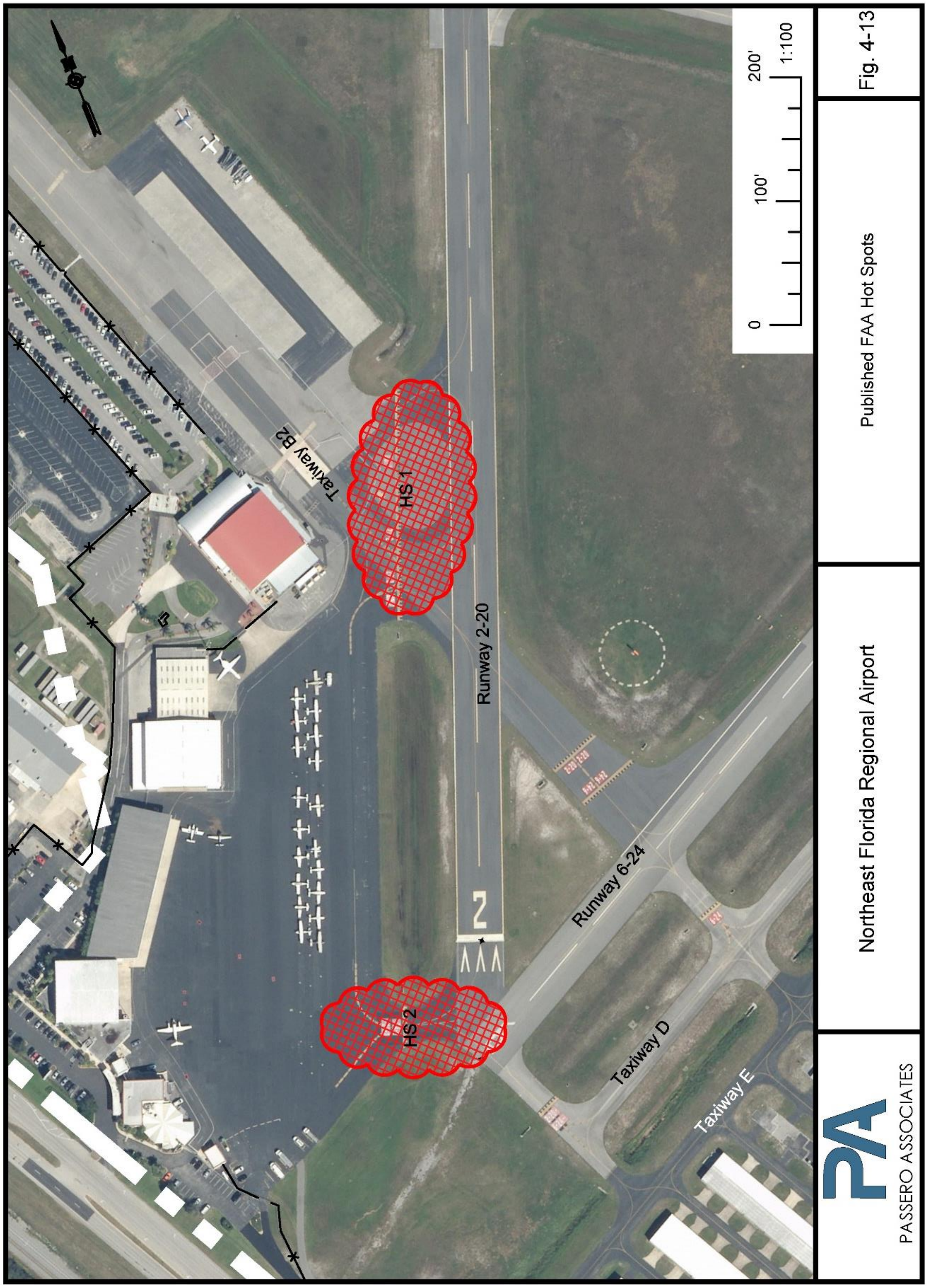
Taxiway G

Located northwest of Taxiway F and southeast of Taxiways D and E. Like Taxiway F, Taxiway G provides access to Taxiway B, the U.S. Customs, ATCT and the ARFF. Taxiway G is 50-feet wide. The movement area of Taxiway G ends at the central apron within the south general aviation area. Rehabilitations of Taxiway G will be required in the short to mid-term development phase.

New Taxiway

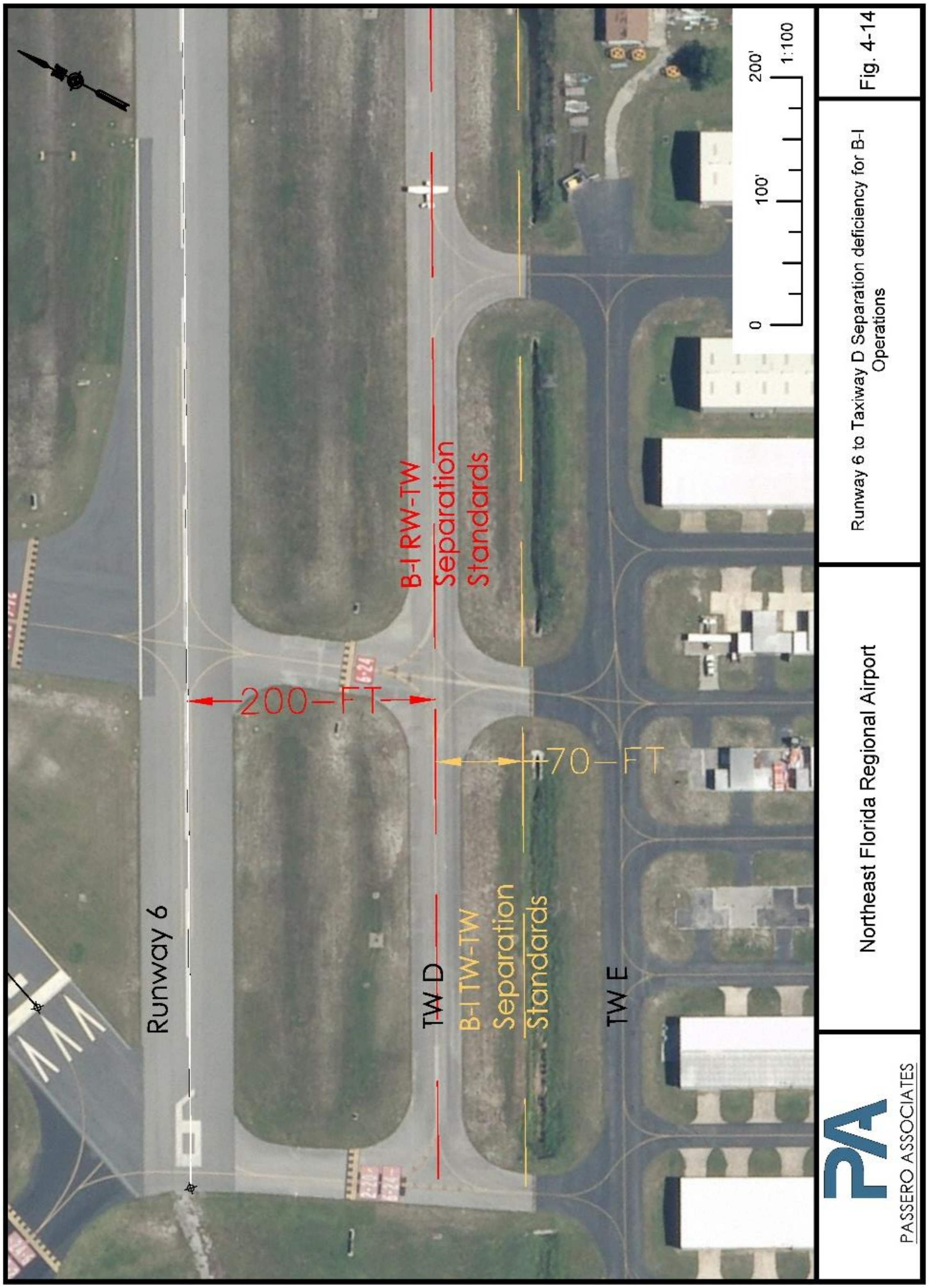
Provide a full-length parallel taxiway to the extended crosswind runway.

Figure 4-13. FAA Published "Hot Spots"



Source: Passero Associates

Figure 4-14: Runway 6 to Taxiway Separation Deficiency for B-I/Small Operations.



Source: Passero Associates

Table 4-17 SGJ Taxiway Condition Summary

Pavement Name	PCI	Year Completed	Period Rehabilitation is Needed (Short, Mid, Long Term)	Type of Rehabilitation
Taxiway A, A1, A2, A3	Good	2015	Long-Term	Reconstruct
Taxiway B North, B1, B2	Satisfactory	2010	Mid-Term	Rehabilitate
Taxiway B South	Good	2013	Long-Term	Rehabilitate
Taxiway D, D2, D4	Poor	Prior 2000	Short-Term	Reconstruct
Taxiway D3	Good	2014	Long-Term	Rehabilitate
Taxiway E	Poor	Prior 2000	Short-Term	Reconstruct/ Eliminate
Taxiway F	Good	2007	Short-Term/Mid-Term	Rehabilitate
Taxiway G	Good	2007	Short-Term/Mid-Term	Rehabilitate

Source: 2012 Pavement Management Study & Past projects

Recommendations:

- Reconstruct Taxiway A, and connectors in long-term.
- Rehabilitate Taxiway B North, B1 and B2 in mid-term.
- Rehabilitate and upgrade Taxiway D and connectors, south of Runway 6-24, in short-term.
- Rehabilitate Taxiway D3 in long-term (Phase 3 in the planning period).
- Rehabilitate Taxiways F and G in short to mid-term.
- Correct FAA published "Hot Spots".
- Provide a parallel taxiway to a crosswind runway.

4.3. Airfield Equipment Requirements

To support the operations of the airfield including airfield additional areas were examined: airfield lighting, marking, signage, navigational/visual aids and obstructions. Each of these are described in the following sections.

4.3.1. Airfield Lighting

Runway 13-31 has high-intensity runway lights (HIRL) installed, while Runway 2-20 and 6-24 have medium-intensity runway lights (MIRL) installed. All runway lighting at SGJ is operated through the Common Traffic Advisory Frequency (CTAF) as well as directly by the on-site ATCT. An improved instrument approach to a crosswind runway requires medium-intensity runway lights. Therefore, the existing runway lighting system is sufficient over the planning period.

Runway end identification lights (REILs) are recommended at airports to provide positive identification of the runway when the surrounding area lacks contrast with terrain. REILs must be installed on only circling approach or circling and non-precision straight-in approach. The crosswind runway should consider installation of REILs.

Taxiway A, B, D, F and G are equipped with taxiway edge lights. Additional lighting will be required for the runway and taxiway if the crosswind runway/taxiway is extended. Upgrading the crosswind runway to a width of 75 feet may require runway lights to be relocated to meet design standards. When taxiway D is relocated, to meet design separation requirements, the taxiway lights will be replaced. This will be considered as part of the alternatives analysis.

Overtime all runway and taxiway lighting will require updating. At that time, updating the lights to light-emitting diode (LED) fixtures should be considered. This is compatible with the existing Sustainability Management Plan. Converting to LED fixtures will reduce overall electric usage at the airport and create a more environmentally responsible and sustainable airfield.

Recommendations:

- Install REIL on crosswind runway.
- Replace MITL on Taxiway D.
- Replace runway lights when crosswind runway is widened.

4.3.2. Pavement Markings

FAA AC 150/5340-1, *Standards for Airport Markings*, identify the pavement markings required on an airport. Pavements markings include painted lines and numbers to aid in the identification of the runways from the air and to provide information to the pilot during the approach phase of the flight, as well as during ground movements.

There are three standard sets of markings used depending on the type of runway: visual markings, non-precision markings, and precision markings. Depending on the type of aircraft activity and physical characteristics of the pavement, additional markings may be required for any of the three broad categories identified above. For example, the FAA requires aiming point markings on any visual or non-precision runway that has a length greater than 4,200 feet and used by jet aircraft. The FAA also allows markings on the runway to be upgraded at any time to include elements that are not required, buy may be deemed necessary to enhance safety. Runway pavements and displaced threshold markings are painted white, while taxiway pavement markings are painted yellow. Enhanced pavement markings are required on Part 139 airfields. **Figure 4-16** provides an example of enhanced taxiway markings.

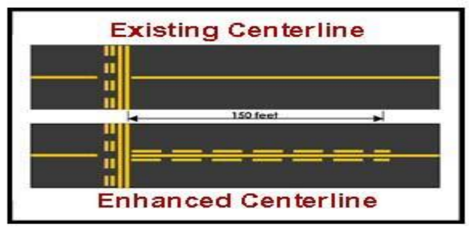


Figure 4-15. Enhanced Taxiway Centerline Markings

FAA guidelines state that taxiways should have centerline markings and runway holding position markings (hold lines) whenever they intersect with a runway. When the crosswind runway is extended, an improved instrument approach would be sought to better serve the aircraft using that runway. Introducing an instrument approach to the runway would require upgrading the markings to non-precision from the existing visual markings.

Each taxiway is marked with hold lines where it intersects with a runway. The hold lines on Taxiway D exceed the design standards for RDC B-I/small criteria. A relocated Taxiway D will require new pavement markings, consisting of a centerline and hold lines.

As stated earlier, the precision object free zone starts at the Runway 31 threshold and is in effect when the approach to Runway 31 is improved to visibilities less than ¾ mile. Pilots and vehicles must hold short when instructed by ATCT. This critical area should be marked on Taxiway B south at that time.

Table 4-18 provides the marking type and condition for each runway at SGJ.

Table 4-18. Runway Marking Type

RUNWAY	EXISTING RUNWAY MARKING TYPE	CONDITION
13-31	Precision (PIR)	Good
6-24	Basic	Fair
2-20	Basic	Fair

Source: Existing: FAA 5010, Passero Associates

Recommendations:

- Upgrade crosswind runway to non-precision markings.
- Re-mark relocated Taxiway D.
- Mark a POFZ critical area on Taxiway B south.

4.3.3. Airfield Signage

Airfield signage consists of illuminated signs installed along the runways and taxiways, including runway and taxiway guidance signs, runway distance remaining signs. The signage system in place at SGJ meets requirements of the FAA for a certificated FAR Part 139 airport. See **Appendix G** for the current signage plan.

An associated sign will be installed along with the critical area hold line for the POFZ on Taxiway B south since the visibilities to Runway 31 are below ¾ mile. Additional signage will be required when crosswind runway and parallel taxiway are extended.

As additional airfield facilities are developed, signage may be required, and should be installed to meet FAA design criteria is AC 150/5340-18F, *Standards for Airport Sign Systems.*

Recommendations:

- Install signage at new POFZ hold line when instrument approach visibility decreases below ¾ mile.
- Install new signage on the extended crosswind runway and parallel taxiway.

4.3.4. NAVAIDs/Visual Aids

NAVAIDS/Visual aids including wind cone, segmented circle, Instrument Landing System (ILS), Medium intensity Approach Lighting System with Runway alignment indicator lights (MALSR), Visual Glideslope Indicator lights (VGSI), Very-high Omnidirectional Range (VOR) and Automated Weather Observation System (AWOS). AC 5340-30H, *Design and Installation Details for airport Visual Aids,* was referenced for this section.

Wind cones provide wind direction information to pilots. At an airport certificated under FAR Part 139, a primary wind cone is required. However, if a primary wind cone is not visible to pilots on approach and takeoff at each runway end, supplemental wind cones should be provided. Each runway available to air carrier use requires a supplemental wind cone. A supplemental wind cone is needed on Runway 31. When a crosswind runway is extended, a supplemental wind cone should be installed on the east end. Supplemental wind cones should be located outside the runway object free area and runway safety area. They should be located near the runway end, preferable on the left side when viewed from an aircraft approaching the runway.

The segmented circle provides a visual cue to pilots indicating landing direction and traffic pattern when the control tower is not operational. Presently, the segmented circle is outside the design surfaces for Runway 2-20 or 6-24 under B-I/small ROFA criteria. When a crosswind runway is upgraded to the next design group, then the segmented circle and wind cone would be impacted and should be considered for relocation.

Runway 31 is equipped with an Instrument Landing System (ILS) and a MALSR. The ILS provides precision instrument approaches to this runway. The MALSR is a lighting system on the approach to Runway 31 that provides visual information to pilots on runway alignment, height perception, roll guidance, and horizontal references for Category I Precision Approaches.

There are three visual glideslope indicators (VGSI) on the airport to Runways 13, 31 and 6. Runway 13 is a 4-light VASI (Visual Approach Slope Indicator), while Runway 31 has a 4-light Precision Path indicator Light (PAPI). Runway 6 has a 2-light PAPI, which should be upgraded when jet operations use the crosswind runway. The crosswind runway should be equipped with a Precision Path Indicator Light (PAPI).

The VOR provides non-precision instrument approaches to the airport.

The FAA maintains an AWOS-III that disseminates weather information to pilots. To ensure no impacts to aircraft operations, it is important for there to be no obstructions within the AWOS siting area. Per Section 2.5 of FAA Order 6560.20B *Siting Criteria for Automated Weather Observation Systems (AWOS*), it is recommended that obstructions (e.g., vegetation, buildings, etc.) be at least 500 feet from the AWOS system. However, if obstructions are located within the 500-foot radius, these obstructions should be at least 15 feet lower than the height of the wind sensor, in which the sensor is recommended to be mounted at 30 to 33 feet AGL. Based on the location of the AWOS, between Taxiways B and B3, the airport fence and parking lots are located within the 500-foot radius to the west but meet the above criteria. The area around the AWOS is clear of obstructions.

Recommendations:

- Install supplemental wind cone on Runway 31 end.
- Install supplemental wind cone on extended crosswind runway to the east.
- Install PAPI on crosswind runway.
- Upgrade PAPI as needed, when jet operations use the crosswind runway.

4.3.5. ATCT and Airport Beacon

SGJ has an air traffic control tower (ATCT) that is operational from 7:00 a.m. to :009 p.m. local time**.** When the tower is not operational, pilots communicate using the common traffic advisory frequency (CTAF) 127.625. The Airport's rotating beacon is located atop the ATCT. Airport rotating beacons indicate the location of a lighted airport, by projecting beams of light spaced 180 degrees apart. Alternating white/green flashes identify a lighted civil airport. To reduce interference with the ATCT and pilot's vision, it is recommended that the airport rotating beacon be located within 5,000 feet of a runway. A beacon should be mounted high enough above the surface so that the beam sweep, aimed 2 degrees or more above the horizon, is not blocked by any natural or manmade object. Having the location of the airport beacon on top of the ATCT ensures there are no obstructions to the field of vision to the rotating beacon. As the beacon light reaches its life expectancy replacement will be necessary.

Recommendation:

- Replace beacon light.

4.3.6. Airspace/Instrument Approach Needs

Airspace capacity at an airport can be impacted when the flight paths of traffic at nearby airports, or local navigational aids (NAVAIDS), interact to adversely impact operations at a specific airport. In addition, obstructions in the general vicinity around an airport significantly impact airport operations, altering flight paths and affecting airport capacity. An existing obstruction analysis task was completed for various surfaces, particularly FAA Part 77 Approach surfaces, which affect the imaginary surfaces; the Threshold Siting Surface, to determine if night instrument approaches are valid and the threshold is in the correct location based on given obstructions; and the glidepath qualification surface (required to be clear when there is a vertically guided approach). The Terminal Instrument Procedures (TERPS) visual segment was evaluated as well for the crosswind runways. It is noted that the TERPS visual segment is mimicked by the Threshold Siting Surface.

An obstruction for this purpose is considered a tree that impacts the clear approaches for an aircraft landing on a runway.

Runway 13-31 is the only runway at SGJ with written instrument approaches – Runway 13 has a non-precision instrument approach (GPS) while Runway 31 has a precision instrument approach (ILS). Such instrument approaches enable aircraft to approach these runway ends during periods of inclement weather or for training purposes, which improves aircraft operational safety. Each approach has circling approaches to the other runways.

When the crosswind runway is extended, the prevailing wind runway should be equipped with a non-precision Global Positioning System (GPS) instrument approach, with visibility minimums of 1 mile. Providing an improved instrument approach to the crosswind runway would aid pilots of smaller aircraft that can't operate during significant crosswinds on the primary runway. This will be considered in the next phase of this report.

The existing obstruction analysis task identified obstructions to Runway 13, 6 and 2 ends (on and off airport). Runways 31, 20 and 24 are clear of any obstructions. Trees on the west side of U.S. 1 impact the threshold siting surface for Runway 2 and 6. The glidepath qualification surface for Runway 13 had obstructions identified, which could adversely impact the existing vertically guided approach to this Runway end. These obstructions should be removed. Trees on lands that are not controlled by the airport should seek easements to remove the obstructions.

With the addition of the approach lighting system to Runway 31, it is anticipated that the visibility minimums will decrease by ¼ mile, bring the visibility minimums down to >1/2 mile. No obstructions were identified.

Recommendations:

- Remove obstructions (trees) to Runway 13, 2 and 6.
- Acquire easements over lands that are not controlled by airport authority to remove obstructions.
- Consider non-precision approach to crosswind runway, if extended.

4.4. General Aviation Facilities

This will examine the general aviation facility needs throughout the 20-year planning period.

4.4.1. Hangars

Hangars are one of the most desirable means for aircraft storage at any airport. In general, hangar types include a combination of the following facilities:

T-Hangars: A fully enclosed building housing individual stalls, each capable of storing one aircraft, typically a single-engine or a light multi-engine aircraft.

Small Box: Similar to a T-hangar, a small box hangar is intended to store one aircraft, typically a single-engine or light-twin. Small box hangars, however, can be developed individually or in a row with shared interior walls. Generally, these types of hangars only front a taxiway/lane on one side and not both as is typical of T-hangar facilities.

Conventional Hangars: A fully enclosed building typically capable of holding multiple aircraft. These are often referred to as storage or box hangars.

Corporate Hangars: Similar to conventional hangars but typically have an attached office and are intended for a single aircraft, possibly two.

Presently, the hangar space is near capacity. Airport administration maintains an extensive list of 150+ aircraft owners that wish to base their aircraft in a T-hangar and 35 aircraft owners that seek conventional hangar space.

This section compares the existing facilities with the forecast levels to identify projected needs. Based on the field review of the FBO apron and south GA area apron, about 15 percent of based aircraft are tied-down on an apron, the remainder are in hangars.

Each development area of the airport was examined individually.

Table 4-19. Additional Based Aircraft Compared to Base Year

Year	2021	2026	2031	2036
Single Engine	17	35	54	76
Multi-Engine	3	5	8	11
Jet	2	4	6	9
Rotor	0	1	2	2
Military	1	2	4	6
Other	0	1	1	2

Source: Passero Associates Forecasts, Chapter 3 2017

South GA Area

From forecasts in Chapter 3, single engine, helicopter and other are anticipated to be in T-hangars, while 100% of the multi-engine are anticipated to be in conventional hangars. Demand for T-hangar will likely remain consistent over the planning period, and flexibility should be planned.

Table 4-20. Additional Based Aircraft Storage Requirements: South GA Area

Year	Conventional Hangars (100% ME)		Aircraft in T-Hangars (85% SE, Other 100% HE)		Tie-Downs (15% SE, Other)	
	Number of Additional Aircraft	Number of Additional Hangars	Number of Additional Aircraft	Number of Additional Hangars Units	Number of Additional Aircraft	Number of Additional Tie-Downs
2021	3	3	15	15	3	3
2026	5	5	33	33	6	6
2031	8	8	51	54	9	9
2036	11	11	70	70	12	12

East Corporate Area

From the forecasts in Chapter 3, 50% of the multi-engine aircraft, 100% of the jet and military aircraft would seek conventional hangars. In addition, airport management maintains a list of approximately 35 itinerant business aircraft owners that have expressed interest in hangars, ranging from small to large conventional hangars. For planning purposes, it is estimated that approximately 25% of these itinerant owners would utilize conventional hangar, culminating in an additional 9 aircraft over the planning period. Demand for larger hangar space is estimated at 2 aircraft per hangar. **Table 4-21** shows the based additional aircraft storage requirements.

Table 4-21. Additional Based Aircraft Storage Requirements: North Functional Area

Year	Conventional Hangars (10,000 SF)	
	Number of Additional Aircraft	Number of Additional Hangars
2021	6	3
2026	10	5
2031	16	8
2036	24	12

Note: Based aircraft is obtained from Chapter 3, excluding military aircraft from the counts. Conventional hangars account for 35% of waiting list in addition to based aircraft

Source: Passero Associates

Conventional hangars can accommodate single to multiple aircraft in them, given the size of the aircraft. For planning purposes, as outlined in Airport Cooperative Research Program (ACRP 113), *Guidebook on General Aviation Facility Planning*, minimum 10,000 SF of space should be used for conventional hangars, that can accommodate up to 98% of the business jet fleet, with a door of 26 feet. Presently the conventional hangars in the east corporate area of the airport are private hangars. Several hangar facilities will be required over the planning period. Potential development alternatives to address this need will be explored in the alternatives section of this report. The additional hangar facilities should be built when there is sufficient demand and adequate finances and may not occur in the development period outlined above.

Recommendation:

- Construct approximately 70 additional T-hangar units in the south GA area.
- Construct approximately 11 additional hangars in the south GA area.
- Construct approximately 12 additional large conventional hangars (10,000 SF each) in the east corporate area.

4.4.2. Aprons

Aprons are a critical component to general aviation facilities. Given the wide variety of aircraft that can be categorized as general aviation, the planning of GA aprons is largely dependent on aircraft parking and aircraft movements. GA aprons is largely dependent on aircraft parking and aircraft movements. GA aprons support a variety of functions, including: parking and storage of based and itinerant aircraft, fuel access, hangar access, and hangar utility, and helicopter activity. Terminal apron requirements will be addressed in a later section of this report.

For planning purposes, based and itinerant aircraft apron requirements are usually considered separately since they serve different functions, and will be addressed in the separate development areas of the airport.

South GA Area

Forecasts indicate that apron space should be set aside to accommodate an additional 12 based aircraft tie-downs throughout the planning period. Planning metrics to estimate the apron space are outlined in Appendix 5 of AC 150/5300-13A, calculated to be 4,500 SF of apron space per aircraft.

Additionally, adequate apron space must be of sufficient depth to be able to pull the plane out of the hangar without impacting set aside outside conventional hangars, assuming a depth of 40 feet.

Table 4-22.Apron Requirements: South GA Area

Year	Based Aircraft Tie-Downs (15%)		Conventional Hangars	
	Number of Additional Tie-Downs	Associated Apron Space (4,500 SF Ea.)	Number of Hangars	Associated Apron Space (2,400 SF Ea.)
2021	5	22,500	3	7,200
2026	6	27,000	5	12,000
2031	9	40,500	8	19,200
2036	12	54,000	11	26,400

East Corporate Area

The east corporate area provides storage for larger business jet aircraft and military. Based on the hangar forecasts for this area, sufficient apron space in front of the hangar needs to be considered. For a 10,000 SF hangar assume a depth of 80 feet prior to the OFA, or 8,000 SF per conventional hangar. These hangars must be sufficiently spaced to meet National Fire Protection Association (NFPA) 409, *Standards of Aircraft Hangars*, typically 50 feet between hangars and other buildings, and 30 feet between hangars and roads/parking lots. The east corporate, which houses the business users of the airport, should be designed to TDG 2 standards.

Table 4-23.Apron Requirements: East Corporate Area

Year	Conventional Hangars	
	Number of Hangars	Associated Apron Space (8,000 SF Ea.)
2021	3	24000
2026	5	40,000
2031	8	64,000
2036	12	96,000

Main Terminal Area

Itinerant aircraft typically use an apron that is more centrally located near an FBO, because it provides supplemental services that an itinerant pilot may be seeking (e.g., fuel, flight training, car rental, etc.). Maneuverability of aircraft must be considered when planning for the aircraft parking apron. Forecasted itinerant peaking operations were used to calculate the increase in apron space needed to accommodate the transient operations. Additional information supplemented the peaking characteristics based on constraints experienced on the FBO apron during special events, such as the Player's Championship, estimated at an additional 10 aircraft.

When sizing aprons for larger aircraft, the apron is sized for the width and length of the aircraft fleet using the airport. Examining TFMSC data concludes the representative aircraft is the Cessna 750, Citation X, which requires 9,400 SF to park the aircraft. The FBO area should be designed to TDG 2 standards.

Table 4-24.Apron Requirements: Main Terminal Area

Year	Itinerant Tie-Downs	
	Number of Additional Tie-Downs	Associated Apron Space (9,400 SF Ea.)
2021	11	103,400
2026	14	131,600
2031	16	150,400
2036	19	178,600

Note: Conventional hangar 80' deep by 100' wide. Itinerant tie-downs from Table 3-31 and special events at 10 aircraft.
Source: Passero Associates

The FBO apron location impacts some design standards which need to be considered during the alternatives section, specifically impacts to Runway 6 ROFA (see **Figure 4-10**), and providing a direct connection from the FBO apron to Runway 2, which is a deficiency to the taxiway design outlined in the AC 150/5300-13A

Recommendations:

- Provide additional 54,000 SF of apron space in the south GA area.
- Provide additional 26,400 SF of apron space around conventional hangars in the south GA area
- Provide additional 96,000 SF apron space with associated hangar development in east corporate area.
- Provide additional 178,600 SF apron space near the FBO.

4.4.3. General Aviation Parking and Access

Parking is based on forecasts. The functional areas were reviewed independently, based on the forecasts to determine future needs.

Most aircraft owners park their automobiles in their respective hangar when they fly their aircraft; therefore there is not a significant amount of parking spaces within the south GA area, except for the conventional hangars, assumed at two spaces per hangar.

St. Johns County off-street parking criteria was applied to parking needs for future conventional hangars, based on 1 parking space for every 5,000 SF of space, and 1 space for every 2 employees, assuming 2 employees/hangar. ACRP 113 guidelines were used for itinerant operations, applying 2.5 space for every peak hour operation above existing peak levels. **Table 4-25** shows the additional parking needs for general aviation. Commercial service will be covered in another section of this report.

Table 4-25. Additional General Aviation Automobile Requirements

Parking Needs	South GA Area	East Corporate Area	Itinerant	Total
2021	6	8	8	22
2026	10	12	20	42
2031	16	18	33	67
2036	22	26	48	96

Source: Passero Associates

Access to the general aviation components is multi-faceted, with access off U.S. 1, and Hawkeye View Lane.

Access to the east corporate area is directly off U.S. 1 onto Gun Club Road, and then onto Hawkeye View Lane. Access to the South GA area is from U.S. 1 onto either Estrella Avenue or Indian Bend. Future T-hangar development in this area may require the relocation or closure of Indian Bend Avenue to accommodate development. Access to the FBO is off U.S. 1 as well. Development potential may impact the ground access to the east corporate and South GA areas. This will be reviewed as part of the alternatives section.

Recommendations

- Provide an additional 48 auto parking spaces near FBO.
- Provide an additional 26 automobile parking spaces in the east corporate area for the conventional hangars.
- Provide an additional 22 automobile parking spaces in the south GA area.
- Consider ground access to east corporate area.
- Consider ground access to south GA area.

4.4.4. General Aviation Runup Areas

The MPAC identified a need for runup areas, for piston powered aircraft, to alleviate the backup that occurs when using Runway 31 for departures. The main congestion points are within the south GA area where Taxiway F and G come together.

Recommendations

- Provide an apron area in the south GA area for piston powered aircraft departing this area

4.5. Commercial Service

FAA AC 150/53660-9, *Planning and Design of Airport Terminal Building Facilities at Nonhub Locations,* airport terminals and related vehicle access and parking are planned, sized, and designed to accommodate peak passenger demands of the forecast periods. The forecasts in Chapter 3 indicated that enplanements could increase from 10,099 to 94,750 by the end of the planning period.

4.5.1. Terminal Building

The existing terminal building is about 14,000 SF, with two additional outdoor functional areas of approximately 4,000 SF of baggage claim area and approximately 3,000 SF of baggage makeup area. Car rental counters are available inside the terminal building, as is airline counters and Transportation Security Administration facilities. As air carrier schedules and fleet change, reorganization of the terminal building may be needed to better accommodate the enplaning/deplaning passengers.

Recommendation:

- Expand terminal building by approximately 28,000 SF, based on additional passenger enplanements.

4.5.2. Terminal Apron

The existing apron is designed in a linear position: pull-in, drive-out configuration. There are two spots denoted on the pavement, which is the minimum required per AC 150/5360-9. Three parking spaces would be needed if the total peak hour passengers increased beyond 150 and there were two or more carriers. The apron is designed to accommodate three (3) passenger gates using A320 aircraft.

Per the pavement inventory condition map, the terminal apron area however is in fair condition and in need of rehabilitation and re-marking, including the security identification display area (SIDA).

Recommendation:

- Rehabilitate terminal apron and re-mark parking stations and SIDA.

4.5.3. Terminal Ground Access and Parking

Ground access to the commercial service terminal building is directly off U.S. 1, via an indirect route through the FBO parking lot. There is limited visibility to the terminal building from U.S. 1. Additional signage and improved access will create a more efficient connection for the passenger. A signalized intersection to the Terminal Building should be considered at the existing curb cut. This will improve traffic flow to U.S. 1 while providing a more direct route to the terminal building.

Applying the guidelines in AC 150/5360-9, *Planning and Design Guidelines for Airport Terminal Facilities*, coupled with the ultimate forecast for enplanements provides that about 200 public automobile parking spaces is needed in the long-term for the enplaned passengers. The existing designated parking spaces account for approximately 169, which is below the forecasted level. During historic high travel periods, there wasn't ample parking spaces.

Employee parking should be provided within a reasonable distance to the terminal. A rule of thumb is to provide 10%-20% of the public parking spaces. This translates into 20-40 parking spaces. The existing parking lot is near capacity with enplaned passengers and employee parking and should be considered for expansion as enplanements increase.

Car rental is available as well, within a brief walk from the terminal building. As of this writing three car rental agencies have counter space inside the terminal building. For airports with low passenger counts rule of thumb is to provide a minimum of 10 parking spaces for each rental company. The airport has about 26 spaces set aside for car rental that serve enplaning passengers. As enplanements increase demand for car rentals increase. Utilizing guidance in AC 150/5360-13, *Planning and Design Guidance for Airport Terminal Facilities*, of 1 car rental for 750 enplaning passengers, the long-term projected enplanements could result in a need for approximately 126 parking spaces. There is no rental car staging, fueling or cleaning facilities on the airport. Expanding the car rental facility will be needed. The existing car rental parking lot and a portion of the terminal parking lot needs rehabilitation.

Recommendations:

- Rehabilitate parking lot for car rentals.
- Expand terminal parking lot as passenger enplanements increase.
- Construct signalized intersection on U.S. 1 for improved access to Terminal Building.
- Expand the car rental facility as passenger enplanements increase.

4.6. Support Facility Requirements

This section will examine the facility needs for security, airport maintenance, ARFF, fuel, and aircraft wash racks.

4.6.1. Security and Fencing

Security fencing is the most common means of securing a perimeter of an airport. At SGJ, perimeter fencing secures most of the airport. Potential vulnerable locations, where no perimeter fencing is present, exist on the east side of the airport around the Tolomato River and along the canal south of Runway 31. These areas are open, natural barriers such as retention ponds and salt water marshes. Alternatives using technology to secure these vulnerabilities on the east side, in lieu of installing a fence will be examined outside the scope of this Master Plan.

As mentioned earlier in this Master Plan, the Transportation Security Administration (TSA) maintains a presence at SGJ. Besides providing security services for passenger operations, TSA oversees the Airport's security fencing.

Additional security fencing may be required as new facilities are developed to maintain a separation between the airside and landside operations. The extent of such airfield security fencing will largely depend on the airport development alternatives selected. Private hangar or facility development must include how the site will work with overall airfield security. Fencing must meet the recommended guidance of six-foot-high chain link fence with three strands of barb wire.

Recommendation:

- Upgrade airport fence with barb wire.
- Install fencing around future development.
- Use of technology (Airport Security Radar System) to secure east side along Tolomato River.

4.6.2. Airport Maintenance Equipment & Building

Operating an airport requires continuous maintenance to keep the airport open and well maintained. These activities require the use and storage of equipment. Grass mowing equipment is needed to maintain the turf areas of the airfield. Such equipment requires dedicated storage space to preserve investment in equipment. This equipment should be stored in a maintenance equipment storage building (MES). Most maintenance equipment is stored in an existing 2,500 square foot building on the corner of Estrella Avenue and Pine Ridge Road, which is in fair condition.

There are no definitive guidelines for MES, but general guidelines can be obtained from ACRP 113. Guidance as outlined in AC 150/5220-18, *Buildings for Storage and Maintenance of Airport Snow and Ice Control Equipment and Materials*, has good information that may be applied to MES as well. Since SGJ maintains greater than 500 acres of land recommended sizing of an MES building is 4,800-6,400 SF to store the equipment.

Recommendation:

- Construct new 4,800-6,400 MES to accommodate the airport maintenance equipment.

4.6.3. ARFF Equipment

Operators of FAR Part 139 airports must provide aircraft rescue and firefighting (ARFF) services during air carrier operations. ARFF equipment is based on two factors: (1) the length of the air carrier aircraft operating; and (2) if the air carrier is performing 5 or more average daily departures. The Airbus A320 measured 123 feet, but presently the air carrier does not conduct 5 or more average daily departures. The new CRJ measures 106 feet, but it too doesn't perform 5 or more average daily departures. Presently SGJ meets the Index A, one vehicle meeting the requirements of FAR Part 139.317. **Table 4-26** provides a synopsis of the Indexes for ARFF equipment.

Table 4-26. ARFF Index

Index A	Aircraft less than 90 feet in length
Index B	Aircraft at least 90 feet but less than 126 feet in length.
Index C	Aircraft at least 126 feet but less than 159 feet in length.
Index D	Aircraft at least 159 feet but less than 200 feet in length
Index E	Aircraft at least 200 feet in length.

Source: AC 150/5220-10E

Recently the airport sponsor purchased a second vehicle that meets Index B criteria. In the long term, the airport will meet its certificate requirements for ARFF equipment. On average ARFF vehicles have a 10-15 year service life, or longer based on airports level of activity. In the long-term a vehicle will require replacement.

At certificated airports, operators are to include in their airport emergency plans for the rescue or aircraft accident victims from waters or marshlands that are adjacent to the airport, and beneath the approach and departure flight paths of air carrier aircraft. An airport adjacent to water/marshes, such as SGJ, should be equipped with an ARFF rescue airboat. This boat shall meet US Coast Guard standards and will be moored at the seaplane ramp. The airport sponsor recently acquired this airboat.

Recommendations:

- Replace existing ARFF equipment when service life expectancy is reached.
- Upgrade existing ARFF facility based on documented need.

4.6.4. Fuel Farm

Fueling is critical for attracting and maintaining a based user group and attracting itinerant aircraft to an airport. Two fuel types are available at the airport for aircraft. 100 LL (AvGas) and Jet A are available. 100LL is available through self-service on the GA ramps, via two tanks, near the Customs building; and also available through fuel truck delivery. Jet A is available through fuel truck delivery. The self-service tank is open 24 hours a day/7-days a week, providing 100LL gas to aircraft users at a lower expense. The FBO maintains a fuel farm along Estrella Ave, that has unleaded gasoline, 100LL and Jet A tanks, with secondary containment, and is easily available to refueling vehicles. A typical fuel truck can carry 8,000 gallons of fuel. The airport tanks are 12,000 gallons capable of accommodating a fuel load.

The Airport has a sufficient capacity to support the forecasted level of activities.

Recommendations:

- Maintain existing, condition and size.

4.6.5. Aircraft Washing

Aircraft washing is the responsibility of aircraft owners and conducted on one of the two designated wash stations on the airport for ADG I and II aircraft. Both are in the south GA area. Future configuration of this area should ensure there is sufficient wash stations provided in the south GA area. There are no specific guidelines for the quantity of wash stations, but adherence to local and state regulations exist for treating the water runoff, generated from the washing activities. The alternatives section will consider if additional wash stations are needed.

Recommendations

- Ensure there is adequate aircraft washing stations to meet local and state water quality regulations.

4.6.6. Airport Administration

Airport administration building is located on the southwest corner of Estrella Avenue and U.S. 1. The facility is used by airport administration and management personnel, contains a conference room, file storage and support areas. It is undersized, at approximately 4,000 SF, based on current needs and should be replaced. Using general guidelines for office space, for 16 employees, including a conference room, a minimum of 10,000 square feet should be considered. The administration building should:

- Provide safe and efficient access to primary roadways
- Have room for adequate auto parking
- Not interfere with other airfield facilities
- Allow easy access to utilities

Recommendations:

- Provide a minimum 10,000 SF administration building.
- Provide a minimum of 50 parking spaces.

4.6.7. Multi-Modal Connectivity

The location of the Northeast Florida Regional Airport is such that is has potential for multi-modal development. Four areas of multi-modal connectivity are described in the sections below.

4.6.7.1. Multi-Modal: Airport to the Tolomato River

Identified in the previous master plan a seaplane floating deck system and aluminum gangway were added to the airport since the previous Master Plan was completed. However, during Hurricane Matthew this system was destroyed. These elements should be considered for future re-installation to help with the utilization of the seaplane/barge ramp. FAA AC 150/5395-1, *Seaplane Base*, was reviewed to determine future needs. A basic public-use seaplane base, which is within a suitable water operating area, consists of approach/departure paths, designated sea lane, taxi channel(s), an anchorage area, and a shoreline ramp or pier. There are published sea lanes, meeting these guidelines, and no changes are recommended. The taxi channel is via the Tolomato River. This section is devoted to the seaplane/barge ramp at the airport. The south wing of the existing seaplane/barge ramp was reconstructed of concrete in 2017. The main ramp was rehabilitated, but the north wing needs to be rehabilitated.

Since the seaplane/barge ramp is collated with the airport FAA design standards apply, as well as FAR Part 77 airspace requirements. Design standards to consider are the runway safety area and object free area for Runway 13-31. The hold line on the seaplane/barge ramp is at the Runway 13-31 RSA limit, and has associated signage. The ROFA would extend approximately 123 feet onto the apron, leaving only 26 feet remaining on the apron. There is insufficient space for aircraft to park on the apron. The apron is below runway grade and meets grading requirements. Any structures on the apron should ensure they do not violate the transitional surface to Runway 13-31 or are marked and lighted accordingly. To comply with Florida Rule 14-60.007, the airport shall have at least one U.S. Coast Guard approved life preserver with a retrieval line attached available during hours of operation.

Recommendations:

- Replace floating dock and gangway.

- Rehabilitate north wing of the seaplane/barge ramp.

4.6.7.2. Multi-Modal: Airport to U.S. 1

U.S. Highway 1 connects Jacksonville, FL to St. Augustine, FL. Furthermore, U.S. Highway 1 is the main thoroughfare for accessing Northeast Florida Regional Airport. From a multi-modal connectivity perspective, general aviation and commercial service passengers can access multiple tourism options in St. Augustine, including World Golf Village, extending up to the City of Jacksonville via U.S. Highway 1.

Recommendations:

- Work with state and local agencies to upgrade U.S. Highway 1 as Airport activity increases.
- Work with local and regional tourism bureaus to market events within St. Augustine and the Jacksonville Metro area.

4.6.7.3. Multi-Modal: Airport to Rail

A dual line Florida East Coast (F.E.C) Railway runs parallel to U.S. Highway 1, on the west side, nearest the airport. The improved State Route 313 (S.R. 313) is underway with an improved interchange near the Cordova property, approximately 1.5 miles north of the Runway 13 end. The F.E.C rail opens up opportunities for logistics and passenger operations. Potential development on Airport-owned lands west of U.S. Highway 1 (Northeast Florida Regional Business development (NFR-B)) could include warehousing/distribution/commercial facilities that can access the F.E.C. rail directly via additional side-tracks for storing and transporting cargo around the region. In addition, a ground transportation center could tie in with the existing F.E.C rail that could be accessed directly from the Airport via an elevated covered walkway above U.S. Highway 1 or by local buses. This presents the opportunity for passengers to visit attractions in St. Augustine and/or the Jacksonville Metro area.

The alternative analysis will examine potential development between U.S. Highway 1 and State Route 313 on airport owned property, including parallel railroad tracks to FEC Railway, utilities, ground access and storm water to support development. The lands on the west of U.S. 1 are appropriately zoned to accommodate this development. Any development on NFRB lands will require public water and waste water facilities to be constructed to support additional development, because the existing systems will not be able to accommodate the increase demand.

Recommendations:

- Work with state and local agencies and the FEC Rail owners to develop multi-modal developments adjacent to the rail.
- Provide passenger connection to the FEC Railway with ground transportation center.
- Provide utility, access and storm water for proposed multi-use development.
- Work with state and local agencies to upgrade U.S. Highway 1 as Airport activity increases.
- Work with local and regional tourism bureaus to market events within St. Augustine and the Jacksonville Metro area.
- Provide parallel track to FEC railway for future distribution facilities.
- Multi-use development on lands west of U.S. 1 with direct connections to U.S. Highway 1, State Route 313, I-95 and State Route 16
    - Warehousing
    - Distribution
    - Commercial
    - Water/wastewater facilities
    - Aviation related development

4.6.7.4. Multi-Modal: Airport to Interstate 95 (I-95)

Providing a ground access corridor that connects U.S. Highway 1 to Interstate 95 (I-95), via Big Oak Road and State Route 313, and ultimately connecting to State Route 16 will be considered in the alternatives section of this Master Plan. This will not only provide direct access from the western portion of St. Johns County to the Airport, but also improve connectivity in the region.

Connecting the SGJ's available lands west and U.S. Highway 1 to I-95 and the FEC Railway will increase the efficiency and attractiveness for development. It will create a direct connection to a major north-south transportation corridor (I-95), and if extended to State Route16, provide access to a major east-west transportation corridor within the state of Florida. A formal request to the Florida Department of Transportation (FDOT) to designate SGJ as an Emerging State Intermodal System (SIS) facility is imperative as a driving force for multi-modal connectivity.

Recommendations:

- Designate SGJ as an Emerging SIS facility.
- Provide improved ground access from U.S. Highway 1 via Big Oak Rd to State Route 313, to I-95 and State Route 16.

4.6.7.5. Multi-Modal Support Facilities

Multi-modal support facilities including hotel, gas station, car rental and parking, resulting from additional flight training at the airport, along with potential for passenger rail service and multi-modal service on the west side of U.S. Highway 1. This will be examined during the alternative analysis section.

Recommendations:

- Provide space for a commercial development/multi-use space.
- Provide space for a consolidated car rental/remote parking facility.

4.8. Summary

This chapter identified several facility improvements for the Northeast Florida Regional Airport. Some improvements are recommended to better meet airport design standards and/or the requirements of the most demanding aircraft making regular use of the facility while other recommended improvements are more supportive of the airport's strategic development or to provide a higher quality airport experience. Each of the individual facility requirements identified in this chapter are summarized in **Table 4-27.**

Table 4-27. Summary of Facility Recommendations from SGJ

RUNWAYS	1. Examine alternatives to improve airfield capacity and ASV. 2. Maintain Runway 13-31 at 8,000 feet long by 150 feet wide. 3. Extend one crosswind Runway to at least 3,700 feet, widen to 75 feet, and provide standard RSA, ROFA B-II design, adjust Runway Visibility Zone. 4. Rehabilitate pavement markings as needed on Runway 13-31. 5. Rehabilitate pavement and markings on Runway 13-31 blast pads. 6. Improve Runway 20 safety area, if maintained as a runway, to provide standard RSA. 7. Modifications to Standards for Runway 13-31 ROFA, ROFZ deficiencies. 8. Maintain a crosswind runway: Re-designate Runway 6-24 as 7-25 or Re-designate Runway 2-20 as 3-21. **9.** Update pavement management plan, routine pavement maintenance on all airfield pavement.
TAXIWAYS	10. Mitigate direct taxiway connection between FBO apron and Runway 2 and 6 end. 11. Reconstruct Taxiway A, and connectors in long-term. 12. Rehabilitate Taxiway B North, B1 and B2 in mid-term. 13. Rehabilitate and upgrade Taxiway D and connectors in the short-term with markings. 14. Rehabilitate Taxiway D3 in long-term (Phase 3). 15. Rehabilitate Taxiway F and G in short to mid-term. 16. Correct FAA documented "Hot-Spot" at Taxiway B2 and Runway 2-20. 17. Mark POFZ critical area hold line on Taxiway B south. 18. Extend taxiway to crosswind runway. 19. Conduct routine pavement maintenance on all taxiways.
AIRFIELD FACILITIES	20. Relocate segmented circle/wind cone when crosswind runway upgraded to B-II standards. 21. Obtain easements to remove off airport obstructions to Runway 6 and 2. 22. Remove two tie-down parking spots on FBO transient apron within Runway 6-24 ROFA, if runway is upgraded to B -II standards. 23. Relocate parked fueling vehicles outside the Runway 6 RPZ. 24. Implement a non-precision approach on extended crosswind runway, upgrade markings to non-precision. 25. Install REIL on crosswind runway. 26. Replace MITL on Taxiway D. 27. Replace Runway/Taxiway lights on crosswind runway, when widened. 28. Install signage at POFZ critical area on Taxiway B south. 29. Install new signage on extended crosswind runway and parallel taxiway. 30. Install supplemental wind cone on Runway 31 end. 31. Install supplemental wind cone on extended crosswind runway to the east. 32. Install PAPI on crosswind runway. 33. Upgrade PAPI as needed, when jet operations use the crosswind runway. 34. Replace beacon light, as needed. 35. Remove obstructions to Runway 13, 6 and 2.

	36. Periodic remarking of all airfield pavements.
AIRIFIELD SUPPORT FACILITIES	37. Replace fencing with 6 feet high fence with barb wires. 38. Install frangible breakaway couplings on fence posts adjacent to Runway 13 end. 39. Install lights, similar to FAR Part 77 Obstruction Lights, on fence posts adjacent to Runway 13 end. 40. Install fencing with future development. 41. Use technology (Airport Security Radar System) to secure east side along Tolomato River. 42. Construct 4,800-6,400 SF maintenance equipment building. 43. Replace ARFF equipment when service life is reached. 44. Ensure adequate aircraft washing facilities to meet local water quality regulations. 45. Construct an administration building at least 10,000 SF administration building with 50 automobile parking spaces.
COMMERCIAL PASSENGER FACILITIES	46. Rehabilitate airline terminal apron, re-mark parking spaces and SIDA. 47. Rehabilitate parking lot for car rentals. 48. Expand automobile parking lot as additional passenger enplanements increase. 49. Expand car rental facility. 50. Construct signalized intersection on U.S. 1 for improved access to the terminal area.
GENERAL AVIATION FACILITIES	51. Construct approximately 70 additional t-hangar units in the south GA area. 52. Construct approximately 11 conventional hangars with apron in the south GA area. 53. Construct approximately 12 additional conventional hangars in the east corporate area. 54. Construct at least 54,000 SF of additional GA based aircraft apron space. 55. Construct approximately 26,400 SF of apron area around conventional hangars in south GA area. 56. Construct approximately 96,000 SF of apron area around conventional hangars in east corporate area. 57. Construct approximately 178,600 SF of additional itinerant apron near the FBO. 58. Construct apron area in south GA area for piston powered aircraft. 59. Provide additional 48 vehicle parking spaces in FBO area. 60. Provide additional 26 vehicle parking spaces in east corporate area. 61. Provide additional 22 vehicle parking spaces in the south GA area. 62. Consider ground access improvements to east corporate area. 63. Consider ground access improvements to south GA area.
MULTI-MODAL	64. Designate SGJ as an Emerging SIS facility. 65. Provide Multi-use development (warehousing, distribution, commercial). 66. Provide utility, access and storm water for development on west-side of U.S. 1 to support warehousing, distribution, commercial, professional development 67. Provide passenger connection to FEC railway system with ground transportation center. 68. Provide parallel trach to FEC Railway for distribution. 69. Provide improved ground access from U.S. 1 via Big Oak Rd to S.R. 313, to I-95 and SR16. 70. Replace floating dock and gangway for seaplane/barge use. 71. Reconstruct north wing of seaplane/barge ramp. 72. Provide life preservers and retrieval rope on seaplane/barge ramp. 73. Provide space for commercial development/multi-use space. 74. Provide space for consolidated car rental/remote parking facilities.

Source: Passero Associates

NFRA

Northeast Florida Regional Airport

Fly Smart!

Chapter Five

Airport Development Alternatives

5. AIRPORT DEVELOPMENT ALTERNATIVES

This section of the Master Plan Update presents a comparison of airport development alternatives that meet aviation needs over the planning period, while satisfying the ultimate development goals for the Airport and the Airport Authority. The identification of alternatives was completed based on the information presented in the previous chapters of this master plan.

Throughout this chapter, each alternative will be presented and assessed, based on the screening criteria described below in **Table 5-1**, followed by a corresponding figure and a numeric summary of screening criteria results.

Table 5-1. Screening Criteria for Airport Development Alternatives

CRITERIA	DESCRIPTION
OPERATIONAL SCREENING CRITERIA	
Operations	Each alternative will be rated based on its benefit and improvement of the operation of the airport, related airport design standards, safety, security and capacity enhancements. The numeric rating will be assigned in response to the basic question, **"How much does this alternative improve the physical layout and operation of the airport?"**
Environmental	Each alternative will be rated based on its potential impact to the environment (and environmental impact categories assigned by the FAA), including the cost and effort needed to permit and mitigate any environmental impacts with regulatory agencies. The numeric rating will be assigned in response to the basic question**, "How much does (or could) this alternative impact the physical environment of the airport and immediate area?"**
Development Cost	Each alternative will be rated based on its corresponding development cost, including consideration of the likelihood that the Airport Authority (and related grant funding agencies) would fund the development shown. The numeric rating will be assigned in response to the basic question, "**How much does this alternative cost? And, could the Airport Authority access and provide the needed funding to complete this development?"**
Airfield Strategic	Each alternative will be rated based on its relation to current and long-term development strategies and goals. The numeric rating will be assigned in response to the basic question**, "How well does this alternative meet the existing and long-term goals of the airport and the Airport Authority?"**
BUSINESS PLANNING – SCREENING CRITERIA	
Support-to-Community	Each alternative will be rated based on its ability to directly and/or indirectly provide support and value within the St. Johns County region. Related factors will include the airports' economic impact, ability to provide supporting infrastructure to support the airport and the region, and resulting job creation. The numeric rating will be assigned in response to the basic question, **"How well does this alternative support the St. Johns County region?"**
Revenue/Return on Investment (ROI)	Each alternative will be rated based on its ability to generate revenue for the Airport, and to provide a Return-on-Investment (ROI) for the funds needed to accomplish the proposed development. The numeric rating will be assigned in response to the basic question**, "How well does this alternative generate revenue and provide an acceptable financial return on the funds provided by the Airport Authority?"**

Transportation Connectivity/Intermodal	Each alternative will be rated based on its ability to provide improved ground transportation accessibility to the airport area, including improved connectivity to other modes of transportation. The numeric rating will be assigned in response to the basic question, **"How much does this alternative improve the local and regional transportation system?"**
Business Strategic	Each alternative will be rated based on its ability to address and improve the business planning related strategies and interests of the Airport Authority. The numeric rating will be assigned in response to the basic question, **"How well does this alternative impact the business operations, community value and its' corresponding overall economic impact within the community?"**

Source: Passero Associates

Each alternative will be assigned a rating (from 1 – 5) for each screening factor listed above. Within each criterion, a higher rating equates to a more favorable and beneficial alternative for the airport. Each alternative will be assigned a total numeric rating at the end of each individual section, followed by a comprehensive summary of findings for all alternatives at the end of the chapter.

Details on the screening criteria and rating details are provided in **Tables 5-2 to 5-9**, below.

Table 5-2. Operations (a higher level of improvement results in a higher rating)

Description	Rating
Alternative provides minimal (no) improvement to operations (safety, security, capacity, design standards)	1
Alternative provides nominal benefit to operations	2
Alternative provides moderate benefit to operations	3
Alternative provides significant benefit to operations	4
Alternative provides major benefit to operations	5

Source: Passero Associates

Table 5-3. Environmental (a lower level of impact results in a higher rating)

Description	Rating
Alternative results in major impacts to the environment (to the environmental impact categories assigned by FAA)	1
Alternative results in significant impacts to environment	2
Alternative results in moderate impacts to environment	3
Alternative results in nominal impacts to environment	4
Alternative results in minimal impacts to environment	5

Source: Passero Associates

Table 5-4. Development Cost Screening Criteria (a lower development cost results in a higher rating)

Symbol	Rating
$$$$$	1: $10,000,000+
$$$$	2: $5,000,000 - $10,000,000
$$$	3: $1,000,000 - $5,000,000
$$	4: $500,000 - $1,000,000
$	5: $0 - $500,000

Source: Passero Associates

Table 5-5. Airfield Strategic (a higher level of support results in a higher rating)

Description	Rating
Alternative minimally supports long-term goals / strategies of the Airport and the Airfield	1
Alternative nominally supports long-term goals/strategies	2
Alternative moderately supports long-term goals/strategies	3
Alternative significantly supports long-term goals/strategies	4
Alternative provides major support to long-term goals/strategies	5

Source: Passero Associates

Table 5-6. Support-to-Community Screening Criteria (a greater benefit to more people results in a higher rating)

Symbol	Rating
	1: Minimal (or no) benefit to the region
	2: Nominal benefit to the region
	3: Moderate benefit to the region
	4: Significant benefit to the region
	5: Major benefit to the region

Source: Passero Associates

Table 5-7. Revenue and ROI Screening Criteria (greater revenue and corresponding ROI result in a higher rating)

Symbol	Ratings
	1: Minimal (or no) revenue generation and/or ROI to airport
	2: Nominal revenue generation and/or ROI to airport
	3: Moderate revenue generation and/or ROI to airport
	4: Significant revenue generation and/or ROI to airport
	5: Major revenue generation and/or ROI to airport

Source: Passero Associates

Table 5-8. Improved Ground Transportation, Efficiency and Connectivity (a higher level of improvement results in a higher rating)

Description	Rating
Alternative provides minimal (no) improvement to ground transportation systems, efficient and connectivity	1
Alternative provides nominal benefit to ground transportation systems, efficient and connectivity	2
Alternative provides moderate benefit to ground transportation systems, efficient and connectivity	3
Alternative provides significant benefit to ground transportation systems, efficient and connectivity	4
Alternative provides major benefit to ground transportation systems, efficient and connectivity	5

Source: Passero Associates

Table 5-9. Business Strategic (a higher level of support results in a higher rating)

Description	Rating
Alternative minimally supports the long-term business, community and economic impact goals/strategies of the Authority	1
Alternative nominally supports long-term goals/strategies	2
Alternative moderately supports long-term goals/strategies	3
Alternative significantly supports long-term goals/strategies	4
Alternative provides major support to long-term goals/strategies	5

Source: Passero Associates

5.1. Airfield Alternatives

Airfield facilities are the operational focal point of an airport complex. Because of their role, and the fact that they physically dominate a great deal of an airport's property, airfield facility needs are often the most critical factor in the determination of viable airport development alternatives. Specifically, the runway and taxiway systems of an airfield generally require the greatest commitment of land area and often have the greatest influence on the identification and development of related airport facilities.

The following sections outline a variety of development options, necessary facilities and spatial requirements to facilitate safe and improved airport operations.

Based on deficiencies outlined in Chapter 4, some airfield improvements are required at the Airport to meet FAA design and safety standards and to ensure compliance with federal grant assurances. As previously noted in **Table 4-25**, SGJ's airfield deficiencies were broken down into the following categories: runways, taxiways, airfield facilities, airfield support facilities, commercial passenger facilities, general aviation facilities, and multi-modal facilities. The sections that follow will identify development alternatives to address deficiencies in each of these categories. It should be noted that not all deficiencies require consideration of airport development alternatives, as some deficiencies will simply be addressed and corrected.

5.1.1. Increasing Overall Annual Service Volume (ASV)

NFRA currently operates at greater than 70% of its' ASV, when alternatives and improvements should be planned and implemented to improve long-term ASV, before excessive operational delays persist.

Improved ASV is provided when new runways and taxiways are constructed, and / or runways do not intersect. If a non-intersecting runway was provided, the ASV could increase from 200,000 to 275,000 annual operations. To accomplish this goal, alternatives are provided below, for consideration.

No build Alternative

As a baseline comparison, the No build alternative is presented for consideration. This alternative is presented to maintain the hangar and apron space within its' existing state of development. No new (or improved) facilities are proposed.

Benefits:

- Retain thee intersecting runways.

Impacts:

- Airport will continue to experience capacity issues throughout the planning period, already at 70% of capacity.
- Delays will increase as operations increase.

Option 1: Non-Intersecting Runway West of Runway 13-31 on NFRA (Figure 5-1)

- Construct 3,700-foot parallel runway, offset 700 feet west of Runway 13-31

Benefits:

- Improved ASV.

Impacts:

- Physical overlay of runway and runway protection zone to Northrup Grumman facilities, Taxiway B, t-hangars and ARFF building does not meet design standards.
- Direct (close-in) overflights to Northrup Grumman.
- Loss of building function in numerous areas.
- Environmental: Wetlands and drainage system are impacted.

Option 2: Non-Intersecting Runway East of Runway 13-31 on NFRA (Figure 5-2)

- Construct 3,700-foot parallel runway, offset 2,000 east of Runway 13-31.

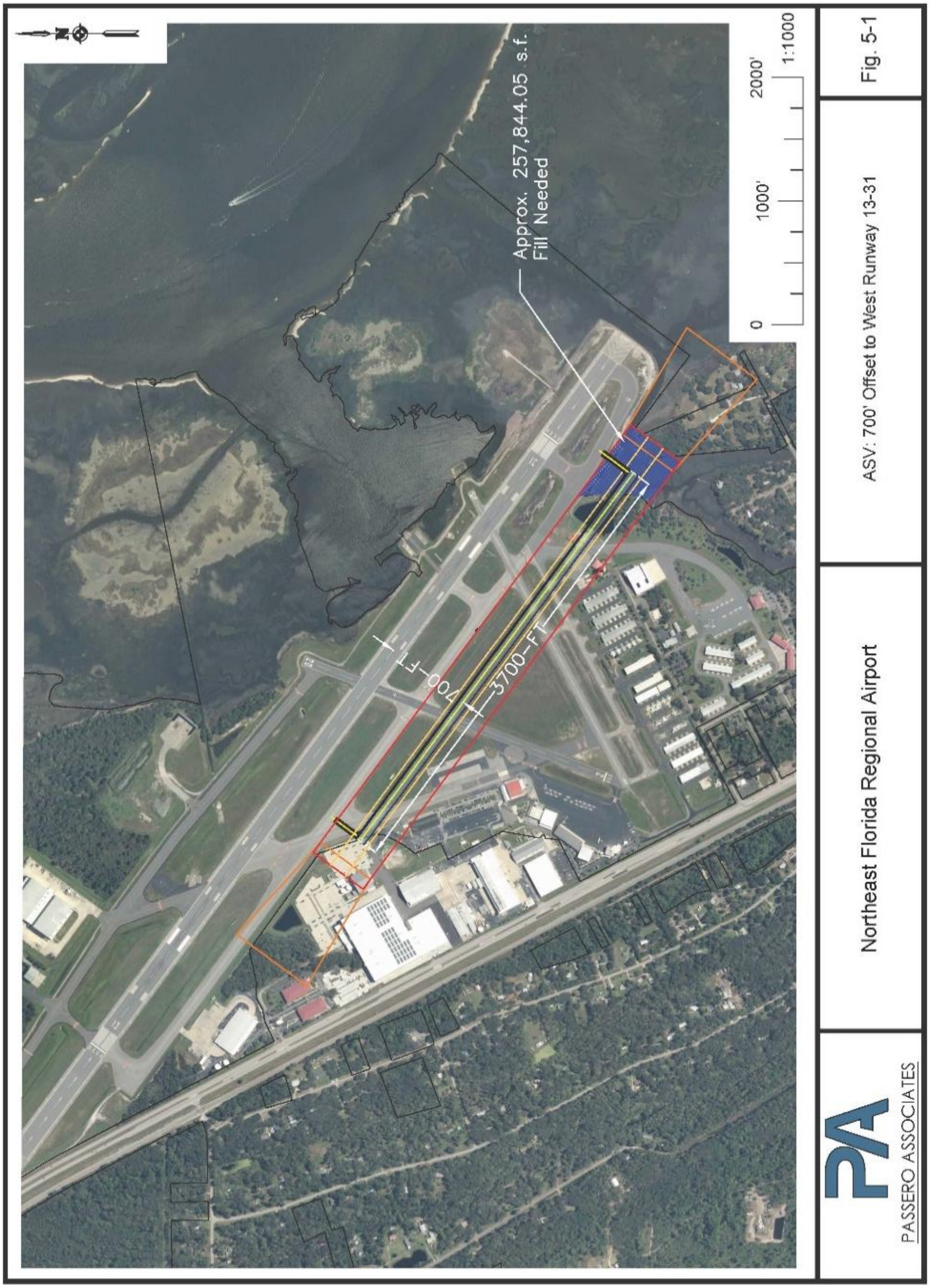
Benefits:

- Improved ASV.
- Avoids existing east corporate area development.

Impacts:

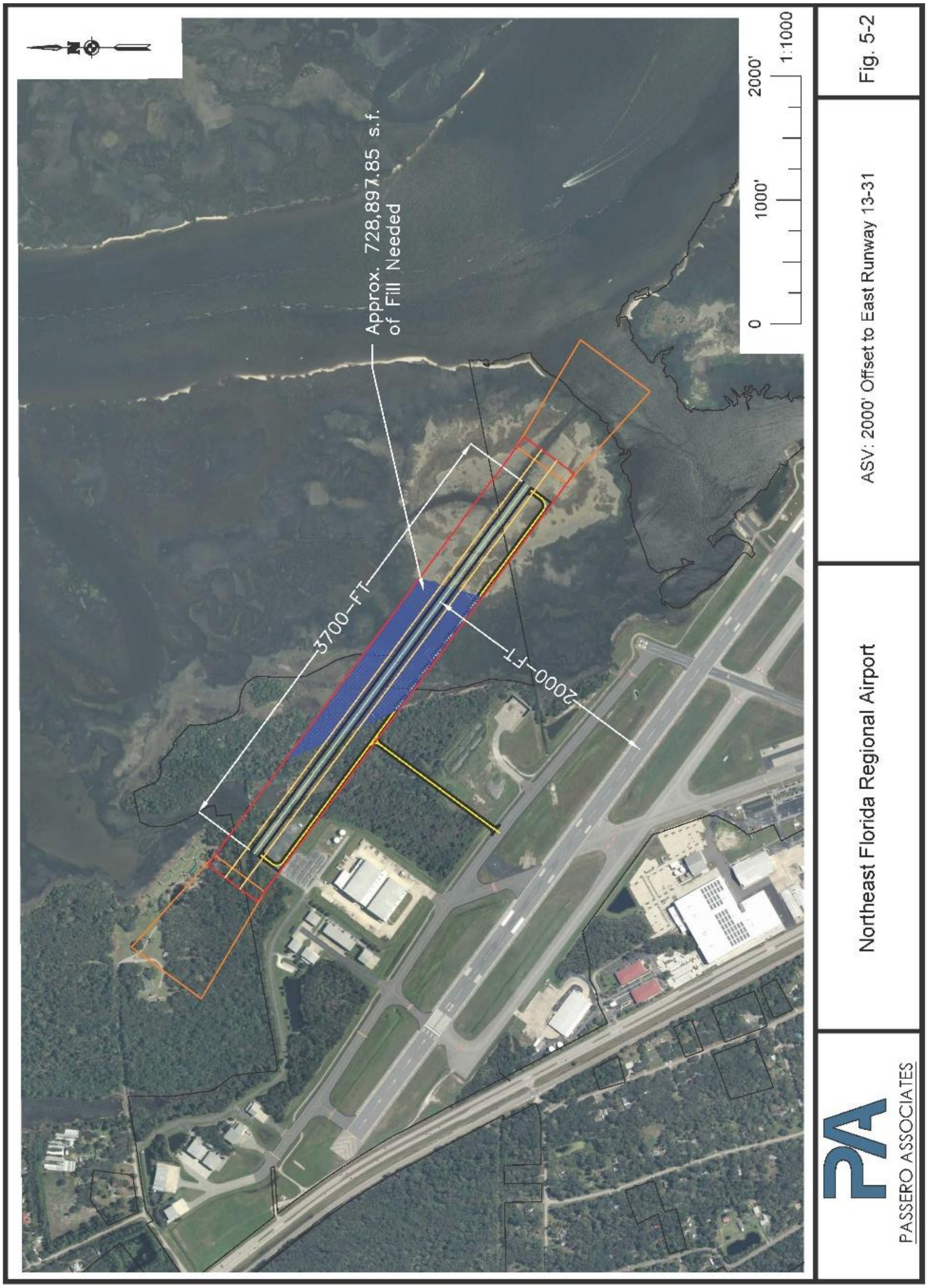
- Acquisition of Gun Club and state land needed.
- Significant cost needed for additional fill for runway and connector taxiway connection.
- Environmental: Significant impact to numerous environmental impact categories (wetlands, protected species, etc.) with corresponding challenge to obtain needed permits.

Figure 5-1. Non-intersecting Runway on airport to the west of Runway 13-31 (700 feet separation from 13-31)



Source: Passero Associates

Figure 5-2. Non-intersecting Runway on airport to the west of Runway 13-31 (2000 feet separation from 13-31)



Source: Passero Associates

Option 3: Non-Intersecting Runway on Land West of U.S. Highway 1 (NFRB) (Figure 5-3A)

- Construct 3,700-foot long crosswind Runway 5-23, west of U.S. Highway 1.

Benefits:

- Improve ASV.

Impacts:

- Runway area cannot be seen and managed by current ATC; therefore, equipment will need to be purchased for remote ATC operations.
- Operational challenge to operate independent of east runway system or require bridged connector to the east.
- High cost for new runway development and possible bridge connector to east.
- Airport Authority does not own all the land needed, requires land release from SJWMD.
- Environmental: Significant impact to numerous environmental impact categories (wetlands, protected species, etc.).

Option 4: Parallel Runway on Land West of U.S. Highway 1 (NFRB) (Figure 5-3B)

- Construct 3,200-foot long parallel Runway 13L-31R, west of U.S. Highway 1.

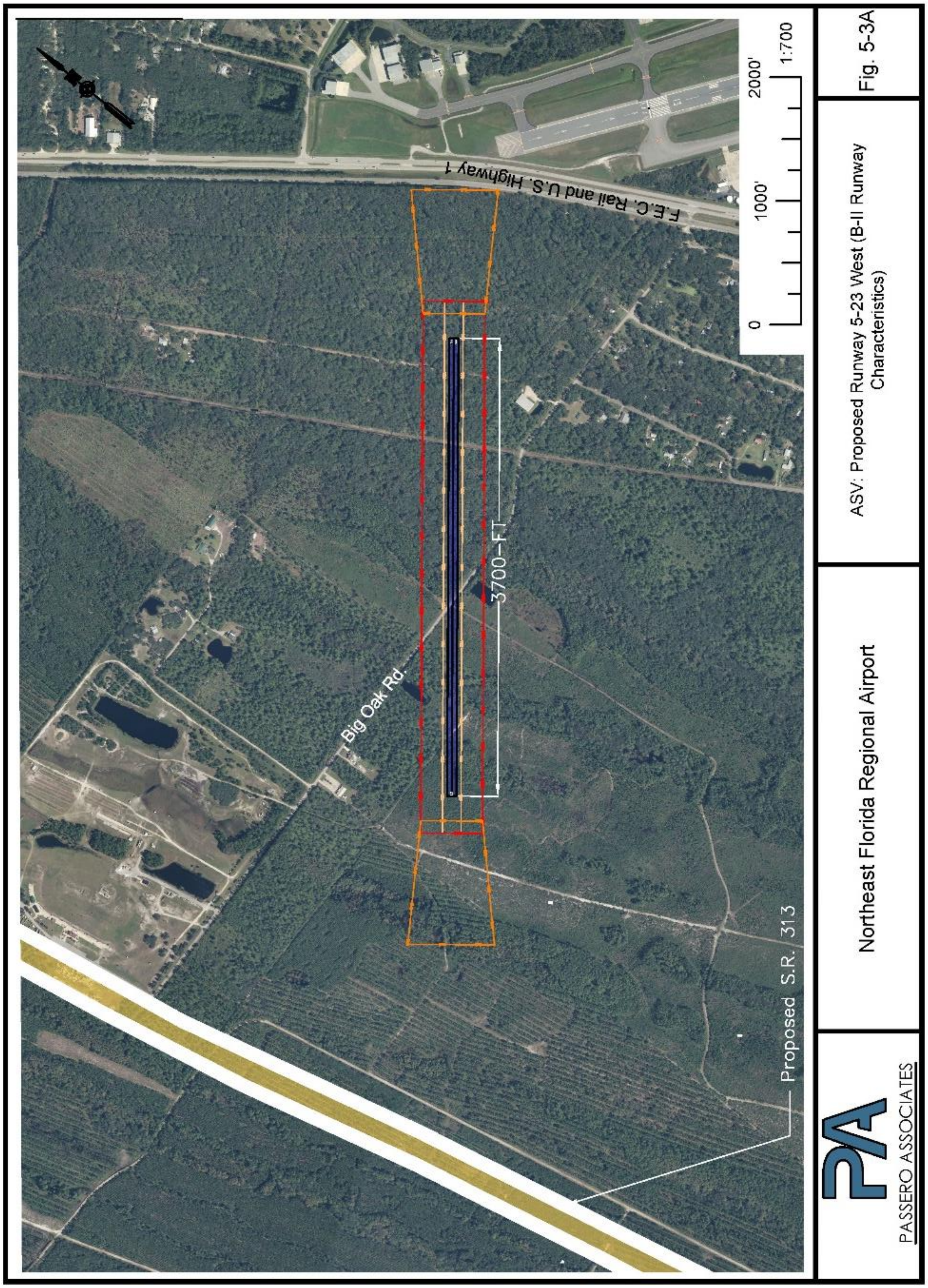
Benefits:

- Improve ASV.
- Provide separate runway for flight training purposes only.

Impacts:

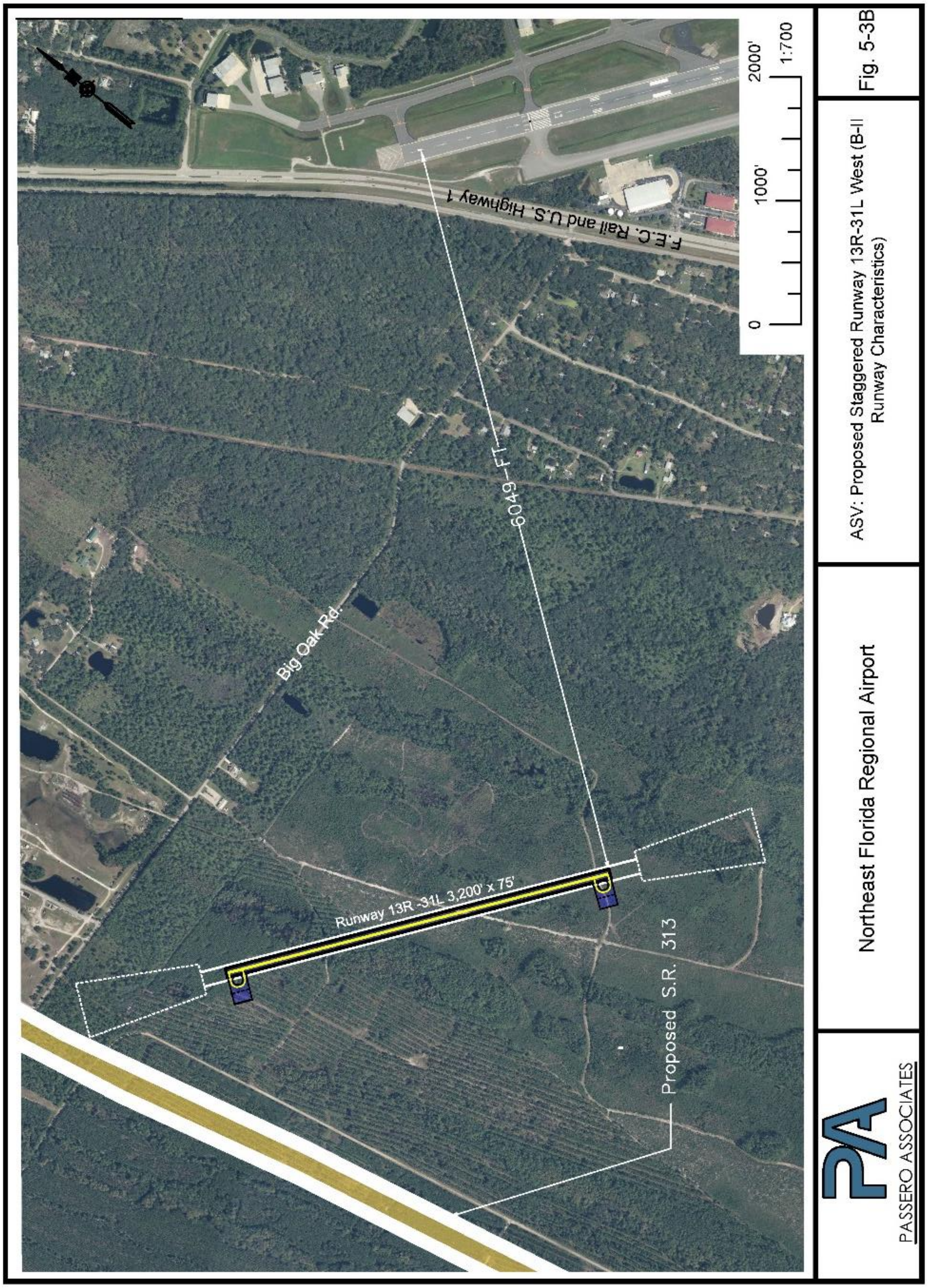
- Runway area cannot be seen and managed by current ATC; therefore, equipment will need to be purchased for remote ATC operations.
- Airport Authority does not own all the land needed, requires lands from SJWMD.
- Costs from additional land acquisitions and development of a runway.
- Environmental: Significant impact to numerous environmental impact categories (wetlands, protected species, etc.).

Figure 5-3A. Non-intersecting Runway on airport to the west of Runway 13-31 on NFRB (2000 feet separation from 13-31)



Source: Passero Associates

Figure 5-3B. Proposed Parallel Runway 13R-31L on NFRB



Source:Passero Associates

Alternate Airport Sites

When ASV improvements cannot be accommodated on existing airport property, an alternate new airport (airport site) may be considered. Several versions of the Florida Aviation System Plan (FASP) show a void in airport service coverage between St. Johns and Clay counties, so this is a possible site for an alternate airport. The second possible site that is being considered is located near State Route 206 in St. Johns County on the I-95/State Route 206 Site.

The requirements for a new, alternate airport site included the following elements:

- Provide a 5,000' x 75' runway and full parallel taxiway system.
- Provide a non-precision instrument approach procedure to both runway ends, designed to RDC B-II standards with visibility greater than ¾ mile.
- Provide adequate aircraft parking apron space.
- Provide areas for T-hangars and corporate hangars.
- Provide for an efficient ground access and automobile parking system, and
- Provide adequate land for Runway Protection Zones, FAR Part 77 Approach and Transitional surfaces and buffers to adjacent land uses.

Alternate Site #1 – Clay Port/Reynolds Airpark (Figure 5-4)

- Examine the converted (and re-developed) site within Clay County, adjacent to St. Johns County, to convert an existing private airport to a public-use general aviation airport.

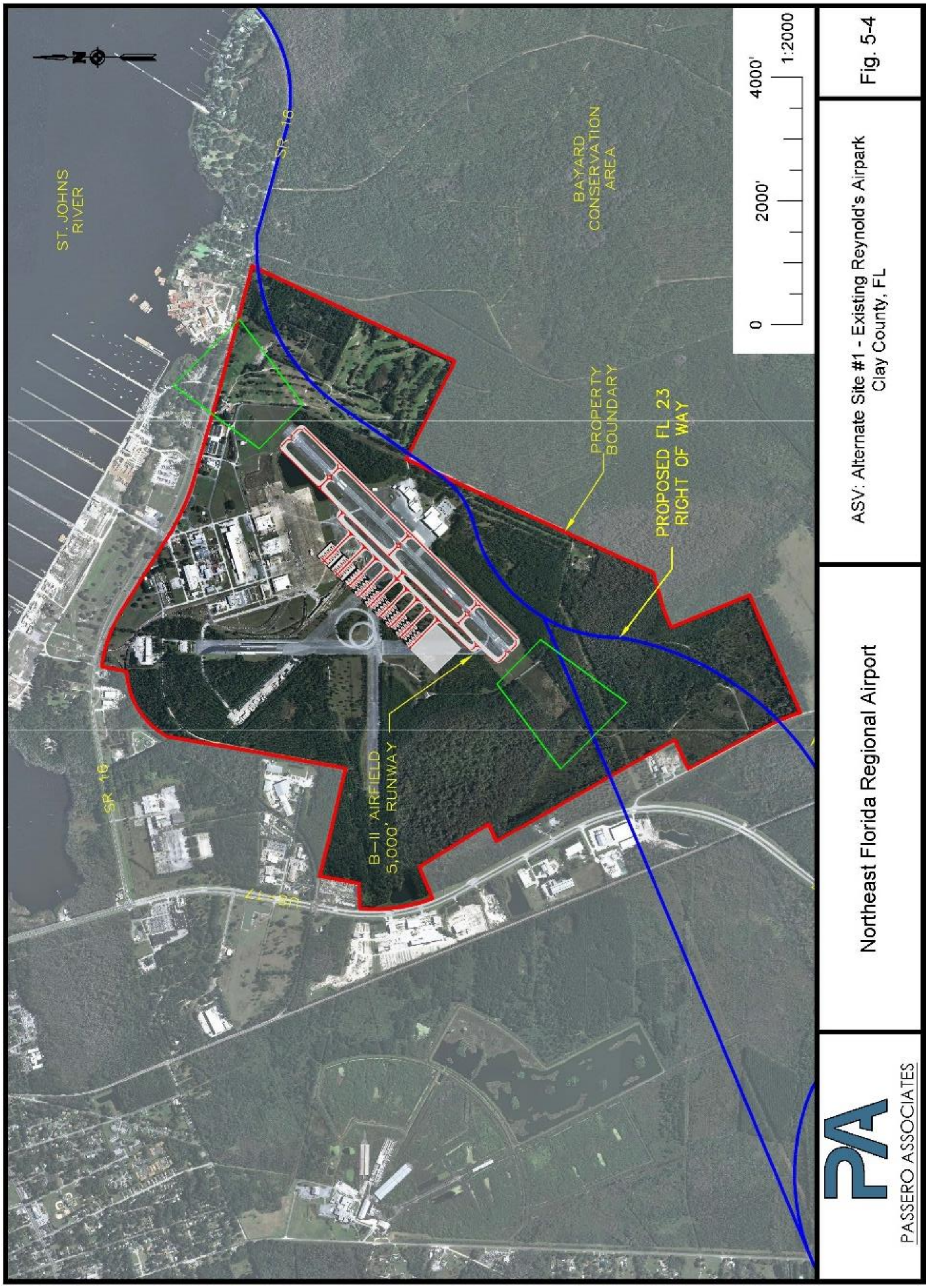
Benefits:

- Current site is an existing airport facility.
- Current site already provides most of the desired airport facilities.
- Current Land Use: MURP (Mixed Use Reynolds Park) – Is compatible with airport development.
- Zoning: H-2 (Heavy Industrial) – Is compatible with airport development.
- Current site is surrounded by large tracts of undevelopable land (Bayard conservation area and the St. Johns river used for outdoor recreational activities).
- Regional ground transportation connection to future expressway, and immediate access to St. Johns County.

Impacts:

- Close proximity of First Coast Expressway (State R 23) to the runway system and RPZ.
- Private ownership interest and acceptance to sell the land for municipal airport development.
- Local public acceptance of the airport as a municipal, general aviation airport.
- Environmental planning, impact and mitigation.
- Development cost and access to state and federal grant programs.
- Challenge on locating a local municipality to become the future airport owner and long-term sponsor of the facility.
- Challenge in meeting the state and federal airport system requirements for inclusion into state and federal airport system plans.

Figure 5-4. ASV: Runway Alternate Site #1



Source: Passero Associates

<u>Alternate Site #2 – I-95/State Route 206 Site (Figure 5-5)</u>

- Examined a new site within St John's County to develop a new general aviation airport on undeveloped land.

Benefits:

- Relatively undeveloped (and available) site.
- Ability to provide most (or all) of the desired airport facilities.
- Proposed site is currently open / rural land.
- Nearby access to State Route 206 and I-95.

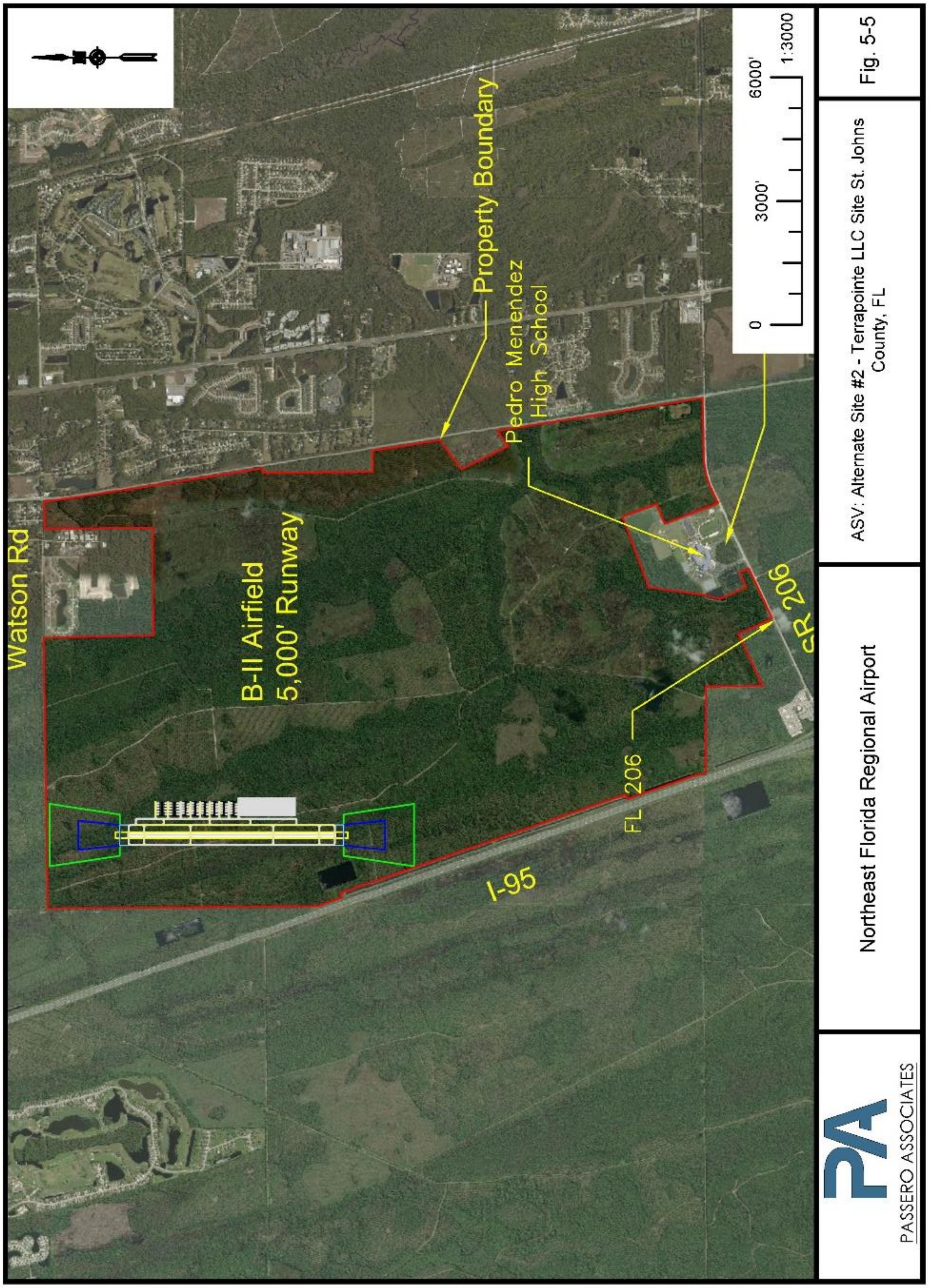
Impacts:

- Proposed residential developments surround this land area
- Pedro Menendez High School is located in close proximity to the south.
- Public acceptance of a new airport.
- Environmental planning, impact and mitigation.
- Development cost and access to state and federal grant programs.
- Challenge to current airport authority, or another viable sponsor to proceed with new airport development.
- Challenge in meeting the state and federal airport system requirements for inclusion into state and federal airport system plans
- Roadway access and development costs

It should be noted that establishing a new general aviation airport is a significant effort, including the following additional steps, at a minimum:

- Secure an Airport Sponsor
- Conduct a Feasibility Study
- Determine inclusion in the Florida Airport System Plan, and then the FAA's National Plan of Integrated Airport Systems (or NPIAS)
- Airport Site Selection and Preliminary environmental planning
- Airport Master Planning
- Local government planning
- Environmental Impact Analysis and Mitigation
- Airport Financing and Acquisition
- Airport Construction, then operation

Figure 5-5. ASV: Runway Alternate Site #2



Source: Passero Associates

Table 5-10. ASV Alternative Summary

Description	No Build	Parallel Runway West Runway 13-31	Parallel Runway East Runway 13-31	Non-Intersecting Runway West of U.S. Highway 1	Staggered Runway 13R-31L West of U.S. Highway 1	Existing Reynold's Airpark Site	I-95/State Route 206 Site
Project Type	Airside	Airside	Airside	Airside	Airside	Airside	Airside
Operational	1	3	3	5	5	5	5
Environmental	5	2	1	3	3	3	2
Cost	5: $	1: $$$$$	1: $$$$$	2: $$$$	2	1: $$$$$	1: $$$$$
Airfield Strategic	1	1	1	3	5	2	3
Support-to-Community	1:	1:	1:	1:	3:	3:	4:
Revenue/ROI			1:	1:	:	.	4:
Intermodal/SIS Connectivity	1	1	1	1	1	1	1
Business Strategic	1	1	1	1	1	1	4

Source: Passero Associates

5.1.1.1. Crosswind Runway Alternatives

Crosswind runway alternatives will consider maintaining Runway 2-20, maintaining Runway 6-24 and creating a new crosswind runway between Runway 2-20 and Runway 6-24. All crosswind runways will be examined to meet future B-II standards, with a runway length of 3,700 feet, parallel taxiway access and a future non-precision approach. Please note that FAA and FDOT provide grant funding for only one crosswind runway, to provide the necessary wind coverage for the local runway system.

No Build Alternative

As a baseline comparison, the No build alternative is presented for consideration. This alternative is presented to maintain the hangar and apron space within its' existing state of development. No new (or improved) facilities are proposed.

Benefits:

- Retain two existing crosswind runways.
- No environmental impacts.
- No additional development costs, only future rehabilitation and maintenance costs.

Impacts:

- Funding will be limited for rehabilitation of one of the runways.
- Both runways are too short to adequately serve as a true crosswind runway.

Runway 2-20 as Crosswind (Long-Term)

Extend Runway 2-20 (**Figure 5-6**) as the preferred crosswind runway, at B-II standards. This runway orientation provides for an additional 2.8% of wind coverage, after primary Runway 13-31 is considered, for 0-6 knot crosswind components and small aircraft operations.

- Extend Runway 2-20 to 3,700-feet long by 75-feet wide.
- Implement a non-precision instrument approach procedure and install/upgrade REILs, edge lighting, wind cone, and PAPI.
- Upgrade necessary airfield signage.
- Close Runway 6-24 (and maintain only one, FAA and FDOT eligible crosswind runway).

Benefits:

- FAA recommended (supported) runway length and design standards for category B-II are satisfied.
- Runway's existing width and proposed length will satisfy B-II standards.
- Eliminates design standard conflicts with Runway 6-24, when 6-24 is closed.

Impacts:

- Significant environmental impact to existing West Indian Manatee habitat area (and wetlands), east end of Runway 2-20, including cost and permitting / mitigation schedule.
- Cost to acquire approximately 16+/- acres of property, to be filled and graded.
- ROFA encroaches on airline terminal and FBO apron area parking positions.
- Existing Taxiway B2 hotspot remains.
- Runway-to-taxiway/taxilane separation within the FBO area cannot be met.
- Full length parallel taxiway would impact terminal apron, only partial parallel taxiway possible.
- Demolish Runway 6-24, D4 and D2, and corresponding conflict / access to existing t-hangar area

Runway 6-24 as Crosswind (Long-Term)

Extend Runway 6-24 (**Figure 5-7**) as the preferred crosswind runway, at B-II standards. This runway orientation accounts for an additional 5.7% of wind coverage, after primary Runway 13-31 is considered, for 0-6 knot crosswind components and small aircraft operations.

- Extend Runway 6-24 to 3,700 feet and widen Runway to 75 feet.
- This alternative will also implement a non-precision instrument approach procedure and install/upgrade REILs, edge lighting, wind cone and PAPI.
- Upgrade Runway 6-24 Primary Surface with the implementation of the non-precision approach procedures and keep the area clear of unauthorized obstacles.
- Upgrade necessary airfield signage.
- Keep Runway 2-20 open, but only designate Runway 6-24 as the FAA and FDOT eligible crosswind runway

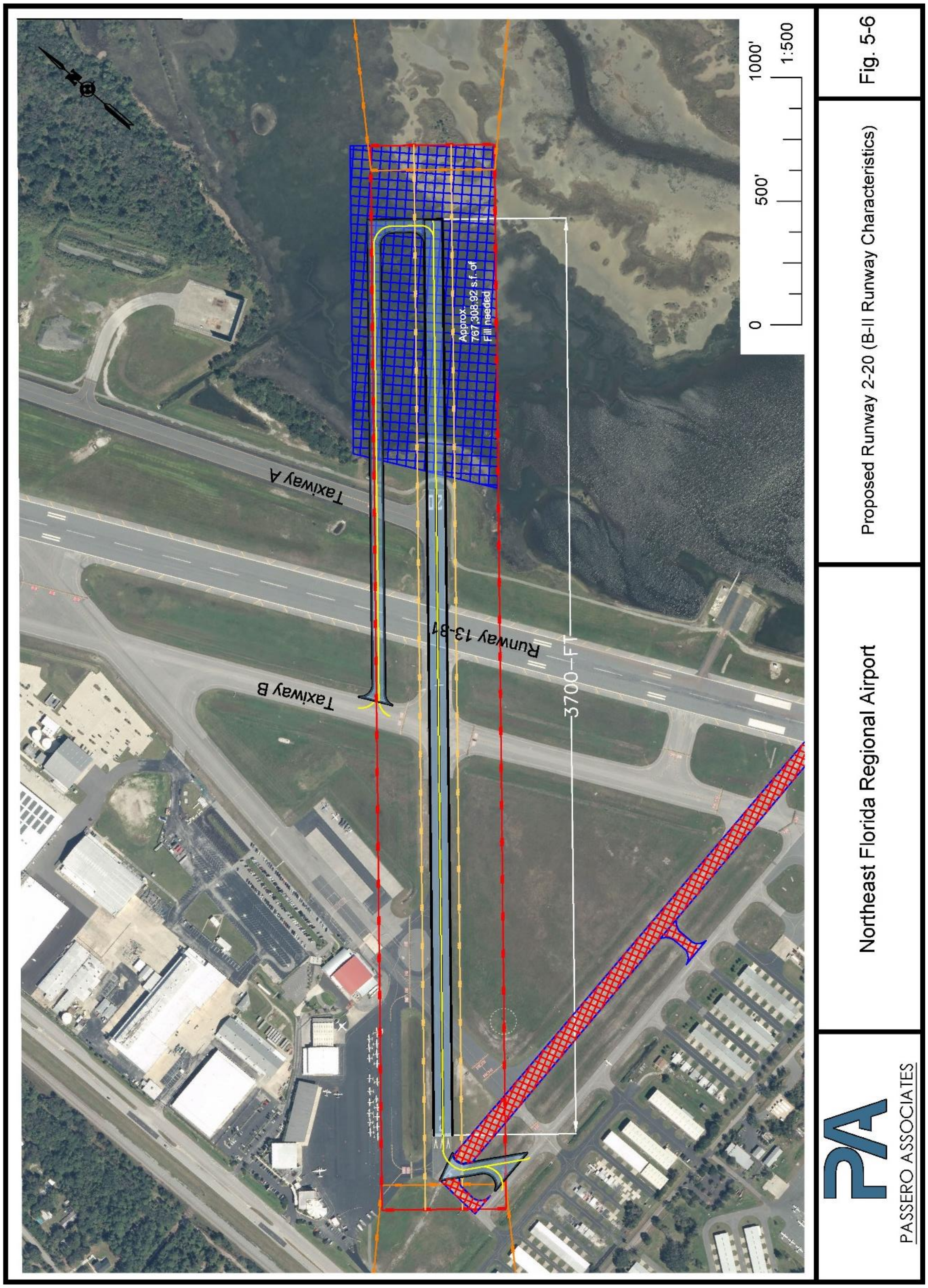
Benefits:

- FAA recommended (supported) runway length and design standards for category B-II are satisfied.
- Provides full length parallel taxiway.

Impacts:

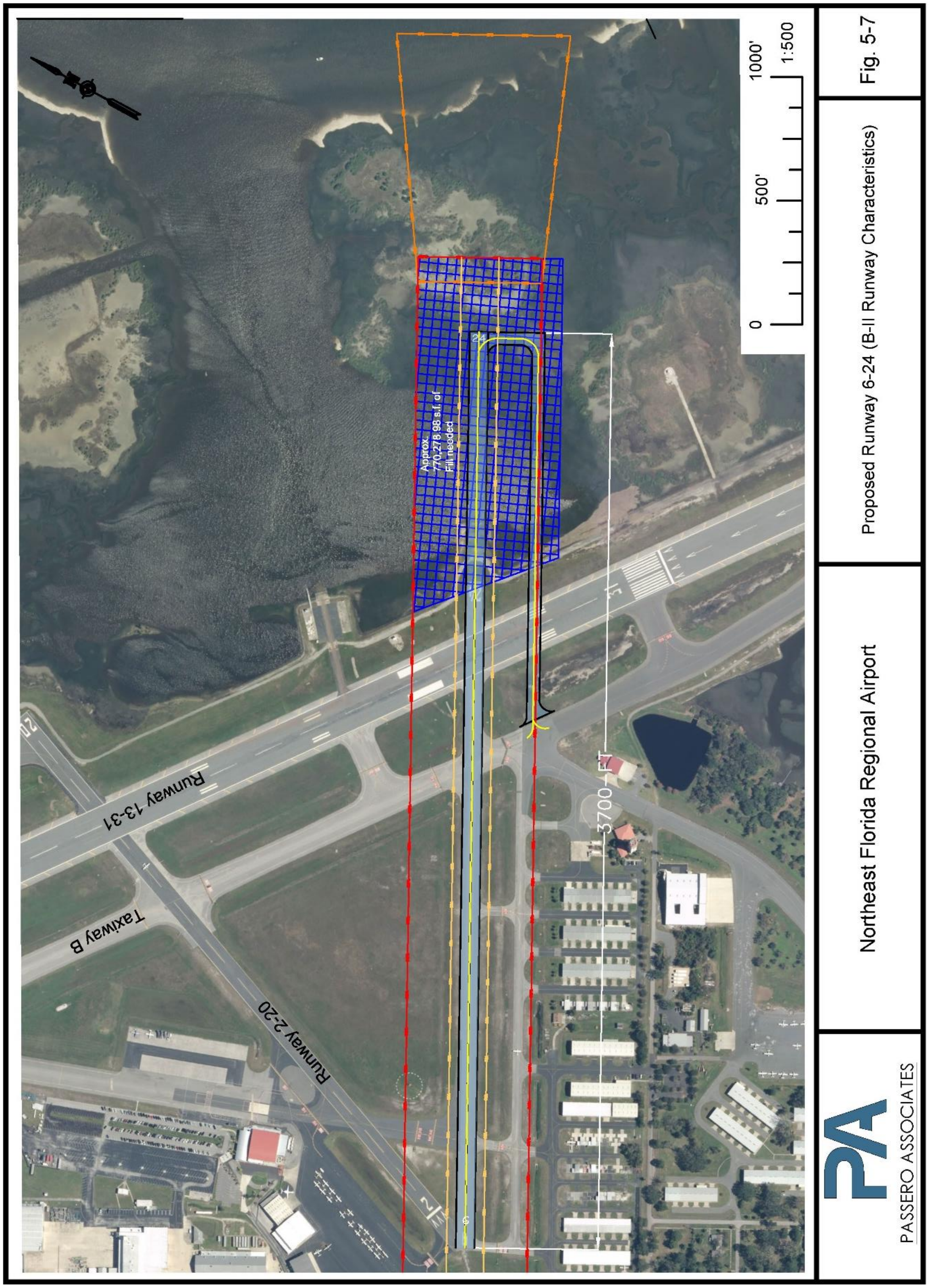
- Significant environmental impact to existing West Indian Manatee habitat area (and wetlands), east end of Runway 6-24, including cost and permitting / mitigation schedule
- Cost to acquire approximately 15+/- acres of property, filled and graded.
- Southern section of FBO apron will have to close due to being located within the Runway Object Free Area (ROFA).
- Existing Runway-to-taxiway/taxilane separation to Taxiway D does not meet standard, unless that is addressed separately.
- Conflicting design standards with Runway 2-20 remain with overlapping safety areas

Figure 5-6. Extend Runway 2-20 as crosswind runway



Source: Passero Associates

Figure 5-7. Extend Runway 6-24 as crosswind runway



Source: Passero Associates

New Runway 5-23 as Crosswind (Long-Term)

This alternative explores the possibility of shifting Runway 6-24 and 2-20 to the orientation of Runway 5-23 (**Figure 5-8**). This new runway orientation would account for 5.2% of additional wind coverage, after Runway 13-31 is considered, for 0-6 knot crosswind components and small aircraft operations.

- Constructing new Runway 5-23 to become the preferred crosswind runway to the dimensions of 3,700 feet x 75 feet.
- Upgrade the runway with a non-precision approach procedure and install/upgrade REILs, edge lighting, wind cone and PAPI.

Benefits:

- FAA recommended (supported) runway length and design standards for category B-II are satisfied.
- Full length, non-conflicting parallel taxiway is installed.

Impacts:

- Portion of the FBO apron fuel parking area encroaches within the ROFA.
- Seaplane ramp operation is impacted by the orientation (overlay) of the runway operation.
- Cost to acquire approximately 17+/- acres of property, to be filled and graded.
- Significant environmental impact to existing West Indian Manatee habitat area (and wetlands), east end of runway, including cost and permitting / mitigation schedule.
- Demolish Runway 6-24 and Taxiway D2.
- Demolish portion of Runway 2-20 between Runway 5 and Taxiway D3.

New Runway 4-22 as Crosswind (Long-Term)

This alternative explores the possibility of shifting Runway 6-24 to the orientation of Runway 4-22 (**Figure 5-9**) for the consideration of Runway 4-22 as the preferred crosswind runway, developed at B-II standards. This runway orientation accounts for 4.9% of wind coverage after Runway 13-31 is considered, for 0-6 knot crosswind components and small aircraft operations.

- Construct Runway 4-22 to become the preferred crosswind runway to the dimensions of 3,700 feet x 75 feet.
- Upgrade the Runway with a non-precision instrument approach procedure and install/upgrade REILs, edge lighting, wind cone and PAPI.

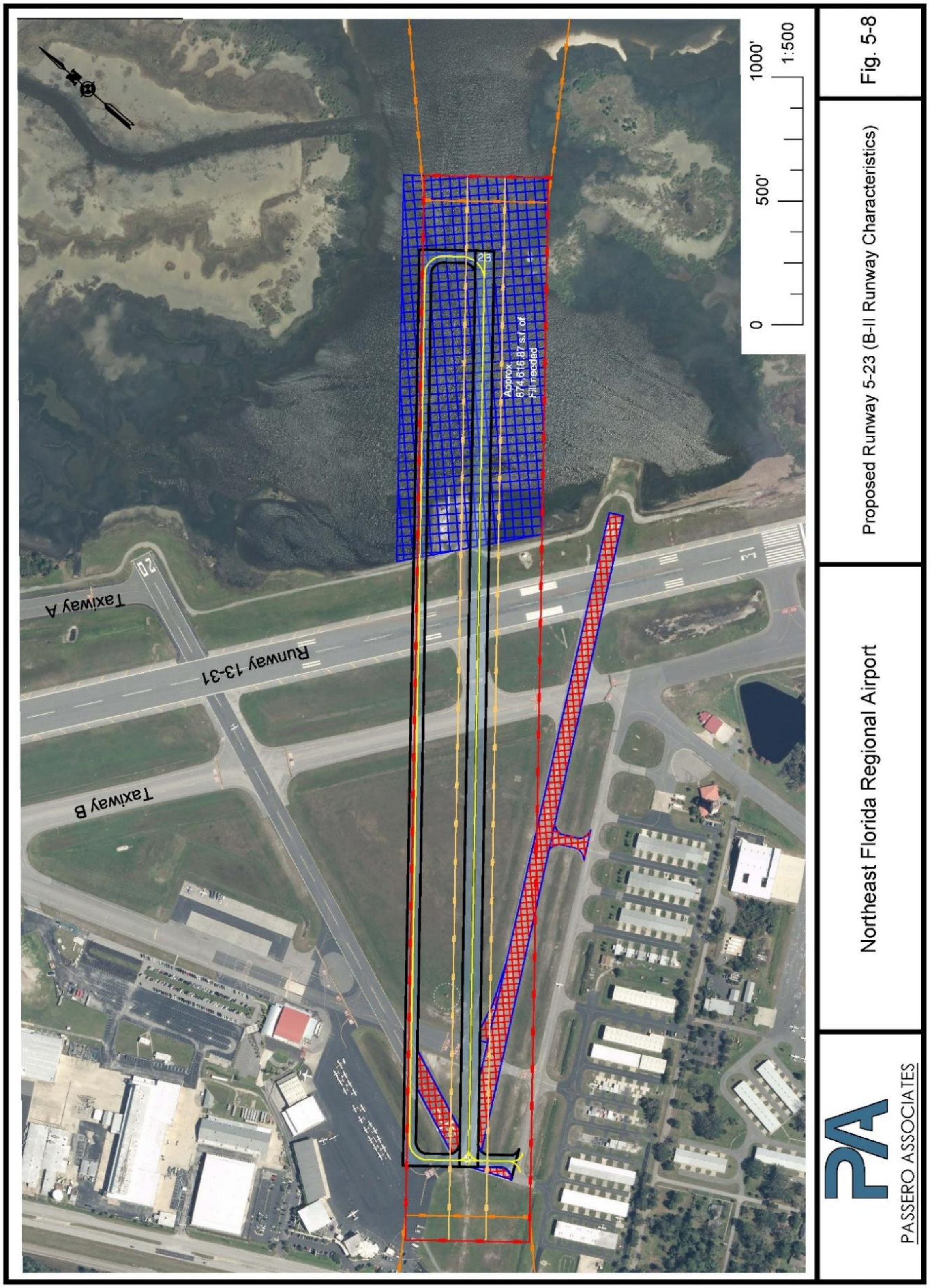
Benefits

- FAA recommended (supported) runway length and design standards for category B-II are satisfied.
- Provides a crosswind runway at exactly 90 degrees (off-set to Runway 13-31).

Impacts:

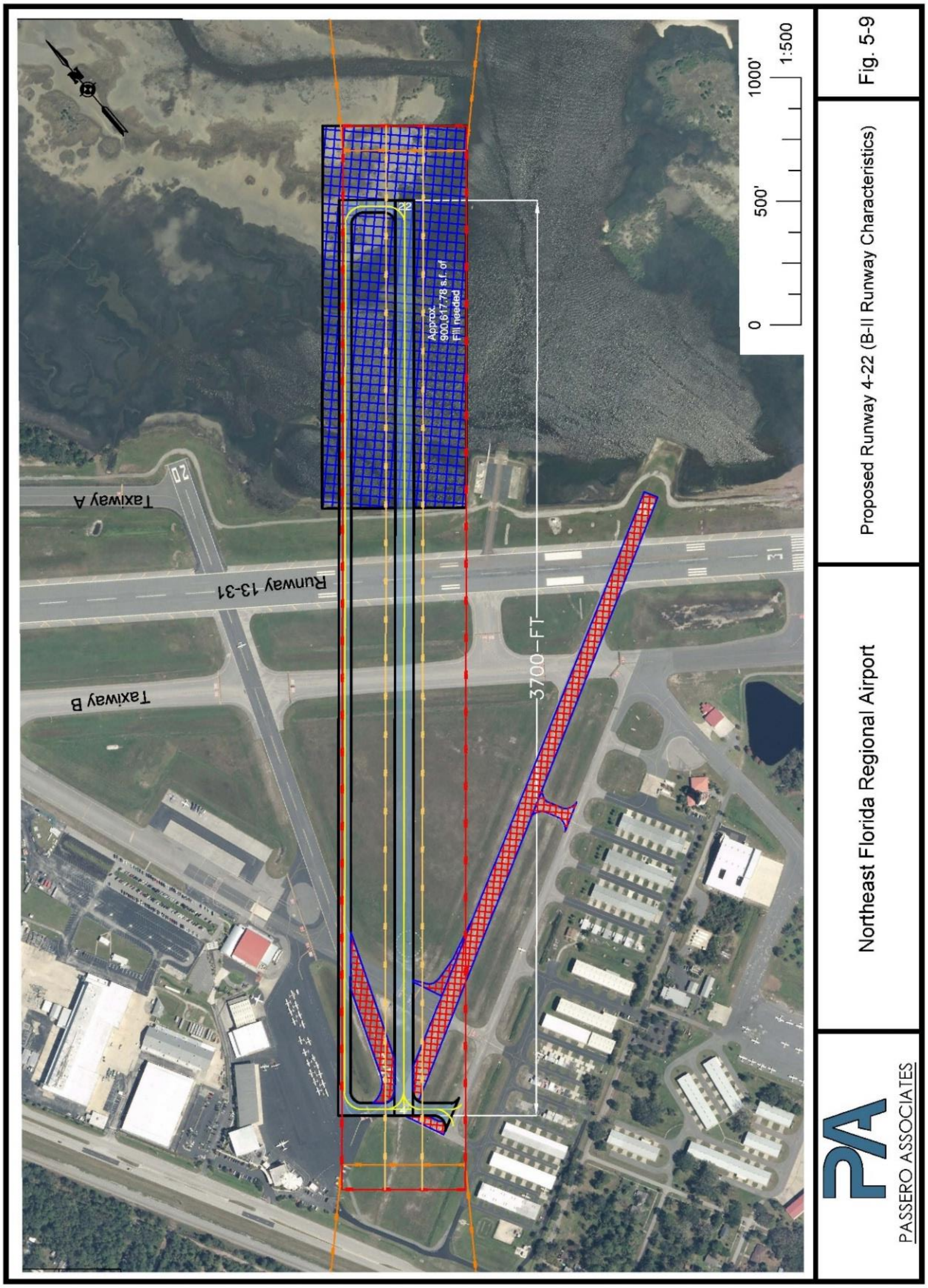
- Taxiway D4 requires realignment.
- Portion of the FBO apron area encroaches in the ROFA.
- Cost to acquire approximately 18+/- acres of property, to be filled and graded.
- Significant environmental impact to existing West Indian Manatee habitat area (and wetlands), east end of runway, including cost and permitting / mitigation schedule.
- Cost to demolish Runway 6-24, and Taxiway D2.
- Cost to demolish portions of Runway 2-20 and Taxiway D3.
- Requires realignment of the connector to Terminal Apron from Runway 13-31.

Figure 5-8. Develop and Extend Runway 5-23 as crosswind runway



Source: Passero Associates

Figure 5-9. ASV: Extend Runway 4-22 (B-II) as crosswind runway



Source: Passero Associates

Table 5-11. Crosswind Runway Alternatives Summary

Description	No Build	Runway 2-20 as Crosswind	Runway 6-24 as Crosswind	Runway 5-23 as Crosswind	Runway 4-22 as Crosswind
Project Type	Airside	Airside	Airside	Airside	Airside
Operational	4	2	4	3	3
Environmental	5	2	2	1	1
Cost	3: $$$	2: $$$$	2: $$$$	2: $$$$	2: $$$$
Airfield Strategic	2	1	5	3	3
Support-to-Community	1:	1:	1:	1:	1:
Revenue/ROI	1:	1:	1:	1:	1:
Intermodal/SIS Connectivity	2	2	2	2	2
Business Strategic	1	1	1	1	1

Source: Passero Associates

5.1.1.2. Runway 2-20 Taxiway Conversion, Hotspot and Direct-Connection of FBO Apron to Runway 6

The alternatives in this section evaluate two options to mitigate the hotspot deficiency at Runway 2-20 and Taxiway B2 by proposing to convert the Runway to a taxiway and mitigating the direct connection between the FBO Apron and Runways 2 and 6.

No Build Alternative

As a baseline comparison, the No Build Alternative is presented for consideration. This alternative is presented to maintain the existing configuration of Runway 2-20 and associated facilitates. No new (or improved) facilities are proposed.

Benefits:

- Retain two existing crosswind runways.
- No environmental impacts.
- No additional development costs, only future rehabilitation and maintenance costs.

Impacts:

- Funding will be limited for rehabilitation of one of the runways.
- The location of Runway 2 end encompasses portion of the FBO apron.
- Direct access from apron to a runway end.
- Overlapping RSA and ROFA for Runway 2-20 and 6-24
- FAA RSA grading requirement off the Runway 20 will not be met; approximately 0.14 acres of fill required.
- Existing Taxiway B2 "hotspot" will remain.

Possible Conversion of Runway 2-20 to a Taxiway

- Runway 2-20 has 100 or fewer annual operations, as landings and/or takeoffs. Most airfield operations conducted on this runway are actually taxi operations from the FBO/Terminal apron to Taxiway B and Runway 13-31. As a third runway, Runway 2-20 is not eligible for FAA and/or FDOT grant funding for rehabilitation or long-term improvement. Therefore, this alternative proposes converting Runway 2-20 to a taxiway.

- To meet design standards of no direct apron to runway connection, **Figure 5-10** shows an alternative mitigating (elimination) of the "hotspot" issue by converting Runway 2-20 into a taxiway, therefore eliminating the direct connection from an apron onto a runway. The Figure also depicts the proposed Runway 6-24 under B-II conditions and a relocated taxiway connector. Relocating the taxiway connector will meet design standards and ensure there will be no direct connection between the apron and Runway 6.

Benefits:

- Mitigate and solve the non-standard connection between the FBO apron and an operational runway.
- Solve the taxiway "hotspot" issue at Runway 2-20 and Taxiway B2.
- Minimal impacts to existing drainage and electrical infrastructure.
- Minimal costs to change Runway 2-20 edge lighting to taxiway lighting.
- Eliminate existing encroachment to the aircraft hold line within the FBO apron area.
- Converted taxiway can be used for taxi operations 100% of the time.
- Existing Runway 2-20 separation from the FBO apron area taxilane is approximately 205 feet. Converting this Runway into a taxiway would satisfy taxiway-to-taxiway separation standards for up to an ADG III aircraft (152 feet).
- Conversion to a taxiway will become eligible for federal and state funding for all future taxiway improvements.
- Would eliminate need to satisfy RSA grading standards off the Runway 20 end, an existing deficiency.

Impacts:

- Significant loss of one of NFRA's three runways.
- Impact to small aircraft operations during crosswind operations.
- Cost to convert Runway 2-20 to a taxiway.
- Cost to demolish taxiway connections.

FBO Taxilane Connector and Taxiway B2 Hotspot

- As outlined in Chapter 4, the FAA has documented hotspots where the FBO apron meets the taxiway connector to Runways 6 and 2, and also where Taxiway B2 meets Runway 2-20. As shown in **Figure 5-11**, the proposed solution is to designate a no-taxi paved island using green paint, and installing runway guard lights to further deter pilots from taxiing directly onto Runway 2-20 without making a turn.

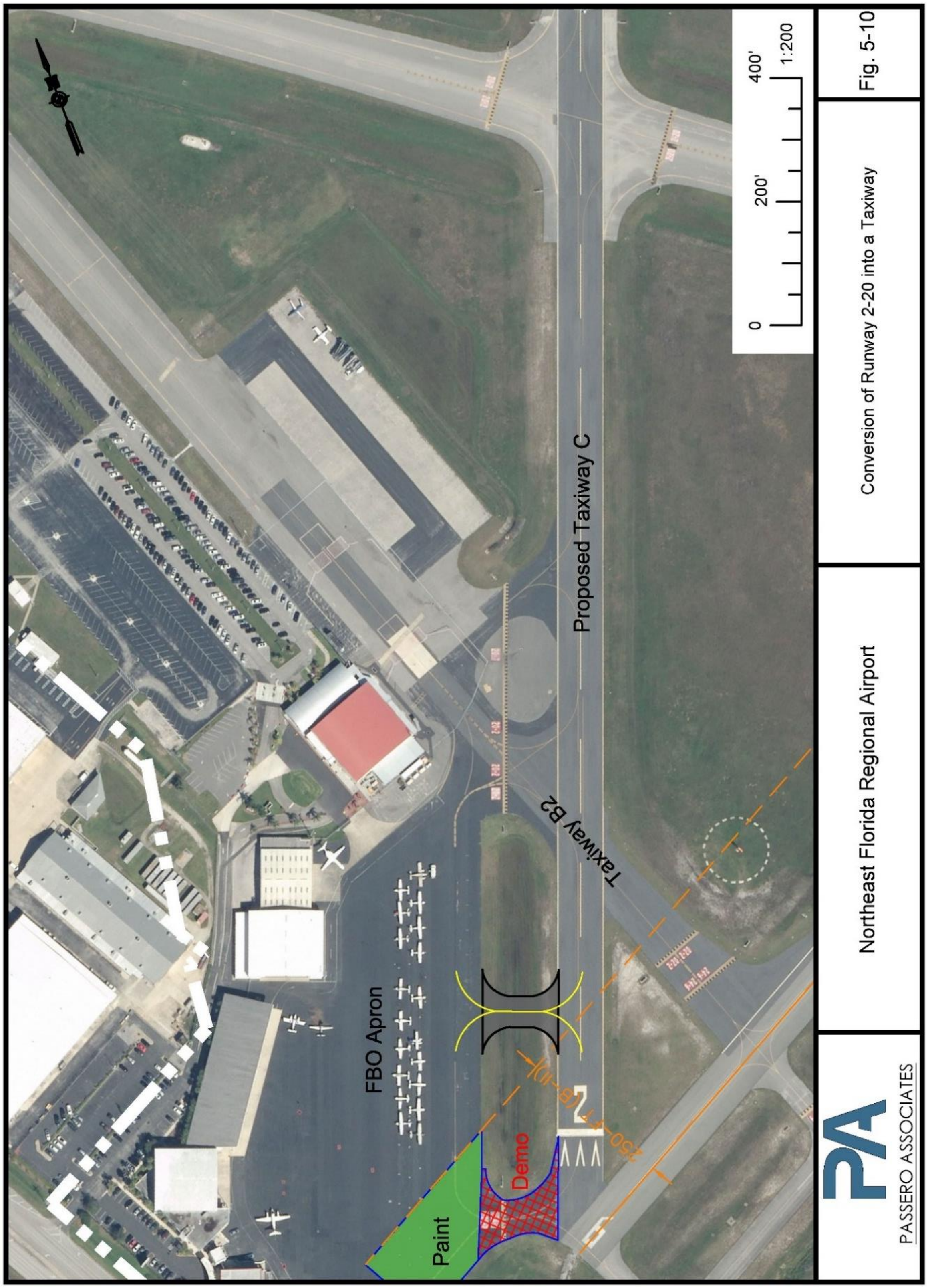
Benefits:

- Mitigate and solve the hotspot caused by the non-standard connection between the FBO and runway environment.
- Correct the taxiway hotspot at Runway 2-20 and Taxiway B2 by narrowing the access and installing runway guard lights to raise situational awareness to an active runway.

Impacts:

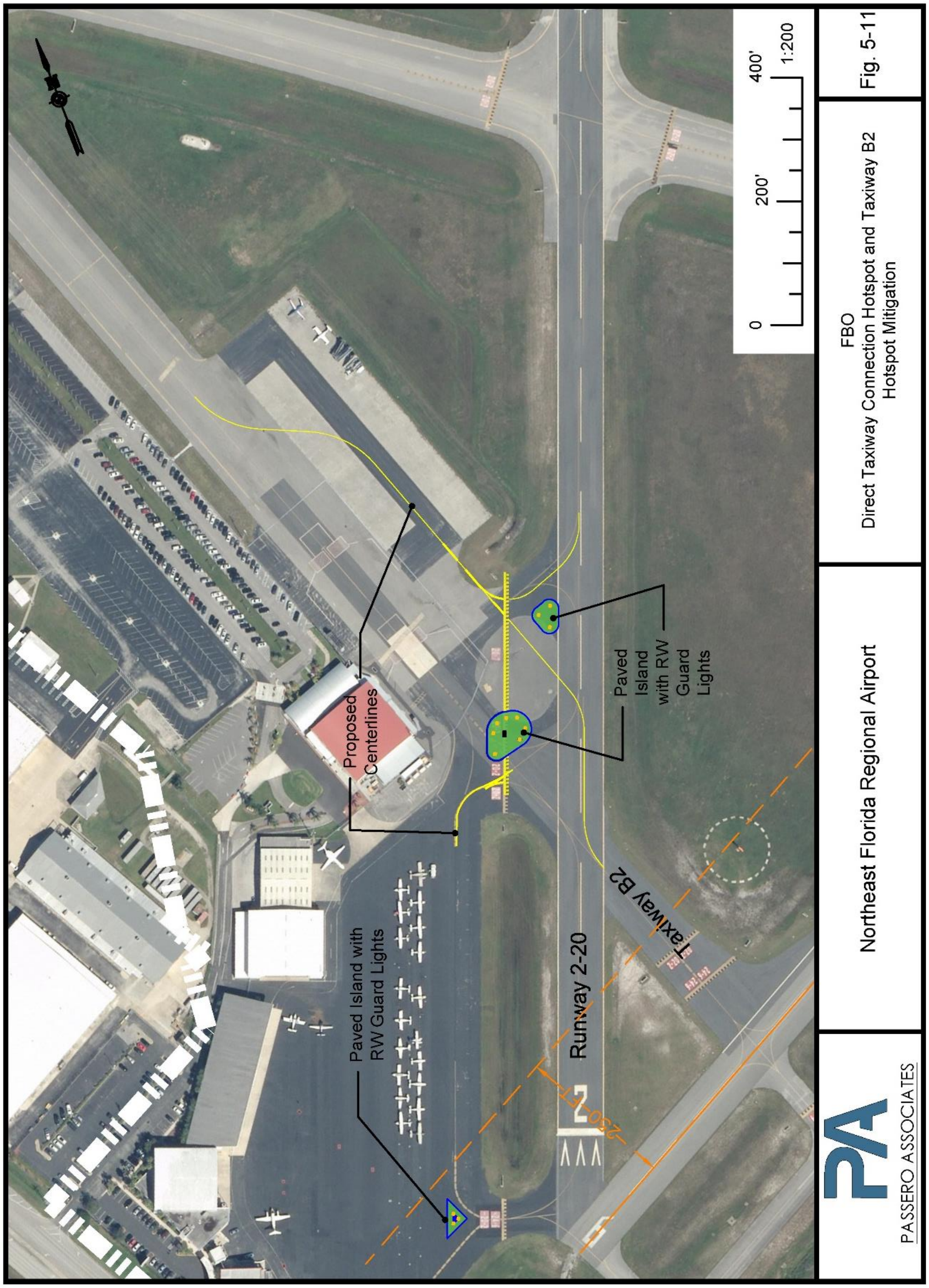
- Cost associated with installing infrastructure.
- Costs associated with airfield markings and painting excess pavement "green" to show as non-active pavement.
- Potential for congestion at point of access into commercial service parking and FBO apron area.
- No direct access to Runway 2 end without back-taxi operations.

Figure 5-10. Conversion of Runway 2-20 into a Taxiway



Source: Passero Associates

Figure 5-11. FBO Direct Taxiway Connection Hotspot and Taxiway B2 Hotspot Mitigation



Source: Passero Associates

Table 5-12. FBO Direct Connection and Taxiway B2 Hotpot Mitigation Alternatives for Runway 2-20

Description	No Build	Convert Runway 2-20 to Taxiway	Remove Connector/Narrow Hotspot/Install Runway Guard Lights
Project Type	Airside	Airside	Airside
Operational	2	5	3
Environmental	5	5	1
Cost	3: $$$	1: $$$$$	1: $$$$$
Airfield Strategic	2	5	4
Support-to-Community	1:	1:	1:
Revenue/ROI	1:	3:	1:
Intermodal/SIS Connectivity	1	1	1
Business Strategic	1	2	1

Source: Passero Associates

5.1.2. South General Aviation Alternatives

Hangar and apron space requirements were identified in Chapter 4. Alternatives to satisfy these requirements are identified in the sections below.

No Build Hangar Alternative

As a baseline comparison, the No Build Alternative is presented for consideration. This alternative is presented to maintain the hangar and apron space within its' existing state of development. No new (or improved) facilities are proposed.

Benefits:

- No environmental impacts or impacts to adjacent airfield facilities.
- No additional development costs, only future rehabilitation and maintenance costs.

Impacts:

- Existing Runway-to-taxiway/taxilane separation between Runway 6-24 and Taxiway D does not meet design standard.
- Hangar demand identified in Chapter 4 will not be met for general aviation or business development.
- Existing pilots on wait list will not be located in hangars.

5.1.2.2. Construction of Additional Hangars

NFRA is currently developing an additional 24 T-hangars (with net gain of 18 units, after the associated demolition of 6 "port-a-port" hangars) within the south general aviation area. The rehabilitation of two existing 10-unit T-hangars will follow. As noted in Chapter 4, 76 additional T-hangar units are needed over the 20-year planning period. **Figure 5-12** depicts the alternative development of T-hangars within the south general aviation area.

- 87 total T-hangar units (net gain of 81 units) and 11 box hangar units are added.
- Approximately 44,175.18 square feet (sf) of total hangar apron space is provided.
- Non-aviation commercial development is proposed along U.S. Highway 1.
- The relocation of Indian Bend Road (to the south) is shown to provide direct access from the airport conference center to U.S. Highway 1.

Benefits:

- Hangar and apron demand can be met.
- Efficient taxilane connections to Taxiways D and F continue.
- The alternative can be implemented in a phased approach, based on realized demand.
- Maintain general aviation operations / functional area consistent with the airport and local community.
- Provides flexibility to accommodate realized demand for non-aviation support facilities (e.g., hotels, rental car facilities) along U.S. Highway 1.

Impacts:

- Voluntary (long-term) acquisition of five parcels of private land are needed.
- Costs associated with the demolition of a portion of Araquay Avenue and the relocation of Indian Bend Road.
- Costs associated with drainage infrastructure relocation and improvement.

Figure 5-12. South General Aviation Alternative

Source: Passero Associates

Table 5-13. South General Aviation Area Alternatives Summary

Description	No Build	Full Build
Project Type	3	Airside/Landside
Operational	5	5
Environmental	5: $	4
Cost	2	1: $$$$$
Airfield Strategic	3:	5
Support-to-Community	1:	3:
Revenue/ROI	1	4:
Intermodal/SIS Connectivity	2	3
Business Strategic	1	5

Source: Passero Associates

5.1.2.3. Taxiway D and E Alternatives

Although the existing separation between Runway 6-24 and Taxiway D satisfies the existing requirements for B-I-small aircraft, the separation will have to increase if Runway 6-24 is upgraded to a B-II runway. Furthermore, based on existing pavement condition reports, Taxiways D, D2, D3 and D4 and E have pavement in poor to serious condition.

No Build Taxiway D and E Alternative

As a baseline comparison, the No Build Alternative is presented for consideration. This alternative is presented to maintain the existing Taxiways in their existing state of development. No new (or improved) facilities are proposed.

Benefits:

- Rehabilitate Taxiway D eligible for funding.
- Taxiway D and E separations only meets criteria for small aircraft.

Impacts:

- Taxiway E (in poor condition) would require rehabilitation
- Doesn't meet design standards for large aircraft, as identified in Chapter 4

Upgrade Taxiway D Alternative

The following alternative will evaluate relocating Taxiway D to 240 feet from Runway 6-24 to accommodate airplane design group (ADG) II conditions. The medium intensity taxiway lighting (MITL) will also be replaced. **Figure 5-13** depicts this alternative.

- Rehabilitate Taxiway D (and connector taxiways) pavement condition to "Excellent/Good".
- Relocate Taxiway D from existing 200 feet to 240 feet from Runway 6-24, to accommodate B-II operations.
- Demolish a portion of Taxiway E (past Hangar Row C) and extend taxilanes directly to Taxiway D.

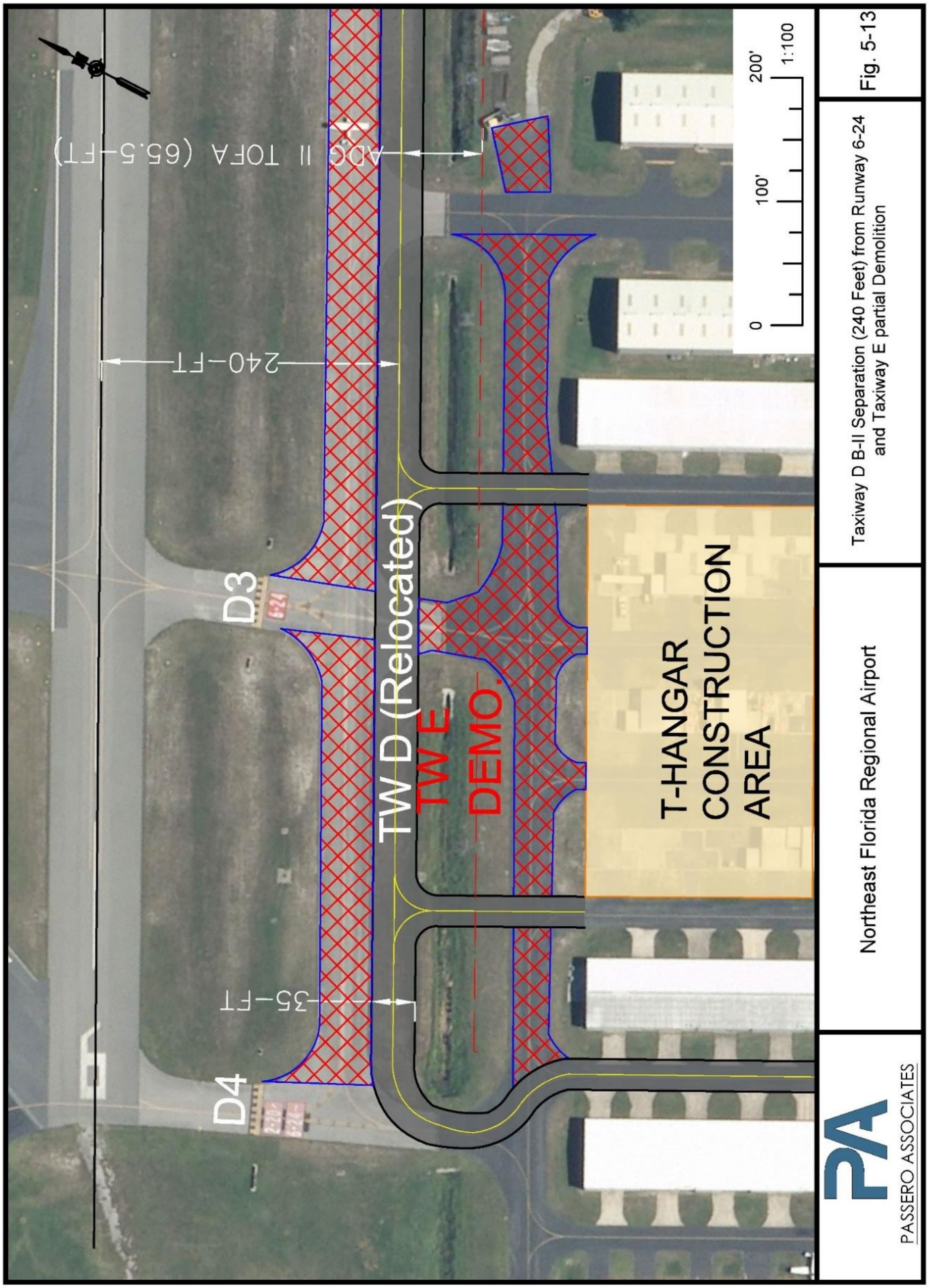
Benefits:

- Rehabilitate pavement for Taxiway D connectors that are in poor to failing condition.
- Taxiway D separation will meet design standards for operations on Runway 6-24 under B-II design standards.
- Taxiway E (in poor condition) is eliminated, with more efficient connection to Taxiway D.
- Minimized vehicle access to airfield and T-hangar area at Taxiway E and D.

Impacts:

- Additional costs for taxilane connectors.
- Cost to demolish Taxiway E.
- Cost to relocate Taxiway D and improve drainage infrastructure.

Figure 5-13. Taxiway D B-II Separation from Runway 6-24 and Taxiway E Partial Demolition



Source: Passero Associates

Table 5-14. Taxiway D and E Alternatives Summary

Description	No Build	Taxiway D 240' Separation Eliminate Taxiway E
Project Type	Airside	Airside
Operational	3	5
Environmental	5	4
Cost	3: $$$	3: $$$
Airfield Strategic	3	5
Support-to-Community	1:	1:
Revenue/ROI	1:	1:
Intermodal/SIS Connectivity	1	1
Business Strategic	2	4

Source: Passero Associates

5.1.2.4. South GA Area Roadway Access

This section will examine the roadways system that supports general aviation in the southern portion of the airport.

No Build South GA Roadways

As a baseline comparison, the No Build Alternative is presented for consideration. This alternative is presented to maintain the existing roadways access in its' existing state of development. No new (or improved) facilities are proposed.

Benefits:

- No environmental impacts.
- Costs.

Impacts:

- Doesn't provide adequate roadway access to support needed facility.

GA Roadway Improvements

Improve roadway access within south GA area (**Figure 5-14**).

- Relocate Indian Bend Road, to provide direct access from Airport Conference Center to U.S. Highway 1.
- Realign access roads to accommodate efficient t-hangar development and tenant access.

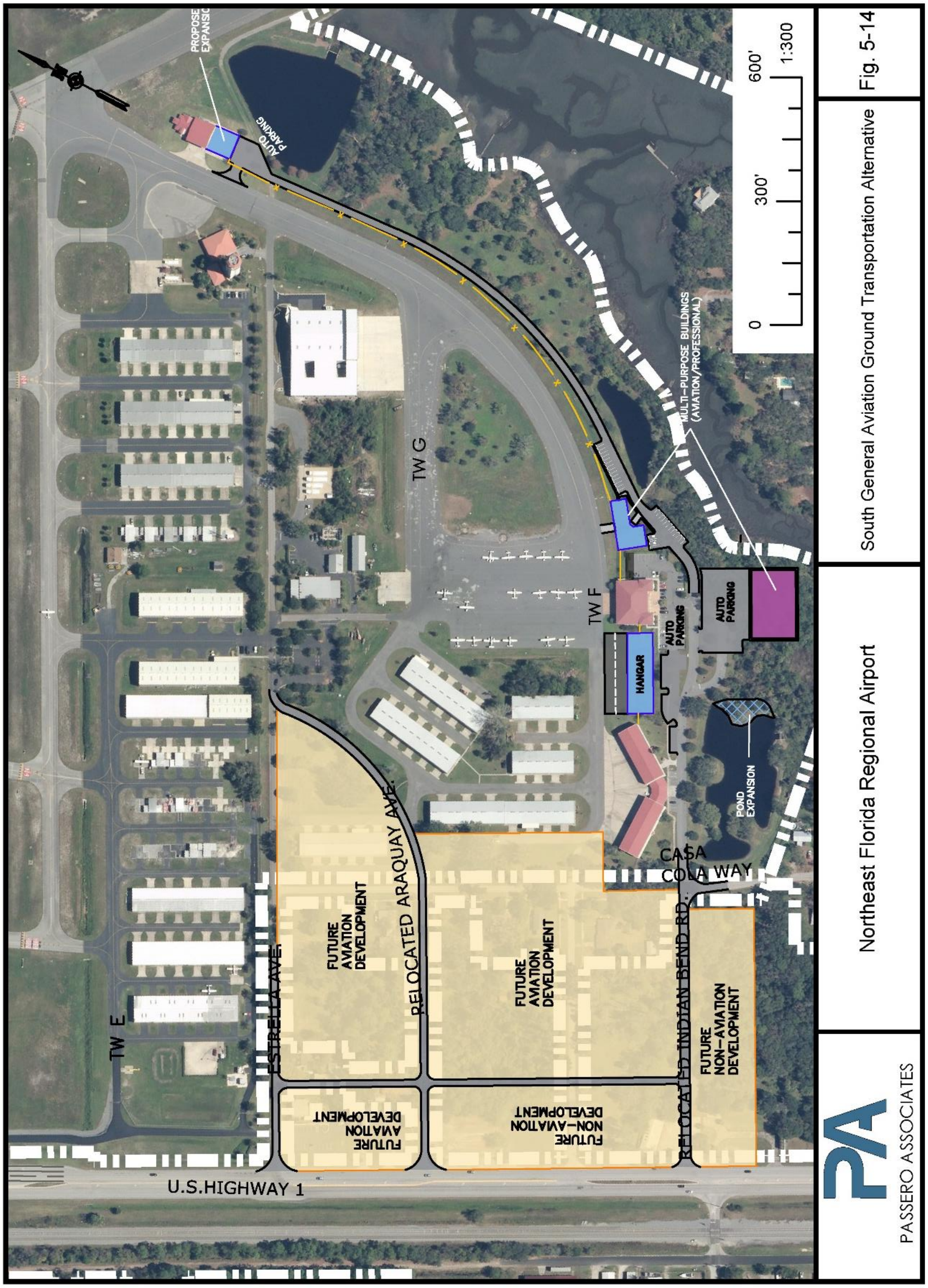
Benefits:

- Provides improved access, supporting additional development within the south (general aviation) area.
- Consistent with long-term airport goals and t-hangar demand.

Impacts:

- Cost
- Need, based on actual hangar and ground access demand.

Figure 5-14. South General Aviation Area Roadway Improvements



Source: Passero Associates

Table 5-15. Roadway Alternatives Summary

Description	No Build	South GA Area
Project Type	Landside	Landside
Operational	3	5
Environmental	5	4
Cost	5: $	3: $$$
Airfield Strategic	1	5
Support-to-Community	1:	3:
Revenue/ROI	1:	3:
Intermodal/SIS Connectivity	2	3
Business Strategic	2	5

Source: Passero Associates

5.1.3. East Corporate Alts. Conventional Hangars and FBO

FBO and Hangar, and apron space requirements were identified in Chapter 4. Alternatives to satisfy these requirements are identified in the sections below.

No Build Alternative

As a baseline comparison, the No Action hangar alternative is presented for consideration. This alternative is presented to maintain the east area in its' existing state of development. No new (or improved) facilities are proposed.

Benefits:

- No environmental impacts or impacts to adjacent airfield facilities.
- No additional development costs, only future rehabilitation and maintenance costs.

Impacts:

- East Corporate area will not meet hangar demand.
- Existing pilots on wait list will not be located in hangars.

5.1.3.1. Alternate FBO, MRO and Construction of Box Hangars

Based on aviation forecasts, there will be a need for 12 additional 10,000 sf conventional hangars (box hangars) with 96,000 sf of additional hangar apron space (i.e., 8,000 sf per additional box hangar). The east corporate area is the logical location for these additional hangars. Furthermore, due to the apron size needed to accommodate future FBO operations, along with potential development of conventional hangars in the east corporate area, the following alternatives provide potential locations for the conventional hangars and FBO.

Option 1A: Add 17 New Box Hangars, Relocate (or new) FBO to East Side of Airport (Figure 5-15A)

- This option proposes relocating the FBO facilities from the west to the east side of the airport, to accommodate future demand and provide a 100% dedicated site to FBO operations. As an alternate consideration, a separate (new) FBO and/or other significant airport service provider could occupy the proposed development area.
- This alternative proposes 17 conventional hangars and the relocated FBO.

Benefits:

- No impacts to existing airfield facilities in the east corporate area.
- The addition of 17 box hangars and apron will satisfy the future demand, based on the forecast.

- Provide a location for relocated FBO with automobile parking, building and apron space.

Impacts:

- Environmental and wetlands impacts.
- Significant costs to build hangars, taxilane, apron and supporting infrastructure.
- Cost to install new (extended) access road and utility systems.
- Interest and support from FBO to relocate.

Option 1B: Convert Previous FBO Facility to Corporate Hangars (Figure 5-15B)

- This option proposes the conversion of the existing FBO facility (hangars and apron) to corporate use in the existing main terminal area.

Benefits:

- Simple conversion from FBO facilities to corporate use.
- Efficient usage of existing hangar, apron and utility systems.
- Minimal (lessened) operational demand at Runway 6-24, 2-20 at taxiway intersections.

Impacts:

- Significant cost for conversion from FBO to corporate.
- Interest and support from FBO to relocate.

Option 2: 12 New Box Hangars (south of Grumman), Relocated FBO (north of Grumman) (Figure 5-16)

- This option proposes a split in the new development on the east side of Runway 13-31, relocating the FBO parking apron to the undeveloped east corporate area, and new box hangars to the undeveloped south area.
- This alternative proposes 12 conventional hangars and apron in the south area.
- This alternative provides tie-downs for small to large business jet operators in the east corporate area.
- Note: Portions of this alternative can be implemented with (or without) the full relocation of the FBO.

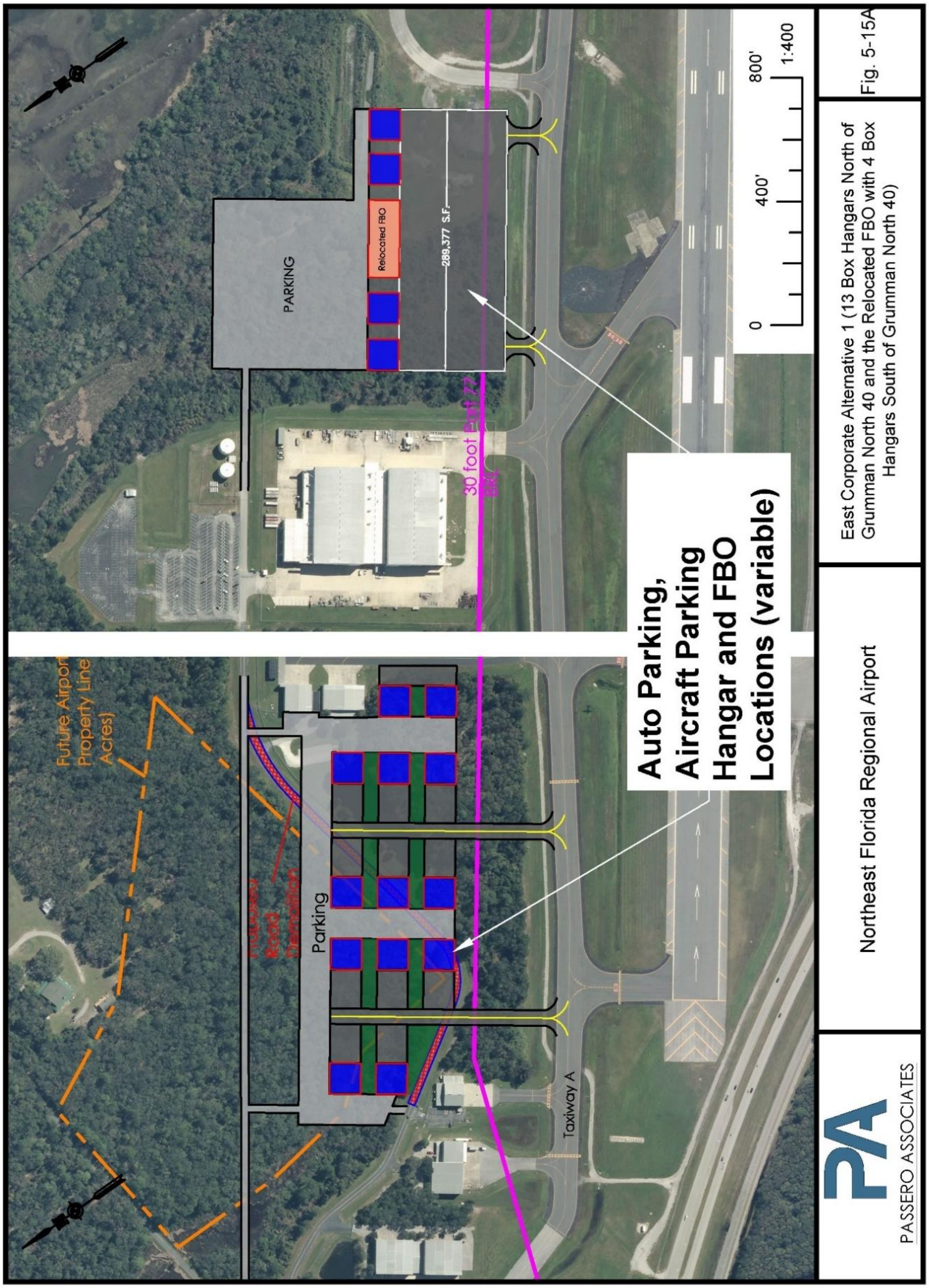
Benefits:

- No impacts to existing airfield facilities in the east corporate area.
- The addition of 12 box hangars and apron will satisfy the future demand.
- Provide a location for relocated FBO with automobile parking, building and apron space.

Impacts:

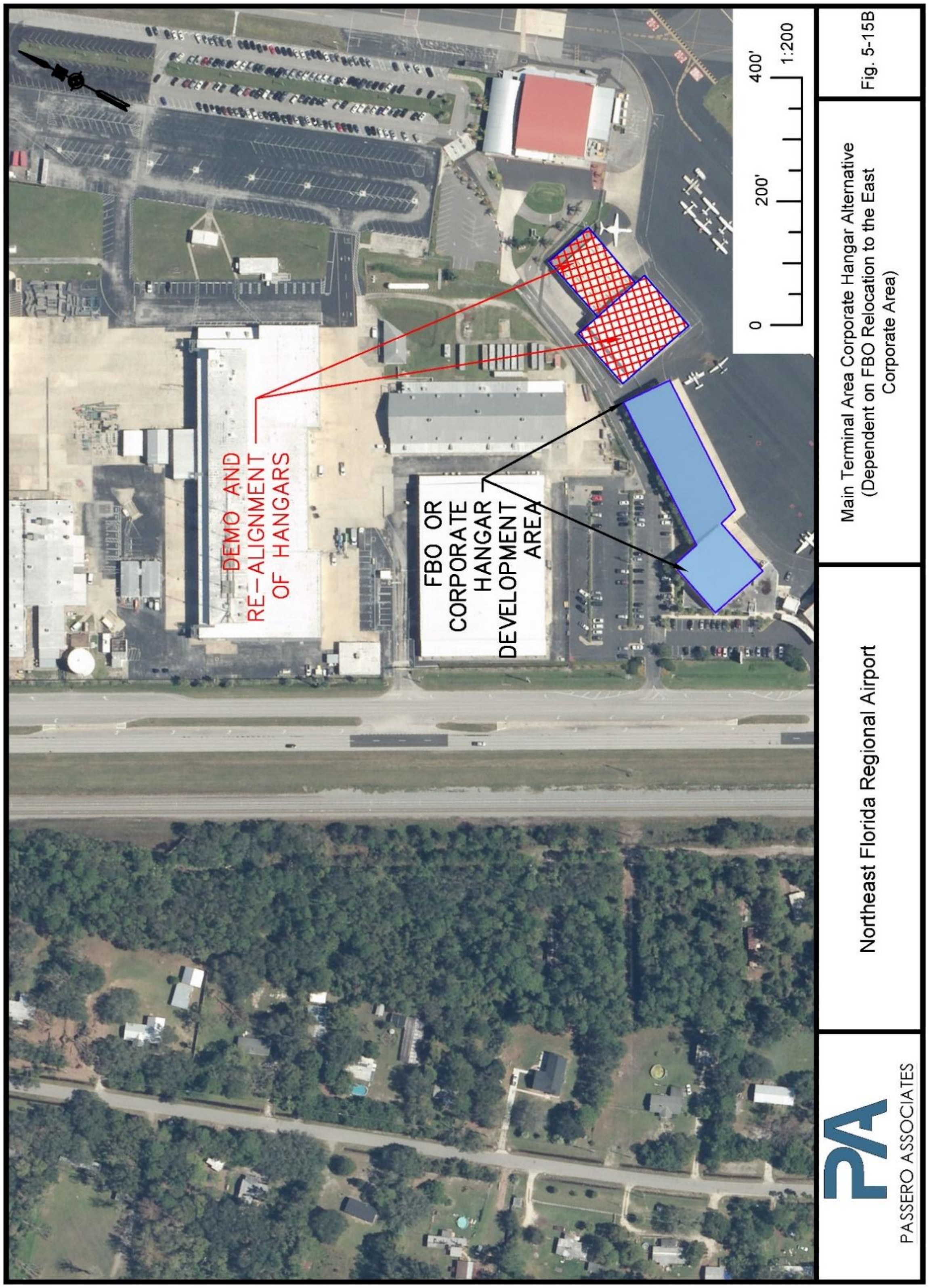
- Environmental and wetlands impacts.
- Costs to build taxilane and apron pavement.
- Cost to relocate Hawkeye View Lane.
- Cost associated with moving and creating stormwater retention.
- Acceptance for two FBO facilities, aircraft parking and new hangars not co-located.

Figure 5-15A. East Corporate Alternative 1 (17 Box Hangars and Relocated FBO)



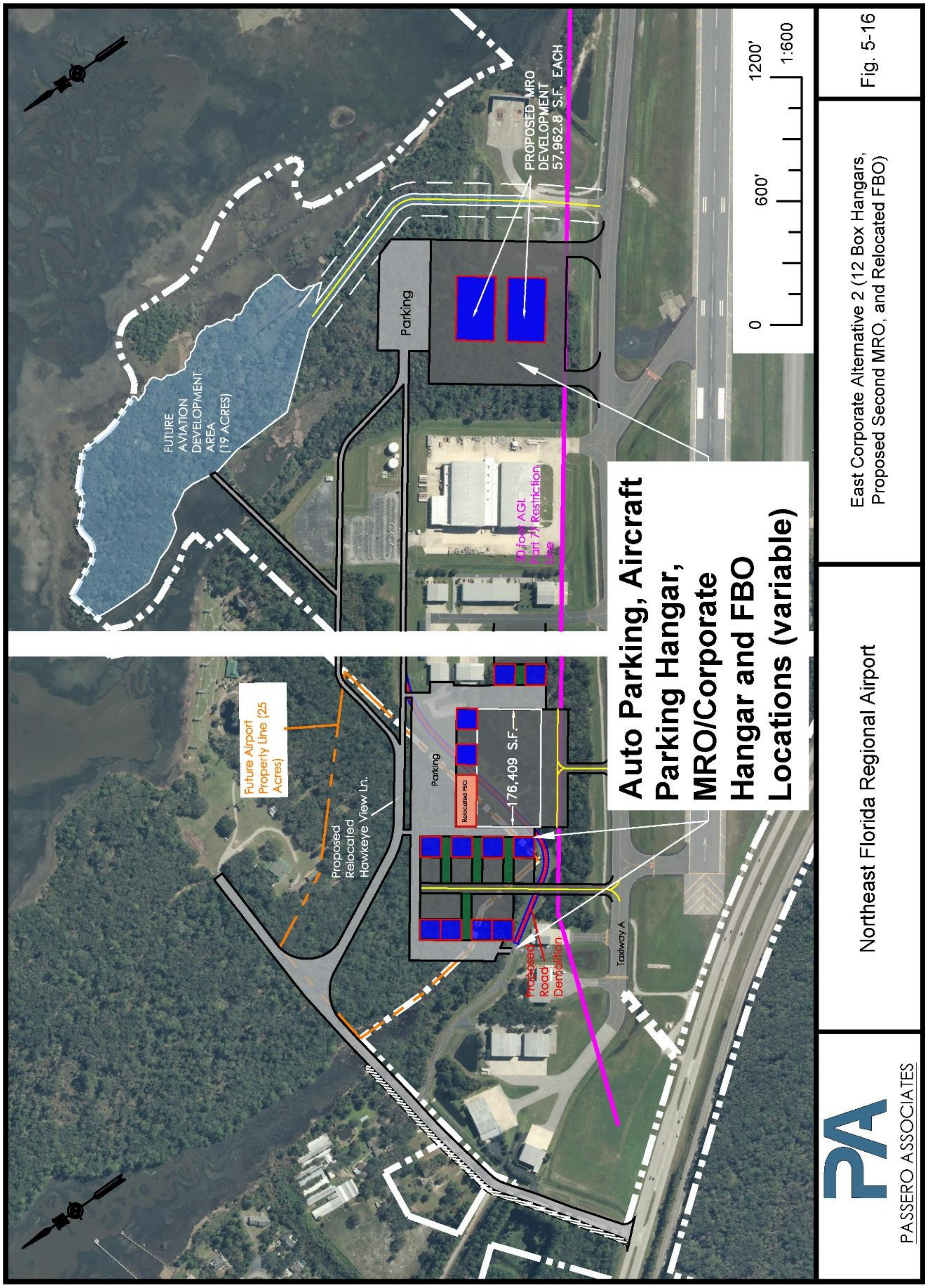
Source: Passero Associates

Figure 5-15B. Conversion of Previous FBO



Source: Passero Associates

Figure 5-16. East Corporate Alternative 2 (Box Hangars South; Relocated FBO East)



Source: Passero Associates

Table 5-16. East Corporate Area Alternatives Summary

Description	No Build	FBO (With Hangars) South	FBO East, Hangars South
Project Type	Landside	Landside	Landside
Operational	3	5	3
Environmental	5	3	3
Cost	5: $	5: $	5: $
Airfield Strategic	2	4	3
Support-to-Community	3:	3:	3:
Revenue/ROI	1:	3:	3:
Intermodal/SIS Connectivity	1	1	1
Business Strategic	2	5	5

Source: Passero Associates

5.1.3.2. East Corporate Area Roadway Access

Development on the east side will require roadway improvements to support the additional automobile vehicles.

No Build Alternative

As a baseline comparison, the No build alternative is presented for consideration. This alternative is presented to maintain the access road in its' existing state of development. No new (or improved) facilities are proposed.

Benefits:

- No environmental impacts.
- No additional development costs, only future rehabilitation and maintenance costs.

Impacts:

- Existing roadways will not support additional automobile traffic, when development occurs to meet demand.
- Delays will be incurred.

Build Alternative

Improve roadway access within the east corporate area (**Figure 5-17**).

- Straighten and widen Hawkeye View Lane to a four-lane road to access additional development areas east of Runway 13-31.
- Acquire approximately 25 acres of land to straighten Hawkeye View Lane.
- Upgrade Gun Club Road from two lanes to four lanes to accommodate additional vehicles.
- Install a signalized intersection at U.S. Highway 1 and Gun Club Road.

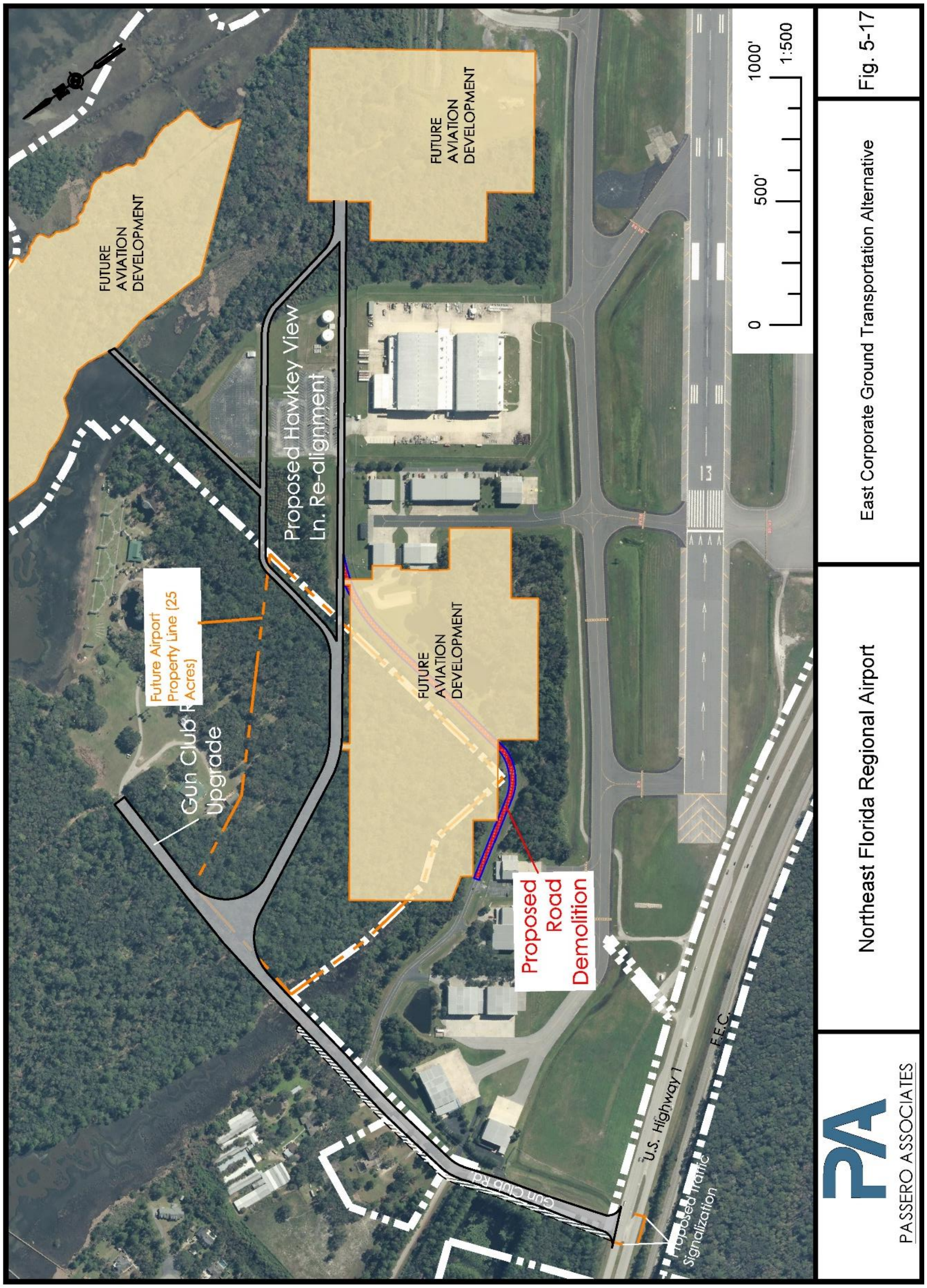
Benefits:

- Provides additional development area and access capacity in the East Corporate Area, east of Runway 13-31.
- Provides signalized intersection (improved, safe ground access) for users of the East Corporate Area.

Impacts:

- Cost and grant funding availability.
- Environmental.
- Documented need based on actual users' needs and additional future development eats of Runway 13-31.

Figure 5-17. East Corporate Area Roadway Improvements



Source: Passero Associates

Table 5-17. Roadway Alternatives Summary

Description	No Build	East Corporate Area
Project Type	Landside	Landside
Operational	3	5
Environmental	5	3
Cost	5: $	3: $$$
Airfield Strategic	3	5
Support-to-Community	1:	3:
Revenue/ROI	1:	1:
Intermodal/SIS Connectivity	1	3
Business Strategic	1	5

Source: Passero Associates

5.1.4. Aircraft Runup Areas

During a previous MPAC meeting, members noted the specific need for aircraft "run-up" and holding areas to support flight school training operations. The need for aircraft runup areas were identified to alleviate congestion on Taxiway B, departing Runway 31. to satisfy these requirements are identified in the sections below.

No Build Alternative

As a baseline comparison, the No Action alternative is presented for consideration. This alternative is presented to maintain the airfield in its' existing state of development. No new (or improved) facilities are proposed.

Benefits:

- No environmental impacts or impacts to adjacent airfield facilities.
- No additional development costs, only future rehabilitation and maintenance costs.

Impacts:

- Congestion may continue on Taxiways B, F and D as pilots perform pre-flight procedures on the taxiways.

Construction of Runup Areas

In response to this need, the airport experiences congestion on Taxiways B, F and D when aircraft are using active taxiways to perform run-up operations. These alternatives will examine the locations of runup areas that can alleviate the congestions issues that are faced today.

Option 1: Provide Runup Area at Runway 2-20 and Taxiway B (Figure 5-18)

- This option provides a runup area that can accommodate six aircraft between Runway 2-20 and Taxiway B.
- This runup area would be for aircraft coming from the FBO/Terminal area.

Benefits:

- Removes the aircraft from an active taxiway to perform run-up operations.
- Minimizes airfield congestion.
- Located outside the TOFA.

Impacts:

- Costs to build run-up area.
- Run-up areas for small aircraft only.

Option 2: Provide Runup Area off Taxiway F (Figure 5-19)

- This option provides a runup area that can accommodate aircraft along Taxiway F.
- This runup area would be support aircraft departing the flight school within the south general aviation area.

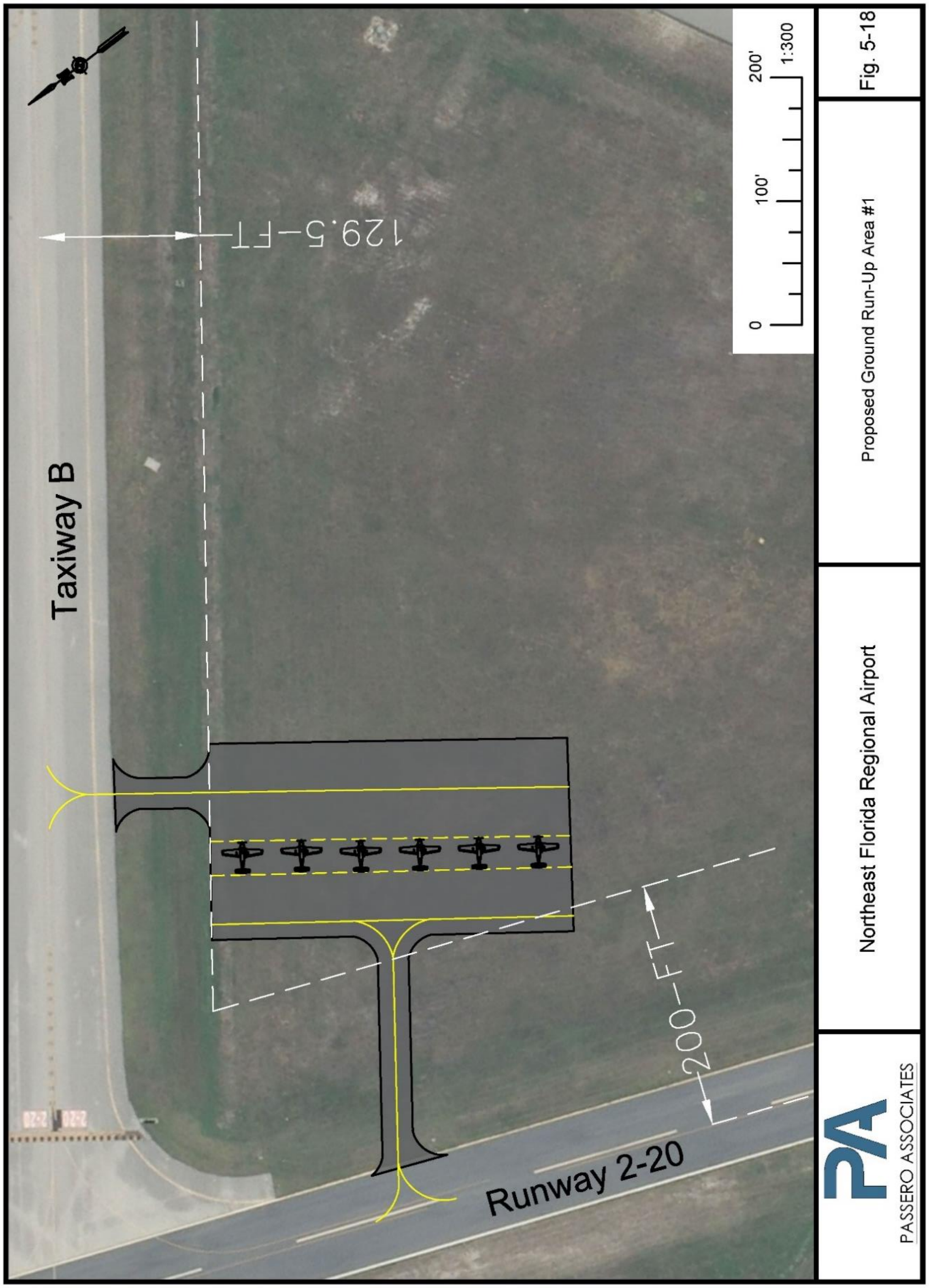
Benefits:

- Removes the aircraft from an active taxiway to perform run-up operations.
- Minimizes airfield congestion.
- Located outside the TOFA.

Impacts:

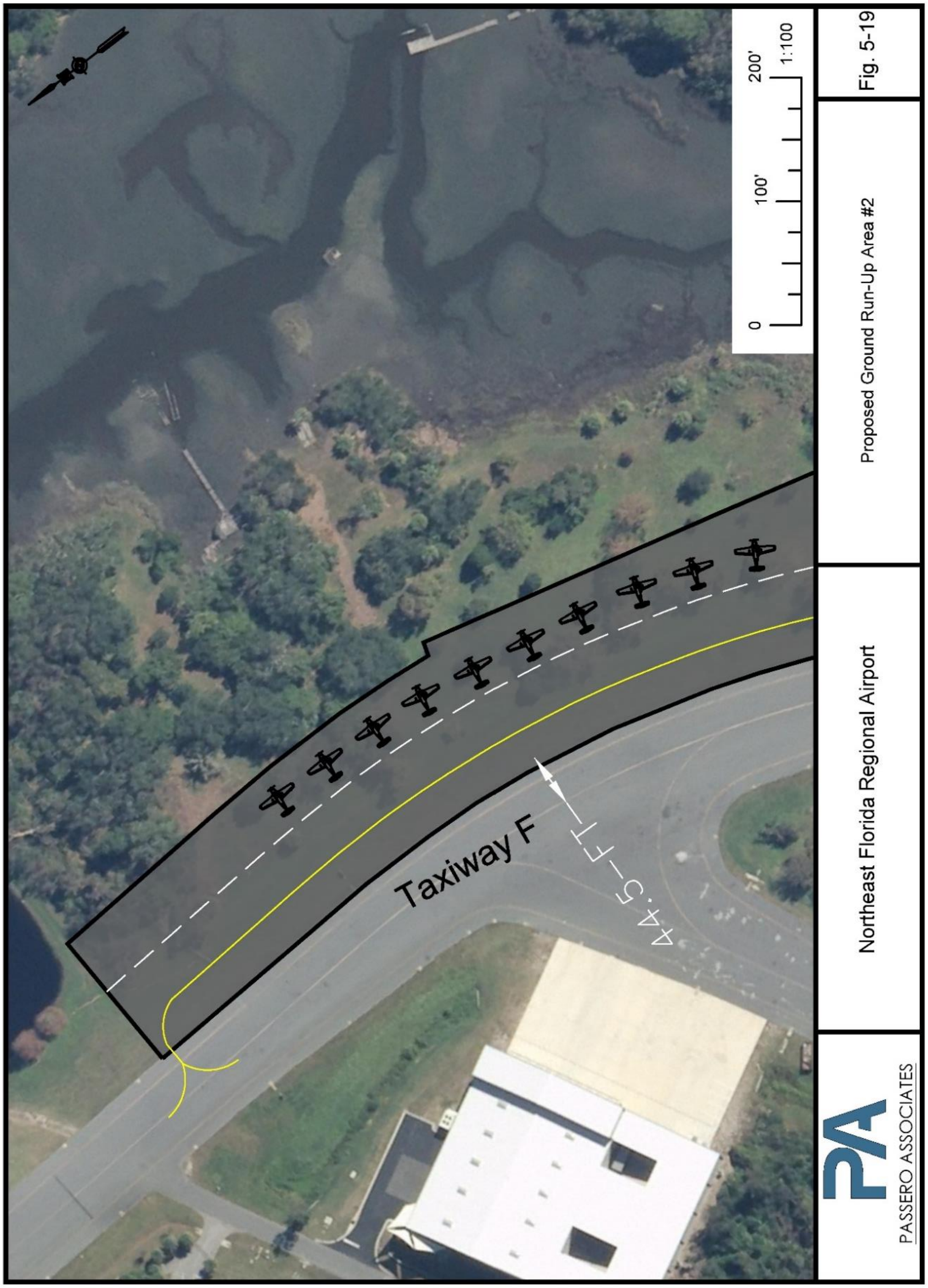
- Costs to build run-up area.
- Run-up areas for small aircraft only.

Figure 5-18. Run-up Area 1 (Runway 2-20 and Taxiway B)



Source: Passero Associates

Figure 5-19. Run-up Area (Taxiway F)



Source: Passero Associates

Table 5-18. Runup Alternatives Summary

Description	No Build	Taxiway F Option 1	Taxiway F Option 2
Project Type	Airside	Airside	Airside
Operational	3	5	5
Environmental	5	4	4
Cost	5: $	1: $$$$$	1: $$$$$
Airfield Strategic	2	5	5
Support-to-Community	3:	1:	1:
Revenue/ROI	1:	1:	1:
Intermodal/SIS Connectivity	1	1	1
Business Strategic	2	3	3

Source: Passero Associates

5.1.5. Main Terminal Area

The need for additional automobile parking spaces was identified in Chapter 4. Alternatives to satisfy these requirements are identified in the sections below.

No Build Alternative

As a baseline comparison, the No Action Alternative is presented for consideration. This alternative is presented to maintain the main terminal area in its' existing state of development. No new (or improved) facilities are proposed.

Benefits:

- No environmental impacts or impacts to adjacent airfield facilities.
- No additional development costs, only future rehabilitation and maintenance costs.

Impacts:

- Not enough automobile parking to meet demand throughout the planning period.

5.1.5.2. Automobile Parking and Passenger Terminal Expansion

Additional, centrally located automobile parking is needed. To address this need, a parking garage is proposed. (**Figure 5-20**).

- This option constructs a one-story parking garage over the terminal parking lot.
- This option also proposes the expansion of the existing passenger terminal in two phases (i.e., expansion in each phase by approximately 14,000 SF).

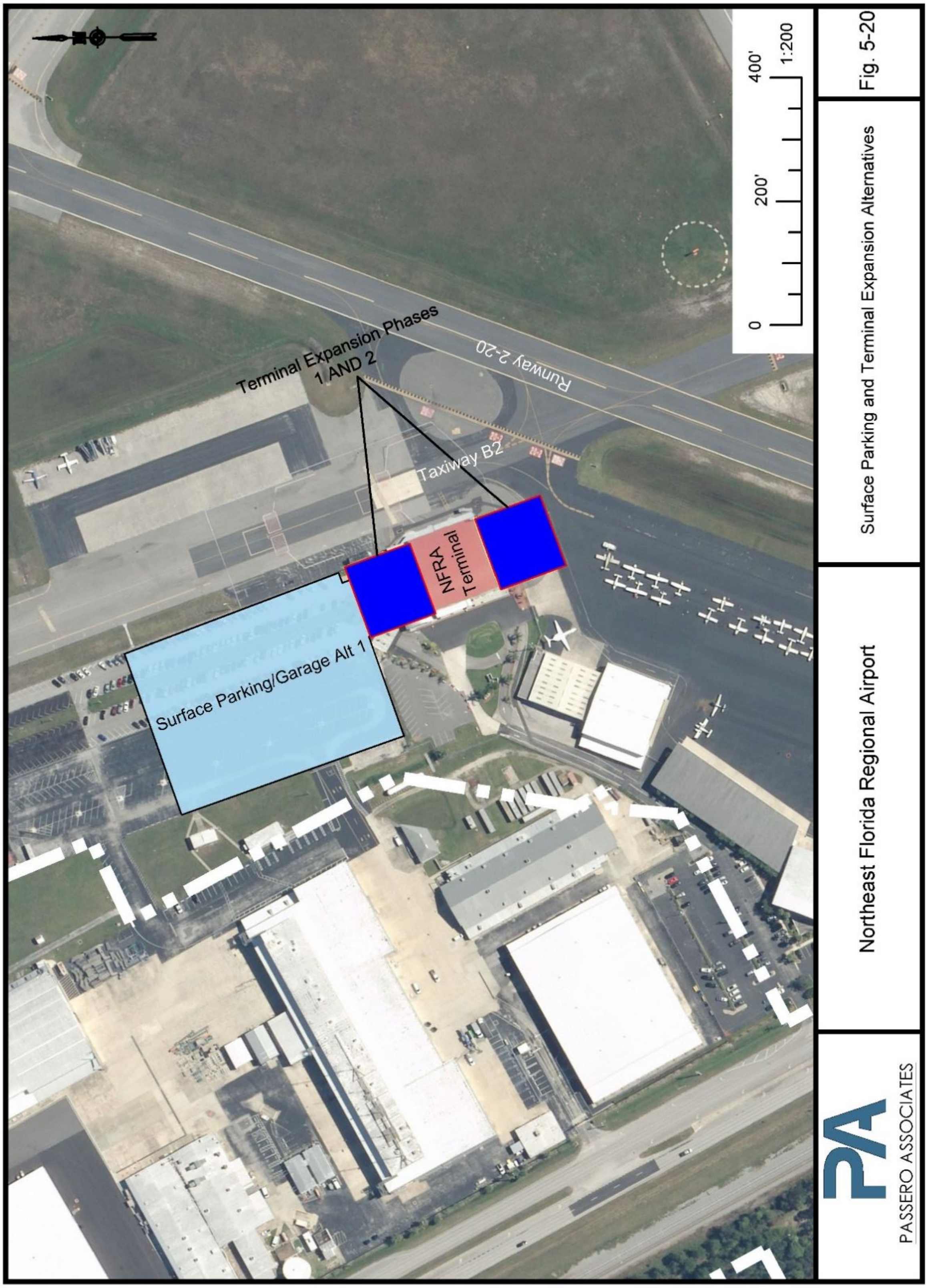
Benefits:

- Provide an additional 100 automobile parking spaces through one-story garage.
- No airspace (height) conflict.
- Provides ability for shared usage with tenants.
- Provide additional space for tenants, and passengers through the expansion of the passenger terminal.

Impacts:

- Significant Cost and limited availability of grant funding.
- Pedestrian distance to end-user locations.
- Limited ability to generate sufficient supporting revenue.
- Cost associated with the terminal expansion.
- Cost associated with the construction of the terminal parking garage.

Figure 5-20. Automobile Parking Alternative



Source: Passero Associates

Table 5-19. Parking Alternatives Summary

Description	No Build	Terminal Garage
Project Type	Landside	Landside
Operational	2	5
Environmental	5	4
Cost	5: $	4: $$
Airfield Strategic	3	3
Support-to-Community	2:	3:
Revenue/ROI	1:	1:
Intermodal/SIS Connectivity	1	1
Business Strategic	2	3

Source: Passero Associates

5.1.5.3. Main Terminal Area Roadway Access

Provide improved central access point for airport and tenants, including signalized intersection at U.S. Highway 1 and internal terminal access road efficiencies.

No Build Alternative

As a baseline comparison, the No Action Alternative is presented for consideration. This alternative is presented to maintain the main terminal access roadways in its' existing state of development. No new (or improved) facilities are proposed.

Benefits:

- No environmental impacts or impacts to adjacent airfield facilities.
- No additional development costs, only future rehabilitation and maintenance costs.

Impacts:

- Not enough automobile parking to meet demand throughout the planning period.

Main Terminal Area Roadway Access Alternative

Improve roadways access into the terminal area.

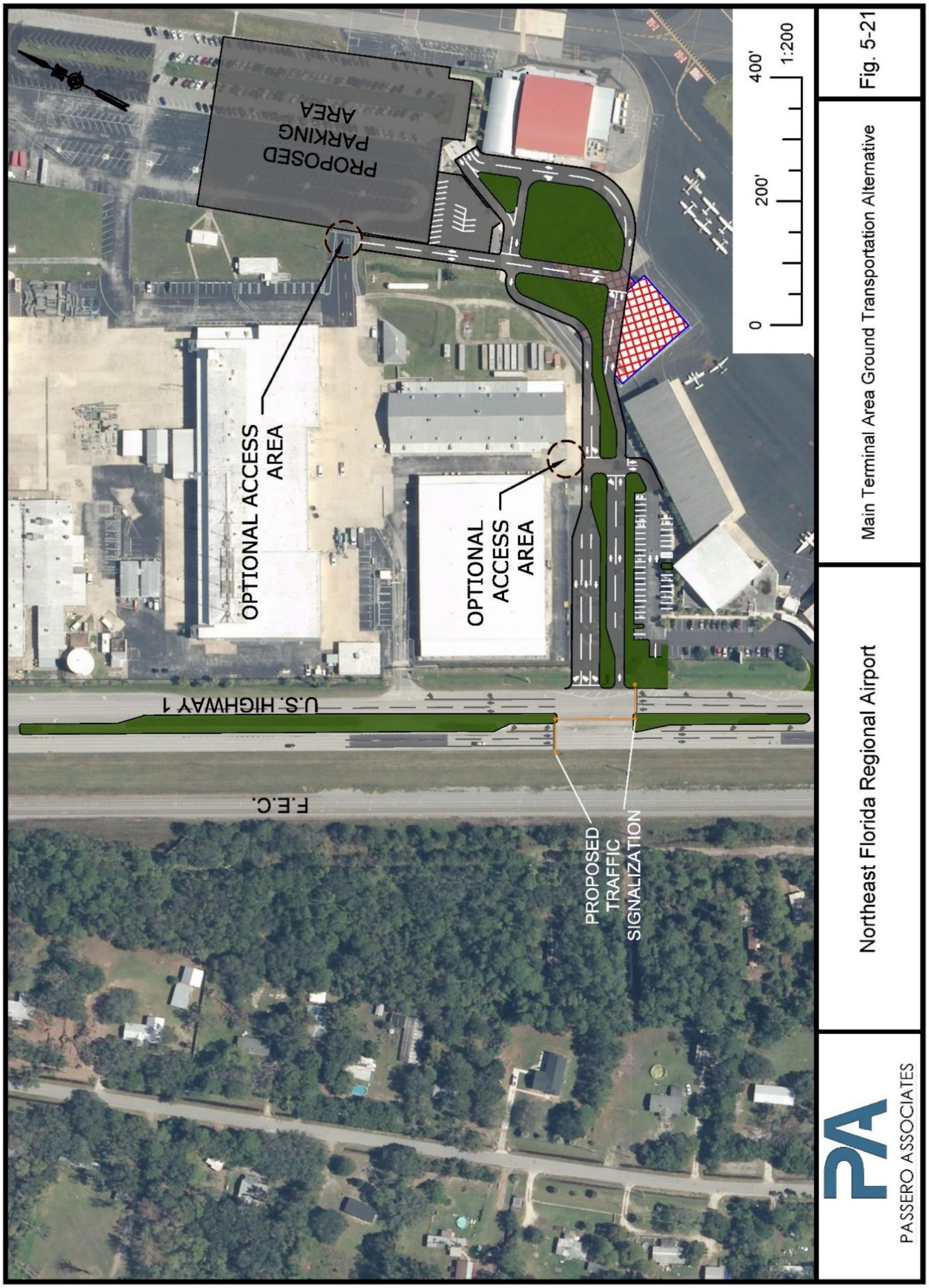
Benefits:

- Improves accessibility from U.S. 1 into the airport's central FBO and commercial service terminal area.
- Long-term partnership with FDOT.
- Improved circulation within airport central terminal area.
- Potential partnership with Northrop-Grumman for shared access points to U.S. Highway 1.
- Signalized Intersection.

Impacts:

- Cost associated with roadway improvements to U.S. Highway 1.

Figure 5-21. Main Terminal Area Roadways



Source: Passero Associates

Table 5-20. Roadway Alternatives Summary

Description	No Build	Main Terminal Area
Project Type	Landside	Landside
Operational	3	5
Environmental	5	4
Cost	5: $	2: $$$$
Airfield Strategic	3	5
Support-to-Community	1:	3:
Revenue/ROI	1:	1:
Intermodal/SIS Connectivity	3	3
Business Strategic	3	4

Source: Passero Associates

5.1.6. NFR-B (West Side of U.S. 1)

The Airport Authority owns considerable land west of U.S. Highway 1 (also referred to as Northeast Florida Regional Business Park, or NFR-B) that could be used for both aeronautical and non-aeronautical development. Previous studies have identified the need for intermodal access and commercial / industrial development, based on the favorable proximity of U.S. Highway 1, the Florida East Coast (FEC) railway, the future State Route 313 corridor and Interstate 95.

Proposed aeronautical development west of U.S. Highway 1 includes a Maintenance-Repair-Overhaul (or MRO) facility, including a limited-use, at-grade taxiway crossing to U.S. Highway 1 and the FEC railway, from the northern end of Taxiway B.

The state of Florida Strategic Intermodal System (or SIS), does not currently include NFRA as an active participant, although several transportation modes near the airport are included. The development proposed within this section may make NFRA (or components of NFRA) eligible for inclusion to the SIS, improving "connectivity" of the airport to other modes of transportation within the SIS.

This section will examine the roadway connectivity and potential development of airport land between U.S. Highway 1, proposed State Route 313 and Interstate 95 (I-95).

In addition to multi-modal development, other potential non-aeronautical land use ideas include warehousing/distribution/commercial facilities, water/wastewater facilities, and public access/multi-purpose space.

No Build Alternative

As a baseline comparison, the No Build Alternative is presented for consideration. This alternative is presented to maintain these lands in their current state of development. No new (or improved) facilities are proposed.

Benefits:

- No environmental impacts.
- No additional development costs.

Impacts:

- Lost opportunity for economic development to support St Johns county and surrounding areas.

5.1.6.1. Roadway/Highway Alternatives

This section will examine the potential development of roadways and highways west if U.S. Highway 1 (**Figures 5-22, 5-23 and 5-24**).

<u>Segment 1: U.S. Highway 1 to State Route 313 (Big Oak Road) (Figure 5-22)</u>

- Provide for improved connection from U.S. Highway 1 to the proposed State Route 313 utilizing existing Big Oak Road.

Benefits:

- Utilizes existing, active roadway system.
- Stimulates growth and accessibility of undeveloped land.
- Provides logical connection between U.S. Highway 1 and State Route 313.

Impacts:

- Cost and availability of funding.
- *Physical divider of developable land area.*

<u>Segment 2: State Route 313 to I-95 (limited access highway) (Figure 5-23)</u>

- Provide new, limited access highway from State Route 313 (at Big Oak Road) to I-95, through lands owned by St. Johns River Water Management District.

Benefits:

- *Provides major regional benefit of access from I-95 to Airport area, State Route 313 and U.S. Highway 1.*
- *Provides alternate connection to north-south interstate highway system for daily use, emerging business use, emergency access and potential evacuation corridor.*

Impacts:

- *Environmental access, approval and permitting.*
- *Cost and availability of funding, including timeframe needed to implement.*
- *Acceptance and approval from state of Florida and St Johns River Water Management District.*
- *Coordination within local and regional agencies for land use and ground access plans.*

<u>Segment 3: Connection from I-95 to State Route 16 (Figure 5-24)</u>

- Provide for connection from I-95 to State Route 16.

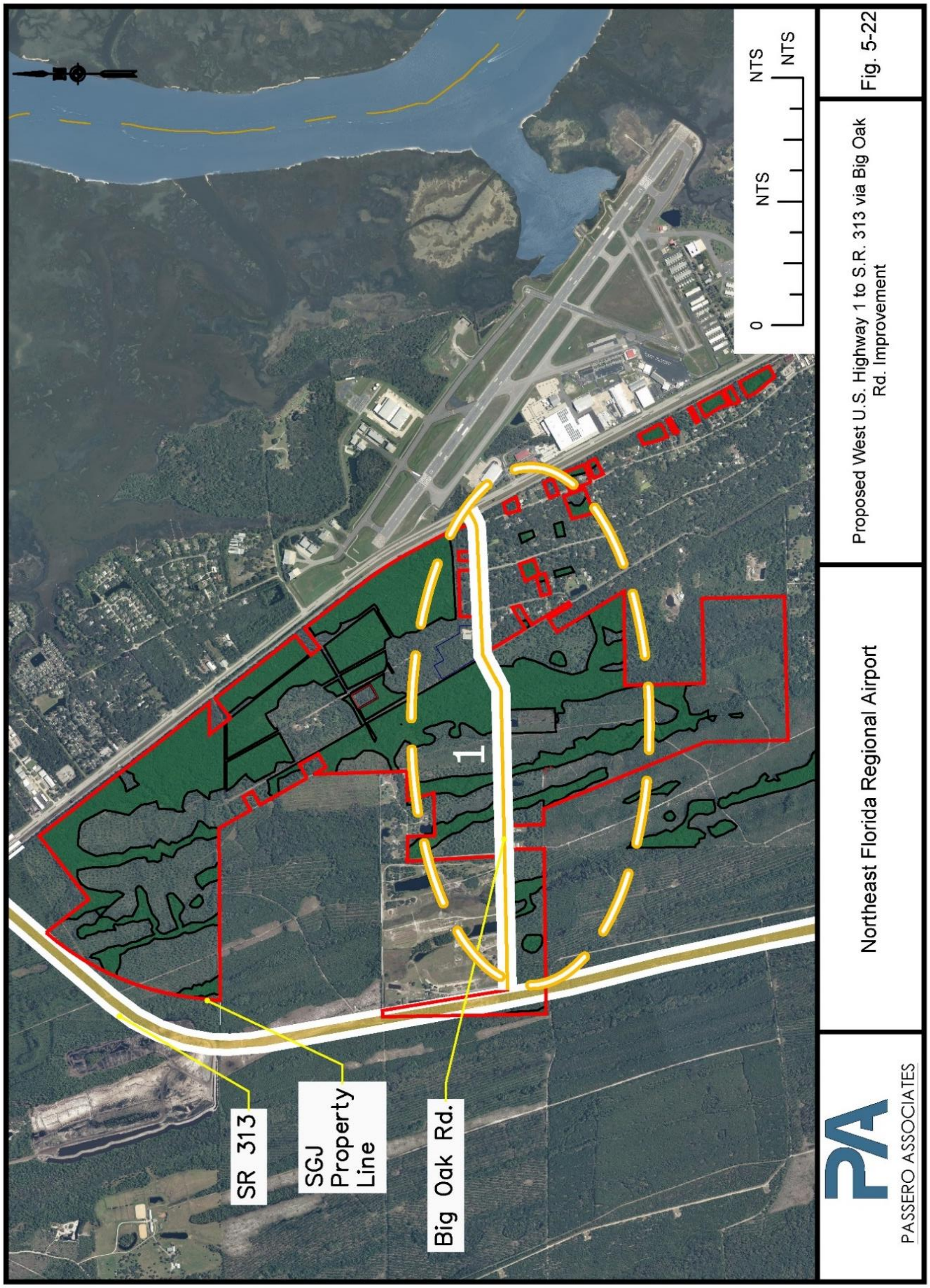
Benefits:

- Provides major regional benefit of access from I-95 to State Route 16.
- Provides alternate connection to east-west interstate highway system for daily use, emerging business use, emergency access and potential evacuation corridor.

Impacts:

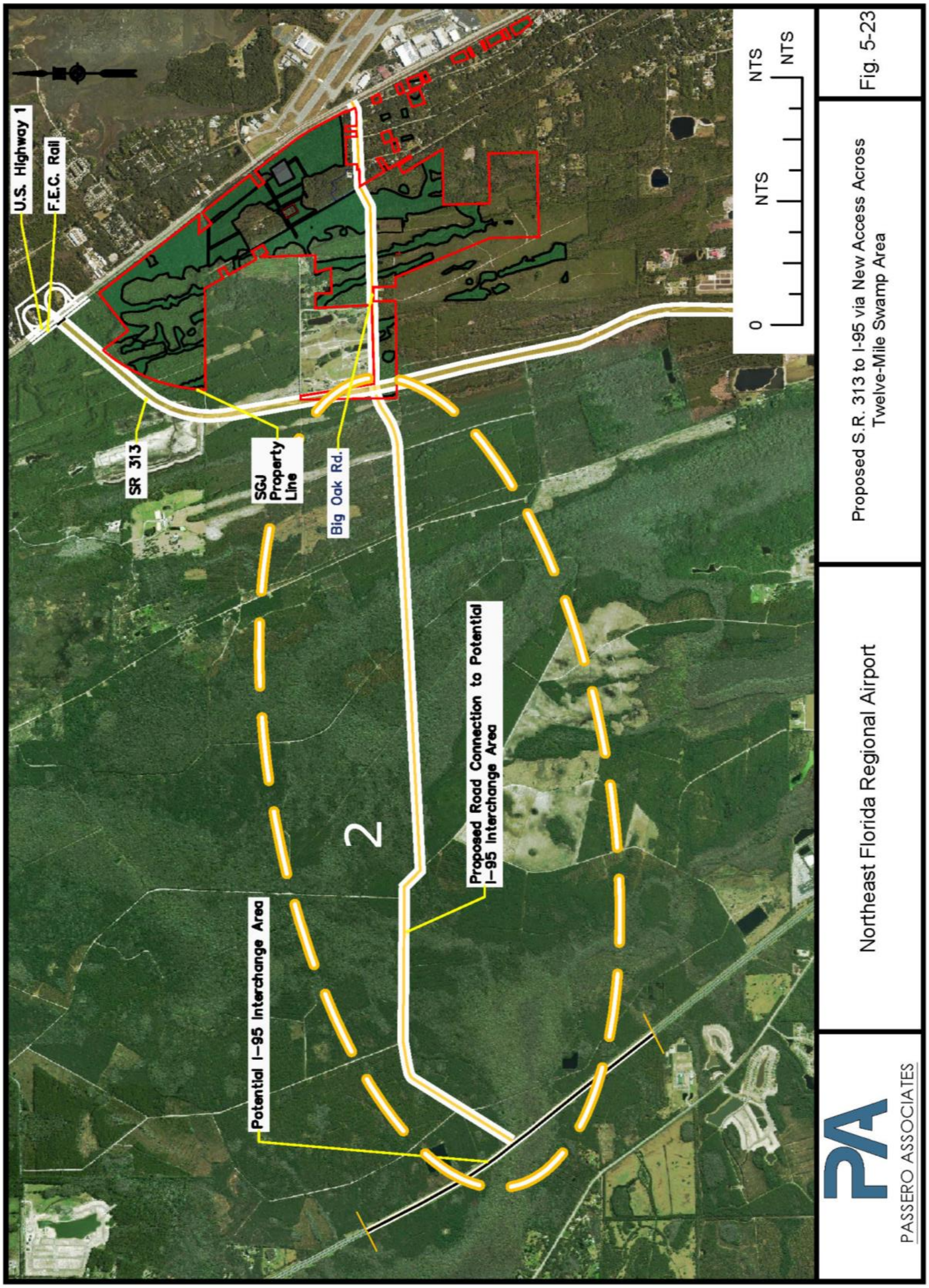
- Cost and availability of funding, including timeframe needed to implement.
- Acceptance and approval from state of Florida and St Johns River Water Management District.
- Coordination within local and regional agencies for land use and ground access plans.

Figure 5-22. U.S. 1 to S. R. 313 Roadway



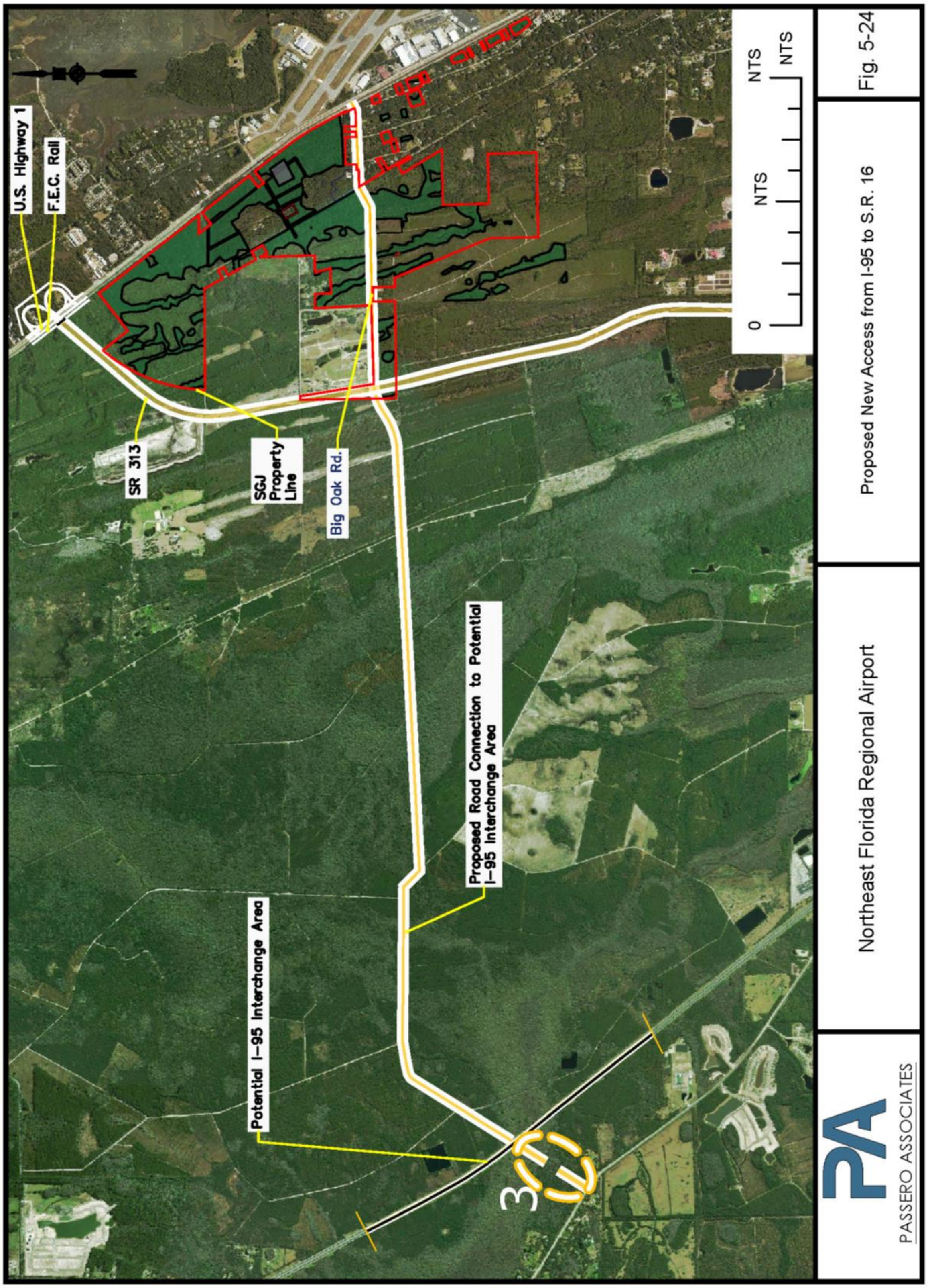
Source: Passero Associates

Figure 5-23. S.R. 313 to I-95



Source: Passero Associates

Figure 5-24. I-95 to S.R. 16



Source: Passero Associates

Table 5-21. NFR-B Roadway Alternatives Summary

Description	No Action	U.S. Highway 1 to State Route 313	State Route 313 to I-95	I-95 to State Route 16
Project Type	Landside	Landside	Landside	Landside
Operational	3	5	5	5
Environmental	5	2	2	3
Cost	5: $	2: $$$$	1: $$$$$	2: $$$$
Airfield Strategic	1	1	1	1
Support-to-Community	1:	4:	5:	4:
Revenue/ROI	1:	1:	1:	1:
Intermodal/SIS Connectivity	1	4	5	4
Business Strategic	1	5	5	4

Source: Passero Associates

5.1.6.2. NFR-B Potential Development

During small group discussions, several potential business and community-related land uses for NFR-B were identified (see **Figures 5-25 to Figures 5-30**), including the following:

- Warehousing
- Distribution
- Commercial
- Water/wastewater facilities supporting development within the Airport, City of St. Augustine and St. Johns County
- Aviation related development

- Provide utility, access and stormwater facilities for proposed multi-purpose development
- Provide passenger connection to the FEC Railway with regional ground transportation center
- Provide commuter rail support center
- Provide parallel track to FEC railway to support future rail-focused distribution facilities

Option 1: Non-Aeronautical Use, Commercial/Warehousing/Distribution with Rail access

- Provide parallel rail to FEC railway.
- Provide lands for various commercial/warehousing/distribution facilities.

Benefits:

- *Regional Importance and Economic Impact, including job creation.*
- *Long-term source of revenue for Airport Authority.*

Impacts:

- *Environmental access, permitting and mitigation.*
- *Infrastructure cost.*
- *Coordination with local and regional agencies for land use and ground access plans.*
- *Coordination and acceptance with FEC rail.*

Option 2: Aeronautical Use, Maintenance-Repair-Overhaul (MRO)

- Provide parallel rail to FEC railway.
- Provide lands for new Major MRO facility, consistent with two (2) large scale MRO facilities that already exist on-airport.

Benefits:

- Regional Importance and Economic Impact, including job creation.
- Long-term source of revenue for Airport Authority.

Impacts:

- Environmental access, permitting and mitigation.
- Infrastructure cost.
- Coordination with local and regional agencies for land use and ground access plans
- Identification of Major MRO operator, including investment / partnership within the development.

Option 3: Non-Aeronautical Use: Public/Multi-Purpose Development

- Provide multi-purpose, open functional area for public-use, outdoor venue, recreational use, event planning, hurricane response, etc.
- Note: In accordance with federal grant assurances, the Airport Authority must always apply Fair-Market-Value (FMV) calculations to land development and related operational leases.

Benefits:

- Regional Importance and Economic Impact, including job creation.
- Long-term source of revenue for Airport Authority.

Impacts:

- Environmental access, permitting and mitigation.
- Infrastructure cost.
- Coordination with local and regional agencies for land use and ground access plans.
- Identification of local partnerships and potential uses and users.

Option 4: Non-Aeronautical Use: Water/Wastewater Plants

Existing utility systems may not have sufficient capacity to provide water and wastewater capacity related to the full development of NFR-B.

- Provide potable water plant for development of NFR-B and adjacent area.
- Provide wastewater treatment plant for development of NFR-B and adjacent area.

Benefits:

- Needed to support development of NFR-B.
- Regional Importance and Economic Impact, including job creation.
- Long-term source of revenue for Airport Authority.

Impacts:

- Environmental access, permitting and mitigation.
- Infrastructure cost.
- Coordination with local and regional agencies.
- Partnership needed with City of St. Augustine, St. Johns County and / or private facility.
- Feasibility studies and advance planning needed, prior to implementation.

Option 5: Non-Aeronautical Use, Passenger Terminal/Rail/Intermodal Center

- Provide for intermodal airport-rail terminal area, supporting passenger or commuter rail, west side of U.S. Highway 1.
- Provide for public parking, including bus, taxi, rental car, etc.

Benefits:

- Potential long-term benefit to Airport and Community.
- Regional Importance and Economic Impact, including job creation.
- Long-term source of revenue for Airport Authority.

Impacts:

- Infrastructure and facility cost.
- Coordination with local and regional agencies.
- Coordination with FEC Rail, City of St. Augustine and St. Johns County planning interests.
- Partnership needed with potential operators.

Feasibility studies and advance planning needed, prior to implementation

Option 6: Purchase Available/Adjacent Land from SJRWMD

- Purchase available (excess) land from St Johns River Water Management District (SJRWMD), west of U.S. Highway 1, east of proposed State Route 313.

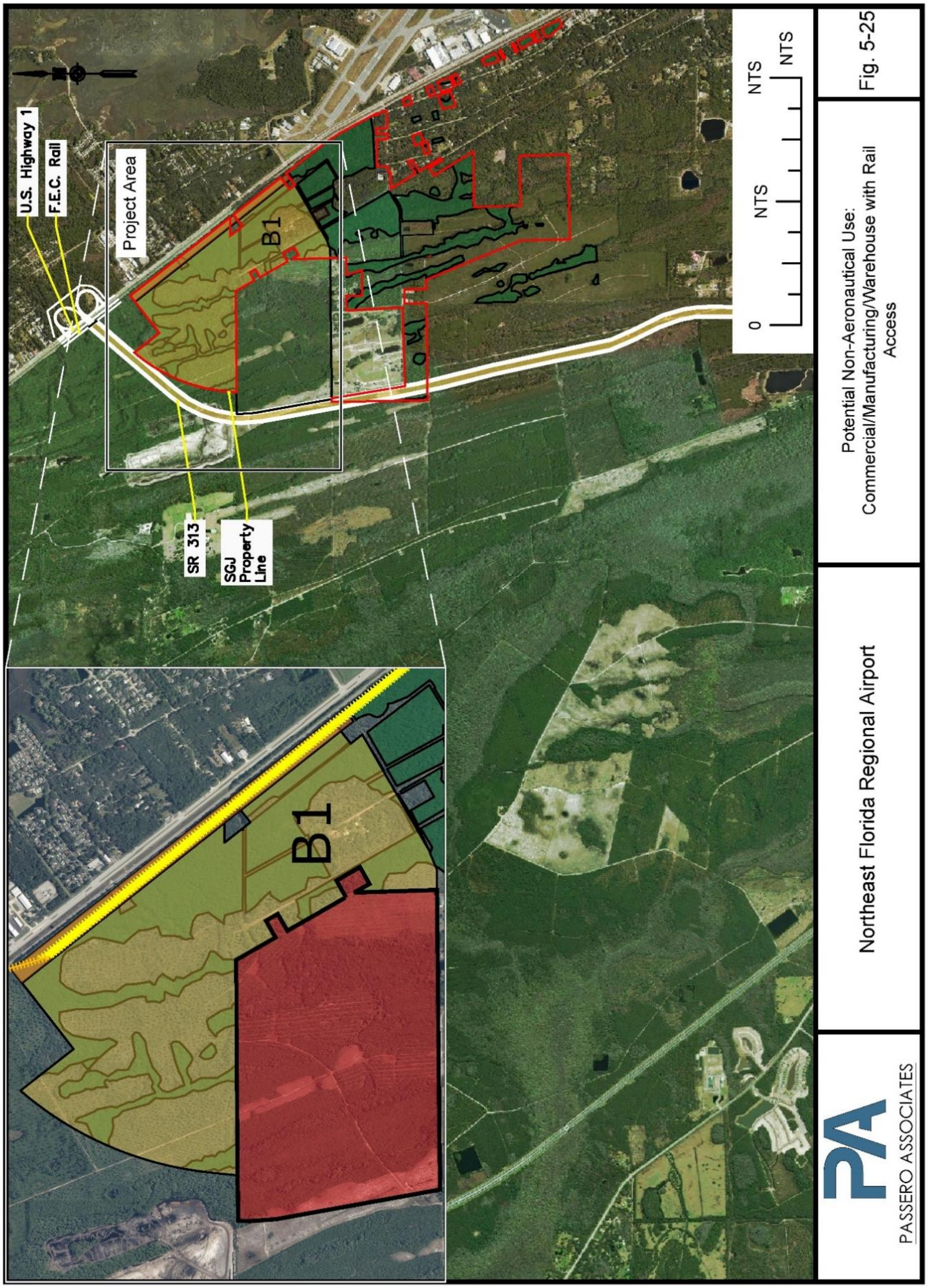
Benefits:

- Compatible land use, for NFRA and NFR-B.
- Future development potential, consistent with other Airport Master Goals and proposed development.
- Control of land versus incompatible development of conflicting development, by others.

Impacts:

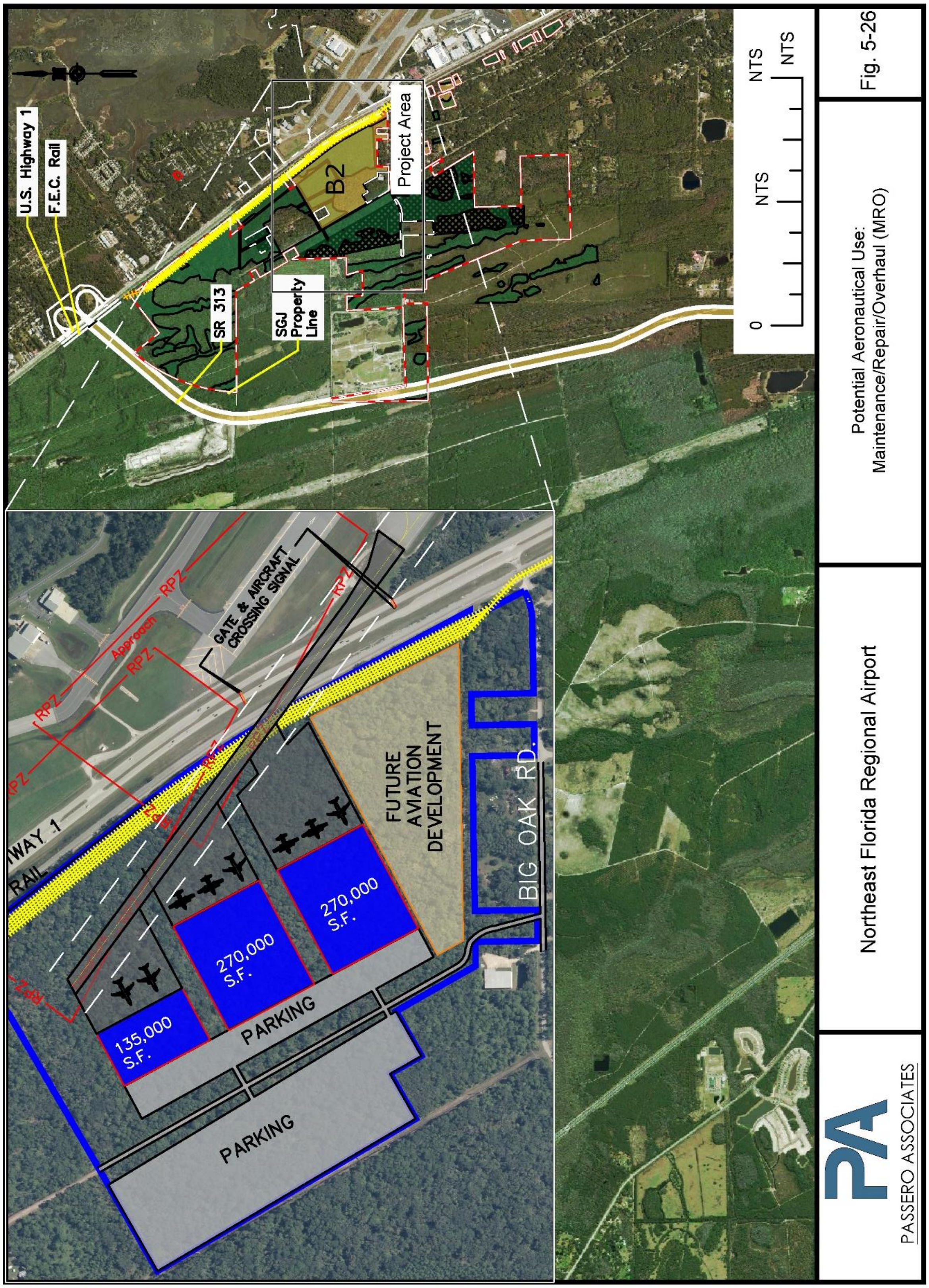
- Cost.
- Coordination with local and regional agencies.

Figure 5-25. Non-Aeronautical Development: Commercial/Warehousing/Distribution with Rail Access



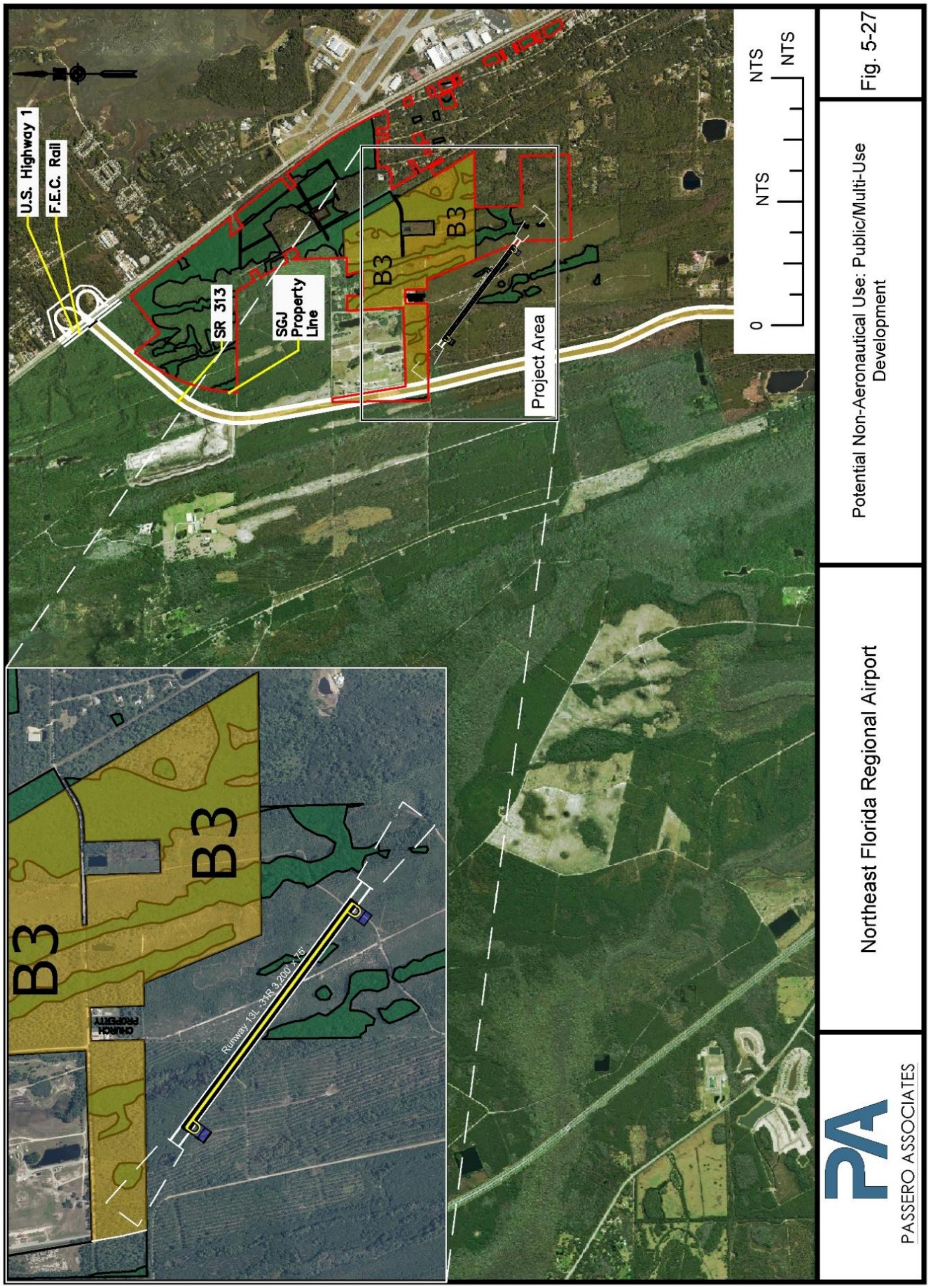
Source: Passero Associates

Figure 5-26. Aeronautical Use: Maintenance, Repair, Overhaul



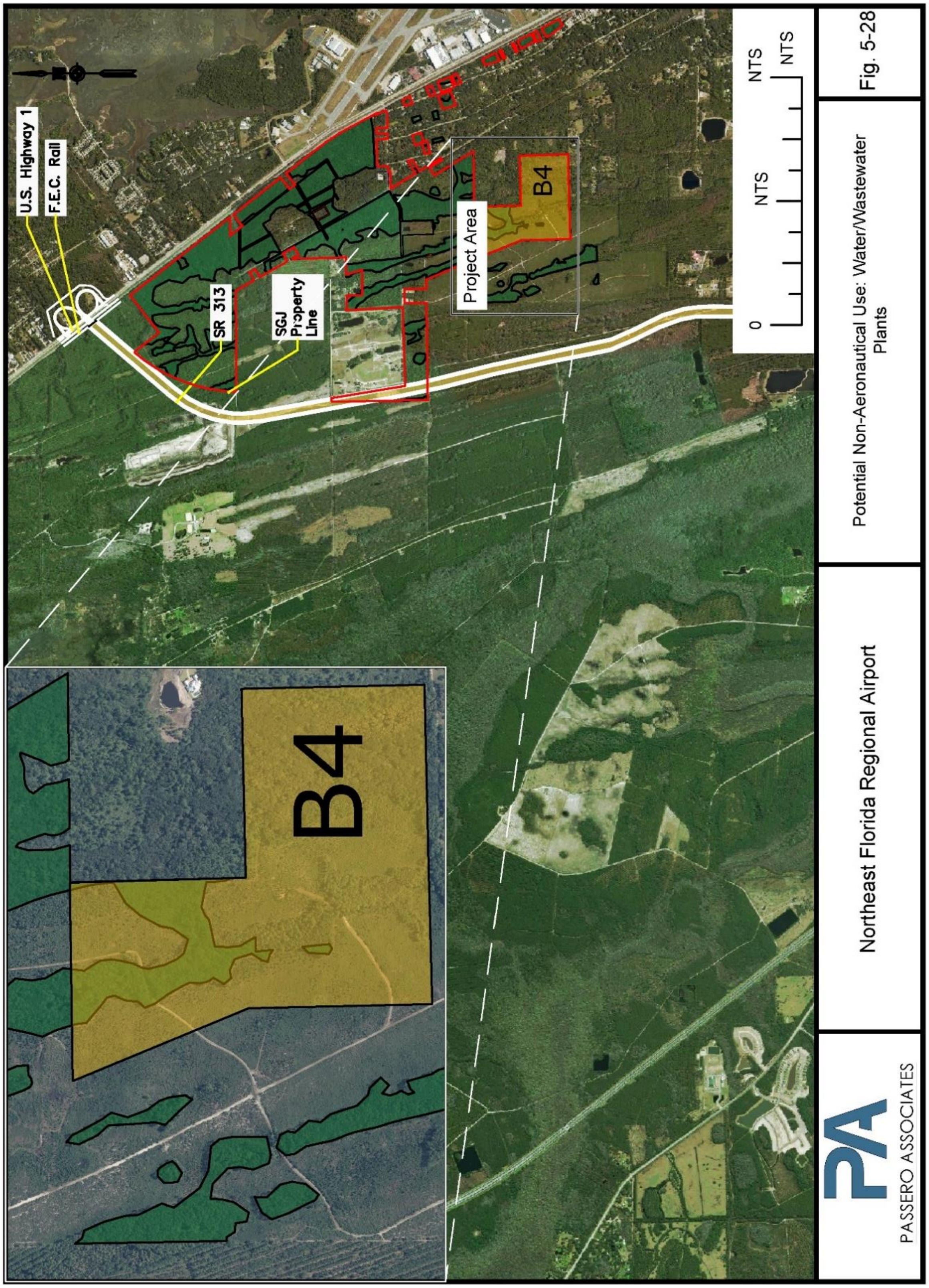
Source: Passero Associates

Figure 5-27. Non-Aeronautical Use: Public/Multi-Purpose



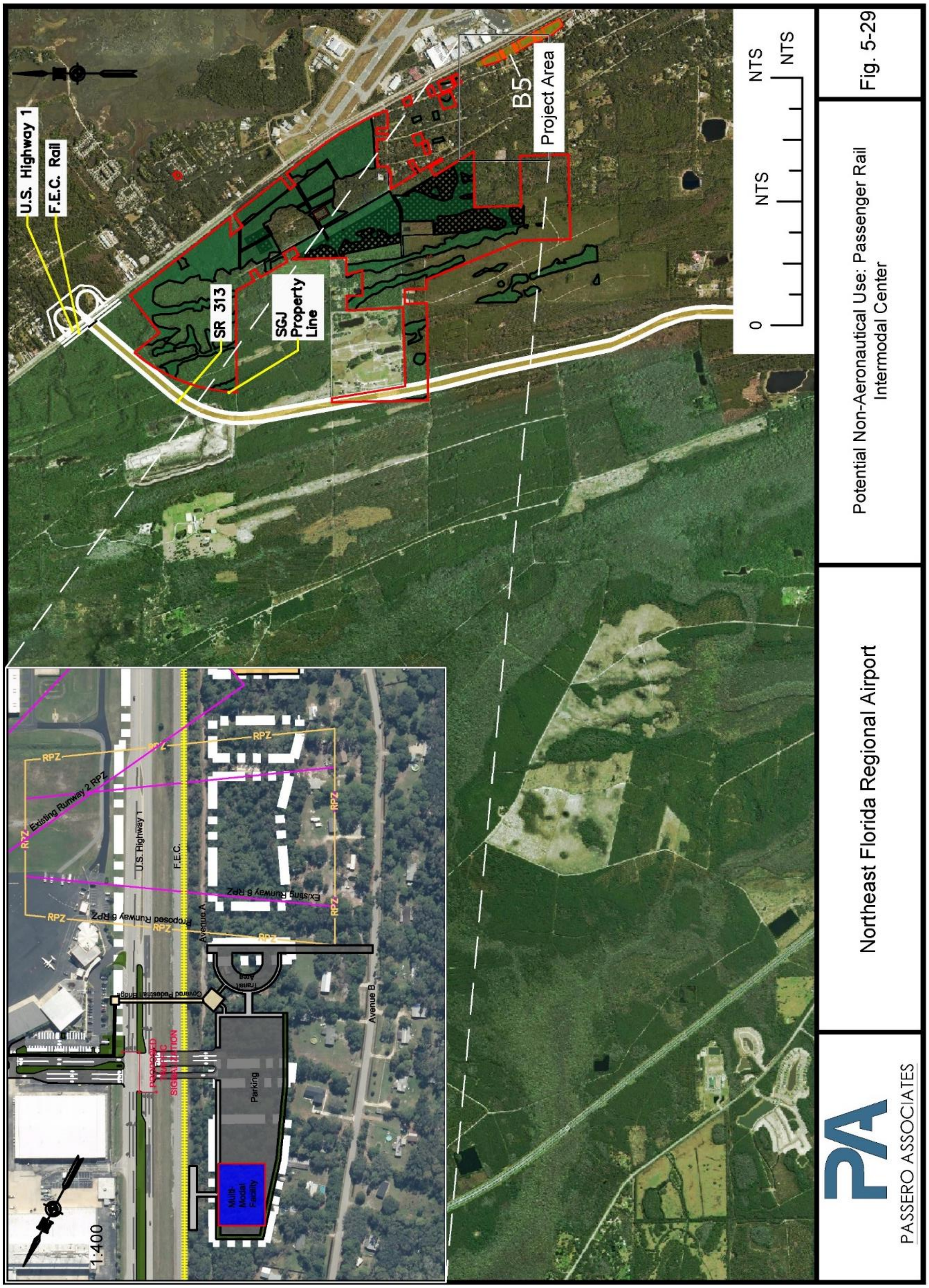
Source: Passero Associates

Figure 5-28. Non-Aeronautical Use: Water/Wastewater Plants



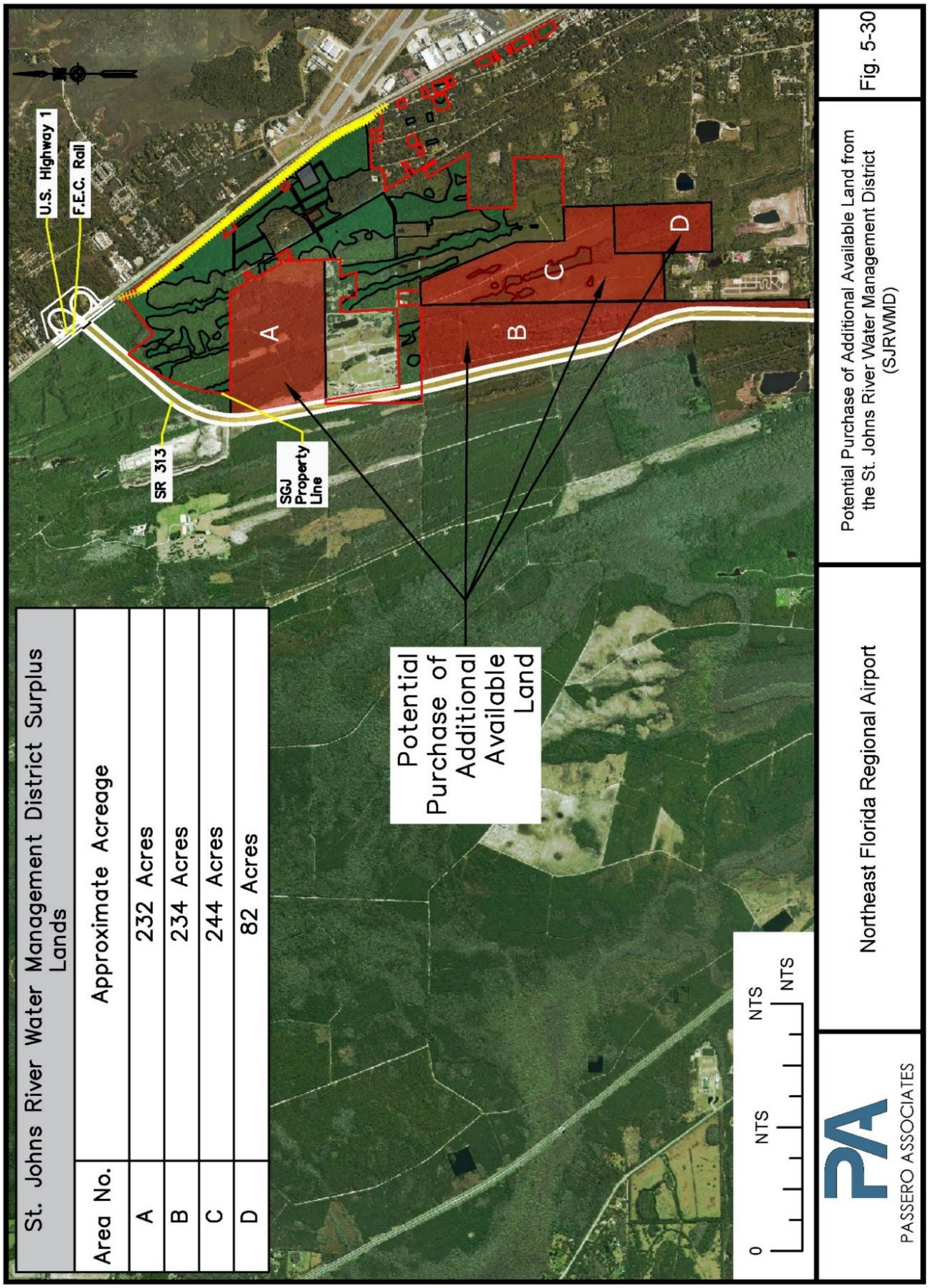
Source: Passero Associates

Figure 5-29. Non-Aeronautical Use: Passenger Rail/Intermodal



Source: Passero Associates

Figure 5-30. Available Land from SJRWMD



Source: Passero Associates

Table 5-22. NFR-B Alternatives Summary

Description	No Build	Non-Aero Commercial/ Distribution/ Warehousing/ Rail Access	Aeronautical MRO	Non-Aero Public/ Multi-Use	Non-Aero Water/ Wastewater	Non-Aero Passenger Rail/ Intermodal	Purchase Available/ Adjacent Land from SJRWMD
Project Type	Landside	Landside	Airside	Landside	Landside	Landside	Landside
Operational	1	5	5	5	3	4	5
Environmental	5	2	2	2	2	2	2
Cost	5: $	1: $$$$$	1: $$$$$	1: $$$$$	1: $$$$$	1: $$$$$	1: $$$$$
Airfield Strategic	1	1	5	1	1	1	1
Support-to-Community	1:	5:	5:	5:	4:	4:	4:
Revenue/ROI	1:	5:	5:	2:	3:	2:	5:
Intermodal/SIS Connectivity	1	3	3	3	1	5	5
Business Strategic	1	5	5	3	4	3	5

Source: Passero Associates

Table 5-23. Comparison Table

	ASV Alts						Crosswind Runway Alts					Hot Spot and Runway 2 Alt			South GA Area		Taxiway D Alt	
Description	No Build	Parallel Runway West Runway 13-31	Parallel Runway East Runway 13-31	Non-Intersecting Runway West U.S. Highway 1	Existing Reynold's Airpark Site	I-95/State Route 206 Site	No Build	Runway 2-20 as Crosswind	Runway 6-24 as Crosswind	Runway 5-23 as Crosswind	Runway 4-22 as Crosswind	No Build	Convert Runway 2-20 to Taxiway	Remove Connector/Narrow Hotspot	No Build	Full Build	No Build	Taxiway D 240' Separation/ Eliminate Taxiway E
Project Type	Airside	Airside	Airside	Airside	Airside	Airside	Airside	Airside	Airside	Airside	Airside	Airside	Airside	Airside	Airside/ Landside	Airside/ Landside	Airside	Airside
Operational	1	3	3	**5**	5	5	4	2	4	3	3	2	5	3	3	5	3	5
Environmental	5	2	1	**3**	3	2	5	**2**	2	1	1	5	5	1	5	4	5	4
Cost	5: $	1: $$$$$	1: $$$$$	1: $$$$$	1: $$$$$	1: $$$$$	3: $$$	2: $$$$	2: $$$$	2: $$$$	2: $$$$	3: $$$	1: $$$$$	1: $$$$$	5: $	1: $$$$$	3: $$$	3: $$$
Airfield Strategic	1	1	1	**3**	**2**	**3**	1	**1**	**5**	3	**3**	2	5	4	2	5	3	5
Subtotal	**12**	**7**	**6**	**12**	**11**	**11**	**13**	**7**	**13**	**9**	**9**	**12**	**16**	**9**	**15**	**15**	**14**	**17**
Support-to-Community	1:	1:	1:	1:	3:	4:	1:	1:	1:	1:	1:	1:	1:	1:	3::	3:	1:	1:
Revenue/ ROI	1:	1:	1:	1:	1:	4:		1:	1:	1:	1:	1:	3:	1:		4:	1:	1:
Intermodal/SIS Connectivity	1	1	1	1	**1**	**1**	2	2	2	2	2	1	1	1	1	3	1	1
Business Strategic	1	1	1	1	**1**	**4**	1	1	1	1	1	1	2	1	2	5	2	4
TOTAL	**16**	**11**	**10**	**16**	**17**	**24**	**18**	**12**	**18**	**14**	**15**	**16**	**23**	**13**	**22**	**30**	**19**	**24**

Source: Passero Associates

Table 5-23. Comparison Table (cont'd)

	South GA Access Roads		East Corporate Area			East Corporate Roadway Access		Runup Areas			Automobile Parking	
Description	No Build	South GA Area	No Build	FBO with Hangars south	Existing FBO Apron Converted	No Build	East Corporate Area Roadway	No Build	Taxiway F Option 1	Taxiway F: Option 2	No Build	Terminal Garage
Project Type	Landside	Landside	Landside	Landside	Landside	Landside	Landside	Airside	Airside	Airside	Landside	Landside
Operational	3	5	3	5	3	3	5	3	5	5	2	5
Environmental	5	4	5	3	3	5	3	5	4	4	5	4
Cost	5: $	3: $$$	5: $	5: $	5: $	5: $	3: $$$	5: $	1: $$$$$	1: $$$$$	5: $	4: $$
Airfield Strategic	1	5	2	4	3	3	5	2	5	5	3	3
Subtotal	**14**	**17**	**15**	**17**	**14**	**16**	**16**	**15**	**15**	**15**	**15**	**16**
Support-to-Community	1:	3:	3:	3:	3:	1:	3:	3:	5:	5:	2:	3:
Revenue/ ROI	1:	3:	1:	3:	3:	1:	1:	1:	1:	1:	1:	1:
Intermodal/SIS Connectivity	2	3	1	1	1	1	3	1	1	1	1	1
Business Strategic	2	5	2	5	5	1	5	2	3	3	2	3
TOTAL	**20**	**31**	**22**	**29**	**26**	**20**	**28**	**22**	**25**	**25**	**21**	**24**

Source: Passero Associates

Table 5-23. Comparison Table (cont'd)

	Terminal Roadway Alternatives		NFR-B Roadways				NFR-B Development Alts						
Description	No Build	Main Terminal Roadway	No Build	U.S. Highway 1 to State Route 313	State Route 313 to I-95	I-95 to State Route 16	No Build	Non-Aero Commercial/ Distr./Warehouse/ Rail	Aero MRO	Non-Aero Public / Multi-Use	Non-Aero Water / Wastewater	Non-Aero Passenger Rail/ Intermodal	Purchase Available Land from SJRWMD
Project Type	Landside	Landside	Landside	Landside	Landside	Landside	Landside	Landside	Airside	Landside	Landside	Landside	Landside
Operational	3	5	3	5	5	5	1	5	5	5	3	4	5
Environmental	5	4	5	2	2	3	5	2	2	2	2	2	2
Cost	5: $	2: $$$$	5: $	2: $$$$	1: $$$$$	2: $$$$	5: $	1: $$$$$	1: $$$$$	1: $$$$$	1: $$$$$	1: $$$$$	1: $$$$$
Airfield Strategic	3	5	1	1	1	1	1	1	5	1	1	1	1
Subtotal	**16**	**16**	**14**	**10**	**9**	**11**	**12**	**9**	**13**	**9**	**7**	**8**	**9**
Support-to-Community	1:	3:	1:	4:	5:	4:	1:	5:	5:	5:	4:	4:	4:
Revenue/ ROI	1:	1:	1:	1:	1:	1:	1:	5:	5:	2:	3:	2:	5:
Intermodal/SIS Connectivity	3	3	1	4	5	4	1	3	3	3	1	5	5
Business Strategic	3	4	1	5	5	4	1	5	5	3	4	3	5
TOTAL	**24**	**27**	**18**	**24**	**25**	**24**	**16**	**27**	**31**	**22**	**19**	**22**	**28**

Source: Passero Associates

5.2. Preferred Alternative

After discussion with members from the MPAC and Sponsor at MPAC meeting #5 on June 29, 2018 regarding each alternative, a preferred alternative from each was selected. **Figures 5-31** and **5-32** present the consolidated preferred alternatives for NFRA and NFR-B.

Each preferred alternative that was identified by the MPAC and Sponsor will be discussed in the following sections.

5.2.1. Airfield Operating Area

This area at SGJ includes the runway and taxiway environments that allow aircraft taxi, takeoff and landing operations.

5.2.1.1. Runway 2-20 Preferred Alternative

As stated in Section 5.1.1 of this master plan, Runway 2-20 has more taxi operations than takeoff and landing operations in addition to the documented FAA "Hot-Spot" and the presence of a non-standard taxiway connector from the FBO apron to the runway environment. However, after much discussion with the pilots that use Runway 2-20 and MPAC members, the Sponsor agreed that Runway 2-20 should remain open as a runway and not be converted to a taxiway unless a triggering event deems the runway unusable from the standpoint of the FAA (i.e., the FAA no longer considers Runway 2-20 a runway due to diminished safety of aircraft operations caused by the hot spot).

Therefore, this preferred alternative recommends that Runway 2-20 remain a runway until the FAA deems this runway as unusable. In addition, the FBO taxiway connector adjacent to Runways 2 and 6 is proposed to be demolished or painted for closure to ensure that there is not a direct connection from an apron parking area to the active runway environments.

Although Runway 2-20 will remain open, it will not be the preferred crosswind runway at SGJ; therefore, future maintenance and projects will have to be locally funded for Runway 2-20.

5.2.1.2. Runway 6-24

Many alternatives were evaluated for the preferred crosswind runway at SGJ, but Runway 6-24 was found to be the best option. Runway 6-24 is proposed to be extended to measure, at a minimum, 3,700 feet and widened to a minimum of 75 feet. Furthermore, Runway 6-24 will be upgraded with non-precision instrument approaches on both ends.

5.2.2. Main Terminal Area

This area at SGJ includes the passenger terminal, FBO and ground connections to U.S. Highway 1.

5.2.2.1. Passenger Terminal

After discussion with the Sponsor and members from the MPAC, there was expressed need for an expansion to the passenger terminal. This expansion will take place in two phases. Both phases call for an expansion of approximately 14,000 SF Although there are two tenants (Via Air and Elite Air) operating out of the main terminal, the forecast from Chapter 3 projects growth in operations, which means additional tenants. Therefore, the terminal expansion should happen with the planning period when the demand for expansion is required.

5.2.2.2. Passenger Terminal Parking Garage

As identified in Chapter 4, approximately 100 additional parking spots are needed within the planning period. To make space available for the parking need, the MPAC agreed with the alternative to construct a one-story parking garage adjacent to the existing passenger terminal. From a phasing standpoint, this parking garage may be built after the passenger terminal expansion for a direct connection with the terminal. Prior to construction of the parking garage, the Sponsor will need to end the lease agreement with Northrup Grumman to take back ownership of the parking lot adjacent to the passenger terminal.

5.2.2.3. Terminal Roadway Improvements

The existing roadway leading into the passenger terminal area lacks signage and has several congestion points given the existing layout of the roadway and buildings. Furthermore, turning out of this area onto U.S. Highway 1 presents serious safety concerns due to lack of traffic signals at the intersection of U.S. Highway 1 and the terminal entrance.

To address roadway improvements within the terminal area, the MPAC agreed to improving the terminal access by:

1. Making modifications to U.S. Highway 1 by adding designated turn lanes, islands/medians and adding traffic signalization.
2. Providing a direct road straight to the passenger terminal, along with secondary roads to the vehicle parking areas.

It should be noted that in order for the terminal road improvement to occur a few hangars will need to be demolished. These hangars were identified to be in poor condition and are currently ear marked for demolition.

5.2.3. South GA Area

This area at SGJ includes the existing GA hangars, flight school, maintenance hangars, wash racks and the airport administration building.

5.2.3.1. Taxiway D Relocation

With the recommendation to upgrade Runway 6-24 to a B-II runway, Taxiway D will have to be relocated 240 feet from the Runway. Therefore, the recommended preferred alternative calls for the demolition of existing Taxiway D, relocation of Taxiway D 240 feet from Runway 6-24. Furthermore, the taxiway will need to be 35 feet wide to satisfy the TDG II requirement of the future critical aircraft. The MPAC agree with this alternative.

5.2.3.2. Aviation/Non-Aviation Development

During this master plan update, the Sponsor started a T-hangar project for the replacement of six existing "Port-a-Ports" with two 12-unit T-hangars. Building off of this project, the MPAC agreed to the demolition of Taxiway E – which is in poor condition – and construction of 81 additional T-hangar units and 11 box hangars. In addition, approximately 44,200 SF of apron space is also proposed. Additional aviation and non-aviation developments are also proposed. Possible uses for these developments include: third flight school, conference center, hotel, rental car, etc. Last, the existing airport administration building needs to be expanded; therefore, expansion is proposed to the airport administration building within the planning period.

5.2.3.3. Roadway Improvements

For the aviation/non-aviation developments to happen, roadway improvements need to take place first. These improvements include extending Araquay Avenue within the Airport property boundary, with a relocated security gate; and relocating Indian Bend Road to the south to provide direct access from the airport conference center to U.S. Highway 1. The MPAC agreed with this recommendation.

5.2.4. East Corporate Area

This area at SGJ includes a second GA area, east of Runway 13-31. Northrup Grumman's North 40 MRO facility is in this area as well as the St. Johns Sheriff Hangar.

5.2.4.1. Box Hangar Construction

As identified in Chapter 4, additional box hangars are required to meet projected future demand. Being that SGJ has two areas for GA hangars, the MPAC agreed to the recommendation to construct 12, 100' x 100' box hangars in this area north of Grumman's North 40.

5.2.4.2. Relocated FBO

As identified in Chapter 4, the existing parking apron and building square footage of the FBO will not meet future demand. Because the existing FBO site is constrained, the MPAC agreed to the option to potentially relocate the FBO to the east corporate area within the planning period. The relocated FBO site will provide adequate parking for FBO and future GA operations. The existing FBO site is proposed to be converted to hangars and additional parking for GA operations.

5.2.4.3. Second MRO Development

Different alternatives were evaluated for the site south of Grumman's North 40. These alternatives included constructing additional box hangars, relocating the FBO and constructing a second MRO facility. After discussion with the MPAC, it was agreed that the preferred alternative will be constructing a second MRO facility.

5.2.4.4. Roadway Improvements

In order to accommodate the proposed future development of box hangars, MRO and the relocated FBO, road improvements on Hawkeye View Lane need to occur. Prior to improvements, however, approximately 25 acres of land will need to be acquired from the Gun Club (Gameclub Properties Inc). Furthermore, Hawkeye View Lane will need to be straightened and widened to a four-lane road to accommodate the future development. Last, to improve traffic safety, there is proposed signalization at the intersection of U.S. Highway 1 and Gun Club Road. The MPAC agreed to these roadway recommendations.

5.2.5. West Area (NFR-B)

This area at SGJ includes lands west of U.S. 1 that are owned by the Sponsor. There is also available surplus land from the SJRWMD in this area as well.

5.2.5.1. Development

After small group, MPAC and Sponsor discussions, it was agreed that the land west of U.S. Highway 1 will be made available for aeronautical and non-aeronautical uses. As presented in Section 5.1.6, the proposed alternative for all five development options (i.e. commercial/manufacturing/warehouse, MRO, public/multi-use, water/wastewater plants, and multi-modal transportation center) was approved by the MPAC. Regarding the MRO development, the MPAC also approved an at-grade aircraft crossing to the proposed MRO development. As described in Section 5.1 of this master plan, the aircraft crossing will occur in the early morning and the aircraft will be towed by a vehicle. To enhance the safety of people using U.S. Highway 1, aircraft crossing gates will be constructed and will be offset 10 feet from the ADG III taxiway object free area.

This alternative includes constructing 5 parallel rail tracks and acquiring approximately 800 acres of surplus land from the SJRWMD.

5.2.5.2. Training Runway 13R-31L

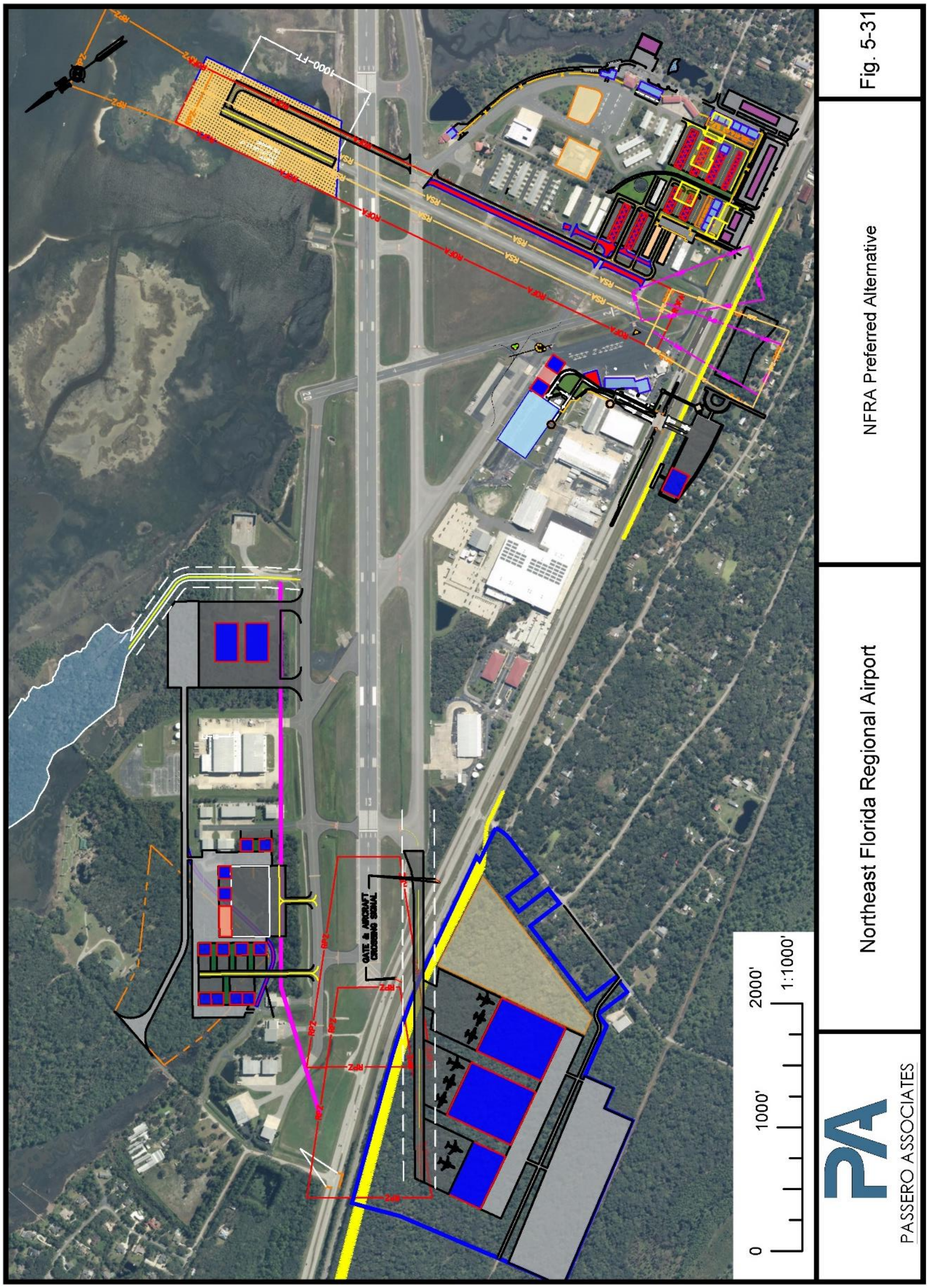
As identified in Chapter 4, SGJ has an ASV above 70%. FAA regulations state that when an airport reaches an ASV above 70%, an additional runway needs to be considered. At SGJ, a large percentage of touch-and-go operations occur, which attributes to delays. To satisfy this demand, a small 3,200-foot runway is proposed as the preferred alternative. This runway is intended for small aircraft training purposes only.

5.2.5.3. Roadway Improvements

FDOT is in the process of constructing S.R. 313 which acts as a bypass from U.S. 1 to S.R. 16 in St. Augustine. Through multiple discussions with the Sponsor, FDOT, St. Johns County and the MPAC, the proposed alternative to connect U.S. 1 to I-95 was agreed as a preferred alternative by the MPAC and Sponsor.

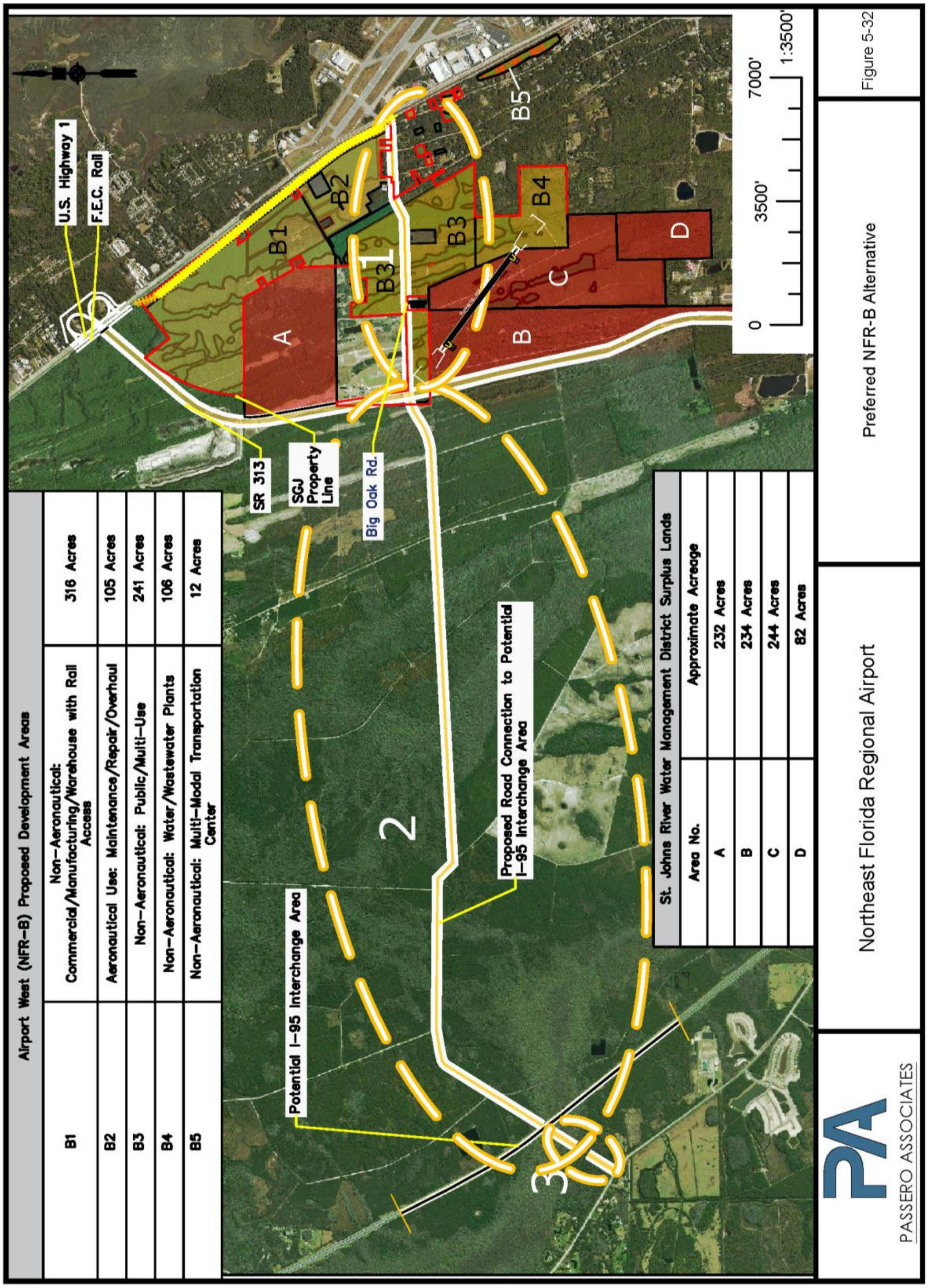
Figures 5-31 and **5-32** present the consolidated preferred alternatives for NFRA and NFR-B.

Figure 5-31. NFRA Preferred Alternative



Source: Passero Associates

Figure 5-32. NFR-B Preferred Alternative



Source: Passero Associates

Chapter Six

Sustainability

6. SUSTAINABILITY

In April 2011, a Sustainability Management Plan (or SMP) was prepared for Northeast Florida Regional Airport with four primary objectives:

- Establish the Airport Authority's vision for sustainability
- Identify the Airport Authority's sustainability goals and objectives
- Develop a strategy to meet the goals and objectives
- Develop a performance measurement and reporting plan.

The sustainability program focused on nine specific goals:

1. Economic Vitality
2. Community Relations
3. Planned Development
4. Energy
5. Air Quality
6. Natural Resource Management
7. Water Quality and Conservation
8. Materials and Waste Management
9. Airport Connectivity

6.1. Sustainability Review

Sustainability initiatives for each of the focus categories was obtained from the Sustainability Management Plan and reviewed by Airport Staff to provide an update on the status of each initiative. Under the "Completed" column, if the initiative is blank, no action has been taken to date. The update is provided below:

6.1.1. Energy Conservation

The goal of the recommended sustainability initiatives is to is to minimize the Airport's rate of energy consumption and increase its use of renewable energy sources.

Initiative	Description	Completed
Install energy-efficient lighting	LED lighting can be used on the airport to reduce energy consumption. Although LED lighting can be more expensive to install, energy savings typically lead to return on investment of two years. LED can also be considered for indoor/outdoor lighting, specifically the Administration, Maintenance, General Aviation, And Commercial Terminal Buildings as well as for the apron.	Ongoing
Shut down Airfield lighting during Nighttime, off-peak hours.	Enable pilot-controlled lightning (PCL) for aircraft operating during nighttime, off-peak hours.	Complete

Install Occupancy sensors	Controlling the time when light fixtures are on is one of the most basic methods of limiting energy use and saving operating costs. Occupancy sensors detect movement or sound to determine when a space is occupied and shuts off fixtures after a specific period of time if no occupancy is detected. Electricity savings of 35-45 percent could be obtained with occupancy sensors.	Ongoing
Develop an operation and maintenance (O&M) manual.	Develop a comprehensive O&M manual that includes record logs, for all systems and operations: all HVAC system equipment, lighting controls and sensors, refrigeration systems, vertical transport, building envelope, emergency power generators and automatic transfer switching, uninterruptible power supply systems, life safety systems (fire protection, fire alarm, egress pressurization, lightning protection, domestic and process water pumping and mixing systems, equipment sound control systems, data and communication systems, paging systems, security systems, irrigation systems, plumbing and fixtures.	Ongoing
Track and report annual energy consumption.	Track energy use as a performance measure, using an energy baseline. Track and report annual energy numbers/savings after implementing energy reduction strategies for use as a marketing mechanism, to accomplishment energy goals, manage strategies, etc.	Ongoing
Install an “advanced metering system”	An advanced metering system gathers energy use data on a defined schedule as well as on-demand, enabling real-time monitoring of electrical use, time-based electrical rates, and continuous commissioning. The system can, at a minimum, provide data daily to support operations and other energy management functions.	Ongoing
Implement “Green” building and design standards	Develop standards for new buildings that incorporate environmentally-friendly and energy efficient features into design and construction, similar to those incorporated in to the construction of the new Airport Conference Center facility.	Ongoing
Design and implement Flexible Ticket counter for future passenger terminal facilities	Flexible ticket counters, or common-use facilities, can be used by multiple airlines as needed in passenger terminal facilities. The existing passenger terminal at NFRA is a common-use, and any future passenger terminal expansions could be designed with common-use facilities.	Complete
Conduct a renewable and alternative energy feasibility study	Renewable energy production options to consider on an airport include wind, solar PV system, and geothermal. With Government incentives and financial assistance, renewable energy systems can be financially feasible to implement.	Under Consideration
Use Natural Gas instead of Oil	Should natural gas become available to the Airport, NFRA should consider using it to replace use of oil. Natural gas burns cleaner and more efficiently than oil, and therefore results in reduced emissions air pollutants.	Ongoing
Maximize use of natural light and other daylighting strategies	Maximize user of large windows to maximize natural light. Utilize mesh roller shades to reflect sunlight during hotter months. Consider hurricane and sound resistant windows that would reduce noise and the Airport's vulnerability to hurricanes.	Ongoing with new construction
Consider the integration of alternative energy production sources into the design of new development	As the airport plans new development, alternative energy sources (such as roof-top solar photovoltaic panels) that would result in a favorable return on investment could be considered in the design of new buildings.	Under Consideration

Provide electric charging stations in parking areas	AS electric cars become more prevalent in the future, charging stations could be proceeded in Airport parking areas. The charging stations could be solar-powered to reduce operational costs to the airport.	Ongoing
Use tank-less water heaters	Tank-less water heaters provide near instantaneous hot water.	Complete – various locations
Sub-meter Energy Use	Energy sub-metering involves measuring and collecting detailed energy use data within one or more facilities at the area. Energy sub-metering can be implemented at various scales and can be gradually integrated into the Airport's infrastructure.	Ongoing

Source: SMP (2011) and Passero Associates

6.1.2. Air Quality

The goal of the recommended sustainability initiatives is to minimize NFRA's emission of air pollutants and greenhouse gases (GHG).

Initiative	Description	Completed
Encourage employees to use alternative fuel/hybrid vehicles	The airport has one Toyota Prius and an electric golf cart. An enhancement of this current initiative could include preferred parking for all alternative fuel/hybrid vehicles.	Ongoing
Encourage conversation of Gasoline-fueled GSE to electric vehicles	Encourage the conversation of FBOs' gasoline-fueled GSE (Including tugs, small trucks, and service vehicles) to electric. Establish a policy that all new applicable GSE vehicles will be electric.	Ongoing
Utilize more environmentally friendly cleaning agents	Follow LEED indoor air quality principles and review maintenance and janitorial programs to eliminate toxic agents as part of the cleaning program. The airport currently uses citrus-based products. An enhancement of this current initiative could include documentation of products used.	Ongoing
Reduce aircraft taxiing times	The airfield capacity at NFRA is becoming an issue; thus, resulting in a constrained facility with unreasonable aircraft taxi times. Establishment of practices that reduce, aircraft idling and taxi times will help decrease GHG emissions.	Ongoing
Minimize fugitive dust emissions during construction	Apply routine watering or dust suppressants on exposed earth or unpaved roadways commonly used by motor vehicles during construction. This initiative is current required for all National Pollutant Discharge Elimination System (NPDES) construction permits.	Complete
Conduct routine maintenance of equipment and facilities	Ensure regular and thorough maintenance of fossil fuel engines to improve burn efficiency and stationary sources to ensure effectiveness of required control technologies. Include initiative as an element of tenant education.	Complete
Ensure new Building HVAC equipment does not use CFC or HCFC refrigerants	Design new HVAC requirements without CFC/HCFC refrigerants.	Complete
Use low-emitting construction materials	Encourage or require the use of low-emitting asphalt, paints, and other construction materials	Complete

Avoid construction during adverse weather conditions	Alter construction scheduling to limit activity during high wind or poor air quality conditions	Complete
Reduce aircraft APU usage	Reduce APU usage by providing 400 Hz Electricity and preconditioned air at gates during passenger boarding and deplanement.	Ongoing
Install efficient ductwork products	Follow LEED indoor air quality principles by installing ductwork products that can be easily cleaned or those that protect against mold/fiber shredding.	Complete
Develop an Air Quality Management Plan	An Air Quality Management Plan could be developed as part of the Airport Improvement Program.	Under Consideration

Source: SMP (2011) and Passero Associates

6.1.3. Natural Resources Management

The goal of the recommended sustainability initiatives is to minimize unavoidable impacts to natural areas and continue to protect local biodiversity.

Initiative	Description	Completed
Join in partnerships with Environmental non-profit organizations	Formalize partnership with Guana Tolomato Matanzas National Estuarine Research Reserve (GTMNERR) in order to develop a Wetland Mitigation Bank to ensure no net loss of wetlands as a result of future Airport Development.	Under Consideration
Formalize Landscape ordinance	Revise the Airport's land use planning initiative to follow Florida Department of Transportation's (FDOT) Compatible Land Use Document and coordinate with St. Johns County Building Services to formalize the Airport's exemption to the County's landscaping and tree mitigation ordinance.	Partially Complete
Establish Nature Education Area	NFRA's Nature Education Area will be designed and constructed by staff and local youth groups to promote environmental education and wellness.	Partially Complete
Develop a Storm Water Master Plan	For the area of the airport on that other side of U.S. And its future development, the airport must consider developing a stormwater master plan that would address water quality, wetlands and protected species for the entire area, instead of on a project area basis.	Ongoing
Inventory wetlands and upland vegetation Area	An inventory/ characterization of wetlands and upland vegetation areas would provide NFRA with important information to manage spill events if they occur.	Ongoing
Create a library of existing material/ information of on-Airport natural resources	The airport should seek to build a library of educational materials relating to the Airport's natural environment.	Ongoing

Seek out Innovative Design techniques to minimize natural resource impacts of development	As the Airport develops, NFRA should continue to investigate and utilize innovative design techniques that minimize impacts on the natural environment.	Ongoing
Design storm water storage and conveyance systems to withstand between a 100- year and a 500- year storm	Because of Climate change predictions that estimate that storms will become more intense in the future, the Airport should consider designing its storm water storage and conveyance systems to withstand heavier rainfall and more frequent flooding.	Ongoing

Source: SMP (2011) and Passero Associates

6.1.4. Water Quality and Conservation

The goal of the recommended sustainability initiatives is to minimize water consumption and continue to protect water quality.

Initiative	Description	Completed
Eliminate Underground Storage Tanks (UST)	The majority of Airport underground storage tanks are double-walled. The airport is currently in the process of replacing the Galaxy Aviation tanks with double walled tanks.	Complete
Coordinate regularly with St. John's Water Management District	Discuss ongoing projects through regularly scheduled meetings.	Ongoing
Install Water efficient fixtures	New buildings at the Airport, such as the terminal building and the Airport Conference Center, have some low flow plumbing fixtures.	Ongoing

Source: SMP (2011) and Passero Associates

6.1.5. Materials and Waste Management

The goal of the recommended sustainability initiatives is to minimize the generation and impacts of waste through materials reuse and recycling, and purchase of environmentally preferable materials.

Initiative	Description	Completed
Recycle batteries, tires, and pavement millings. Provide “Collection points”	Many of the NFRA's tenants currently collect and recycle batteries.	Ongoing
For projects or facilities, develop an inventory list of space allocation, infrastructure and equipment that is	For all new projects as well as existing Airport facilities, evaluate the space availability.	Ongoing

needed to facilitate waste reduction and recycling.		
Work with St. Johns County and the Aerospace Academy at St. Augustine High school to establish a "Hazardous Materials Collection Day"	Establishing a "Hazardous Materials Collection day" is an effective way to collect and collaborate with St. Johns County to dispose of hazardous materials that can be recycled.	Under Consideration
Conduct an inventory of PCB-containing equipment	Perform evaluation to identify all PCB-containing equipment at facilities to facilitate planning future developments/ construction projects.	Under Consideration
Establish an Airport-wide recycling program	Establish airport-wide recycling programs targeting passengers, tenants, and airport operations.	Under Consideration
Establish a food donation program	With the onset of commercial passenger service and increase in passenger traffic at the Airport, donate leftover per-packaged goods from food vendors or security to a food bank for local needy.	Under Consideration

Source: SMP (2011) and Passero Associates

6.1.6. Airport Connectivity

The goal of the recommended sustainability initiatives is to strengthen the Airport as a transportation hub by enhancing multi-modal transportation connectivity within the region.

Initiative	Description	Completed
Advance multi-modal station planning at the Airport, including FEC rail station	The airport will continue to work with the Florida Department of Transportation (FDOT) to promote rail connectivity at the airport. The Airport is conducting a cost benefit analysis to determine whether beneficial to have a rail and/or a bus station at the airport.	Under Consideration
Prioritize projects/opportunities that improve airport connectivity	Given the number of different growth opportunities available to NFRA, Airport Management would develop a growth strategy that identifies key milestones and timing of each project.	On-going
Coordinate commercial service flights with local bus service	Once regular commercial flight service begins, the Airport would engage commercial service flight operators to coordinate schedules with Sunshine Bus Company to enable pick-ups and/or regular bus service	Under Consideration
Advertise Public transportation options to Airport users	Promote transportation options once public transportation systems become available to Airport users.	Under Consideration

Integrate the Airport with local and regional planning efforts	Communicate and actively engage with local and regional transit authorities to advance multiple transit connection opportunities.	On-going

Source: SMP (2011) and Passero Associates

6.2. Waste Management and Recycling

On February 14, 2012 the *FAA Modernization and Reform Act of 2012* (FMRA) was signed into law. The FMRA incorporates reference guidance provided by the United States Environmental Protection Agency (EPA), and contains a number of provisions related to improving the sustainability of airports. Section 132(b) expanded the definition of airport planning to include "*developing a plan for recycling and minimizing the generation of airport solid waste, consistent with applicable State and local recycling laws, including the cost of a waste audit*." Further, Section 133 of the FMRA states that the issuance of a grant for an airport master plan requires confirmation that the master plan scope of work includes a review of solid waste recycling at the airport. An airport master plan must address issues relative to solid waste at the airport including:

- The feasibility of solid waste recycling at the airport;
- Minimizing the generation of solid waste at the airport;
- Operation and maintenance requirements;
- The review of waste management contracts; and
- The potential for cost savings or the generation of revenue.

On September 30, 2014 the FAA issued a memorandum - *Guidance on Airport Recycling, Reuse, and Waste Reduction Plans*. This section of the Master Plan will follow the guidance set forth within this memorandum, thus meeting the requirements of Section 133 of the FMRA.

Per FAA's waste memorandum, "recycling refers to any program, practice, or opportunity to reduce the amount of waste disposed in a landfill." In addition to recycling or the diversion of materials for the purpose of conversion, this definition is inclusive of material reuse and source reduction.

Other referenced documents include:

- 49 U.S.C. section 47102(5) and 47106(a): These provisions outline the legislative requirements for airport recycling, reuse, and waste reduction plans as an element of an airport master plan.
- FAA Order 5100.38D, AIP Handbook: Published on September 30, 2014. This Order outlines AIP grant eligibility for airport recycling, reuse, and waste reduction plans, including the cost of a waste audit.
- FAA Synthesis Document: Recycling, Reuse, and Waste Reduction Plans at Airports: Published on April 24, 2013. This report is a resource for airport sponsors that are developing or broadening their recycling programs. The synthesis document compiles airport recycling and waste minimization practices.
- Advisory Circular (AC) 150/5200-34A, *Construction or Establishment of Landfills near Public Airports* and AC 150/5200-33B, *Hazardous Wildlife Attractants on or Near Airports*: These AC's address siting criteria for waste disposal operations on or near airports are identified in these ACs. Any waste disposal operations in an airport recycling, reuse, and waste reduction plan for a federally-obligated airport must be sited in accordance with these documents.

6.2.1. Type of Solid Waste Generated at Airports

Airports generate various types of solid waste. The FAA's Memorandum provides guidance that addresses the recycling, reuse and reduction of municipal solid waste (MSW) and other materials that can be legally disposed of in a landfill or equivalent state-permitted environment. The following definitions are from the September 30, 2014 memorandum.

Municipal Solid Waste (MSW)

MSW consists of everyday items that are used and discarded. Recyclable MSW at airports include, but not limited to, aluminum or steel, glass bottles and containers, plastic bottles and containers, packaging, bags, paper products, and cardboard.

Construction and Demolition (C&D) Debris

C&D debris is any non-hazardous solid waste that results from land clearing, excavation, or construction, demolition, renovation, or repair of structures, roads and utilities. These materials include, but not limited to, used asphalt, used concrete, scrap metal, roofing materials, carpet, and salvaged building components.

Compost

Compost is sometimes referred to as green waste and food waste. Green waste consists of tree, shrub, and grass clippings in addition to leaves, weeds, small branches, seeds, pods and similar debris generated from landscape maintenance activities. Food waste is food that is not consumed or generated during food preparation activities and is thus discarded.

Deplaned Waste

Deplaned Waste is the waste removed from passenger aircraft. These materials include bottles and cans, newspaper and mixed paper, plastic cups and utensils, food waste, food-soiled paper, magazines, unconsumed or surplus food, and paper towels.

Hazardous Waste

Hazardous Waste (e.g., waste fuel and used oils), universal waste (e.g., batteries and electronic waste) and industrial waste (e.g., chemicals, solvents) are not covered under this guidance. They are often regulated by Federal, state and local laws.

6.2.2. Review of Federal, State, and Local Solid Waste Management Guidelines

This section includes a review of Federal, state and local recycling and waste management practices and regulations at the Federal, State and Local level.

Federal Waste Management Guidance

The guidelines set forth by the FAA and EPA aid waste management efforts by providing direction on how to manage materials such as MSW at airports.

The FAA provides guidance on preparing airport recycling, reuse, and waste reduction plans. An example is the September 30, 2014 Memorandum, titled *Guidance on Airport Recycling, Reuse, and Waste Reduction Plans*.

The EPA also provides recycling guidance in *Developing and Implementing an Airport Recycling Program*. The EPA hierarchy of waste management priorities are source reduction, then reuse, then recycling, with the final disposal to landfill. This program focuses on recycling and provides a 10-step program to establish a recycling program at an airport.

State of Florida

Recycling in the State of Florida is overseen by the Division of Waste Management in the Florida Department of Environmental Protection (DEP). Through the Energy, Climate Change and Economic Security Act of 2008, which the Florida Legislature approved, the DEP was tasked with the oversight of a statewide recycling program. This program established a statewide weight-based recycling goal of 75% by 2020.

The Legislature established interim recycling goals: 40% by 2012, 50% by 2014, 60% by 2016, and 70% by 2018. While Florida reached the goals in 2012 and 2014, in 2016, the recycling rate was only 56%. As a result, the DEP is calling for significant changes to the states' current recycling approach

St. Johns County

St. Johns County offers two different recycling service providers. Advanced Disposal serves the southern half of St. Johns County, while Republic Services serves the northern half of St. John County, including NFRA. No sorting of recyclables is required at NFRA. **Figure 6-1** provides a list of items accepted by St Johns County.

Figure 6-1. St. Johns County Recycling List of Acceptable Items

Items Accepted Include:

Paper

- Newspapers
- Craft Paper
- Shredded Paper
- Paper Towel Cores
- Chip Board
- Cardboard Boxes - Flattened to 2 ft by 3 ft sections
- Paperback Books
- Magazines
- Mail
- Telephone Books
- Brown Paper Bags
- Paperboard Boxes - Cereal

Glass

- Clear Glass
- Green Glass
- Brown Glass
- NO BROKEN GLASS

Cans

- Aluminum Beverage Cans
- Steel Food Cans
- Aluminum Baking Tins
- Aluminum Food Cans
- Clean Metallic Lids

Cartons

- Milk Cartons
- Juice Boxes
- Boxed Soups
- Food & Beverage Cartons

Plastic

- Detergent & Cleaning Containers
- Milk Jugs & Colored Jugs
- Soda Bottles
- Water Bottles
- All Plastics Labeled #1-7 (labels do not need to be removed)

Source: St. Johns County, FL (2019)

City of St. Augustine

The Department of Public Works, Solid Waste Division is responsible for all residential trash, residential recycling, and residential yard debris; it is also responsible for commercial trash, commercial recycling, and commercial debris removal

Northeast Florida Regional Airport

In May 2019 NFRA contracted with Republic Services to provide solid waste pickup.

Table 6-1. Container per May 18, 2018 Contract

Container Size	Pickup	Material Type
8-yard container	1 time per week	Solid Waste
6-yard container	1 time per week	Solid Waste
4-yard container	1 time per week	Solid Waste
4-yard container	1 time per week	Solid Waste

Source: Republic Services; Northeast Florida Regional Airport

Republic Services also performs single-stream recycling at NFRA, whereby all acceptable recycling (shown in the green box in **Figure 6-2**) can be placed in the 4-yd blue container with the words "Single Stream Recycling" on the front of the container. Airport personnel also works with tenants in the Conference Center to collect recycled items (i.e., paper products only) which are placed in separate bins.

Figure 6-2. Republic Services Single-Stream Recycling

Source: Republic Services; Northeast Florida Regional Airport

6.2.3. Review of the Feasibility of Solid Waste Recycling at the Airport

NFRA should consider expanding their service with Republic to include single stream recycling bins in the Conference Center, Administration Building, Terminal Building, and FBO, where significant quantities of recycled material may be produced.

Recycling will cut down on waste hauling costs, leading to lower cash outlay, while meeting local, state and Federal guidelines.

6.2.4. Minimizing the Generation of Solid Waste at the Airport

Many suggestions for minimizing solid waste were identified in the Sustainability Master Plan, and previously in Section 6.1.5, including:

- Continue with the recycled batteries, tires and pavement millings
- Establish a Hazardous Materials Collection Day
- Establish airport wide recycling program
- Establish food donation program

Other methods that have been implemented at other airports that could be adopted to improve the existing waste management include:

- Organize a "Green Team" of Airport employees representing all functional areas.
    - Creating a Green Team is an effective way to generate ongoing sustainability solutions. The Green Team should be comprised of airport employees and representatives from tenants, airlines, and other agencies present at the Airport, such as TSA. A Green Team meets on a consistent basis to develop and implement ongoing and new sustainability strategies. The Green Team should work together to brainstorm improving efficiency and sustainability throughout the airport as well as helping each other with ideas and suggestions.
- Implement a bulk recycling program.
    - Organize annual or bi-annual events to recycle bulk non-hazardous materials and products such as furniture, carpets, etc. Provide the opportunity to participate to airport departments, tenants, and vendors.
- Install additional water bottle refilling stations.
    - Increase the availability of hydration stations by providing them at each administration level for use by staff and visitors to reduce plastic bottle usage. Purchase stations that provide information about how much plastic is kept out of the landfill by refilling water bottles at the hydration station.
- Encourage vendors to reduce plastic and cardboard packaging.
    - Work with vendors to reduce packaging on service items and products purchased by the Airport and tenants.
- Promote or require the use of biodegradable products for food concessionaires.
    - Work with vendors and tenants to provide biodegradable products such as plates, cutlery, cups, etc. used by food concessionaires. Additionally, these products can be composted.
- Reduce paper waste by increasing use of electronic documents and submittals.
    - Utilize an electronic document management system to manage submittals, documents, plans, specifications, reports, etc. Convert to an online / electronic system for all bidding and construction documents.

- Implement a Recycling Advertising Program throughout the terminal to educate and alert passengers on the proposed disposal of waste materials.
- Increase the number of recycling receptacles.
    - Provide additional recycling receptacles for to improve the rate of recycling. Clearly label recycling receptacles and locate in distinct visible locations near service counters, dining areas, and kitchens to make it easier to recycle. In the tenant areas, ensure there is an area for recycling that is located in a convenient location and that receptacles are sized according to use and primary waste stream(s) of the tenant.
- Replace recycle bins that include separate bins for organics/food waste

6.2.5. Operations and Maintenance Requirements

Republic is responsible for the solid waste hauling at the airport. MSW is taken to the local landfill.

6.2.6. Review of Waste Management Contracts

In May 2018, the Airport's contract with Republic contained pickup of solid waste, but no breakdown for recycled content. From this contract it appears there is only fees incurred for solid waste removal. This contract was reviewed for the fees that are being incurred in 2019, at a cost of about $629/month. There were no fees for removal of recycled content or compost. There were no landfill and hauling fees for MSW.

6.2.7. Potential Cost Savings or the Generation of Revenue

To meet the state and local guidelines, the airport can increase recycled content that will be diverted from the landfill. Thus, as the volume of waste sent to landfills decreased, the cost of MSW disposal also decreases, resulting in a savings to the Airport.

6.2.8. Summary

The airport has undertaken many efforts identified in the Sustainability Management Plan in 2011. The Airport will continue to reference the plan to improve the sustainability of the airport, and implement additional measures listed above.

Chapter Seven

Environmental Overview

7. ENVIRONMENTAL CONSIDERATIONS

In addition to identifying airport projects that are financially and technically feasible, an important part of the master planning process is ensuring that future airport developments minimize impacts to the environment. Council on Environmental Quality (CEQ) 1501.2 states, "*Agencies shall integrate the NEPA process with other planning at the earliest possible time to ensure that planning and decisions reflect environmental values, to avoid delays later in the process, and to head off potential conflicts*." Accordingly, identifying potential environmental impacts of proposed airport projects has become an integral part of the master planning process. This environmental overview is prepared to identify potential environmental impacts associated with the proposed airport improvement projects.

This environmental overview was conducted in accordance with FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions,* FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures, and the FAA 's Environmental Desk Reference for Airport Actions*, which require the analysis of several environmental impact categories. Each of these is discussed in detail in the following sections.

FAA Order 1050.1F outlines types of impacts and thresholds that determine if an impact is significant. In general, projects fall into one of the following three categories:

> ***CATEGORICAL EXCLUSIONS*** *- Projects that are categorically excluded include those actions that have been found under normal circumstances to have no potential for significant environmental impact.*
>
> ***ACTIONS NORMALLY REQUIRING AN ENVIRONMENTAL ASSESSMENT (EA)*** *- Projects that normally require an EA are actions that have been found to sometimes have significant environmental impacts.*
>
> ***ACTIONS NORMALLY REQUIRING AN ENVIRONMENTAL IMPACT STATEMENT (EIS)*** *- If a project is found to have significant impacts during the preparation of an EA, the FAA can determine that an EIS is required to investigate in greater detail a project's potential environmental impacts.*

For the purposes of this study, environmental impact categories will be discussed but addressed only as they apply specifically to SGJ and its master development plan as outlined in the previous chapters. In considering potential environmental impacts within this framework, this environmental overview identifies those categories that may warrant more detailed analysis in a formal EA.

7.1. Environmental Impact Categories Analysis

The following sections discuss the preliminary evaluation of the recommended airport development projects for each of the environmental impact categories included in FAA Order 1050.1F.

Air Quality

The Clean Air Act (CAA) established National Ambient Air Quality Standards (NAAQS) for six criteria pollutants. The U.S. Environmental Protection Agency (USEPA) has oversight for the CAA. Air quality is regulated by two primary laws: Clean Air Act (CAA), and the National Environmental Policy Act (NEPA). Evaluating air quality seeks to answer, will the proposed project cause or create a reasonably foreseeable emission increase?

East and West Side of U.S. Highway 1

Section 109(b)(1) of the Clean Air Act, 1990 (as amended), requires EPA to set forth National Ambient Air Quality Standards (NAAQS) and establish levels for specific pollutants that are "*requisite to protect the public health*." The EPA has identified six criteria pollutants that pose the greatest risk to public health that could lead to environmental and private damage: Ozone, Carbon Monoxide, Lead, Nitrogen Dioxide, Sulfur Dioxide, and Particulate Matter. For these criteria pollutants and within those regions EPA has the authority to designate an area as: "attainment," "non – attainment," or "unclassifiable." Per Title 40 CFR Part 81, "Designation of Areas for Air Quality Planning Purposes" EPA has designated St. Johns County as being in "attainment" for all six criteria pollutants.

Future Action: Future developments would require an air quality analysis to ensure that future emissions do not exceed *de minimus* standards following the new guidance set forth in the FAA's *Aviation Emissions and Air Quality Handbook, Version 3*.

Biological Resources (Including Fish, Wildlife and Plants)

For development projects that impact wildlife (both flora and fauna) habitat, coordination with appropriate agencies is required. Projects that involve water resources such as wetlands, streams or groundwater, or projects that impact wildlife habitat, require coordination with the US Fish and Wildlife Service (USFWS) and the appropriate state agencies.

Identifying species (and wetlands—see Water Resources section below) in the area consisted of two assessments, both carried out by Environmental Resource Solutions (ERS). The first assessment, completed on September 13, 2017, studied approximately 710 acres of land that the airport owns on the east side of U.S. Highway 1. The second assessment, completed on November 22, 2017, studied approximately 969 acres of land that the airport owns on the west side of U.S. 1. Most of the land in the first assessment has been developed by the airport, while most of the lands in the second assessment are undeveloped.

East and West Side of U.S. Highway 1

There are a number of protected bird, reptile, and mammal species near the airport. **Table 7-1** identifies these species.

Table 7-1. Species of Concern around SGJ

Species	Protection	Occurrence Location	Disposition	Potential Location
Bald Eagle	Bald and Golden Eagle Protection Act, Migratory Bird Treaty Act, state regulations	Nest within airport boundary	External construction should take place outside of nesting season to avoid permitting and monitoring	East and West
American Oystercatcher	Threatened (FWC)	4.2 miles SE of airport	Habitat not within airport property—no adverse effects expected	None
Black Skimmer	Threatened (FWC)	4.2 miles SE of airport	Habitat not within airport property—no adverse effects expected	None
Little Blue Heron	Threatened (FWC)	Rookery 3.2 miles NW of airport	Mobile species that is unlikely to be affected by future development	East and West
Tricolored Heron	Threatened (FWC)	Rookery 3.2 miles NW of airport	Mobile species that is unlikely to be affected by future development	East
Least Tern	Threatened (FWC)	Rookery 3.2 miles NW of airport	Mobile species that is unlikely to be affected by future development	East
Snowy Egret	Imperiled Species Management Plan (Florida)	Potentially on site	Mobile species that is unlikely to be affected by future development	West
White Ibis	Imperiled Species Management Plan	Potentially on site	Mobile species that is unlikely to be affected by future development	West
Wood Stork	Endangered (FWS and FWC)	Colony 5.4 miles SE of airport	Species unlikely to be affected by future development.	East and West
Red-Cockaded Woodpecker	Endangered (FWS and FWC)	Not within five mile radius of airport	Unlikely that habitat requisites are present in airport area	None
Eastern Indigo Snake	Threatened (FWS and FWC)	Closest occurrence 1.6 miles N of airport	Depends on gopher tortoise burrow survey	East and West

Florida Pine Snake	Threatened (FWC)	Closest occurrence 2.8 miles SE of airport	Depends on gopher tortoise burrow survey	East
Gopher Tortoise	Threatened (FWC), Candidate for federal listing by FWS	Closest occurrence 3.9 miles SE of airport	Survey should be completed if work is proposed in on-site uplands	East and West
West Indian Manatee	Threatened (FWS)	Closest live occurrence 3.5 miles SE of airport	Any water work would require assessment and coordination with FWC	East

Source: ERS Report, Sept 2017 and Nov 2017

Future Action: A gopher tortoise burrow survey should be conducted for on-site uplands to determine impacts snake and tortoise species. Development within the Tolomato River would require an assessment for the West Indian Manatee.

Climate

Greenhouse Gases (GHG) affect the global climate. GHG emissions from anthropogenic sources, such as burning fossil fuels, can contribute to climate change, thus warming the planet. CO_2 is the most important anthropogenic GHG because it is a long-lived gas that remains in the atmosphere for up to 100 years. Research has shown a direct link between fuel combustion and GHG emissions. Climate is triggered if there is potential increase in GHG emissions from the Proposed Action or alternatives (fuel burn from additional airfield operations). There are no significant thresholds for aviation GHG emissions. In 2010 a Greenhouse Gas Report was conducted as part of the Sustainable Master Plan. This report was based on projected increase in enplanement and operations from commercial service. While the results indicated a slight increase in GHG they were within the acceptable levels of a commercial service airport.

East Side of U.S. Highway 1

The increase in operations, from both commercial service and general aviation, resulting from additional hangar development, are consistent with the GHG emissions for this size facility.

West Side of U.S. Highway 1

Additional development on these lands, both from the construction of a parallel runway for general aviation aircraft, and the construction of structures that will increase the number of motor vehicles, electricity usage, and other fuel usage will likely include the documentation of GHG resulting from the project.

Future Action: The environmental documentation for the development projects for west side should address the potential increase in operations that could increase GHG emissions.

Coastal Resources

The Coastal Barriers Resources Act (COBRA) of 1982 prohibits the Federal government from financial involvement associated with building and development in undeveloped portions of designated coastal barriers, which consist of undeveloped coastal barriers along the Atlantic and Gulf coasts. These areas were mapped and designated as Coastal Barrier Resources System (CBRS) units or "otherwise" protected areas and are delineated on the Federal Emergency Management Agency (FEMA) Federal Insurance Rate Maps (FIRMs).

East and West Side of U.S. Highway 1

SGJ is not situated within any federally assigned units included in the CBRS.

On the other hand, the airport is within a State of Florida Coastal Zone Managed Area. In 1972, the Coastal Zone Management Act CZMA was passed, which allows states to create a coastal management program. With a National Oceanic and Atmospheric Administration approved program, a state can review federal activities within or adjacent to the coastal zone.

Future Action: Any project on airport property that requires the issuance of a permit is subject to CZMP consistency review.

Department of Transportation Act: Section 4(f)

Section 4(f) of the USDOT Act of 1966 (Title 49, USC, Section 303) requires special considerations be made regarding the "use" of any publicly owned park, recreation area, wildlife/waterfowl refuge or historic property that is listed in or eligible for the National Register of Historic Places (National Register).

East and West Side of U.S. Highway 1

The proposed project would not use or affect any publicly owned land of a park, recreational area, or wildlife and waterfowl refuge. The adjacent property on the east side for development of the north functional area, requires acquisition from a private land owner that has an active Gun Club on the property. This is private, thus not subject to Section 4(f).

Future Action: Thus, there are no anticipated Section 4f properties located near the Airport that would be impacted because of the preferred development plan.

Farmlands

The Farmland Protection Policy Act (FPPA) regulates Federal actions with the potential to convert important farmland to non-agricultural uses. It defines prime, unique, statewide, and locally important farmlands:

- *Prime farmland is land having the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimal use of fuel, fertilizer, pesticides, or products.*
- *Unique farmland is land used for producing high-value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture necessary to produce high quality crops or high yields of crops.*
- *Statewide and locally important farmland is land that has been designated as "important" by either a state government (state Secretary of Agriculture or higher office), by county commissioners or by an equivalent elected body.*

The FAA requires an EA for an airport project that would convert land protected under the Farmland Protection Policy Act (FPPA) to non-agricultural use. Prime farmland is defined as land best suited for producing food, feed, forage, fiber, and oilseed crops. Farmland is classified based on the present soils.

East and West Side of U.S. Highway 1

According to the USDA Natural Resource Conservation Service, the lands both east and west of U.S. Highway 1 do not sit on prime farmland. Therefore, FPPA is not applicable for any future development.

Hazardous Materials, Pollution Prevention, and Solid Waste

Hazardous materials are regulated by a number of federal laws and regulations. The Resource Conservation and Recovery Act (RCRA) provides a general guideline for the generation, transportation, treatment, storage, and disposal of hazardous waste.[8] The focus of RCRA is only on active and future sites; it does not the address abandoned or historical sites. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) created a tax on the chemical and petroleum industries and provided federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the

[8] USEPA, Resource Conservation and Recovery Act, November 1980.

environment.[9] Hazardous materials are defined by CERCLA, as amended by the Superfund Amendments and Reauthorization Act, and the Toxic Substances Control Act.[10] In general, the hazardous materials definition includes 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.

The Florida Department of Environmental Protection (FDEP) is also involved in the administration and enforcement of the federal hazardous materials regulations. On February 12, 1985, Florida received authorization from the U.S. Environmental Protection Agency (USEPA) to administer its own hazardous waste management and regulatory program under RCRA and received final authorization on November 17, 2000, to implement the Hazardous and Solid Waste Amendments of 1984.[11] FDEP's Hazardous Waste Regulation Section (HWRS) is responsible for implementing the hazardous waste regulatory portion of RCRA. FDEP reviews and issues permits and coordinates compliance monitoring and enforcement activities at hazardous waste generators, transporters, and treatment, storage and disposal (TSD) facilities at its district offices.

East Side of U.S. Highway 1

According to EPA's NEP Assist, there are hazardous waste locations on airport property. These locations are for aircraft and aviation services and not only are normal to have on airports but also are all in compliance with the law.

West Side of U.S. Highway 1

No sites were listed for the west side lands; however, an assessment should be conducted prior to development.

Future Action: A future Phase I Environmental Site Assessment should be conducted to determine the presence of any hazardous materials on the west side of U.S. Highway 1.

Historical, Architectural, Archeological, and Cultural Resources

Historic and archaeological resources include districts, sites, buildings, structures, objects, and landscapes included in or eligible for inclusion in the state and national registers of historic places, or areas designated as historically or archaeologically sensitive.

East Side of U.S. Highway 1

According to the St John's County Predictive Model Zone, these lands have a high possibility of having an archeological site. Undeveloped lands on the east side should be reviewed and cleared prior to development.

West Side of U.S. Highway 1

According to the St John's County Predictive Model Zone, these lands have a low to medium possibility of having an archeological site. Prior to development of this site additional research may be warranted. **Future Action**: A Phase 1 archeological site review should be conducted to ensure there are no resources of significance.

Land Use

Most issues regarding compatible land use surrounding airports are based on noise impacts. However, other issues such as relocation of residences or businesses and alteration of floodplains, wetlands or critical habitat may also influence property surrounding the airport. For these reasons, the FAA requires that airports and

[9] USEPA, Comprehensive Environmental Response, Compensation, and Liability Act, December 11, 1980.

[10] USEPA, Superfund Amendments and Reauthorization Act, October 17, 1986.

[11] FDEP Hazardous Waste Regulation Section, http://www.dep.state.fl.us/waste/categories/hwRegulation/default.htm (August 5 ,2009).

airport sponsors seek compatible uses for the land surrounding the airport through zoning and municipal planning efforts.

According to the St. Johns County Zoning Map, the airport and its property is located in an Airport Overlay District. This district exists on both sides of U.S. 1 and is in place to prevent incompatible land uses from being developed around the airport to protect airspace.

East Side of U.S. Highway 1

Proposed development at the Airport is consistent with normal development at airports.

West Side of U.S. Highway 1

Proposed development on the west side of U.S. Highway1 is consistent with the zoning of the Airport Overlay District, see **Table 7-2**. The district's intent is to promote the health, safety and general welfare of the inhabitants of the County by preventing the creation, establishment or maintenance of hazards to aircraft, preventing the destruction or impairment of the utility of an airport and the public investment therein and protecting the lives and properties of owners or occupants of lands in the vicinity of any public use airport as well as the users of the airport; and to aid and implement the overriding Federal and State interest in safe operation of airports and the security of land surrounding them..

The current land uses west of U.S. Highway 1 are scattered residential and undeveloped lands. These uses will be converted to compatible land uses including:

Table 7-2. Proposed Development Areas in NFR-B

Area ID	Proposed Use	Proposed Development Uses
B1	Non-Aeronautical	Commercial/Manufacturing/Warehouse with Rail Access
B2	Aeronautical Use	Maintenance/Repair/Overhaul
B, C	Aeronautical Use	Training Runway
B3	Non-Aeronautical	Public/Multi-Use
B4	Non-Aeronautical	Water/Wastewater Plants
B5	Non-Aeronautical	Multi-Modal Transportation Center
A, B, C, D	Approximately 800 Acres of SJRWMND Surplus Land for Sale/Exchange	

Source: Passero Associates NFRB Proposed Development

Natural Resources, Energy Supply, and Sustainable Design

When a federal action has the potential to affect energy requirements or use consumable natural resources, 40 CFR 1502.16(e) and (f) requires the assessment of the proposed project's energy requirements, energy conservation and the use of natural resources. Executive Order 13123, Greening the Government through Efficient Energy Management (64 Federal Register 30851, dated June 8, 1999) encourages the use of renewable energy for proposed projects.

Energy supply for the Airport is currently provided by Florida Power and Light, the local utility company and is dictated by the Airport's airfield lighting, hangar and building lighting, and heating demands. Fuel consumption at the Airport is currently influenced by aircraft operations and fleet mix. Subsequently this impacts fuel consumption and causes delays on aircraft operations at the airport.

East Side of U.S. Highway 1

Additional energy supply is needed for new hangars in the north and south functional areas.

West Side of U.S. Highway 1

Due to the increased industrial development west of U.S. Highway 1, supply and demand of energy is expected to increase.

Future Actions: Work with utility provider to ensure sufficient utilities can be provided for development.

Noise and Compatible Land Use

Typically, noise is the most apparent impact that an airport has on the environment with most complaints generated by nearby residents. Noise is usually defined as unwanted sound; a definition that includes both the psychological and physical nature of the sound. Under certain conditions, noise may cause hearing loss, interfere with human activities at home and work, and may affect human health, and well-being in various ways. It is important that potential noise impacts be considered when planning for airport improvements.

East Side of U.S. Highway 1

Noise levels east of U.S. Highway 1 are not anticipated to change significantly. The proposed fleet mix is anticipated to remain consistent with existing fleet mix. Aircraft operations are anticipated to increase however, but in line with previous master plan forecasts. Temporary noise will be created from construction impacts.

West Side of U.S. Highway 1

Some noise increases are expected on the lands west of U.S. Highway 1. First, there will be temporary construction noise impacts as all the buildings are constructed. Second, increased development will bring in more people and more transportation, increasing noise levels at street level. With the construction of a new parallel runway additional noise will be noted.

Future Action: As part of the Environmental Assessment for development of NFR-B it is anticipated that a noise analysis will be required for the additional streel level noise that will be generated from the additional anticipated traffic.

Socioeconomic, Environmental Justice, and Children's Health and Safety Risks

Actions of the airport such as land acquisition can potentially have major effects on the surrounding community. Federal law requires that disruptive impacts be carefully evaluated as part of any proposed airport improvement project. Such induced impacts are those which may create shifts in population movement and growth patterns, public service and demand, and changes in commercial and economic activity.

East and West Side of U.S. Highway 1

St. Johns County has steadily been increasing in population, almost doubling its population since 2000. Its 2016 estimated population is 235,087. As this trend continues, it is important that future airport developments are compatible with the natural growth of the region.

The area of proposed development is not an environmental justice area. Proposed development should consider relocating fencing to secure the airfield. Development should use appropriate materials to prevent impact to children's health and safety.

Future Action: Additional development will have a positive socioeconomic impact to the greater St John county community. Lands should be appropriately secured, and appropriate materials should be used to protect children's health and safety.

Visual Effects (Including Light Emissions)

Airport light emissions and the resulting glare from lighting and flashing airport lighting facilities have the potential to adversely affect surrounding communities through visual impacts. Therefore, the FAA requires that light emissions be analyzed.

Visual or aesthetic impacts are inherently more difficult to define because of the subjectivity involved. Aesthetic impacts deal more broadly with the extent that the development contrast with the existing environment and whether the jurisdictional agency considers this contrast objectionable.

East Side of U.S. Highway 1

Extended crosswind runway and taxiway will have additional lighting and NAVAIDS, which are compatible with airport lighting. Additionally, the proposed new hangars are compatible with regular airport infrastructure. Consequently, it is not anticipated that there will be any significant visual effects east of U.S. Highway 1.

West Side of U.S. Highway 1

The proposed development will visually change the aesthetics. As stated under the "Land Use" section, the project area west of U.S. Highway 1 is currently scattered residential and undeveloped land, with many trees. Development on NFR-B will remove many of the trees and replace them with commercial/industrial development, thus changing the visual impacts of the area. This change however is consistent with the other surrounding commercial/industrial development.

Future Action: An Environmental Assessment will be required for development on the west side. Residences that are to remain on the west side, outside of the NFR-B area, should utilize the existing trees to act as a natural visual barrier from development.

Water Resources (Including Wetlands, Floodplains, Surface Waters, Groundwater, and Wild and Scenic Rivers)

The Clean Water Act establishes regulatory authority and standards for controlling discharges to surface and groundwater. Planning airport actions must include appropriate management practices to prevent and mitigate potential water pollution. To the extent possible, FAA Order 5050.4B, *Airport Environmental Handbook*, requires consideration be given to the following: storm and sanitary sewer design, requirements for additional water supply or water treatment capacity, erosion controls to prevent siltation, provisions for containing oil spills and wastewater from aircraft washings, designs to preserve existing drainage or minimize dredge and fill, and locations with regard to surface and subsurface aquifers or sensitive ecological areas such as wetlands.

Wetlands

Wetlands are areas that are flooded or have water near or at the surface of the ground, and are most commonly known as swamps, marshes and bogs. Wetlands perform functions and provide benefits that no other areas of the landscape can, such as supplying and purifying our drinking water. Wetlands also provide critical habitat for wildlife, and many animals depend entirely on wetlands for their survival, while others depend on wetlands for feeding, nesting, resting, or breeding purposes. As such, the protection of wetlands systems is of critical importance, and must be considered in relation to any airport improvement project.

Activities in waters of the United States, including wetlands, are regulated by federal, state, and local regulations and or laws. Executive Order 11990, Protection of Wetlands, mandates that each federal agency take action to minimize the destruction, loss, or degradation of wetlands, and preserve and enhance their natural values. The U.S. Army Corps of Engineers (USACE) has authority to regulate activities in waters of the U.S. under the *Clean Water Act* and the *Marine Protection, Research, and Sanctuaries Act* of 1972, as amended. The legal framework for the regulation of activities in the State of Florida is provided, in part, by Chapter 373 of the Florida Statutes.

Environmental Resource Solutions Inc. (ERS) completed a preliminary remote wetland and wildlife assessment on all airport lands east and west of U.S. Highway 1 **(**see **Appendix H)**. East of U.S. Highway 1, the airport owns 710 acres. ERS' assessment did not include field work, but rather a review of information from St. Johns River Water Management District (SJRWMD), and the US Army Corps of Engineers (USACE). The data comprised of historical aerial photography, published soil survey mapping, SJRWMD land use/land cover habitat mapping, and aerial interpretation. Consequently, wetland boundaries and acreages provided are estimations that can be confirmed through a wetland delineation.

East Side of U.S. Highway 1

The assessment found that 218.22 acres of the 710 total acres are wetlands. Three different communities comprise the 218.22 acres of wetlands. 3.71 are Mixed Wetland Hardwoods, 47.81 are Wetland Forested Mixed and 166.70 are Saltwater marshes.

West Side of U.S. Highway 1

Airport property west of U.S. Highway 1 totals 969 acres. Of that, 394.64 acres are wetlands. Three communities comprise this nearly 400 acres of wetlands as well. They include Mixed Wetland Hardwoods (236.93 acres), Hydric Pine Flatwoods (21.62 acres), and Wetland Forested Mixed (136.09 acres). Tree removal is needed for the future west side development. As such additional documentation to offset the impact the tree removal will have on wetlands is needed.

Future Action: Prior to development on either side of the airport, that lies within wetlands, a delineation will need to be conducted, and the USACE will be coordinated with to obtain the necessary permits. Future NFR-B needs to consider the tree removal impacts to the wetlands as well.

Floodplains

A floodplain is the land area adjacent to a river or stream or other body of flowing water which is, on the average, likely to be covered with flood waters resulting from a 100-year frequency storm. Maintaining floodplains are critical in that they provide important flood water storage functions.

Based on the FEMA Flood Map Service Center, the airport and its properties are covered by three different flood maps: 12109C0304H, 12109C0303H, and 12109C0301H. All three maps include lands both east and west of U.S. Highway 1.

East Side of U.S. Highway 1

East of U.S. Highway 1, the airport is under 2 flood zones. One of these zones, on the eastern part of the airport, is special Flood Hazard Area (SFHA) Zone AE (EL 8). This corresponds to the floodplain associated with the Tolomato River, which has a 1% annual chance Base Flood Elevation (BFE) of 8.1 feet NGVD29, as shown in the FEMA *Flood Insurance Study* for St. Johns County, dated September 2, 2004. The Zone AE area has an estimated 1% or greater chance of being flooded during any given year. The Tolomato River is part of the Intracoastal Waterway and is a coastal flooding area, with Base Flood Elevations that decrease as distance increases from the ultimate flooding source, the Atlantic Ocean.

Adjacent to the west of the Zone AE, is a Zone X. Zone X is an area of moderate flood hazard, where there is a 0.2% annual chance of a flood hazard. There is a 1% annual change of a flood with an average depth less than one foot or with drainage areas of less than one square mile. Zone X is a zone of moderate to low risk.

West Side of U.S. Highway 1

West of U.S. Highway 1 is a mix of Zone A and Zone X. Directly west of the airport's main buildings and over U.S. Highway 1 is Zone A. A Zone A is an area with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. Since detailed analyses are not performed for such areas; no depths or base flood elevations are shown within these zones. From this zone, as one heads north, there is a Zone X, and the risk of flood continues to decrease.

Future Action: Development on the east side will require building meets the minimum height above floodplain for development.

Surface Waters and Storm Water Management

Drainage and water management systems on airport property must comply to regulatory and/or approvals from state and federal agencies. They may also be subject to review by local agencies depending on the specific site. The FAA AC 150/5320-5 *Airport Drainage Design* and AC 150/5200-33 *Hazardous Wildlife Attractants On or Near Airports* are the circulars that provide airports with FAA requirements. Based on the *Airport Drainage Design* AC, specific airside drainage must be designed for a 5-year recurrence interval rainfall event, which is an intense rainfall that is likely to occur once every five years.

East and West Side of U.S. Highway 1

Regarding SGJ, both the FAA and FDOT provide funding for airport development; however, project funding is contingent on proof that there will be no significant impact to the environment. On the state and local side, SGJ is under the jurisdiction of the St. Johns River Water Management District (SJRWMD). Furthermore, any project that modifies the existing drainage system, or adds impervious surfaces to SGJ require an Environmental Resource Permit (ERP) issued under Chapter 62-330 Florida Administrative Code (FAC) and the projects must provide reasonable assurance that there will be no adverse impact on water quality, provide flood protection, and ensure no impacts to ecosystems and wetlands. Furthermore, SGJ is also subject to the requirements of the National Pollutant Discharge Elimination System (NPDES) of the federal Clean Water Act. The Florida Department of Environmental Protection (FDEP) exercises this authority under Section 403.0855 Florida Statutes (FS). Based on Permit FLR05A849, SGJ is in compliance with this regulation. However, individual construction projects are subject to the NPDES and the regulation and permits for these projects are generally the responsibility of the project contractor.

Storm water from SGJ is discharged to the Tolomato River, east of the Airport. The water surface elevations in the Tolomato River affect the pipe, ditch and swale sizing for the airport drainage system. Higher water levels at the discharges can affect waterways by:

- Raising upstream water levels in swales and pipes for a given discharge;
- Lower the amount of water that can be discharged; or,
- Require larger pipes and swales to discharge the runoff water.

Tidal fluctuations of 4 ½ to 5 feet are reported by the National Oceanic and Atmospheric Administration (NOAA) at the St. Augustine Inlet Station. The Mean High Water (MHW) reported for the St. Augustine Inlet station is 1.7 feet NAVD '88 and the Mean Higher High Water (MHHW) for the station is 2.1 feet NAVD '88. It is important to note that these values do not reflect storm water surge but are important for airport drainage system planning. The discharges to the Tolomato River at SGJ do not require special structures or ponds to limit the flow rates; therefore, water may be discharged as fast as necessary to avoid on-airport flooding as long as the water quality will not be degraded in the process. However, there is a special condition at SGJ that applies to discharge structures in respect to manatees. This condition requires that pipe openings be designed so opening are limited to 8-inches by use of grates or bars to prevent manatees from entering the system and getting trapped.

The Tolomato is part of the Intercoastal Waterway (ICW) and has a direct connection to the Atlantic Ocean. The Tolomato is a Class II waterway, which is defined as water used for shellfish propagation or harvesting, per the 62-302.400 Florida Administrative Code (FAC). This classification establishes the standards of water quality discharging into a waterway. This is important because certain elements (e.g., lead, zinc, copper, etc.) exist on airports and can be harmful to the habitat of waterways. As a part of this Master Plan, a comprehensive storm water management report was completed and is also included in **Appendix H.** Please refer to this report for more information regarding storm water at SGJ.

In addition, a master stormwater management plan is needed for the development of NFRA and NFR-B to control the stormwater flow from additional impervious surfaces.

Future action: a detailed water management report will be required prior to the development of the west side, to help identify the type and quantity of development that can occur and be permitted.

Groundwater/Water Supply

Water supply for almost all of St. Johns County is groundwater. A review of the aquifers and their recharge maps, obtained from the SJRWMD, shows that the airport is not located within any recharge area. Rather, the airport is in a discharge area. Therefore, future development is not anticipated to affect groundwater resources.

Four Waters Engineering provided a summary of water and wastewater evaluation for the proposed development. There is sufficient public supply of water and wastewater facilities by the City of St Augustine, with the following adaptations to each development area (refer to **Appendix I** for the report)

East Side of U.S. Highway 1

To provide adequate fire flow to the proposed development include:

- To support north development: upgrade the existing water mains from the 12-inch water main along Gun Club Road to the end of the north-south segment on Hawkeye View Lane

- To support south end development: construct a 16-inch interconnect between the existing U.S. Highway 1 west side and east side water mains near Estrella Ave; construct an 8-inch loop along Indian Bend Road
- No required upgrades to the wastewater collection for the north or south side development areas.

West Side of U.S. Highway 1

To support the development, the following recommendations for a water system expansion include:

- Connect to the 16-inch water main on the west side of U.S. Highway 1 in a minimum of two locations and provide a looped water system to provide water system reliability to the development and reduce the potential for water quality issues due to stagnant water;
- Master plan the water system route and pipe sized to serve the NFR-B proposed development to ensure suitable fire flow. The minimum recommended connection size to the 16-inch water main on U.S. Highway 1, based on available development information, is 12-inch.
- Install multiple pump-stations for wastewater collection throughout the site, connecting to a master pump station located central tot eh sire which would connect to the City's 12-inch force main along U.S. Highway 1 to the south of Oak Avenue

Future action: prior to development on both the east and west side upgrades to the water system and wastewater systems will eb necessary.

Wild and Scenic Rivers

According to The Wild and Scenic Rivers Act of 1968, 16 USC 1271-1287 and 36 CFR, Part 297, Subpart A, "Wild and scenic rivers" are those rivers having remarkable scenic, recreational, geologic, fish, wildlife, historic, or cultural values. Federal land management agencies in the Departments of the Interior and Agriculture manage the Wild and Scenic Rivers Act (Act). The National Park Service (NPS) has the primary role in maintaining the National Rivers Inventory. The Wild and Scenic Rivers "program" is more commonly referred to as the "National Wild and Scenic Rivers System" (WSRS). The intent of the program is to preserve these rivers' free-flowing conditions, protect the areas in their immediate vicinity, and strive to balance river development with permanent protection of the country's most outstanding free-flowing rivers. According to 45 FR 59190, dated September 8, 1980, federal agencies must determine if development actions would adversely affect the characteristics of a National Rivers Inventory (NRI) river that would qualify for the WSRS. If so, federal agencies are responsible for studying and developing reasonable alternatives that would avoid or mitigate such impacts.

East and West Side of U.S. Highway 1

According to the Wild and Scenic River Program website, there are no designated Wild and Scenic Rivers within the east of west side if U.S. Highway 1 that would be impacted. Therefore, any future development would not impact these resources.

7.2. Conclusion

This chapter serves as a cursory review of the potential for environmental impacts that may be associated with the proposed development at SGJ. Further environmental studies, such as a CATEX or an EA will be necessary. Project-specific impacts and necessary mitigation measures will be determined and identified in those environmental review documents.

Chapter Eight

Airport Layout Plan Drawing Set

8. AIRPORT LAYOUT PLAN DRAWING SET

This chapter describes the Airport Layout Plan (ALP) drawing set developed for the 20-year planning period of this master plan. These plans identify areas needed for aviation related development during and beyond the planning horizon, as well as the available land on the airport which should be reserved for future revenue streams resulting from non-aviation related development. The plan will also serve as a reference for the Sponsor to evaluate existing and/or future obstruction disposition in conjunction with Federal Aviation Administration (FAA) criteria. The ALP set presented becomes the official development plans for SGJ, which may be amended over time to reflect changes in the airfield environment or the demand affecting future facilities.

The ALP set consist of thirty-four (34) separate drawings which were prepared in AutoCAD to graphically depict the recommended airfield improvements, imaginary surfaces, and the layout of future facilities. This ALP set is compliant with all pertinent criteria established by the FAA in Advisory Circular (AC) 150/5070-6B, *Airport Master Plans*, and AC 150/5300-13, *Airport Design*. Specifically, this drawing set includes:

- Cover Sheet
- Airport Data Sheet
- Existing Facilities Drawing
- Airport Layout Plan (2 Sheets with and without Aerial)
- Terminal Area Plan 1: South GA Area
- Terminal Area Plan 2: Main Terminal Area
- Terminal Area Plan 3: East Corporate Area
- Multi-Modal Connectivity Plan
- Airspace Plan
- Airspace Plan (Outer Approach)
- Airspace Profile
- Airspace Profile (NPI/PIR)
- Inner Portion of the Runway 13 Approach Surface
- Inner Portion of The Runway 31 Approach Surface
- Inner Portion of the Runway 02 Approach Surface
- Inner Portion of the Runway 20 Approach Surface
- Inner Portion of the Runway 06 Approach Surface
- Inner Portion of the Runway 06 Approach Surface (Proposed)
- Inner Portion of the Runway 24 Approach Surface
- Inner Portion of the Runway 24 Approach Surface (Proposed)
- Departure Surface Runway 31 Plan
- Departure Surface Runway 31 Profile
- Departure Surface Runway 13 Plan and Profile
- Departure Surface Runway 6 Plan and Profile (Proposed)

- Departure Surface Runway 24 Plan (Proposed)
- Departure Surface Runway 24 Profile (Proposed)
- Land Use Map (On-Airport)
- Land Use Map (Off-Airport)
- Ground Access Plan NFRA
- Ground Access Plan NFR-B
- Airport Property Map
- Airport Property Map Data Sheet
- Airport Property Map Data Sheet 2

This chapter presents a half-size (11"x17") version of the ALP drawings with a brief discussion of each. Please note that the ALP drawings included in this chapter have been scaled down to fit on half-size pages; therefore, the ALP drawings are not to true scale, and measurements must NOT be taken from the ALP sheets included in this chapter. Measurements must only be taken from the full-sized (22"x34") ALP set that will be provided in conjunction with this report.

The following sections describe what is included in each sheet, as required by the FAA. The FAA checklist will be submitted to the FAA, along with a draft ALP submittal. This help ensure that all FAA ALP requirements are met.

8.1. Cover Sheet

The Cover Sheet serves as an introduction to the ALP set. This sheet includes the name of the Airport, a location map, vicinity map, and an index of drawings included in the ALP set.

8.2. Data Sheet

The Data Sheet is typically included in an ALP set when adequate space is not available on the ALP sheet to include all the necessary tabular information about the Airport and its facilities, as was the case for this project. The Data Sheet includes a variety of information relative to the Airport and its runways, taxiways, instrument approach capabilities, as well as operational and environmental conditions.

8.3. Existing Facilities Sheet

The existing facilities sheet identifies airport facilities as they existed during the course of this planning study (2017-2019). This sheet identifies airfield pavement, markings, buildings, and safety areas, and was used to identify the Airport's ability to meet design standards established for a C-II airfield.

8.4. Airport Layout Plan

The ALP is the primary planning document for the Airport and is a graphic representation, to scale, of existing and proposed Airport facilities, their location, dimensional and clearance data, and the overall infrastructure of the Airport including runways, taxiways, and aprons. Once approved by the FAA and the FDOT, the ALP becomes the official guidance for the City Williston for how to manage the development of the Airport while meeting state and federal obligations, ensuring the economic goals of the City are realized, and providing the greatest possible public benefit. The FAA refers to the ALP when considering grant applications for development assistance at the Airport as well as when analyzing the aeronautical impacts from some off-airport development in the near vicinity of the Airport.

8.5. Terminal Area Plans

The Terminal Area Plan presents enlarged areas of the ALP and illustrate existing and proposed building and apron facilities in greater detail. The Terminal Area Plan generally seeks to present a detailed view of the terminal building, aircraft parking aprons, automobile parking areas, general aviation (GA) and corporate hangars, and non-aviation development areas. For Williston Municipal's ALP, two separate Terminal Area Plans were developed to highlight future development across multiple areas of the airfield.

8.6. Multi-Modal Connectivity Plan

This plan depicts the different areas of the airfield that deal with different modes of transportation. These include existing and proposed rail access on airport-owned lands west of U.S. Highway 1; the existing barge seaplane ramp located on the Tolomato River; the existing Big Oak Road corridor on airport-owned lands west of U.S. Highway 1; and, the proposed multi-modal center located on airport-owned lands west of U.S. Highway 1 connected to the Airport via an covered overhead walkway.

8.7. Inner Portion of the Approach Surface Drawings

The inner portion of the approach surface drawings display the existing and future approach surface configurations and their interaction with airport and off-airport environs. The extended runway centerline ground profiles and the critical point profiles are shown for terrain clearance purposes. Notable objects of height are identified in both the plan and profile views in each plan and are tabulated with object height and penetration information as well as future mitigation efforts if required. These drawings are supplemental to the Part 77 Airspace Surface drawings.

The plan and profile views for each runway end beginning 200 feet prior to a runway, except for the grass strip with begin at the end of the runway.

8.8. Future 14 CFR Part 77 Airspace Surfaces (Airspace Plan)

Federal Aviation Regulations (FAR) Part 77, *"Objects Affecting Navigable Airspace,"* prescribes airspace standards which establish criteria for evaluating navigable airspace. Airport imaginary surfaces are established relative to the Airport and its runways. The size of each imaginary surface is based on the runway category with respect to existing and proposed visual, non-precision, or precision instrument approaches for that runway. The space and dimensions of the respective approach surfaces are determined by the most demanding, existing or proposed, approach for each runway. The imaginary surfaces definitions include:

Primary Surface

The primary surface is a rectangular area symmetrically located about the runway centerline and extending a distance of 200 feet beyond each runway end. The elevation of the primary surface is the same elevation as the nearest point of the runway.

Horizontal Surface

The horizontal surface is an oval shaped area situated 150 feet above the published airport elevation. Its dimensions are determined by circles, either 5,000 feet or 10,000 feet in radius depending on the sophistication and utility of the runway, which are centered about the midpoint of each end of the primary surface. These circles are then connected by lines of tangent to enclose the limits of the horizontal surface.

Conical Surface

The conical surface is a sloped area originating at the edge of the horizontal surface and extending outward and upward at a slope of 20:1 for a horizontal distance of 4,000 feet.

Transitional Surfaces

These surfaces extend outward and upward at right angles to the runway centerline and centerline extended at a slope of 7:1 from the sides of the primary surface as well as from the sides of the approach surface. Transitional surfaces for those portions of the approach, which project through and beyond the limits of the conical surface, extend a distance of 5,000 feet measured horizontally from the edge of the approach surface at right angles to the runway centerline.

Approach Surface

This surface begins at the ends of the primary surface and slopes upward at a predetermined ratio while at the same time flaring out horizontally. The width and elevation of the inner ends conform to that of the primary surface, while the slope, length, and outer width are determined by the runway service category and future instrument approach capabilities.

Analysis of the Part 77 surfaces surrounding the Airport was based upon obstacle data obtained from Quantum Spatial at the beginning of this master plan.

8.9. Extended Approach Zone Profiles

This drawing depicts the profile view of the future Part 77 approach surface as depicted on the Part 77 Airspace Surfaces drawings. While similar to the inner plan and profile view of the approach ends, this drawing illustrates the profile view of the approach surface along its entire length and at a larger scale. Roadways and other critical structures lying under the approach surface are identified.

8.10. Departure Surface Plan and Profiles

This drawing depicts the plan and profile view of the runways with required 40:1 departure procedures. Runways that require departure procedures have existing/future instrument approach procedures. Roadways and other critical structures lying under the approach surface are identified. Obstructions were identified of Runway 13 end for 31 departures.

8.11. On- and Off-Airport Land Use Map

The purpose of the existing land use plan is to identify the land uses currently surrounding the Airport so as to inform discussion about airport growth and development as well as the growth and development of properties surrounding the Airport. Additionally, a review of existing land uses surrounding the Airport enables the analysis of the Airport's land use compatibility. As stated earlier in this master plan, there is an existing airport overlay district zoned adjacent to SGJ. Therefore, adjacent land uses will be compliant to Airport operations. Land uses further out from the airport, outside of the airport overlay district, are also identified.

8.12. Exhibit "A" Airport Property Inventory Map

The airport property map is intended to depict the areas of existing airport sponsor ownership and areas proposed for ownership or release. The map also shows easement, buildings, aprons, fences, roads, and other features of concern. Parcels are shown for depiction purposed only and this map is not intended to be used for survey or land acquisition purposes. Property information includes ownership, date of acquisition, and federal involvement if applicable.

Approximately 800 acres of land are identified as potential acquisition by the Sponsor. There are approximately 139 acres of existing conservation easements. These easements are located on airport-owned lands east and west of U.S. Highway 1.

Airport Layout Plan

NORTHEAST FLORIDA REGIONAL AIRPORT (SGJ)

Prepared For:

The St. Augustine - St. Johns County Airport Authority

Prepared By:

Passero Associates

DRAFT

Updated February, 2020

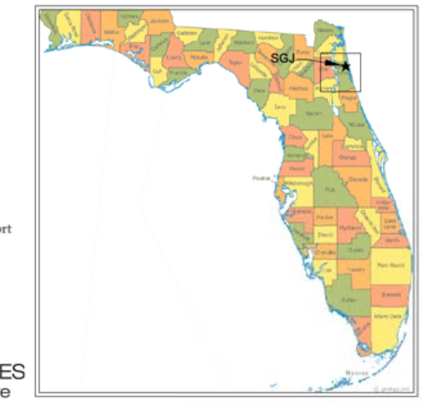
FAA AIP Grant#: 3-12-0073-039-2016

FDOT Grant #: 428840-1-94-16

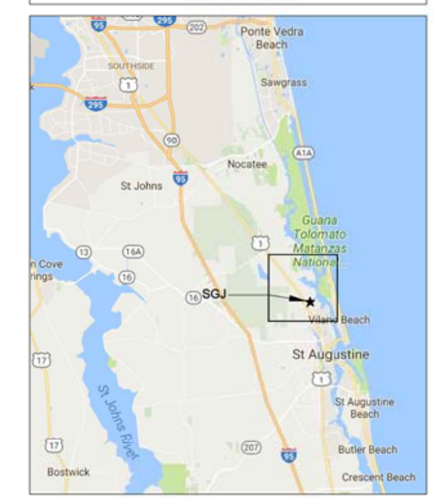
NFRA Northeast Florida Regional Airport *Fly Smart!*

PA PASSERO ASSOCIATES engineering architecture

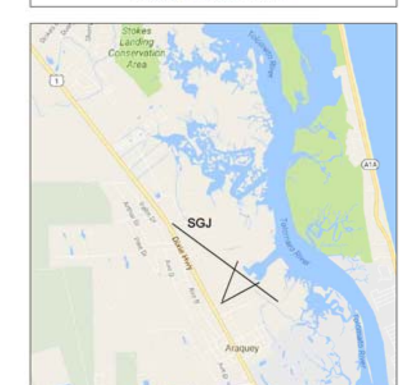
STATE MAP



VICINITY MAP



LOCATION MAP



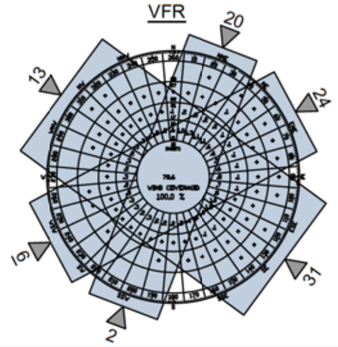
INDEX OF DRAWINGS

On behalf of Passero Associates, this Airport Layout Plan (ALP) was prepared for the Northeast Florida Regional Airport according to the applicable Advisory Circulars and ARP SOP 2.00, and accurately depicts the proposed use of airspace at the time of submittal. The ALP conforms with FAA design standards, except as noted.

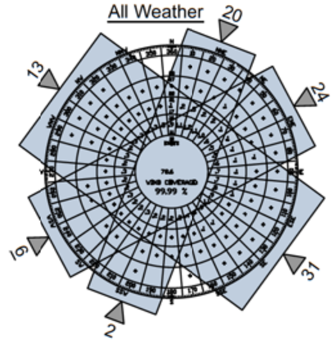
ALP PREPARED BY		SPONSOR REVIEW		FLORIDA DEPARTMENT OF TRANSPORTATION		FEDERAL AVIATION ADMINISTRATION	
Passero Associates		St. Augustine - St. Johns County Airport Authority					
Signature of Approval	Date	Signature of Approval	Date	Signature of Approval	Date	Signature of Approval	Date

RUNWAY DATA TABLE														
RUNWAY DATA	Runway 2/20				Runway 6/24				Runway 13/31				Runway 13R-31L	
	Existing		Ultimate		Existing		Ultimate		Existing		Ultimate		Ultimate	
	Runway 2	Runway 20	Runway 2	Runway 20	Runway 6	Runway 24	Runway 6	Runway 24	Runway 13	Runway 31	Runway 13	Runway 31	Runway 13R	Runway 31L
Runway Design Code (RDC)	A/B-I Small-VIS		SAME		A/B-I Small-VIS		B-II-5000		C-III-2400		D-V-2400		A/B-I Small	A/B-I Small
Runway Approach Reference Code (APRC)	B-I-VIS	B-I-VIS	Same	Same	B-I-VIS	B-I-VIS	B-II-5000	B-II-5000	D-IV-5000; D-V-5000	D-IV-2400; D-V-2400	Same	Same	A/B-I-VIS	A/B-I-VIS
Runway Departure Reference Code (DPRC)	B-I (S)	B-I (S)	Same	Same	B-I (S)	B-I (S)	B-II	B-II	D-IV	D-IV	Same	Same	A/B-I (S)	A/B-I (S)
True Bearing	21-2-17.53 N		Same		61-52-52.99 N		SAME		126-18-34.62 N		Same	Same		
Critical Aircraft	Cessna 172		Same		Cessna 172		Beech 200 Super King Air		Boeing 737		Boeing 757		Cessna 172	
Pavement Strength & Material Type														
Strength by Wheel Loading (Single Wheel) lbs	100,000		Same		46,500		Same		100,000		Same		100,000	
Strength by Wheel Loading (Dual Wheel) lbs	203,500		Same		85,000		Same		280,000		Same		203,500	
Strength by Wheel Loading (Dual Tandem) lbs	N/A		Same		N/A		Same		560,000		Same		N/A	
Strength by Wheel Loading (Dual Double Tandem) lbs	N/A		Same		N/A		Same		1,120,000		Same		N/A	
Strength by PCN	53 /F/A/X/T		Same		19 /F/A/X/T		Same		126 /F/A/W/T		Same		53 /F/A/X/T	
Surface Type-Condition	ASPH-E		Same		ASPH-E		Same		ASPH-G		Same		ASPH-E	
Surface Treatment	N/A		Same		N/A		Same		N/A		Same		N/A	
Effective Runway Gradient (%)	0.100%		Same		0.100%		Same		0.041%		Same		0.100%	
Runway Dimensions	2,609' x 75'		Same		2,701' x 60'		3,700' x 75'		8,001' x 150'		Same		3,200' x 75'	
Displaced Threshold Coordinates (NAD 83)														
Latitude	N/A	N/A	Same	Same	N/A	N/A	Same	Same	29-57-56.52 N	29-57-20.53 N	Same	Same	N/A	N/A
Longitude	N/A	N/A	Same	Same	N/A	N/A	Same	Same	81-20-52.87 W	81-19-56.64 W	Same	Same	N/A	N/A
Elevation	N/A	N/A	Same	Same	N/A	N/A	Same	Same	9.55'	5.95'	Same	Same	N/A	N/A
Runway End Coordinates (NAD 83)														
Latitude	29-57-16.09 N	29-57-40.20 N	Same	Same	29-57-14.33 N	29-57-26.94 N	Same	29-57-31.61	29-58-02.71 N	29-57-15.80 N	Same	Same	29-57-32.32 N	29-57-13.56 N
Longitude	81-20-27.79 W	81-20-17.14 W	Same	Same	81-20-28.60 W	81-20-01.53 W	Same	81-19-51.51	81-21-02.54 W	81-19-49.26 W	Same	Same	81-22-11.19 W	81-21-41.87 W
Runway End Elevation	9.14'	5.47'	Same	Same	9.63'	5.88'	Same	5.88' (EST.)	9.52'	5.67'	Same	Same	35.00' (EST.)	31.00' (EST.)
Runway Lighting Type	MIRL		Same		MIRL		Same		HIRL	HIRL	Same	Same	MIRL	
Runway Marking Type	Basic-F		Same		Basic-F		NPI		PIR-G	PIR-G	Same	Same	Basic-G	Basic-G
14 CFR Part 77 Approach Category	20:1	20:1	Same	Same	20:1	20:1	Same	Same	NPI (34:1)	PIR (50:1)	Same	Same	20:1	20:1
Visibility Minimums	Visual	Visual	Same	Same	Visual	Visual	Not Lower than 1 Mile	Not Lower than 1 Mile	Not Lower than 1 Mile	Lower than 3/4 Mile	Same	Same	Visual	Visual
Type of Aeronautical Survey Required	NVGS	NVGS	Same	Same	NVGS	NVGS	Same	Same	VGS	VGS	Same	Same	NVGS	NVGS
Runway Departure Surface Required	No	No	Same	Same	No	No	Yes (40:1)	Yes (40:1)	Yes (40:1)	Yes (40:1)	Same	Same	No	No
Runway Object Free Area (ROFA)														
Width	250'	250'	Same	Same	250'	250'	500'	500'	800'	800'	Same	Same	250'	250'
Length Prior to Threshold	240'	240'	Same	Same	240'	240'	300'	300'	600'	600'	Same	Same	240'	240'
Length beyond Runway End	240'	240'	Same	Same	240'	240'	300'	300'	1000'	1000'	Same	Same	240'	240'
Runway Safety Area (RSA)														
Width	120'	120'	Same	Same	120'	120'	150'	150'	500'	500'	Same	Same	120'	120'
Length prior to Threshold	240'	240'	Same	Same	240'	240'	300'	300'	600'	600'	Same	Same	240'	240'
Length beyond Runway End	240'	240'	Same	Same	240'	240'	300'	300'	1000'	1000'	Same	Same	240'	240'
Obstacle Free Zone (OFZ) Width	250'		Same		250'		400'		400'		Same	Same	250'	
Precision Obstacle Free Zone (POFZ)	N/A		Same		N/A		Same		N/A	Yes (800' x 200')	Same	Same	N/A	
Threshold Siting Surface (TSS)	20:1	20:1	Same	Same	20:1	20:1	20:1	20:1	20:1	20:1	Same	Same	20:1	20:1
Penetrations to TSS	Yes	No	Same	Same	Yes	No	Yes	No	Yes	Yes	Same	Same	N/A	N/A
Visual and Instrument NAVAIDS	None	None	Same	Same	2-Light PAPI	N/A	Same	GPS, 4-Light PAPI	GPS, 4-Light VASI, VOR	GPS, 4-Light PAPI, ILS, MALSR	Same	Same	None	None
Touchdown Zone Elevation (TDZE)	9.3'	9.3'	Same	Same	9.7'	9.7'	Same	N/A	9.8'	7.5'	Same	Same	N/A	N/A
Horizontal/Vertical Datum	NAD 83/NAVD 88													

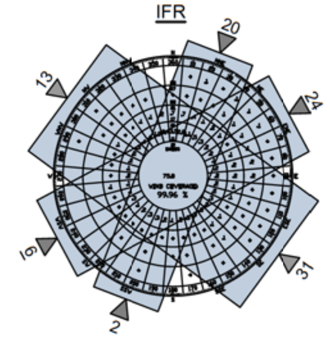
VFR



All Weather



IFR



VFR Weather (Ceiling > 1000 feet; Visibility > 3 Statute Miles)				
Runway	**10.5 kt**	**13 kt**	**16 kt**	**20 kt**
Runway 13-31	89.90%	94.19%	98.31%	99.59%
Runway 2-20	90.47%	94.96%	N/A	N/A
Runway 6-24	90.95%	95.65%	N/A	N/A
Runway 13-31/2-20	98.61%	99.65%	99.89%	99.98%
Runway 13-31/6-24	97.57%	99.35%	99.87%	99.99%
All Runways	**99.90%**	**99.99%**	**100.00%**	**100.00%**

All Weather				
Runway	**10.5 kt**	**13 kt**	**16 kt**	**20 kt**
Runway 13-31	89.64%	94.05%	98.17%	99.51%
Runway 2-20	90.84%	95.08%	N/A	N/A
Runway 6-24	90.40%	95.28%	N/A	N/A
Runway 13-31/2-20	98.53%	99.55%	99.84%	99.96%
Runway 13-31/6-24	97.04%	99.15%	99.80%	99.96%
All Runways	**99.86%**	**99.79%**	**99.99%**	**100.00%**

IFR Weather (Ceiling between 250 feet and 1000 feet; Visibility between 3/4 and 3 Statute Miles)				
Runway	**10.5 kt**	**13 kt**	**16 kt**	**20 kt**
Runway 13-31	86.18%	92.22%	96.87%	98.98%
Runway 2-20	93.45%	95.89%	N/A	N/A
Runway 6-24	84.96%	91.94%	N/A	N/A
Runway 13-31/2-20	97.86%	98.73%	99.42%	99.87%
Runway 13-31/6-24	92.25%	97.44%	99.32%	99.86%
All Runways	**99.51%**	**99.88%**	**99.99%**	**100.00%**

DECLARED DISTANCE TABLE								
Runway End	EXISTING				ULTIMATE			
	TORA	TODA	ASDA	LDA	TORA	TODA	ASDA	LDA
2	2610'	2610'	2610'	2610'	Same	Same	Same	Same
20	2610'	2610'	2610'	2610'	Same	Same	Same	Same
6	2701'	2701'	2701'	2701'	3,700'	3,700'	3,700'	3,700'
24	2701'	2701'	2701'	2701'	3,700'	3,700'	3,700'	3,700'
13	8001'	8001'	7202'	6144'	Same	Same	Same	Same
31	8001'	8001'	6730'	5925'	Same	Same	Same	Same
13R	N/A	N/A	N/A	N/A	3,200'	3,200'	3,200'	3,200'
31L	N/A	N/A	N/A	N/A	3,200'	3,200'	3,200'	3,200'

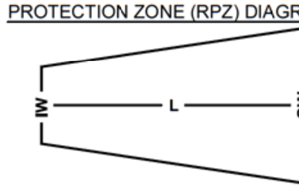
AIRPORT DATA TABLE		
AIRPORT DATA	EXISTING	ULTIMATE
Airport Elevation (MSL)	10'	35'
Airport Reference Point (ARP NAD 83)		
Latitude	29-57-33.31 N	29-57-33.77
Longitude	81-20-23.04 W	81-20-22.01
Mean Max Temperature of Hottest Month	July, 91.9°F	N/A
Airport Terminal Area NAVAIDS	VOR/DME, NDB, ILS	SAME
Airport Reference Code (ARC)	C-III	D-IV
Critical Aircraft	Boeing 737	Boeing 757
Taxiway Design Group	TDG III	TDG V
Misc. Facilities	AWOS	SAME
Magnetic Variation	6° 33' W changing by 0° 5'W per year	6° 46' W changing by 0° 5'W per year
Date of Magnetic Declination	March 17, 2017	N/A
NPIAS Service Level	General Aviation	SAME
State Equivalent Service Level	Primary	SAME
Airport Identifier	SGJ	SAME

MODIFICATION OF DESIGN STANDARDS					
NO.	STANDARD MODFIED	FAA REGULATION	EXISTING CONDITIONS	PROPOSED ACTION	DATE OF FAA APPROVAL

NOTES

1. Coordinates and elevations for ARP, runway ends, and displaced thresholds have been obtained from the 2016 Quantum Spatial Inc. survey. Please note that the coordinates and elevation values are different from the published values on the FAA 5010. Therefore, the FAA 5010 for SGJ needs to be updated at the completion of this Master Plan Update.
2. Please refer to the Inner Portion of the Approach Plan and Profile Sheets for details on the disposition of obstacles penetrating threshold siting surfaces.
3. Runways 2-20 and 6-24 will have to be changed to 3-21 and 7-25 during the 20 year planning period due to the change in magnetic declination.
4. Wind data obtained from the National Oceanic and Atmospheric Administration (NOAA), via the FAA wind data page. 10 years of wind data was used from the time period of 2007-2016.
5. Estimated elevations for Runway 13R-31L were obtained using Google Earth. Please note that a further obstruction study will need to be performed prior to constructing the runway.
6. Taxiway width was obtained from data provided by the 2016 Quantum Spatial, Inc. survey. Taxiway-Taxiway separation is included on Terminal Area Drawings, as applicable.
7. All latitude/longitude coordinates are in the NAD 83, Florida East State Plane Coordinate System. All Elevations listed/shown throughout this drawing set are set to the NAVD 88 datum.
8. Fixed or Moveable Object Free Area is half of the Taxiway Object Free Area (TOFA) per the AC 150/5300-13A Airport Design. As such, only the TOFA will be shown on the drawings, where applicable, to reduce clutter.
9. Although the highest TDG category is V based on the largest airfield geometries (i.e., Taxiways A and B measure 75' wide), the critical aircraft is an ADG III based on 2018 TFMSC data. Therefore, the existing Airport TDG category is III and the future TDG category is proposed to be V.
10. Runway to taxiway separation dimensions are shown on the terminal area plans, to avoid clutter on the drawing.
11. Threshold Siting Surfaces are in accordance with Engineering Brief No. 99. Obstruction mitigation is identified on the plan and profile drawings within this ALP drawing set.

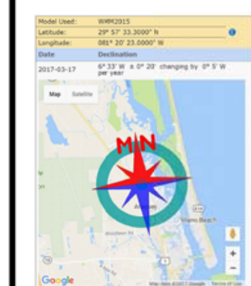
RUNWAY
PROTECTION ZONE (RPZ) DIAGRAM



Runway Protection Zone (RPZ) Table										
	Runway 2/20		Runway 6/24				Runway 13/31		Runway 13R-31L (ULT.)	
	Runway 2	Runway 20	Runway 6	Runway 24	Ultimate Runway 6	Ultimate Runway 24	Runway 13	Runway 31	Runway 13R	Runway 31L
Inner Width (IW)	250'	250'	250'	250'	500'	500'	500'	1000'	250'	250'
Outer Width (OW)	450'	450'	450'	450'	700'	700'	1010'	1750'	450'	450'
Length (L)	1000'	1000'	1000'	1000'	1000'	1000'	1700'	2500'	1000'	1000'

Taxiway Data Table																	
Taxiway Name	A	A1	A2	A3	B	B1	B2	B4	B5	B6	D	D2	D3	D4	E	F	G
Taxiway Design Group (TDG)	5				5						2				1B	3	3
Taxiway Width	75'	88'	53'	75'	75'	121', 221'	238'	93'	105'	106'	40'	40'	40'	40'	30'	50'	50'
Taxiway Safety Area	171'				171'		118'	171'			49'				49'	49'	49'
Taxiway and Taxilane Object Free Area	259'				259'		186'	259'			89'				89'	89'	89'
Taxiway Lighting	MITL				MITL						MITL				N/A	N/A	N/A

PASSERO ASSOCIATES
engineering architecture



NFRA
Northeast Florida Regional Airport
Fly Smart!

Client:

St. Augustine-St. Johns County Airport Authority
4900 U.S. Highway 1, North
St. Augustine, FL 32095

Passero Associates
4730 Casa Cola Way, Suite 200
St. Augustine, FL 32095
(904) 757-6106
www.passero.com

Principal-in-Charge	Andrew M. Holesko
Project Manager	Lisa Cheung
Designed by	Chris Johnson

Revisions

No.	Date	By	Description

Airport Layout Plan Update

Airport Data Sheet

DRAFT
Northeast Florida Regional Airport

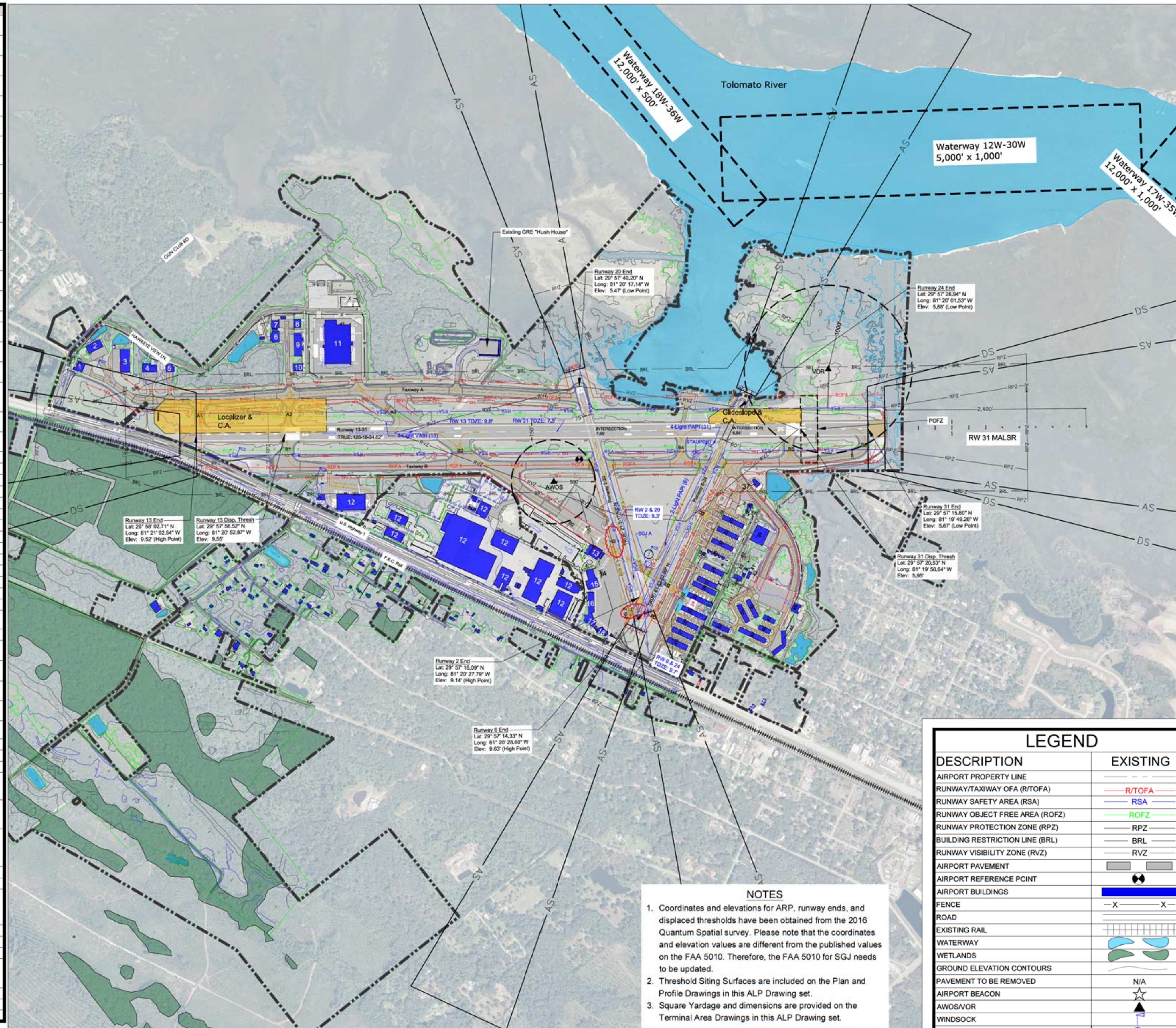
Town/City: City of St. Augustine
County: St. Johns
State: Florida

Project No. 23081.70

Drawing No. Sheet 2

Date February 2020

NFRA Facilities				
Bldg. #	Facility	Approximate Size	Condition	Elevation (MSL)
1	Corporate Hangar (Infinity Aviation Co Inc)	Hangar: 10,575 sf Office: 1,128 sf	Good	45.1
2	Corporate Hangar (Ring Power Aviation)	Hangar: 16,368 sf Office: 3,582 sf	Good	44.9
3	Corporate Hangar (Roberts Aviation)	Hangar: 25,488 sf Office: 4,000 sf	Good	47.7
4	Corporate Hangar (Scott Lagasse Racing)	Hangar: 14,639 sf Office: 950 sf	Fair	43
5	Corporate Hangar (Florida Army National Guard)	Hangar: 4,536 sf Office: 3,168 sf	Fair	40.7
6	Corporate Hangar (Southeast Aero Services Inc.)	Hangar: 12,608 sf Office Trailer: 1,440 sf	Fair	38.3
7	Corporate Hangar (Southeast Aero Services Inc.)	Hangar: 7,863 sf Office Trailers: 2,880 sf	Fair	38.02
8	Corporate Hangar (Patty Wagstaff Aerobatic School - Southeast Aero Services Inc.)	Hangar: 7,273 sf Office: 1,127 sf	Fair	37.5
9	Corporate Hangar 8-9-10 (Southeast Aero Services Inc. - Roberts Aviation - Vino Air)	Hangar: 22,304 sf Office: 1,862 sf	Fair	45.2
10	Corporate Hangar (Regency Aviation)	Hangar: 8,839 sf Office: 735 sf	Fair	36.4
11	Northrop-Grumman North Complex	~	~	65.5
12	Northrop-Grumman South Complex	~	~	28 -75
13	Airline Terminal	23,305 sf	Excellent	38.9
14	Maintenance Shop Hangar (Atlantic Aviation)	Hangar: 8,000 sf Office: 1,600 sf	Poor	40.1
15	Aircraft Storage Hangar (Atlantic Aviation)	Hangar: 12,600 sf Office: 1,995 sf	Poor	40.1
16	Shade/Canopy Hangar (Atlantic Aviation)	19,778 sf	Good	47.5
17	Aircraft Sales/Storage Hangar & Offices (PGA) (Florida Aviation Career Training)	Hangar: 10,404 sf Office: 7,512 sf	Good/Fair	47.8
18	GA Terminal Building (Atlantic Aviation - Rent-a-Car)	9,489 sf	Good/Fair	48.1
19	Line Service Building (Atlantic Aviation)	704 sf	Poor	26.6
20	"A" T-Hangar (10 Units)	15,372 sf	Poor	28.02
21	"B" T-Hangar (10 Units)	15,576 sf	Poor	26.5
22	"C" T-Hangar (11 Units)	13,770 sf	Poor	25.7
23	"D" T-Hangar (12 Units)	17,479 sf	Good	29.17
24	~~Port-A-Ports (6 Units)~~	~~1,872 sf each~~	~~Poor~~	~~-~~
25	"E" T-Hangar (12 Units)	17,479 sf	Good	28.92
26	"G" Box Hangar (6 Units)	15,900 sf	Fair	35.79
27	"H" Box Hangar (4 Units)	13,515 sf	Fair	36.01
28	"I" Box Hangar (4 Units)	14,014 sf	Fair	36.7
29	Airport Maintenance Building	~ 900 sf	Poor	23.2
30	"J" Port-A-Ports (5 Units)	5,550 sf	Poor	21.5
31	"K" T-Hangar (12 Units)	13,872 sf	Fair	28.01
32	"L" T-Hangar (12 Units)	13,872 sf	Fair	28
33	"M" T-Hangar (12 Units)	13,872 sf	Fair	28
34	Self-Service Fuel Farm	Two Above Ground Tanks	Good	-
35	Electric Vault Building	1,144 sf	Fair	25.04
36	Customs Building (U.S. Customs & Border Protection)	3,000 sf	Fair	30.5
37	Airport Rescue & Firefighting Facility (ARFF)	5,046 sf	Good	35.5
38	Air Traffic Control Tower (ATCT)	5,549 sf	Fair	100.1
39	Corporate Hangar (Nimbus Aviation)	Hangar: 32,890 sf Office: 1,650 sf	Good	57.2
40	Fuel Farm	Four Above Ground Tanks	Good	-
41	Green House	~ 1,500 sf	Fair	23.4
42	Maintenance Shed	~ 2,500 sf	Fair	25.5
43	Maintenance Garage	~ 1,200 sf	Fair	26.3
44	Maintenance Warehouse & Office	Warehouse: 5,571 sf Office: 861 sf	Fair	27.4
45	Conference Center (Florida Flyers European US Flight School, Inc.)	16,760 sf	Good	48.03
46	Corporate Hangar (Jacksonville Aviation, INC dba Premier Aviation & Old City Helicopter Sales LLC)	Hangar: 14,000 sf Office: 1,602 sf	Good	40.5
47	"N" Box Hangar (3 Units)	7,800 sf	Good	29.3
48	"O" T-Hangar (6 Units)	7,800 sf	Good	26.1
49	"P" Box/T-Hangar (3/7 Units)	Box Hangars: 9,360 sf T-Hangar: 8,840 sf	Good	29.5
50	"Q" T-Hangar (10 Units)	12,064 sf	Good	26.7
51	"R" T-Hangar (10 Units)	12,064 sf	Good	25.9
52	"S" T-Hangar (9 Units)	11,024 sf	Good	26.5
53	St. Augustine St. Johns County Airport Authority Administration Building	3,696 sf	Fair	19.8
54	~~Quonset Hut~~	~~756 sf~~	~~Fair/Poor~~	~~-~~
55	Civil Air Patrol Building	3,508 sf	Poor	30
56	Civil Air Patrol Building	2,473 sf	Poor	28



NOTES

1. Coordinates and elevations for ARP, runway ends, and displaced thresholds have been obtained from the 2016 Quantum Spatial survey. Please note that the coordinates and elevation values are different from the published values on the FAA 5010. Therefore, the FAA 5010 for SGJ needs to be updated.
2. Threshold Siting Surfaces are included on the Plan and Profile Drawings in this ALP Drawing set.
3. Square Yardage and dimensions are provided on the Terminal Area Drawings in this ALP Drawing set.

LEGEND

DESCRIPTION	EXISTING
AIRPORT PROPERTY LINE	
RUNWAY/TAXIWAY OFA (R/TOFA)	R/TOFA
RUNWAY SAFETY AREA (RSA)	RSA
RUNWAY OBJECT FREE AREA (ROFZ)	ROFZ
RUNWAY PROTECTION ZONE (RPZ)	RPZ
BUILDING RESTRICTION LINE (BRL)	BRL
RUNWAY VISIBILITY ZONE (RVZ)	RVZ
AIRPORT PAVEMENT	
AIRPORT REFERENCE POINT	
AIRPORT BUILDINGS	
FENCE	X X
ROAD	
EXISTING RAIL	
WATERWAY	
WETLANDS	
GROUND ELEVATION CONTOURS	
PAVEMENT TO BE REMOVED	N/A
AIRPORT BEACON	☆
AWOS/VOR	▲
WINDSOCK	
PACS/SACS	

PASSERO ASSOCIATES
engineering architecture

NFRA
Northeast Florida Regional Airport
Fly Smart!

Client:

St. Augustine-St. Johns County Airport Authority
4900 U.S. Highway 1, North
St. Augustine, FL 32095

Passero Associates
4730 Casa Cola Way, Suite 200
St. Augustine, FL 32095
(904) 757-6106
www.passero.com

Principal-in-Charge: Andrew M. Holesko
Project Manager: Lisa Cheung
Designed by: Chris Johnson

Revisions

No.	Date	By	Description

Airport Layout Plan Update

Existing Facilities Drawing

DRAFT
Northeast Florida Regional Airport

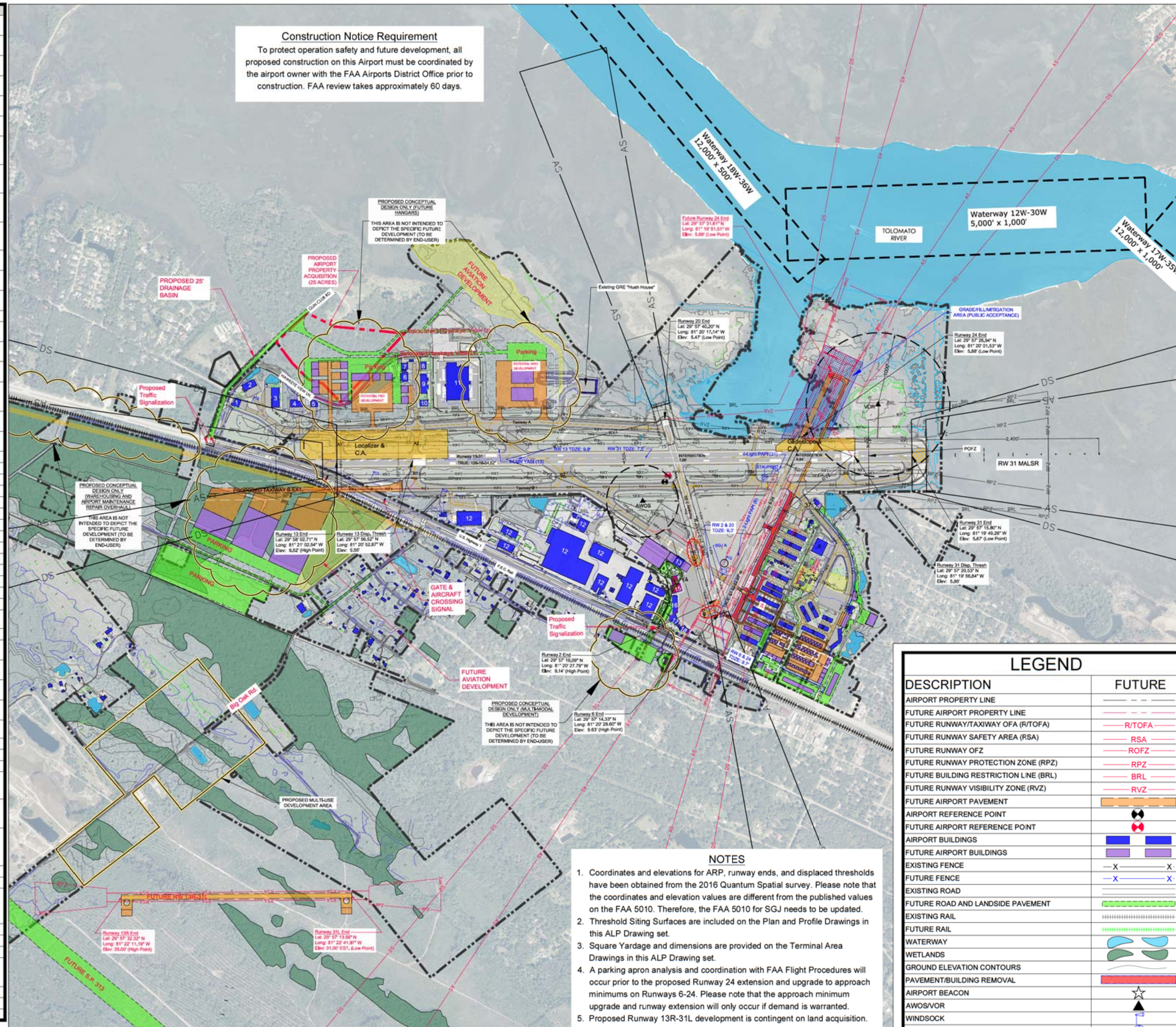
Town/City: City of St. Augustine
County: St. Johns
State: Florida

Project No. 23081.70

Drawing No. Sheet 3

Date February 2020

NFRA Facilities				
Bldg. #	Facility	Approximate Size	Condition	Elevation (MSL)
1	Corporate Hangar (Infinity Aviation Co Inc)	Hangar: 10,575 sf Office: 1,128 sf	Good	45.1
2	Corporate Hangar (Ring Power Aviation)	Hangar: 16,368 sf Office: 3,582 sf	Good	44.9
3	Corporate Hangar (Roberts Aviation)	Hangar: 25,488 sf Office: 4,000 sf	Good	47.7
4	Corporate Hangar (Scott Lagasse Racing)	Hangar: 14,639 sf Office: 950 sf	Fair	43
5	Corporate Hangar (Florida Army National Guard)	Hangar: 4,536 sf Office: 3,168 sf	Fair	40.7
6	Corporate Hangar (Southeast Aero Services Inc.)	Hangar: 12,608 sf Office Trailer: 1,440 sf	Fair	38.3
7	Corporate Hangar (Southeast Aero Services Inc.)	Hangar: 7,863 sf Office Trailers: 2,880 sf	Fair	38.02
8	Corporate Hangar (Patty Wagstaff Aerobatic School - Southeast Aero Services Inc.)	Hangar: 7,273 sf Office: 1,127 sf	Fair	37.5
9	Corporate Hangar 8-9-10 (Southeast Aero Services Inc. - Roberts Aviation - Vino Air)	Hangar: 22,304 sf Office: 1,862 sf	Fair	45.2
10	Corporate Hangar (Regency Aviation)	Hangar: 8,839 sf Office: 735 sf	Fair	36.4
11	Northrop-Grumman North Complex	~	~	65.5
12	Northrop-Grumman South Complex	~	~	28 -75
13	Airline Terminal	23,305 sf	Excellent	38.9
14	Maintenance Shop Hangar (Atlantic Aviation)	Hangar: 8,000 sf Office: 1,600 sf	Poor	40.1
15	Aircraft Storage Hangar (Atlantic Aviation)	Hangar: 12,600 sf Office: 1,995 sf	Poor	40.1
16	Shade/Canopy Hangar (Atlantic Aviation)	19,778 sf	Good	47.5
17	Aircraft Sales/Storage Hangar & Offices (PGA) (Florida Aviation Career Training)	Hangar: 10,404 sf Office: 7,512 sf	Good/Fair	47.8
18	GA Terminal Building (Atlantic Aviation - Rent-a-Car)	9,489 sf	Good/Fair	48.1
19	Line Service Building (Atlantic Aviation)	704 sf	Poor	26.6
20	"A" T-Hangar (10 Units)	15,372 sf	Poor	28.02
21	"B" T-Hangar (10 Units)	15,576 sf	Poor	26.5
22	"C" T-Hangar (11 Units)	13,770 sf	Poor	25.7
23	"D" T-Hangar (12 Units)	17,479 sf	Good	29.17
24	~~Port-A-Ports (6 Units)~~	~~1,872 sf each~~	~~Poor~~	~~-~~
25	"E" T-Hangar (12 Units)	17,479 sf	Good	28.92
26	"G" Box Hangar (6 Units)	15,900 sf	Fair	35.79
27	"H" Box Hangar (4 Units)	13,515 sf	Fair	36.01
28	"I" Box Hangar (4 Units)	14,014 sf	Fair	36.7
29	Airport Maintenance Building	~ 900 sf	Poor	23.2
30	"J" Port-A-Ports (5 Units)	5,550 sf	Poor	21.5
31	"K" T-Hangar (12 Units)	13,872 sf	Fair	28.01
32	"L" T-Hangar (12 Units)	13,872 sf	Fair	28
33	"M" T-Hangar (12 Units)	13,872 sf	Fair	28
34	Self-Service Fuel Farm	Two Above Ground Tanks	Good	-
35	Electric Vault Building	1,144 sf	Fair	25.04
36	Customs Building (U.S. Customs & Border Protection)	3,000 sf	Fair	30.5
37	Airport Rescue & Firefighting Facility (ARFF)	5,046 sf	Good	35.5
38	Air Traffic Control Tower (ATCT)	5,549 sf	Fair	100.1
39	Corporate Hangar (Nimbus Aviation)	Hangar: 32,890 sf Office: 1,650 sf	Good	57.2
40	Fuel Farm	Four Above Ground Tanks	Good	-
41	Green House	~ 1,500 sf	Fair	23.4
42	Maintenance Shed	~ 2,500 sf	Fair	25.5
43	Maintenance Garage	~ 1,200 sf	Fair	26.3
44	Maintenance Warehouse & Office	Warehouse: 5,571 sf Office: 861 sf	Fair	27.4
45	Conference Center (Florida Flyers European US Flight School, Inc.)	16,760 sf	Good	48.03
46	Corporate Hangar (Jacksonville Aviation, INC dba Premier Aviation & Old City Helicopter Sales LLC)	Hangar: 14,000 sf Office: 1,602 sf	Good	40.5
47	"N" Box Hangar (3 Units)	7,800 sf	Good	29.3
48	"O" T-Hangar (6 Units)	7,800 sf	Good	26.1
49	"P" Box/T-Hangar (3/7 Units)	Box Hangars: 9,360 sf T-Hangar: 8,840 sf	Good	29.5
50	"Q" T-Hangar (10 Units)	12,064 sf	Good	26.7
51	"R" T-Hangar (10 Units)	12,064 sf	Good	25.9
52	"S" T-Hangar (9 Units)	11,024 sf	Good	26.5
53	St. Augustine St. Johns County Airport Authority Administration Building	3,696 sf	Fair	19.8
54	~~Quonset Hut~~	~~756 sf~~	~~Fair/Poor~~	~~-~~
55	Civil Air Patrol Building	3,508 sf	Poor	30
56	Civil Air Patrol Building	2,473 sf	Poor	28



NOTES

1. Coordinates and elevations for ARP, runway ends, and displaced thresholds have been obtained from the 2016 Quantum Spatial survey. Please note that the coordinates and elevation values are different from the published values on the FAA 5010. Therefore, the FAA 5010 for SGJ needs to be updated.
2. Threshold Siting Surfaces are included on the Plan and Profile Drawings in this ALP Drawing set.
3. Square Yardage and dimensions are provided on the Terminal Area Drawings in this ALP Drawing set.
4. A parking apron analysis and coordination with FAA Flight Procedures will occur prior to the proposed Runway 24 extension and upgrade to approach minimums on Runways 6-24. Please note that the approach minimum upgrade and runway extension will only occur if demand is warranted.
5. Proposed Runway 13R-31L development is contingent on land acquisition.

LEGEND

DESCRIPTION	FUTURE
AIRPORT PROPERTY LINE	
FUTURE AIRPORT PROPERTY LINE	
FUTURE RUNWAY/TAXIWAY OFA (R/TOFA)	R/TOFA
FUTURE RUNWAY SAFETY AREA (RSA)	RSA
FUTURE RUNWAY OFZ	ROFZ
FUTURE RUNWAY PROTECTION ZONE (RPZ)	RPZ
FUTURE BUILDING RESTRICTION LINE (BRL)	BRL
FUTURE RUNWAY VISIBILITY ZONE (RVZ)	RVZ
FUTURE AIRPORT PAVEMENT	
AIRPORT REFERENCE POINT	
FUTURE AIRPORT REFERENCE POINT	
AIRPORT BUILDINGS	
FUTURE AIRPORT BUILDINGS	
EXISTING FENCE	X X
FUTURE FENCE	X X
EXISTING ROAD	
FUTURE ROAD AND LANDSIDE PAVEMENT	
EXISTING RAIL	
FUTURE RAIL	
WATERWAY	
WETLANDS	
GROUND ELEVATION CONTOURS	
PAVEMENT/BUILDING REMOVAL	
AIRPORT BEACON	
AWOS/VOR	
WINDSOCK	
PACS/SACS	

PASSERO ASSOCIATES
engineering architecture

0 700 1400 Feet

NFRA
Northeast Florida Regional Airport
Fly Smart!

Client:

St. Augustine-St. Johns County Airport Authority
4900 U.S. Highway 1, North
St. Augustine, FL 32095

Passero Associates
4730 Casa Cola Way, Suite 200
St. Augustine, FL 32095
(904) 757-6106
www.passero.com

Principal-In-Charge: Andrew M. Holesko
Project Manager: Lisa Cheung
Designed by: Chris Johnson

Revisions

No.	Date	By	Description

Airport Layout Plan Update

Airport Layout Plan Without Aerial

DRAFT
Northeast Florida Regional Airport

Town/City: City of St. Augustine
County: St. Johns
State: Florida

Project No. 23081.70

Drawing No. Sheet 4A

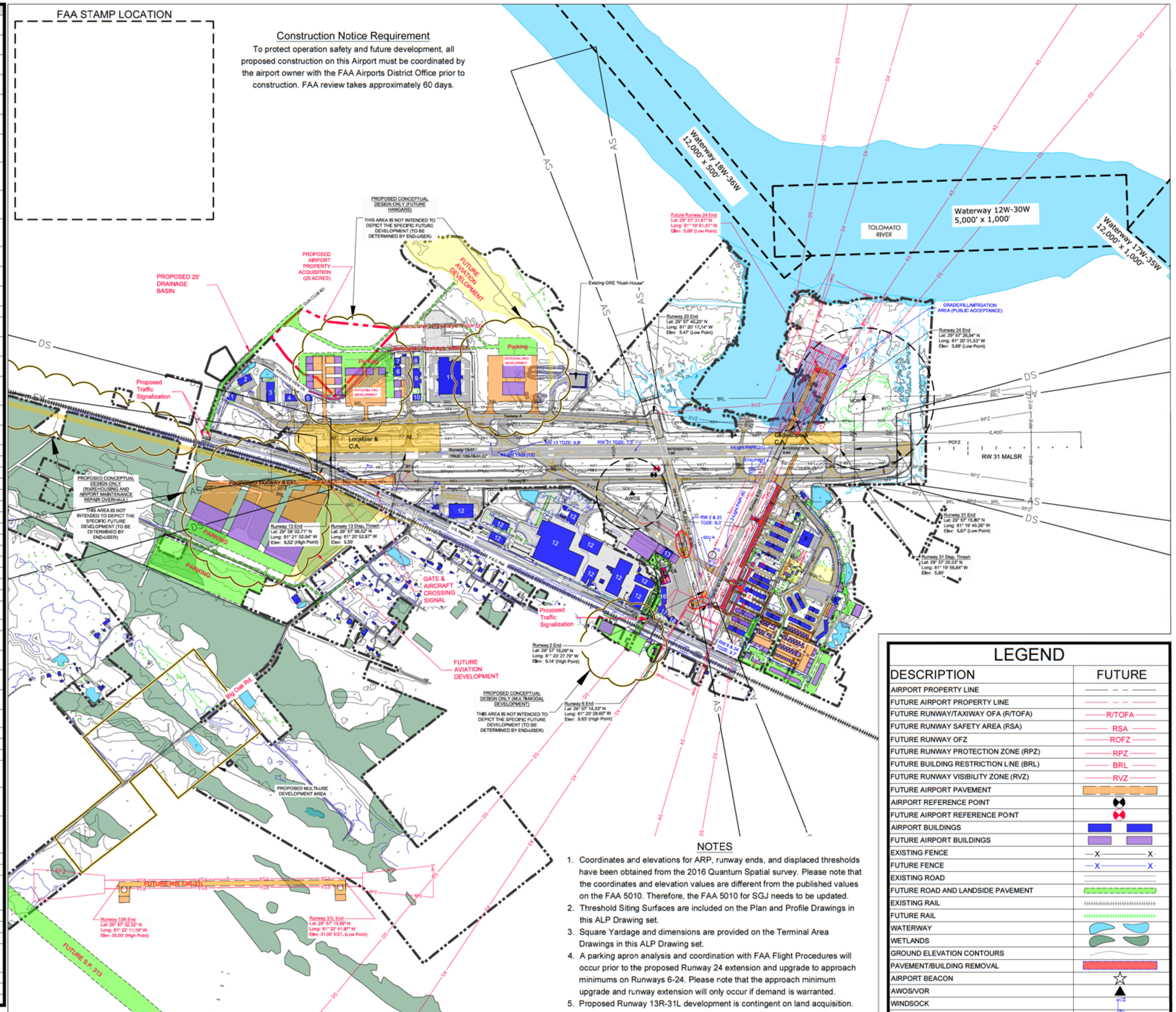
Date February 2020

NFRA Facilities				
Bldg. #	Facility	Approximate Size	Condition	Elevation (MSL)
1	Corporate Hangar (Infinity Aviation Co Inc)	Hangar: 10,575 sf Office: 1,128 sf	Good	45.1
2	Corporate Hangar (Ring Power Aviation)	Hangar: 16,368 sf Office: 3,582 sf	Good	44.9
3	Corporate Hangar (Roberts Aviation)	Hangar: 25,488 sf Office: 4,000 sf	Good	47.7
4	Corporate Hangar (Scott Lagasse Racing)	Hangar: 14,639 sf Office: 950 sf	Fair	43
5	Corporate Hangar (Florida Army National Guard)	Hangar: 4,536 sf Office: 3,168 sf	Fair	40.7
6	Corporate Hangar (Southeast Aero Services Inc.)	Hangar: 12,608 sf Office Trailer: 1,440 sf	Fair	38.3
7	Corporate Hangar (Southeast Aero Services Inc.)	Hangar: 7,863 sf Office Trailers: 2,880 sf	Fair	38.02
8	Corporate Hangar (Patty Wagstaff Aerobatic School - Southeast Aero Services Inc.)	Hangar: 7,273 sf Office: 1,127 sf	Fair	37.5
9	Corporate Hangar 8-9-10 (Southeast Aero Services Inc. - Roberts Aviation - Vino Air)	Hangar: 22,304 sf Office: 1,862 sf	Fair	45.2
10	Corporate Hangar (Regency Aviation)	Hangar: 8,839 sf Office: 735 sf	Fair	36.4
11	Northrop-Grumman North Complex	~	~	65.5
12	Northrop-Grumman South Complex	~	~	28 -75
13	Airline Terminal	23,305 sf	Excellent	38.9
14	Maintenance Shop Hangar (Atlantic Aviation)	Hangar: 8,000 sf Office: 1,600 sf	Poor	40.1
15	Aircraft Storage Hangar (Atlantic Aviation)	Hangar: 12,600 sf Office: 1,995 sf	Poor	40.1
16	Shade/Canopy Hangar (Atlantic Aviation)	19,778 sf	Good	47.5
17	Aircraft Sales/Storage Hangar & Offices (PGA) (Florida Aviation Career Training)	Hangar: 10,404 sf Office: 7,512 sf	Good/Fair	47.8
18	GA Terminal Building (Atlantic Aviation - Rent-a-Car)	9,489 sf	Good/Fair	48.1
19	Line Service Building (Atlantic Aviation)	704 sf	Poor	26.6
20	"A" T-Hangar (10 Units)	15,372 sf	Poor	28.02
21	"B" T-Hangar (10 Units)	15,576 sf	Poor	26.5
22	"C" T-Hangar (11 Units)	13,770 sf	Poor	25.7
23	"D" T-Hangar (12 Units)	17,479 sf	Good	29.17
24	~~Port-A-Ports (6 Units)~~	~~1,872 sf each~~	~~Poor~~	~~-~~
25	"E" T-Hangar (12 Units)	17,479 sf	Good	28.92
26	"G" Box Hangar (6 Units)	15,900 sf	Fair	35.79
27	"H" Box Hangar (4 Units)	13,515 sf	Fair	36.01
28	"I" Box Hangar (4 Units)	14,014 sf	Fair	36.7
29	Airport Maintenance Building	~ 900 sf	Poor	23.2
30	"J" Port-A-Ports (5 Units)	5,550 sf	Poor	21.5
31	"K" T-Hangar (12 Units)	13,872 sf	Fair	28.01
32	"L" T-Hangar (12 Units)	13,872 sf	Fair	28
33	"M" T-Hangar (12 Units)	13,872 sf	Fair	28
34	Self-Service Fuel Farm	Two Above Ground Tanks	Good	-
35	Electric Vault Building	1,144 sf	Fair	25.04
36	Customs Building (U.S. Customs & Border Protection)	3,000 sf	Fair	30.5
37	Airport Rescue & Firefighting Facility (ARFF)	5,046 sf	Good	35.5
38	Air Traffic Control Tower (ATCT)	5,549 sf	Fair	100.1
39	Corporate Hangar (Nimbus Aviation)	Hangar: 32,890 sf Office: 1,650 sf	Good	57.2
40	Fuel Farm	Four Above Ground Tanks	Good	-
41	Green House	~ 1,500 sf	Fair	23.4
42	Maintenance Shed	~ 2,500 sf	Fair	25.5
43	Maintenance Garage	~ 1,200 sf	Fair	26.3
44	Maintenance Warehouse & Office	Warehouse: 5,571 sf Office: 861 sf	Fair	27.4
45	Conference Center (Florida Flyers European US Flight School, Inc.)	16,760 sf	Good	48.03
46	Corporate Hangar (Jacksonville Aviation, INC dba Premier Aviation & Old City Helicopter Sales LLC)	Hangar: 14,000 sf Office: 1,602 sf	Good	40.5
47	"N" Box Hangar (3 Units)	7,800 sf	Good	29.3
48	"O" T-Hangar (6 Units)	7,800 sf	Good	26.1
49	"P" Box/T-Hangar (3/7 Units)	Box Hangars: 9,360 sf T-Hangar: 8,840 sf	Good	29.5
50	"Q" T-Hangar (10 Units)	12,064 sf	Good	26.7
51	"R" T-Hangar (10 Units)	12,064 sf	Good	25.9
52	"S" T-Hangar (9 Units)	11,024 sf	Good	26.5
53	St. Augustine St. Johns County Airport Authority Administration Building	3,696 sf	Fair	19.8
54	~~Quonset Hut~~	~~756 sf~~	~~Fair/Poor~~	~~-~~
55	Civil Air Patrol Building	3,508 sf	Poor	30
56	Civil Air Patrol Building	2,473 sf	Poor	28

FAA STAMP LOCATION

Construction Notice Requirement

To protect operation safety and future development, all proposed construction on this Airport must be coordinated by the airport owner with the FAA Airports District Office prior to construction. FAA review takes approximately 60 days.



NOTES

1. Coordinates and elevations for ARP, runway ends, and displaced thresholds have been obtained from the 2016 Quantum Spatial survey. Please note that the coordinates and elevation values are different from the published values on the FAA 5010. Therefore, the FAA 5010 for SGJ needs to be updated.
2. Threshold Siting Surfaces are included on the Plan and Profile Drawings in this ALP Drawing set.
3. Square Yardage and dimensions are provided on the Terminal Area Drawings in this ALP Drawing set.
4. A parking apron analysis and coordination with FAA Flight Procedures will occur prior to the proposed Runway 24 extension and upgrade to approach minimums on Runways 6-24. Please note that the approach minimum upgrade and runway extension will only occur if demand is warranted.
5. Proposed Runway 13R-31L development is contingent on land acquisition.

LEGEND

DESCRIPTION	FUTURE
AIRPORT PROPERTY LINE	
FUTURE AIRPORT PROPERTY LINE	
FUTURE RUNWAY/TAXIWAY OFA (R/TOFA)	R/TOFA
FUTURE RUNWAY SAFETY AREA (RSA)	RSA
FUTURE RUNWAY OFZ	ROFZ
FUTURE RUNWAY PROTECTION ZONE (RPZ)	RPZ
FUTURE BUILDING RESTRICTION LINE (BRL)	BRL
FUTURE RUNWAY VISIBILITY ZONE (RVZ)	RVZ
FUTURE AIRPORT PAVEMENT	
AIRPORT REFERENCE POINT	
FUTURE AIRPORT REFERENCE POINT	
AIRPORT BUILDINGS	
FUTURE AIRPORT BUILDINGS	
EXISTING FENCE	X X
FUTURE FENCE	X X
EXISTING ROAD	
FUTURE ROAD AND LANDSIDE PAVEMENT	
EXISTING RAIL	
FUTURE RAIL	
WATERWAY	
WETLANDS	
GROUND ELEVATION CONTOURS	
PAVEMENT/BUILDING REMOVAL	
AIRPORT BEACON	
AWOS/VOR	
WINDSOCK	
PACS/SACS	

PASSERO ASSOCIATES
engineering architecture

0 700 1400 Feet

Northeast Florida Regional Airport
Fly Smart!

Client:

St. Augustine-St. Johns County Airport Authority
4900 U.S. Highway 1, North
St. Augustine, FL 32095

Passero Associates
4730 Casa Cola Way, Suite 200
St. Augustine, FL 32095
(904) 757-6106
www.passero.com

Principal-in-Charge: Andrew M. Holesko
Project Manager: Lisa Cheung
Designed by: Chris Johnson

Revisions

No.	Date	By	Description

Airport Layout Plan Update

Airport Layout Plan
Without Aerial

DRAFT
Northeast Florida Regional Airport

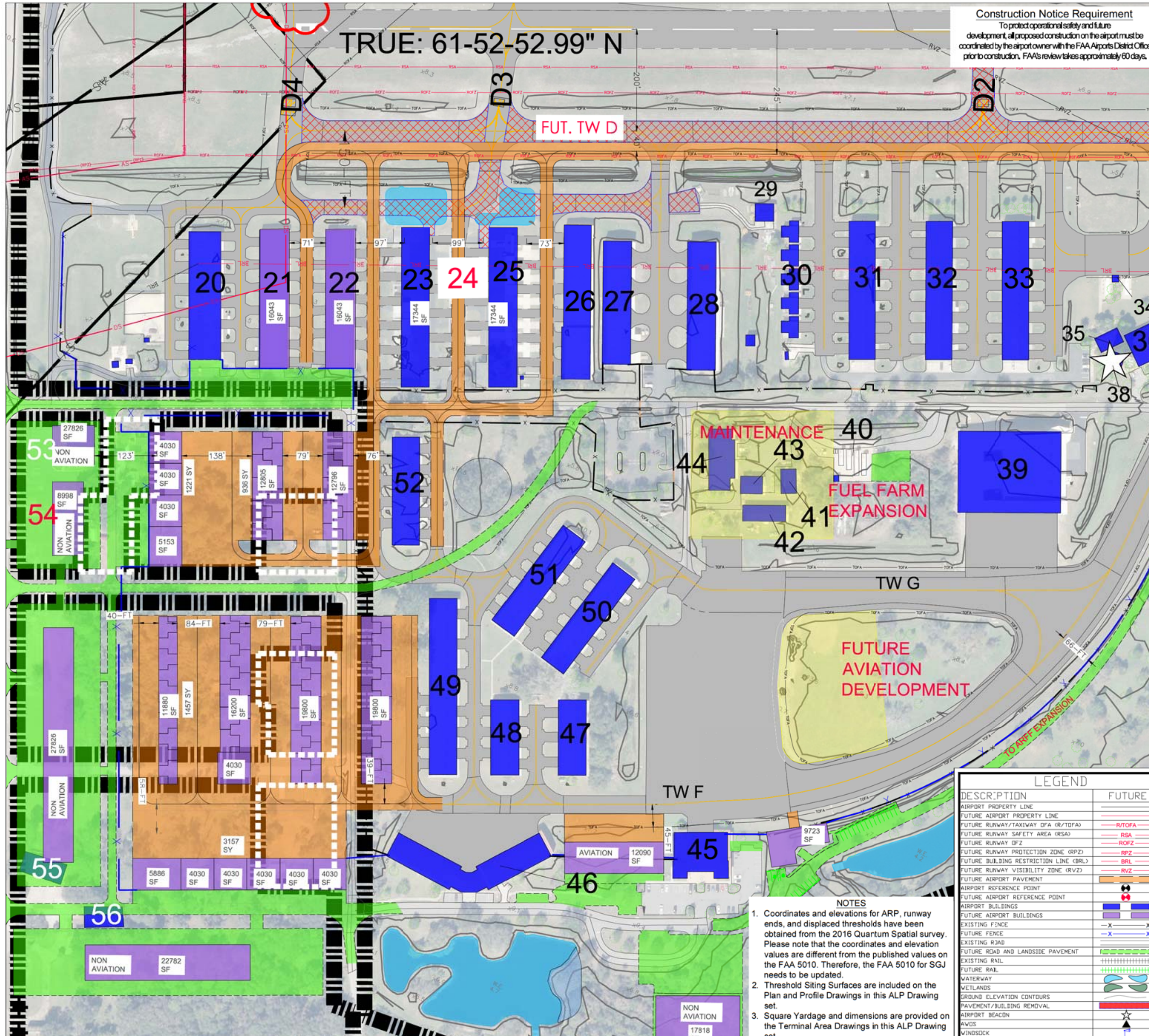
Town/City: City of St. Augustine
County: St. Johns
State: Florida

Project No.
23081.70

Drawing No.
Sheet 4B

Date
February 2020

NFRA Facilities				
Bldg. #	Facility	Approximate Size	Condition	Elevation (MSL)
1	Corporate Hangar (Infinity Aviation Co Inc)	Hangar: 10,575 sf Office: 1,128 sf	Good	45.1
2	Corporate Hangar (Ring Power Aviation)	Hangar: 16,368 sf Office: 3,582 sf	Good	44.9
3	Corporate Hangar (Roberts Aviation)	Hangar: 25,488 sf Office: 4,000 sf	Good	47.7
4	Corporate Hangar (Scott Lagasse Racing)	Hangar: 14,639 sf Office: 950 sf	Fair	43
5	Corporate Hangar (Florida Army National Guard)	Hangar: 4,536 sf Office: 3,168 sf	Fair	40.7
6	Corporate Hangar (Southeast Aero Services Inc.)	Hangar: 12,608 sf Office Trailer: 1,440 sf	Fair	38.3
7	Corporate Hangar (Southeast Aero Services Inc.)	Hangar: 7,863 sf Office Trailers: 2,880 sf	Fair	38.02
8	Corporate Hangar (Patty Wagstaff Aerobatic School - Southeast Aero Services Inc.)	Hangar: 7,273 sf Office: 1,127 sf	Fair	37.5
9	Corporate Hangar 8-9-10 (Southeast Aero Services Inc. - Roberts Aviation - Vino Air)	Hangar: 22,304 sf Office: 1,862 sf	Fair	45.2
10	Corporate Hangar (Regency Aviation)	Hangar: 8,839 sf Office: 735 sf	Fair	36.4
11	Northrop-Grumman North Complex	~	~	65.5
12	Northrop-Grumman South Complex	~	~	28 -75
13	Airline Terminal	23,305 sf	Excellent	38.9
14	Maintenance Shop Hangar (Atlantic Aviation)	Hangar: 8,000 sf Office: 1,600 sf	Poor	40.1
15	Aircraft Storage Hangar (Atlantic Aviation)	Hangar: 12,600 sf Office: 1,995 sf	Poor	40.1
16	Shade/Canopy Hangar (Atlantic Aviation)	19,778 sf	Good	47.5
17	Aircraft Sales/Storage Hangar & Offices (PGA) (Florida Aviation Career Training)	Hangar: 10,404 sf Office: 7,512 sf	Good/Fair	47.8
18	GA Terminal Building (Atlantic Aviation - Rent-a-Car)	9,489 sf	Good/Fair	48.1
19	Line Service Building (Atlantic Aviation)	704 sf	Poor	26.6
20	"A" T-Hangar (10 Units)	15,372 sf	Poor	28.02
21	"B" T-Hangar (10 Units)	15,576 sf	Poor	26.5
22	"C" T-Hangar (11 Units)	13,770 sf	Poor	25.7
23	"D" T-Hangar (12 Units)	17,479 sf	Good	29.17
~~24~~	~~Port-A-Ports (6 Units)~~	~~1,872 sf each~~	~~Poor~~	-
25	"E" T-Hangar (12 Units)	17,479 sf	Good	28.92
26	"G" Box Hangar (6 Units)	15,900 sf	Fair	35.79
27	"H" Box Hangar (4 Units)	13,515 sf	Fair	36.01
28	"I" Box Hangar (4 Units)	14,014 sf	Fair	36.7
29	Airport Maintenance Building	~ 900 sf	Poor	23.2
30	"J" Port-A-Ports (5 Units)	5,550 sf	Poor	21.5
31	"K" T-Hangar (12 Units)	13,872 sf	Fair	28.01
32	"L" T-Hangar (12 Units)	13,872 sf	Fair	28
33	"M" T-Hangar (12 Units)	13,872 sf	Fair	28
34	Self-Service Fuel Farm	Two Above Ground Tanks	Good	-
35	Electric Vault Building	1,144 sf	Fair	25.04
36	Customs Building (U.S. Customs & Border Protection)	3,000 sf	Fair	30.5
37	Airport Rescue & Firefighting Facility (ARFF)	5,046 sf	Good	35.5
38	Air Traffic Control Tower (ATCT)	5,549 sf	Fair	100.1
39	Corporate Hangar (Nimbus Aviation)	Hangar: 32,890 sf Office: 1,650 sf	Good	57.2
40	Fuel Farm	Four Above Ground Tanks	Good	-
41	Green House	~ 1,500 sf	Fair	23.4
42	Maintenance Shed	~ 2,500 sf	Fair	25.5
43	Maintenance Garage	~ 1,200 sf	Fair	26.3
44	Maintenance Warehouse & Office	Warehouse: 5,571 sf Office: 861 sf	Fair	27.4
45	Conference Center (Florida Flyers European US Flight School, Inc.)	16,760 sf	Good	48.03
46	Corporate Hangar (Jacksonville Aviation, INC dba Premier Aviation & Old City Helicopter Sales LLC)	Hangar: 14,000 sf Office: 1,602 sf	Good	40.5
47	"N" Box Hangar (3 Units)	7,800 sf	Good	29.3
48	"O" T-Hangar (6 Units)	7,800 sf	Good	26.1
49	"P" Box/T-Hangar (3/7 Units)	Box Hangars: 9,360 sf T-Hangar: 8,840 sf	Good	29.5
50	"Q" T-Hangar (10 Units)	12,064 sf	Good	26.7
51	"R" T-Hangar (10 Units)	12,064 sf	Good	25.9
52	"S" T-Hangar (9 Units)	11,024 sf	Good	26.5
53	St. Augustine St. Johns County Airport Authority Administration Building	3,696 sf	Fair	19.8
~~54~~	~~Quonset Hut~~	~~756 sf~~	~~Fair/Poor~~	-
55	Civil Air Patrol Building	3,508 sf	Poor	30
56	Civil Air Patrol Building	2,473 sf	Poor	28



Construction Notice Requirement

To protect operational safety and future development, all proposed construction on the airport must be coordinated by the airport owner with the FAA Airports District Office prior to construction. FAA's review takes approximately 60 days.

NOTES

1. Coordinates and elevations for ARP, runway ends, and displaced thresholds have been obtained from the 2016 Quantum Spatial survey. Please note that the coordinates and elevation values are different from the published values on the FAA 5010. Therefore, the FAA 5010 for SGJ needs to be updated.
2. Threshold Siting Surfaces are included on the Plan and Profile Drawings in this ALP Drawing set.
3. Square Yardage and dimensions are provided on the Terminal Area Drawings in this ALP Drawing set.

LEGEND

DESCRIPTION	FUTURE
AIRPORT PROPERTY LINE	
FUTURE AIRPORT PROPERTY LINE	
FUTURE RUNWAY/TAXIWAY OFA (R/TOFA)	R/TOFA
FUTURE RUNWAY SAFETY AREA (RSA)	RSA
FUTURE RUNWAY OFZ	ROFZ
FUTURE RUNWAY PROTECTION ZONE (RPZ)	RPZ
FUTURE BUILDING RESTRICTION LINE (BRL)	BRL
FUTURE RUNWAY VISIBILITY ZONE (RVZ)	RVZ
FUTURE AIRPORT PAVEMENT	
AIRPORT REFERENCE POINT	
FUTURE AIRPORT REFERENCE POINT	
AIRPORT BUILDINGS	
FUTURE AIRPORT BUILDINGS	
EXISTING FENCE	X X
FUTURE FENCE	X X
EXISTING ROAD	
FUTURE ROAD AND LANDSIDE PAVEMENT	
EXISTING RAIL	
FUTURE RAIL	
WATERWAY	
WETLANDS	
GROUND ELEVATION CONTOURS	
PAVEMENT/BUILDING REMOVAL	
AIRPORT BEACON	
AWOS	
WINDSOCK	
PACS/SACS	

PASSERO ASSOCIATES
engineering architecture

Mag 6°33' W changing 0°5' W per year
True

0 100 200 Feet

Northeast Florida Regional Airport
Fly Smart!

Client:

St. Augustine-St. Johns County Airport Authority
4900 U.S. Highway 1, North
St. Augustine, FL 32095

Passero Associates
4730 Casa Cola Way, Suite 200
St. Augustine, FL 32095
(904) 757-6106
www.passero.com

Principal-in-Charge: Andrew M. Holesko
Project Manager: Lisa Cheung
Designed by: Chris Johnson

Revisions

No.	Date	By	Description

Airport Layout Plan Update

Terminal Area Plan
South GA Area

DRAFT
Northeast Florida Regional Airport

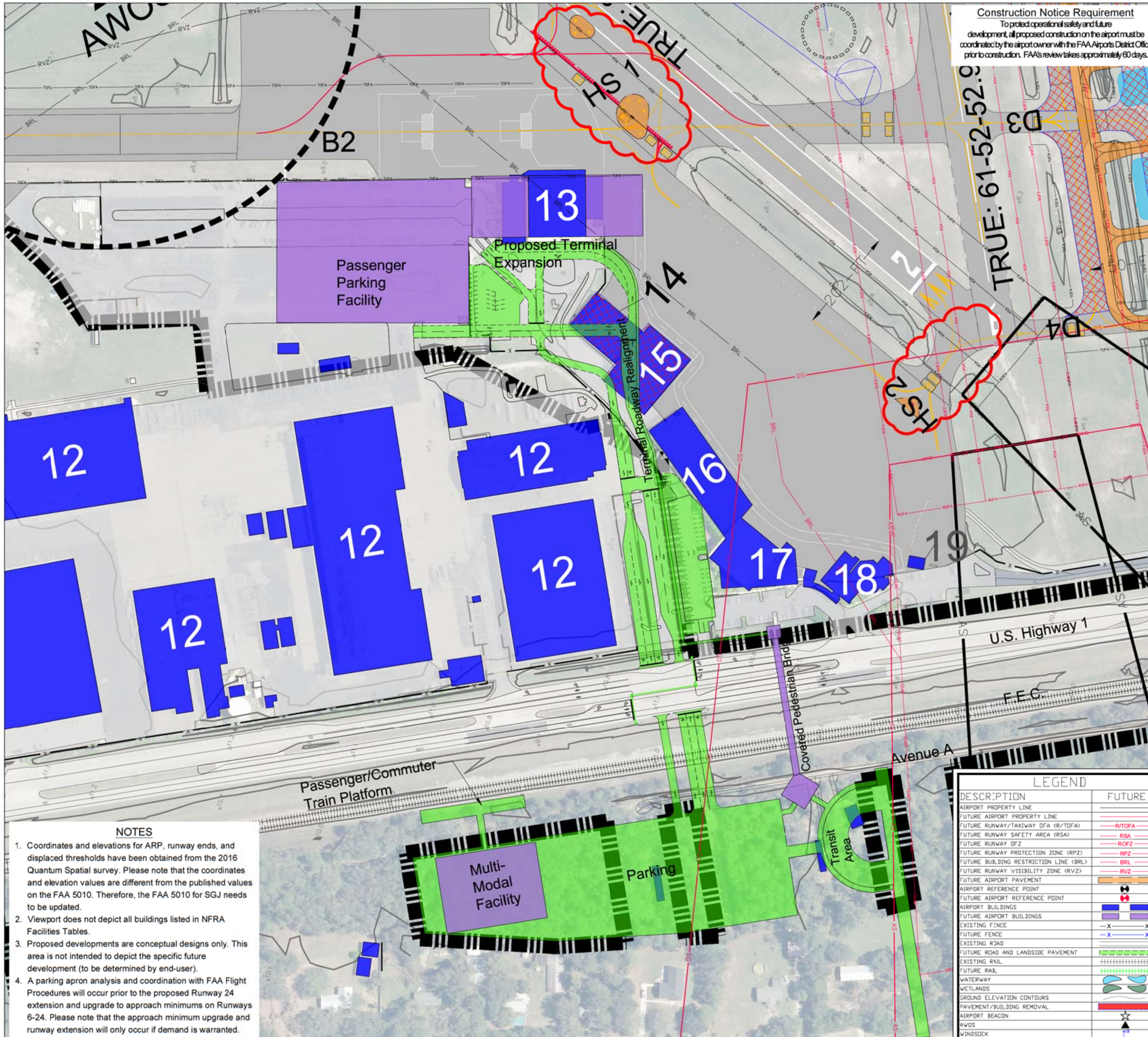
Town/City: City of St. Augustine
County: St. Johns
State: Florida

Project No.
23081.70

Drawing No.
Sheet 5

Date
February 2020

NFRA Facilities				
Bldg. #	Facility	Approximate Size	Condition	Elevation (MSL)
1	Corporate Hangar (Infinity Aviation Co Inc)	Hangar: 10,575 sf Office: 1,128 sf	Good	45.1
2	Corporate Hangar (Ring Power Aviation)	Hangar: 16,368 sf Office: 3,582 sf	Good	44.9
3	Corporate Hangar (Roberts Aviation)	Hangar: 25,488 sf Office: 4,000 sf	Good	47.7
4	Corporate Hangar (Scott Lagasse Racing)	Hangar: 14,639 sf Office: 950 sf	Fair	43
5	Corporate Hangar (Florida Army National Guard)	Hangar: 4,536 sf Office: 3,168 sf	Fair	40.7
6	Corporate Hangar (Southeast Aero Services Inc.)	Hangar: 12,608 sf Office Trailer: 1,440 sf	Fair	38.3
7	Corporate Hangar (Southeast Aero Services Inc.)	Hangar: 7,863 sf Office Trailers: 2,880 sf	Fair	38.02
8	Corporate Hangar (Patty Wagstaff Aerobatic School - Southeast Aero Services Inc.)	Hangar: 7,273 sf Office: 1,127 sf	Fair	37.5
9	Corporate Hangar 8-9-10 (Southeast Aero Services Inc. - Roberts Aviation - Vino Air)	Hangar: 22,304 sf Office: 1,862 sf	Fair	45.2
10	Corporate Hangar (Regency Aviation)	Hangar: 8,839 sf Office: 735 sf	Fair	36.4
11	Northrop-Grumman North Complex	~	~	65.5
12	Northrop-Grumman South Complex	~	~	28 -75
13	Airline Terminal	23,305 sf	Excellent	38.9
14	Maintenance Shop Hangar (Atlantic Aviation)	Hangar: 8,000 sf Office: 1,600 sf	Poor	40.1
15	Aircraft Storage Hangar (Atlantic Aviation)	Hangar: 12,600 sf Office: 1,995 sf	Poor	40.1
16	Shade/Canopy Hangar (Atlantic Aviation)	19,778 sf	Good	47.5
17	Aircraft Sales/Storage Hangar & Offices (PGA) (Florida Aviation Career Training)	Hangar: 10,404 sf Office: 7,512 sf	Good/Fair	47.8
18	GA Terminal Building (Atlantic Aviation - Rent-a-Car)	9,489 sf	Good/Fair	48.1
19	Line Service Building (Atlantic Aviation)	704 sf	Poor	26.6
20	"A" T-Hangar (10 Units)	15,372 sf	Poor	28.02
21	"B" T-Hangar (10 Units)	15,576 sf	Poor	26.5
22	"C" T-Hangar (11 Units)	13,770 sf	Poor	25.7
23	"D" T-Hangar (12 Units)	17,479 sf	Good	29.17
~~24~~	~~Port-A-Ports (6 Units)~~	~~1,872 sf each~~	~~Poor~~	-
25	"E" T-Hangar (12 Units)	17,479 sf	Good	28.92
26	"G" Box Hangar (6 Units)	15,900 sf	Fair	35.79
27	"H" Box Hangar (4 Units)	13,515 sf	Fair	36.01
28	"I" Box Hangar (4 Units)	14,014 sf	Fair	36.7
29	Airport Maintenance Building	~ 900 sf	Poor	23.2
30	"J" Port-A-Ports (5 Units)	5,550 sf	Poor	21.5
31	"K" T-Hangar (12 Units)	13,872 sf	Fair	28.01
32	"L" T-Hangar (12 Units)	13,872 sf	Fair	28
33	"M" T-Hangar (12 Units)	13,872 sf	Fair	28
34	Self-Service Fuel Farm	Two Above Ground Tanks	Good	-
35	Electric Vault Building	1,144 sf	Fair	25.04
36	Customs Building (U.S. Customs & Border Protection)	3,000 sf	Fair	30.5
37	Airport Rescue & Firefighting Facility (ARFF)	5,046 sf	Good	35.5
38	Air Traffic Control Tower (ATCT)	5,549 sf	Fair	100.1
39	Corporate Hangar (Nimbus Aviation)	Hangar: 32,890 sf Office: 1,650 sf	Good	57.2
40	Fuel Farm	Four Above Ground Tanks	Good	-
41	Green House	~ 1,500 sf	Fair	23.4
42	Maintenance Shed	~ 2,500 sf	Fair	25.5
43	Maintenance Garage	~ 1,200 sf	Fair	26.3
44	Maintenance Warehouse & Office	Warehouse: 5,571 sf Office: 861 sf	Fair	27.4
45	Conference Center (Florida Flyers European US Flight School, Inc.)	16,760 sf	Good	48.03
46	Corporate Hangar (Jacksonville Aviation, INC dba Premier Aviation & Old City Helicopter Sales LLC)	Hangar: 14,000 sf Office: 1,602 sf	Good	40.5
47	"N" Box Hangar (3 Units)	7,800 sf	Good	29.3
48	"O" T-Hangar (6 Units)	7,800 sf	Good	26.1
49	"P" Box/T-Hangar (3/7 Units)	Box Hangars: 9,360 sf T-Hangar: 8,840 sf	Good	29.5
50	"Q" T-Hangar (10 Units)	12,064 sf	Good	26.7
51	"R" T-Hangar (10 Units)	12,064 sf	Good	25.9
52	"S" T-Hangar (9 Units)	11,024 sf	Good	26.5
53	St. Augustine St. Johns County Airport Authority Administration Building	3,696 sf	Fair	19.8
~~54~~	~~Quonset Hut~~	~~756 sf~~	~~Fair/Poor~~	-
55	Civil Air Patrol Building	3,508 sf	Poor	30
56	Civil Air Patrol Building	2,473 sf	Poor	28



Construction Notice Requirement

To protect operational safety and future development, all proposed construction on the airport must be coordinated by the airport owner with the FAA Airports District Office prior to construction. FAA's review takes approximately 60 days.

NOTES

1. Coordinates and elevations for ARP, runway ends, and displaced thresholds have been obtained from the 2016 Quantum Spatial survey. Please note that the coordinates and elevation values are different from the published values on the FAA 5010. Therefore, the FAA 5010 for SGJ needs to be updated.
2. Viewport does not depict all buildings listed in NFRA Facilities Tables.
3. Proposed developments are conceptual designs only. This area is not intended to depict the specific future development (to be determined by end-user).
4. A parking apron analysis and coordination with FAA Flight Procedures will occur prior to the proposed Runway 24 extension and upgrade to approach minimums on Runways 6-24. Please note that the approach minimum upgrade and runway extension will only occur if demand is warranted.

LEGEND

DESCRIPTION	FUTURE
AIRPORT PROPERTY LINE	
FUTURE AIRPORT PROPERTY LINE	
FUTURE RUNWAY/TAXIWAY OFA (R/TOFA)	R/TOFA
FUTURE RUNWAY SAFETY AREA (RSA)	RSA
FUTURE RUNWAY OFZ	ROFZ
FUTURE RUNWAY PROTECTION ZONE (RPZ)	RPZ
FUTURE BUILDING RESTRICTION LINE (BRL)	BRL
FUTURE RUNWAY VISIBILITY ZONE (RVZ)	RVZ
FUTURE AIRPORT PAVEMENT	
AIRPORT REFERENCE POINT	
FUTURE AIRPORT REFERENCE POINT	
AIRPORT BUILDINGS	
FUTURE AIRPORT BUILDINGS	
EXISTING FENCE	X X
FUTURE FENCE	X X
EXISTING ROAD	
FUTURE ROAD AND LANDSIDE PAVEMENT	
EXISTING RAIL	
FUTURE RAIL	
WATERWAY	
WETLANDS	
GROUND ELEVATION CONTOURS	
PAVEMENT/BUILDING REMOVAL	
AIRPORT BEACON	☆
AWOS	▲
WINDSOCK	
PACS/SACS	

PASSERO ASSOCIATES
engineering architecture

NFRA
Northeast Florida Regional Airport
Fly Smart!

Client:

St. Augustine-St. Johns County Airport Authority
4900 U.S. Highway 1, North
St. Augustine, FL 32095

Passero Associates
4730 Casa Cola Way, Suite 200
St. Augustine, FL 32095
(904) 757-6106
www.passero.com

Principal-in-Charge: Andrew M. Holesko
Project Manager: Lisa Cheung
Designed by: Chris Johnson

Revisions

No.	Date	By	Description

Airport Layout Plan Update

Terminal Area Plan
Main Terminal Area

DRAFT
Northeast Florida
Regional Airport

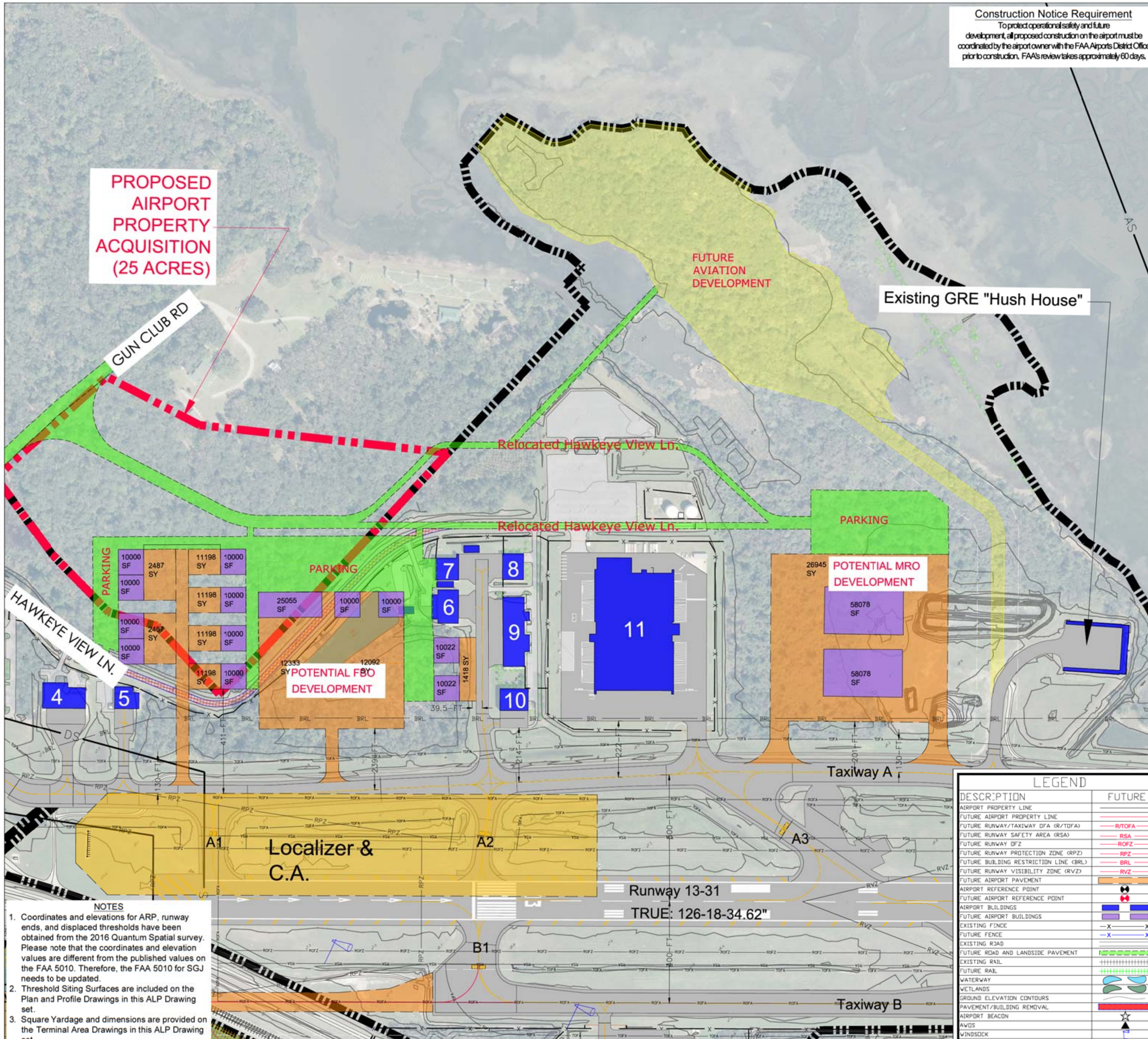
Town/City: City of St. Augustine
County: St. Johns
State: Florida

Project No. 23081.70

Drawing No. Sheet 6

Date February 2020

NFRA Facilities				
Bldg. #	Facility	Approximate Size	Condition	Elevation (MSL)
1	Corporate Hangar (Infinity Aviation Co Inc)	Hangar: 10,575 sf Office: 1,128 sf	Good	45.1
2	Corporate Hangar (Ring Power Aviation)	Hangar: 16,368 sf Office: 3,582 sf	Good	44.9
3	Corporate Hangar (Roberts Aviation)	Hangar: 25,488 sf Office: 4,000 sf	Good	47.7
4	Corporate Hangar (Scott Lagasse Racing)	Hangar: 14,639 sf Office: 950 sf	Fair	43
5	Corporate Hangar (Florida Army National Guard)	Hangar: 4,536 sf Office: 3,168 sf	Fair	40.7
6	Corporate Hangar (Southeast Aero Services Inc.)	Hangar: 12,608 sf Office Trailer: 1,440 sf	Fair	38.3
7	Corporate Hangar (Southeast Aero Services Inc.)	Hangar: 7,863 sf Office Trailers: 2,880 sf	Fair	38.02
8	Corporate Hangar (Patty Wagstaff Aerobatic School - Southeast Aero Services Inc.)	Hangar: 7,273 sf Office: 1,127 sf	Fair	37.5
9	Corporate Hangar 8-9-10 (Southeast Aero Services Inc. - Roberts Aviation - Vino Air)	Hangar: 22,304 sf Office: 1,862 sf	Fair	45.2
10	Corporate Hangar (Regency Aviation)	Hangar: 8,839 sf Office: 735 sf	Fair	36.4
11	Northrop-Grumman North Complex	~	~	65.5
12	Northrop-Grumman South Complex	~	~	28 -75
13	Airline Terminal	23,305 sf	Excellent	38.9
14	Maintenance Shop Hangar (Atlantic Aviation)	Hangar: 8,000 sf Office: 1,600 sf	Poor	40.1
15	Aircraft Storage Hangar (Atlantic Aviation)	Hangar: 12,600 sf Office: 1,995 sf	Poor	40.1
16	Shade/Canopy Hangar (Atlantic Aviation)	19,778 sf	Good	47.5
17	Aircraft Sales/Storage Hangar & Offices (PGA) (Florida Aviation Career Training)	Hangar: 10,404 sf Office: 7,512 sf	Good/Fair	47.8
18	GA Terminal Building (Atlantic Aviation - Rent-a-Car)	9,489 sf	Good/Fair	48.1
19	Line Service Building (Atlantic Aviation)	704 sf	Poor	26.6
20	"A" T-Hangar (10 Units)	15,372 sf	Poor	28.02
21	"B" T-Hangar (10 Units)	15,576 sf	Poor	26.5
22	"C" T-Hangar (11 Units)	13,770 sf	Poor	25.7
23	"D" T-Hangar (12 Units)	17,479 sf	Good	29.17
~~24~~	~~Port-A-Ports (6 Units)~~	~~1,872 sf each~~	~~Poor~~	-
25	"E" T-Hangar (12 Units)	17,479 sf	Good	28.92
26	"G" Box Hangar (6 Units)	15,900 sf	Fair	35.79
27	"H" Box Hangar (4 Units)	13,515 sf	Fair	36.01
28	"I" Box Hangar (4 Units)	14,014 sf	Fair	36.7
29	Airport Maintenance Building	~ 900 sf	Poor	23.2
30	"J" Port-A-Ports (5 Units)	5,550 sf	Poor	21.5
31	"K" T-Hangar (12 Units)	13,872 sf	Fair	28.01
32	"L" T-Hangar (12 Units)	13,872 sf	Fair	28
33	"M" T-Hangar (12 Units)	13,872 sf	Fair	28
34	Self-Service Fuel Farm	Two Above Ground Tanks	Good	-
35	Electric Vault Building	1,144 sf	Fair	25.04
36	Customs Building (U.S. Customs & Border Protection)	3,000 sf	Fair	30.5
37	Airport Rescue & Firefighting Facility (ARFF)	5,046 sf	Good	35.5
38	Air Traffic Control Tower (ATCT)	5,549 sf	Fair	100.1
39	Corporate Hangar (Nimbus Aviation)	Hangar: 32,890 sf Office: 1,650 sf	Good	57.2
40	Fuel Farm	Four Above Ground Tanks	Good	-
41	Green House	~ 1,500 sf	Fair	23.4
42	Maintenance Shed	~ 2,500 sf	Fair	25.5
43	Maintenance Garage	~ 1,200 sf	Fair	26.3
44	Maintenance Warehouse & Office	Warehouse: 5,571 sf Office: 861 sf	Fair	27.4
45	Conference Center (Florida Flyers European US Flight School, Inc.)	16,760 sf	Good	48.03
46	Corporate Hangar (Jacksonville Aviation, INC dba Premier Aviation & Old City Helicopter Sales LLC)	Hangar: 14,000 sf Office: 1,602 sf	Good	40.5
47	"N" Box Hangar (3 Units)	7,800 sf	Good	29.3
48	"O" T-Hangar (6 Units)	7,800 sf	Good	26.1
49	"P" Box/T-Hangar (3/7 Units)	Box Hangars: 9,360 sf T-Hangar: 8,840 sf	Good	29.5
50	"Q" T-Hangar (10 Units)	12,064 sf	Good	26.7
51	"R" T-Hangar (10 Units)	12,064 sf	Good	25.9
52	"S" T-Hangar (9 Units)	11,024 sf	Good	26.5
53	St. Augustine St. Johns County Airport Authority Administration Building	3,696 sf	Fair	19.8
~~54~~	~~Quonset Hut~~	~~756 sf~~	~~Fair/Poor~~	-
55	Civil Air Patrol Building	3,508 sf	Poor	30
56	Civil Air Patrol Building	2,473 sf	Poor	28



Construction Notice Requirement

To protect operational safety and future development, all proposed construction on the airport must be coordinated by the airport owner with the FAA Airports District Office prior to construction. FAA's review takes approximately 60 days.

NOTES

1. Coordinates and elevations for ARP, runway ends, and displaced thresholds have been obtained from the 2016 Quantum Spatial survey. Please note that the coordinates and elevation values are different from the published values on the FAA 5010. Therefore, the FAA 5010 for SGJ needs to be updated.
2. Threshold Siting Surfaces are included on the Plan and Profile Drawings in this ALP Drawing set.
3. Square Yardage and dimensions are provided on the Terminal Area Drawings in this ALP Drawing set.

LEGEND	
DESCRIPTION	FUTURE
AIRPORT PROPERTY LINE	
FUTURE AIRPORT PROPERTY LINE	
FUTURE RUNWAY/TAXIWAY OFA (R/TOFA)	R/TOFA
FUTURE RUNWAY SAFETY AREA (RSA)	RSA
FUTURE RUNWAY OFZ	ROFZ
FUTURE RUNWAY PROTECTION ZONE (RPZ)	RPZ
FUTURE BUILDING RESTRICTION LINE (BRL)	BRL
FUTURE RUNWAY VISIBILITY ZONE (RVZ)	RVZ
FUTURE AIRPORT PAVEMENT	
AIRPORT REFERENCE POINT	
FUTURE AIRPORT REFERENCE POINT	
AIRPORT BUILDINGS	
FUTURE AIRPORT BUILDINGS	
EXISTING FENCE	X X
FUTURE FENCE	X X
EXISTING ROAD	
FUTURE ROAD AND LANDSIDE PAVEMENT	
EXISTING RAIL	
FUTURE RAIL	
WATERWAY	
WETLANDS	
GROUND ELEVATION CONTOURS	
PAVEMENT/BUILDING REMOVAL	
AIRPORT BEACON	☆
AWOS	▲
WINDSOCK	
PACS/SACS	

PASSERO ASSOCIATES
engineering architecture

NFRA
Northeast Florida Regional Airport
Fly Smart!

Client:

St. Augustine-St. Johns County Airport Authority
4900 U.S. Highway 1, North
St. Augustine, FL 32095

Passero Associates
4730 Casa Cola Way, Suite 200 St. Augustine, FL 32095 | (904) 757-6106 www.passero.com

Principal-in-Charge: Andrew M. Holesko
Project Manager: Lisa Cheung
Designed by: Chris Johnson

Revisions			
No.	Date	By	Description

Airport Layout Plan Update

Terminal Area Plan
East Corporate Area

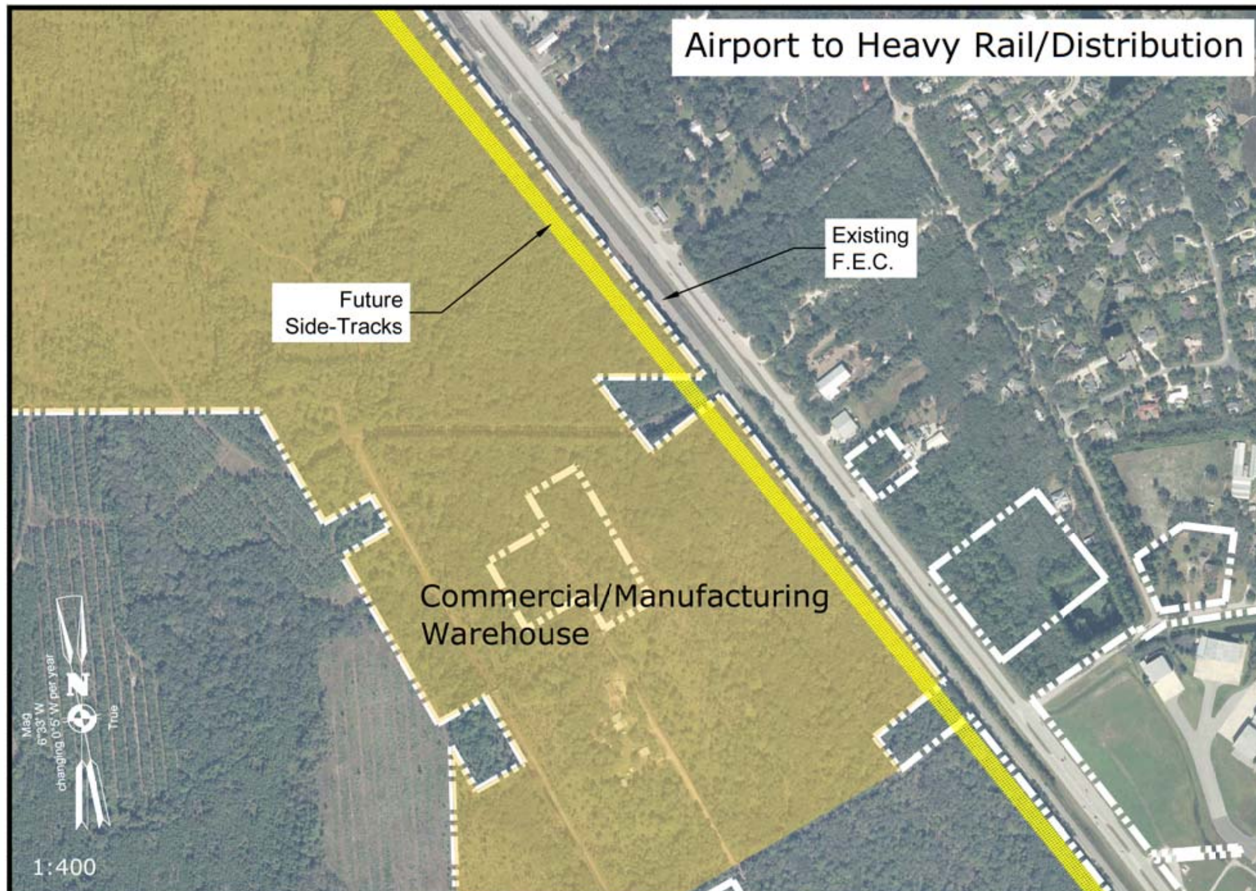
DRAFT
Northeast Florida Regional Airport

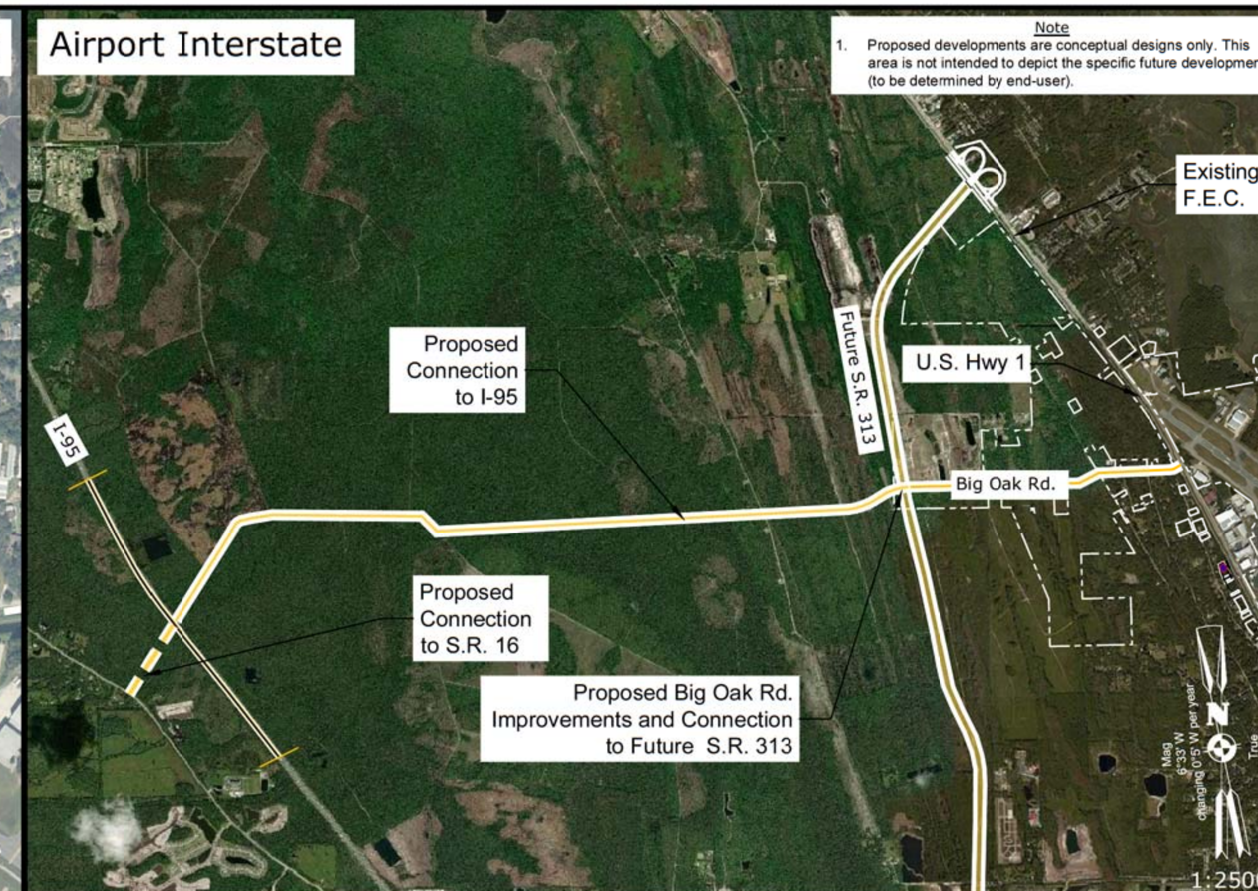
Town/City: City of St. Augustine
County: St. Johns State: Florida

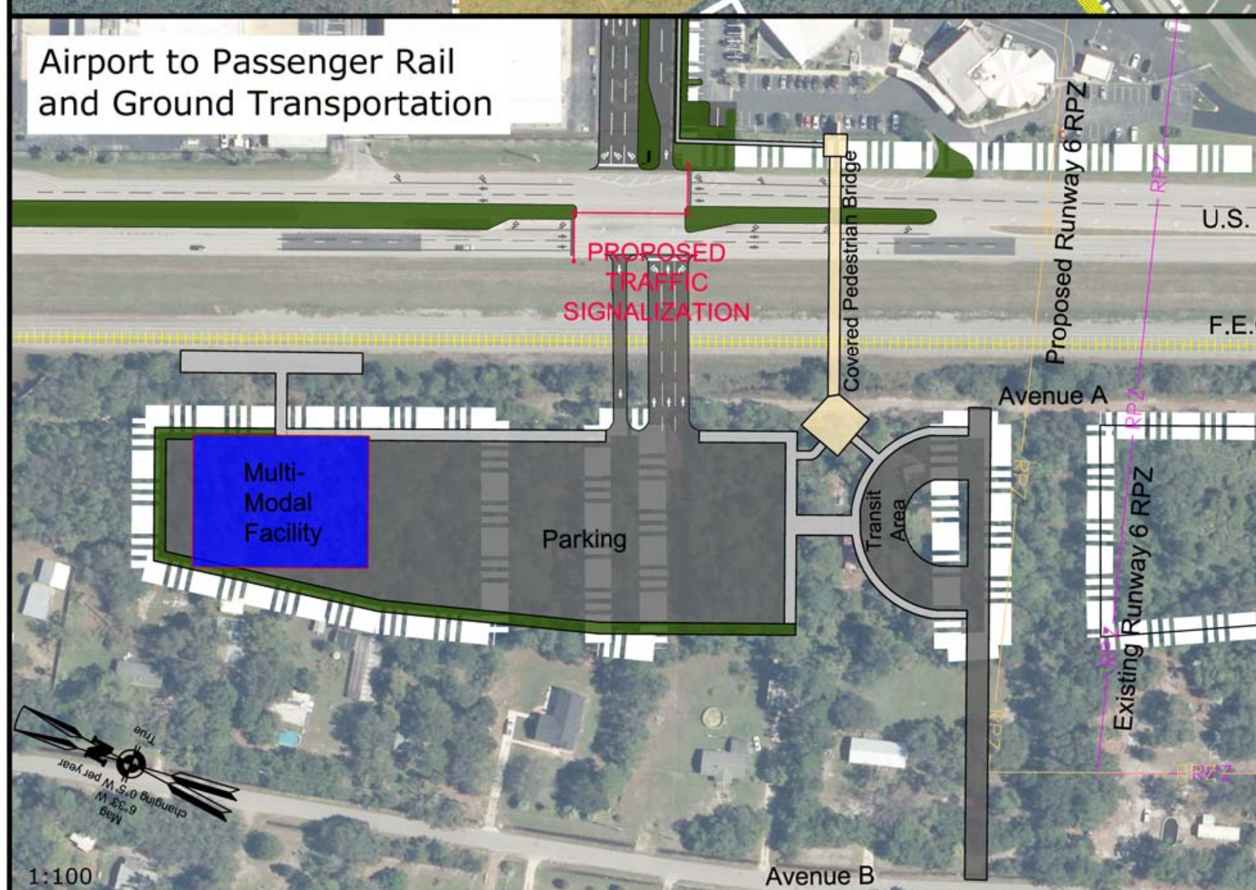
Project No. 23081.70

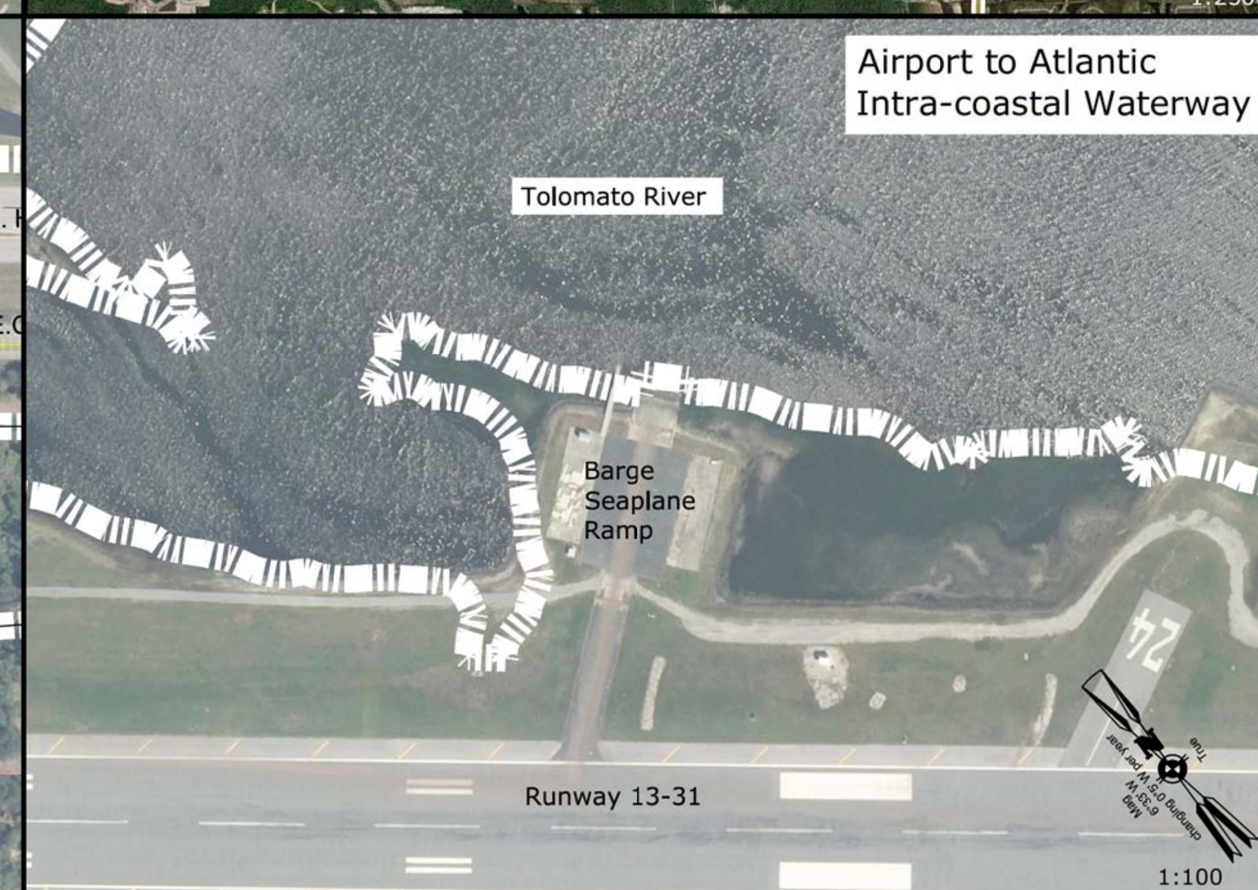
Drawing No. Sheet 7

Date February 2020









PASSERO ASSOCIATES
engineering architecture

NFRA
Northeast Florida Regional Airport
Fly Smart!

Client:

St. Augustine-St. Johns County Airport Authority
4900 U.S. Highway 1, North
St. Augustine, FL 32095

Passero Associates
4730 Casa Cola Way, Suite 200
St. Augustine, FL 32095
(904) 757-6106
www.passero.com

Principal-in-Charge: Andrew M. Holesko
Project Manager: Lisa Cheung
Designed by: Chris Johnson

Revisions

No.	Date	By	Description

Airport Layout Plan Update

Multi-Modal Connectivity Plan

DRAFT
Northeast Florida Regional Airport

Town/City: City of St. Augustine
County: St. Johns
State: Florida

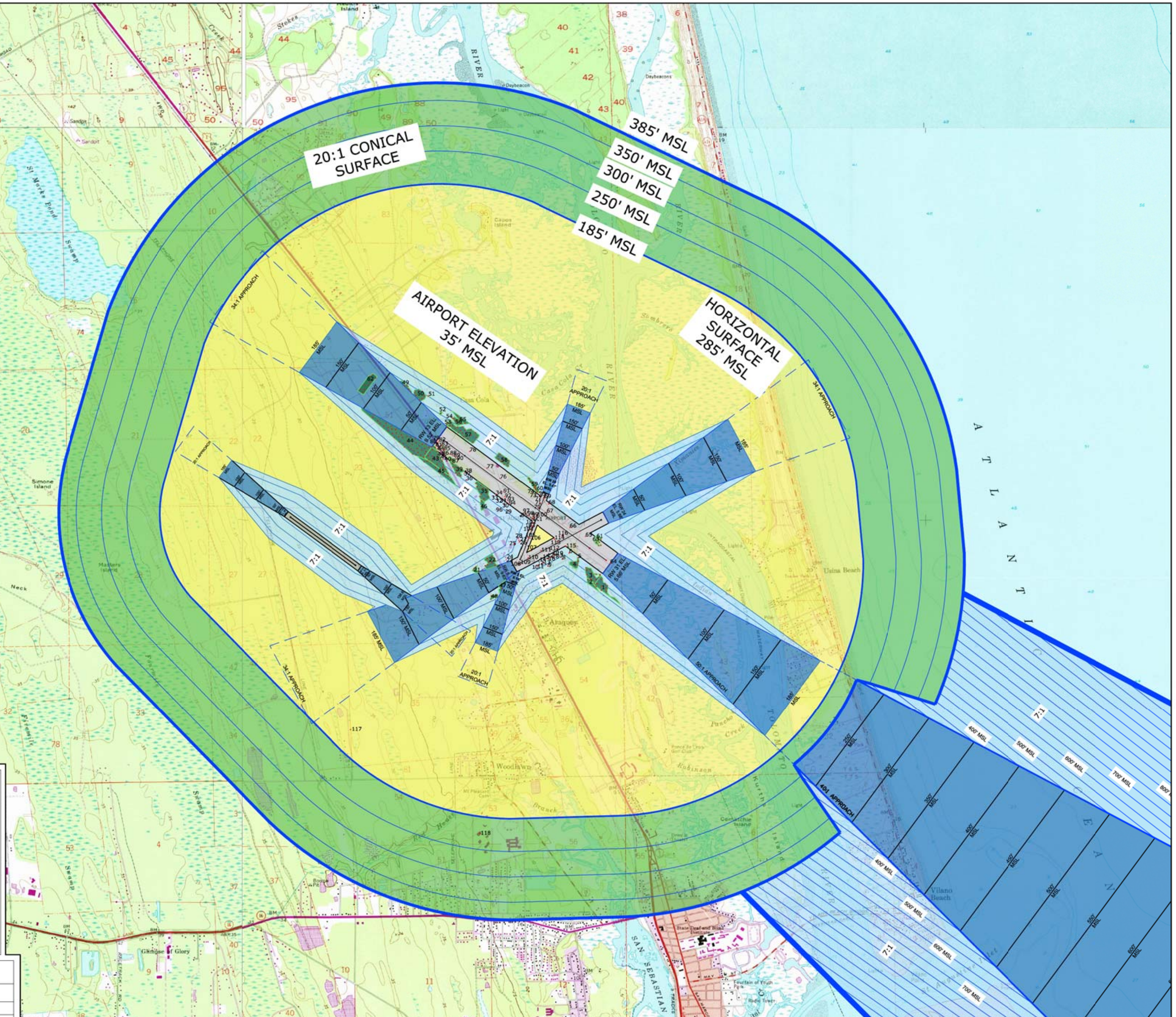
Project No.
23081.70

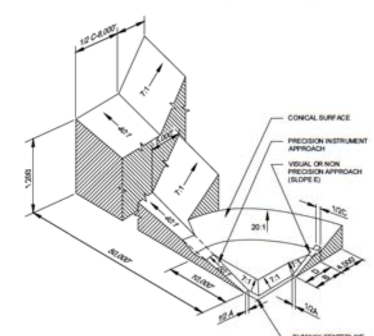
Drawing No.
Sheet 8

Date
February 2020

FEDERAL AVIATION REGULATIONS PART 77, STATES THAT A STRUCTURE IS PRESUMED TO HAVE A SUBSTANTIAL ADVERSE EFFECT UPON THE SAFE AND EFFICIENT USE OF NAVIGABLE AIRSPACE IF ITS HEIGHT EXCEEDS THE FOLLOWING STANDARDS:

1. A HEIGHT OF FIVE HUNDRED (500) FEET ABOVE GROUND LEVEL AT THE SITE OF THE OBJECT ANYWHERE IN THE STATE.
2. A HEIGHT THAT IS TWO HUNDRED (200) FEET ABOVE GROUND LEVEL OR ABOVE THE ESTABLISHED AIRPORT ELEVATION, WHICHEVER IS HIGHER, WITHIN THREE (3) NAUTICAL MILES OF THE ESTABLISHED REFERENCED POINT OF A PUBLIC-USE AIRPORT, EXCLUDING HELIPORTS, AND THE HEIGHT INCREASES IN THE PROPORTION OF ONE HUNDRED (100) FEET FOR EACH ADDITIONAL NAUTICAL MILE OF DISTANCE FROM THE AIRPORT UP TO A MAXIMUM OF FIVE HUNDRED (500) FEET.
3. A HEIGHT WITHIN A TERMINAL OBSTACLE CLEARANCE AREA, INCLUDING AN INITIAL APPROACH SEGMENT, A DEPARTURE AREA, AND A CIRCLING APPROACH AREA, AS DEFINED BY FEDERAL LAWS AND REGULATIONS, WHICH WOULD RESULT IN THE VERTICAL DISTANCE BETWEEN ANY POINT ON THE OBJECT AND AN ESTABLISHED MINIMUM INSTRUMENT FLIGHT ALTITUDE WITHIN THAT AREA OR SEGMENT TO BE LESS THAN THE REQUIRED OBSTACLE CLEARANCE.
4. A HEIGHT WITHIN AN EN ROUTE OBSTACLE CLEARANCE AREA, AS DEFINED BY FEDERAL LAWS AND REGULATIONS, INCLUDING TURN AND TERMINATION AREAS, OF A FEDERAL AIRWAY OR APPROVED OFF-AIRWAY ROUTE, THAT WOULD INCREASE THE MINIMUM OBSTACLE CLEARANCE ALTITUDE.
5. THE SURFACE OF A TAKEOFF AND LANDING AREA OF A PUBLIC-USE AIRPORT OR ANY IMAGINARY SURFACE AS ESTABLISHED BY FAR PART 77. HOWEVER, NO PART OF THE TAKEOFF OR LANDING AREA ITSELF WILL BE CONSIDERED TO BE AN OBSTRUCTION.





ISOMETRIC VIEW OF SECTION

DIM	ITEM	DIMENSIONAL STANDARDS (FEET)					
		VISUAL RUNWAY		NON-PRECISION INSTRUMENT RUNWAY			PRECISION INSTRUMENT RUNWAY
		A	B	A	B: C	B: D	
A	WIDTH OF PRIMARY SURFACE AND APPROACH SURFACE WIDTH AT INNER END	250	500	500	500	1,000	1,000
B	RADIUS OF HORIZONTAL SURFACE	5,000	5,000	5,000	10,000	10,000	10,000
		VISUAL RUNWAY		NON-PRECISION INSTRUMENT RUNWAY			PRECISION INSTRUMENT RUNWAY
		A	B	A	B: C	B: D	
C	APPROACH SURFACE WIDTH AT END	1,250	1,500	2,000	3,500	4,000	16,000
D	APPROACH SURFACE LENGTH	5,000	5,000	5,000	10,000	10,000	*
E	APPROACH SLOPE	20:1	20:1	20:1	34:1	34:1	*

A - UTILITY RUNWAYS
B - RUNWAYS LARGER THAN UTILITY
C - VISIBILITY MINIMUMS GREATER THAN 3/4 MILES
D - VISIBILITY MINIMUMS AS LOW AS 3/4 MILE
E - PRECISION INSTRUMENT APPROACH SLOPE IS 50:1 FOR INNER 10,000 FEET AND 40:1 FOR AN ADDITIONAL 40,000 FEET

NOTES

1. **All Obstruction data, runway coordinates and elevations for ARP, runway ends, and displaced thresholds have been obtained from the 2016 Quantum Spatial survey. Please note that the coordinates and elevation values are different from the published values on the FAA 5010. Therefore, the FAA 5010 for SGJ needs to be updated.**
2. Future Runway 13L-31R Preliminary runway end elevations were obtained using Google Earth.
3. 7.5 Minute Quad Map was obtained from the United States Geographic Survey (USGS).
4. Roadway and obstacle obstructions within the first 100 feet MSL of the approach surfaces are identified and analyzed on the approach plan and profile sheets.
5. All Object Elevations are current as of this ALP Update and are subject to change.

LEGEND

DESCRIPTION	ITEM
OBSTRUCTION/OBSTACLE	X
TREE CLUSTER	

PA
PASSERO ASSOCIATES
engineering architecture

Mag 6°33' W changing 0°5' W per year
N
True

0 2000 4000 Feet

NFRA
Northeast Florida Regional Airport
Fly Smart!

Client:

St. Augustine-St. Johns County Airport Authority
4900 U.S. Highway 1, North
St. Augustine, FL 32095

Passero Associates
4730 Casa Cola Way, Suite 200 St. Augustine, FL 32095
(904) 757-6106 www.passero.com

Principal-In-Charge: Andrew M. Holesko
Project Manager: Lisa Cheung
Designed by: Chris Johnson

Revisions

No.	Date	By	Description

Airport Layout Plan Update

Airspace Plan

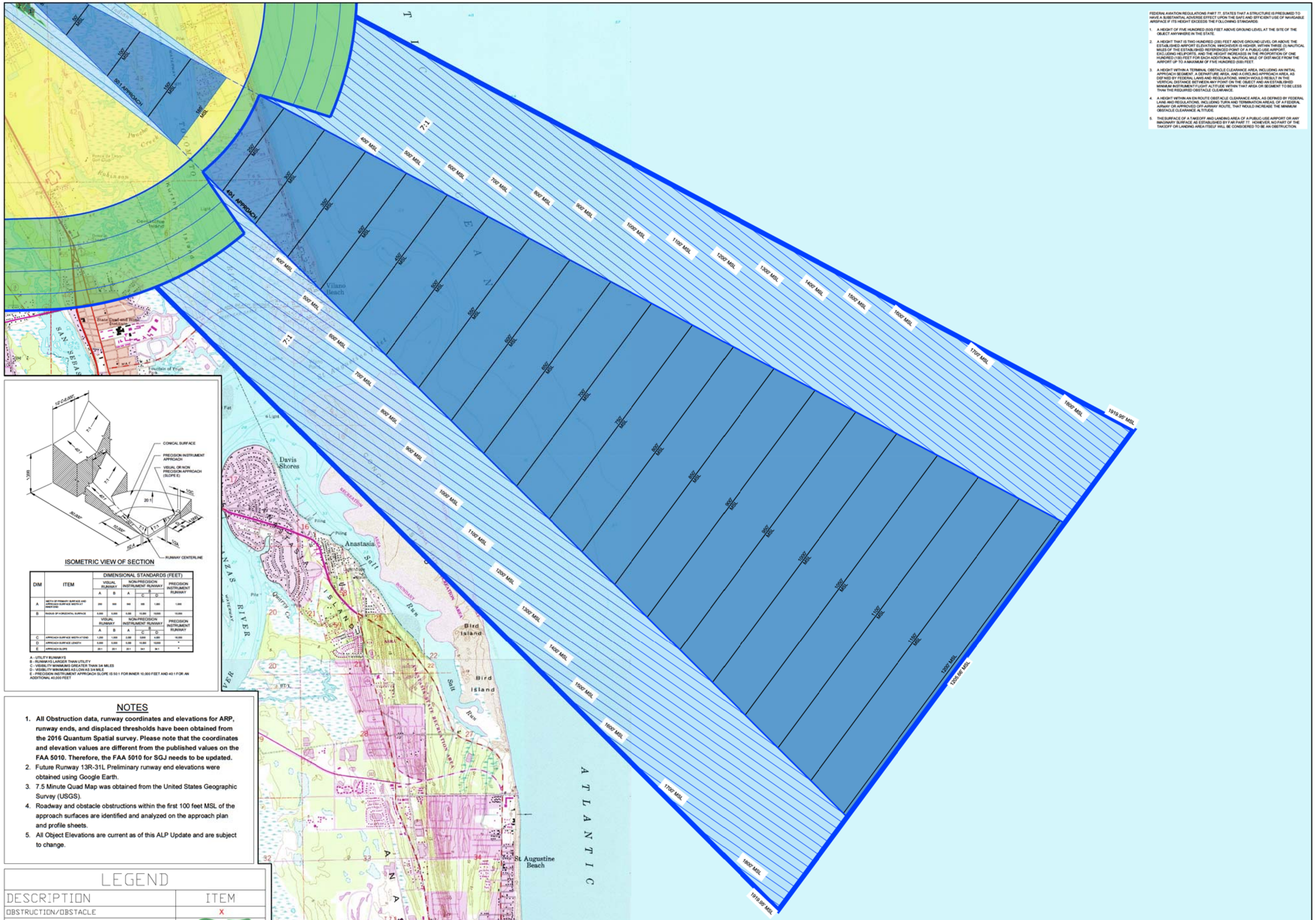
DRAFT
Northeast Florida Regional Airport

Town/City: City of St. Augustine
County: St. Johns
State: Florida

Project No.
23081.70

Drawing No.
Sheet 9A

Date
February 2020



FEDERAL AVIATION REGULATIONS PART 77, STATES THAT A STRUCTURE IS PRESUMED TO HAVE A SUBSTANTIAL ADVERSE EFFECT UPON THE SAFE AND EFFICIENT USE OF NAVIGABLE AIRSPACE IF ITS HEIGHT EXCEEDS THE FOLLOWING STANDARDS:

1. A HEIGHT OF FIVE HUNDRED (500) FEET ABOVE GROUND LEVEL AT THE SITE OF THE OBJECT ANYWHERE IN THE STATE.
2. A HEIGHT THAT IS TWO HUNDRED (200) FEET ABOVE GROUND LEVEL OR ABOVE THE ESTABLISHED AIRPORT ELEVATION, WHICHEVER IS HIGHER, WITHIN THREE (3) NAUTICAL MILES OF THE ESTABLISHED REFERENCED POINT OF A PUBLIC-USE AIRPORT, EXCLUDING HELIPORTS, AND THE HEIGHT INCREASES IN THE PROPORTION OF ONE HUNDRED (100) FEET FOR EACH ADDITIONAL NAUTICAL MILE OF DISTANCE FROM THE AIRPORT UP TO A MAXIMUM OF FIVE HUNDRED (500) FEET.
3. A HEIGHT WITHIN A TERMINAL OBSTACLE CLEARANCE AREA, INCLUDING AN INITIAL APPROACH SEGMENT, A DEPARTURE AREA, AND A CIRCLING APPROACH AREA, AS DEFINED BY FEDERAL LAWS AND REGULATIONS, WHICH WOULD RESULT IN THE VERTICAL DISTANCE BETWEEN ANY POINT ON THE OBJECT AND AN ESTABLISHED MINIMUM INSTRUMENT FLIGHT ALTITUDE WITHIN THAT AREA OR SEGMENT TO BE LESS THAN THE REQUIRED OBSTACLE CLEARANCE.
4. A HEIGHT WITHIN AN EN ROUTE OBSTACLE CLEARANCE AREA, AS DEFINED BY FEDERAL LAWS AND REGULATIONS, INCLUDING TURN AND TERMINATION AREAS, OF A FEDERAL AIRWAY OR APPROVED OFF-AIRWAY ROUTE, THAT WOULD INCREASE THE MINIMUM OBSTACLE CLEARANCE ALTITUDE.
5. THE SURFACE OF A TAKEOFF AND LANDING AREA OF A PUBLIC-USE AIRPORT OR ANY IMAGINARY SURFACE AS ESTABLISHED BY FAR PART 77. HOWEVER, NO PART OF THE TAKEOFF OR LANDING AREA ITSELF WILL BE CONSIDERED TO BE AN OBSTRUCTION.

ISOMETRIC VIEW OF SECTION

DIM	ITEM	DIMENSIONAL STANDARDS (FEET)					
		VISUAL RUNWAY		NON-PRECISION INSTRUMENT RUNWAY			PRECISION INSTRUMENT RUNWAY
		A	B	A	B C	B D	
A	WIDTH OF PRIMARY SURFACE AND APPROACH SURFACE WIDTH AT INNER END	250	500	500	500	1,000	1,000
B	RADIUS OF HORIZONTAL SURFACE	5,000	5,000	5,000	10,000	10,000	10,000
		VISUAL RUNWAY		NON-PRECISION INSTRUMENT RUNWAY			PRECISION INSTRUMENT RUNWAY
		A	B	A	B C	B D	
C	APPROACH SURFACE WIDTH AT END	1,250	1,500	2,000	3,500	4,000	16,000
D	APPROACH SURFACE LENGTH	5,000	5,000	5,000	10,000	10,000	*
E	APPROACH SLOPE	20:1	20:1	20:1	34:1	34:1	*

A - UTILITY RUNWAYS
B - RUNWAYS LARGER THAN UTILITY
C - VISIBILITY MINIMUMS GREATER THAN 3/4 MILES
D - VISIBILITY MINIMUMS AS LOW AS 3/4 MILE
E - PRECISION INSTRUMENT APPROACH SLOPE IS 50:1 FOR INNER 10,000 FEET AND 40:1 FOR AN ADDITIONAL 40,000 FEET

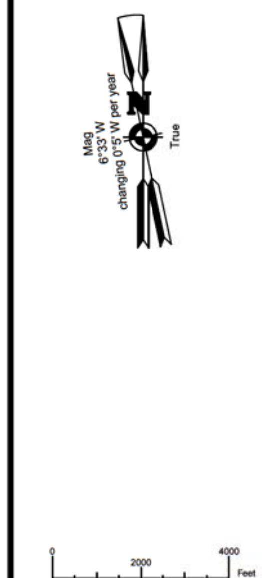
NOTES

1. **All Obstruction data, runway coordinates and elevations for ARP, runway ends, and displaced thresholds have been obtained from the 2016 Quantum Spatial survey. Please note that the coordinates and elevation values are different from the published values on the FAA 5010. Therefore, the FAA 5010 for SGJ needs to be updated.**
2. Future Runway 13R-31L Preliminary runway end elevations were obtained using Google Earth.
3. 7.5 Minute Quad Map was obtained from the United States Geographic Survey (USGS).
4. Roadway and obstacle obstructions within the first 100 feet MSL of the approach surfaces are identified and analyzed on the approach plan and profile sheets.
5. All Object Elevations are current as of this ALP Update and are subject to change.

LEGEND

DESCRIPTION	ITEM
OBSTRUCTION/OBSTACLE	X
TREE CLUSTER	

PASSERO ASSOCIATES
engineering architecture



Northeast Florida Regional Airport
Fly Smart!

Client:

St. Augustine-St. Johns County Airport Authority
4900 U.S. Highway 1, North
St. Augustine, FL 32095

Passero Associates
4730 Casa Cola Way, Suite 200
St. Augustine, FL 32095
(904) 757-6106
www.passero.com

Principal-in-Charge: Andrew M. Holesko
Project Manager: Lisa Cheung
Designed by: Chris Johnson

Revisions

No.	Date	By	Description

Airport Layout Plan Update

Airspace Plan
(Outer Approach)

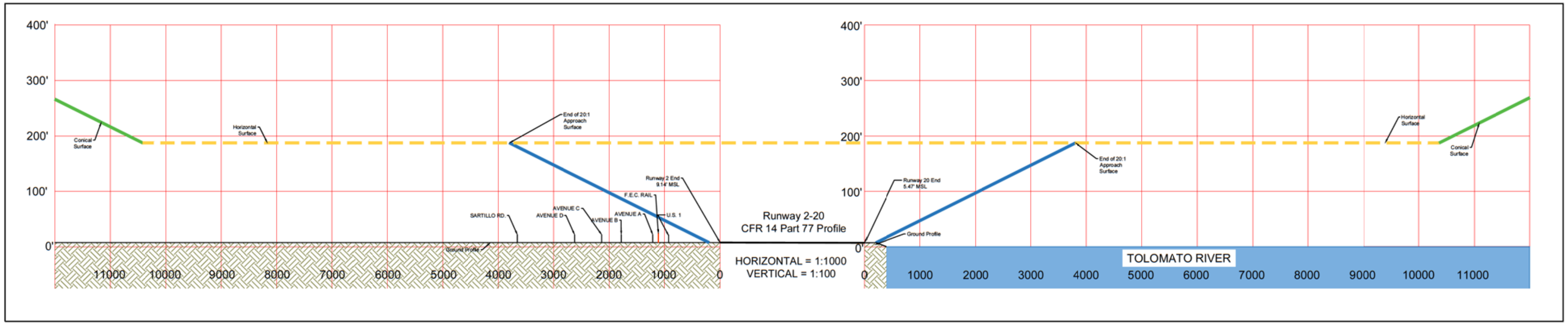
DRAFT
Northeast Florida Regional Airport

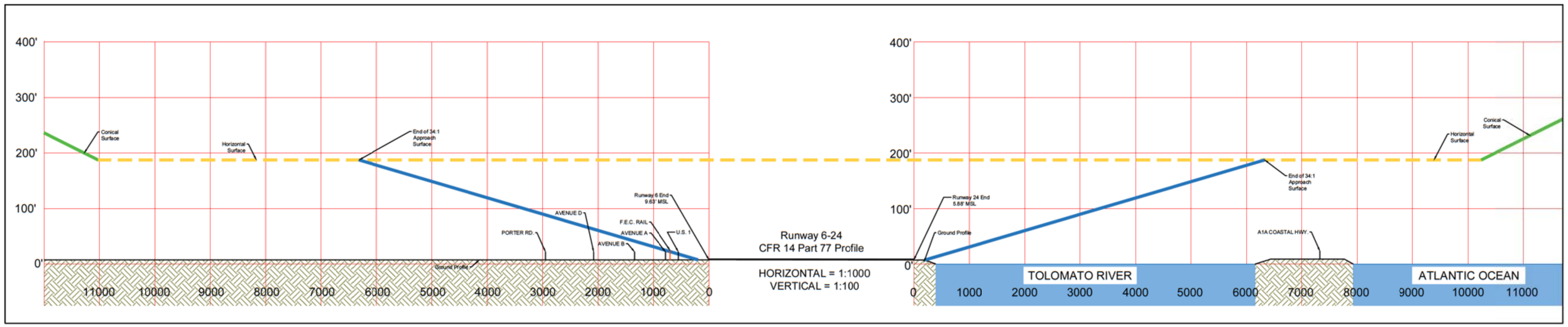
Town/City: City of St. Augustine
County: St. Johns
State: Florida

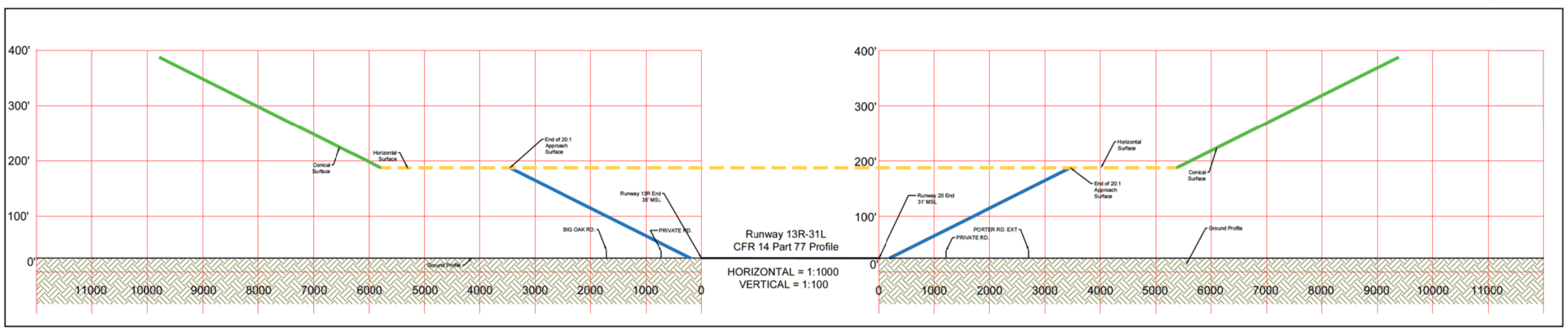
Project No.
23081.70

Drawing No.
Sheet 9B

Date
February 2020







NOTES

1. **All Obstruction data, runway coordinates and elevations for ARP, runway ends, and displaced thresholds have been obtained from the 2016 Quantum Spatial survey. Please note that the coordinates and elevation values are different from the published values on the FAA 5010. Therefore, the FAA 5010 for SGJ needs to be updated.**
2. Future Runway 13R-31L Preliminary runway end elevations were obtained using Google Earth.
3. Roadway and obstacle obstructions within the first 100 feet MSL of the approach surfaces are identified and analyzed on the approach plan and profile sheets.
4. All Object Elevations are current as of this ALP Update and are subject to change.

PASSERO ASSOCIATES
engineering architecture

Mag 6°33' W changing 0°5' W per year
True

Client:

St. Augustine-St. Johns County Airport Authority
4900 U.S. Highway 1, North
St. Augustine, FL 32095

Passero Associates
4730 Casa Cola Way, Suite 200 St. Augustine, FL 32095
(904) 757-6106 www.passero.com

Principal-in-Charge: Andrew M. Holesko
Project Manager: Lisa Cheung
Designed by: Chris Johnson

Revisions

No.	Date	By	Description

Airport Layout Plan Update

Airspace Profile

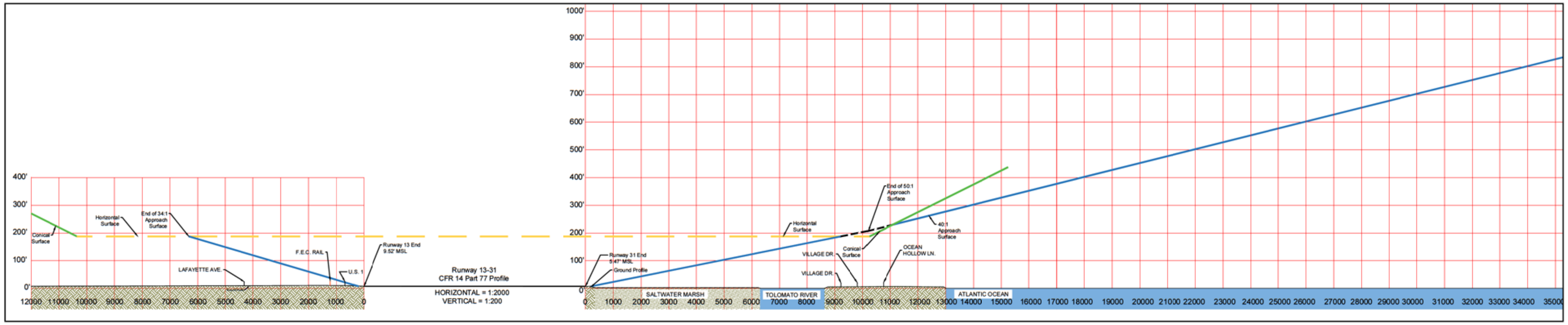
DRAFT
Northeast Florida Regional Airport

Town/City: City of St. Augustine
County: St. Johns
State: Florida

Project No.
23081.70

Drawing No.
Sheet 9C

Date
February 2020



PART 77 OBSTRUCTIONS

ID	DESCRIPTION	OBJECT ELEVATION (FEET MSL)	SURFACE HEIGHT ALLOWED (FEET MSL)	OBJECT PENETRATION+ /CLEARANCE- (FEET)	SURFACE PENETRATING	ON/OFF AIRPORT	DISPOSITION
1	TREE GROUP	68.7	18.27	50.43	TRANSITIONAL	ON	TRIM
2	TREE GROUP	103	77.16	25.84	TRANSITIONAL	ON	TRIM
3	TREE GROUP	68.7	20.29	48.41	TRANSITIONAL	ON	TRIM
4	TREE GROUP	75.6	16.96	58.64	TRANSITIONAL	ON	TRIM
5	BUSH	17.46	17.12	0.34	TRANSITIONAL	ON	TRIM
6	BUILDING	35.52	24.57	10.95	TRANSITIONAL	ON	LIGHT
7	POLE	47.46	43.38	4.08	TRANSITIONAL	ON	LIGHT
8	COMMUNICATIONS TOWER (BEACON)	113.08	64.75	48.33	TRANSITIONAL	ON	LIGHT
9	ANTENNA	63.1	62.25	0.85	TRANSITIONAL	ON	LIGHT
10	HANGAR	35.79	28.86	6.93	TRANSITIONAL	ON	LIGHT
11	TREE	36.26	33.31	2.95	TRANSITIONAL	ON	TRIM
12	HANGAR	36.67	33.50	3.17	TRANSITIONAL	ON	LIGHT
13	TREE	44.01	35.03	8.98	TRANSITIONAL	ON	TRIM
14	TREE	38.65	23.86	14.79	TRANSITIONAL	ON	TRIM
15	TREE	30.01	28.63	1.38	TRANSITIONAL	ON	TRIM
16	HANGAR	28.01	27.38	0.63	TRANSITIONAL	ON	LIGHT
17	TREE	33.9	23.99	9.91	TRANSITIONAL	ON	TRIM
18	HANGAR	27.97	26.96	1.01	TRANSITIONAL	ON	LIGHT
19	HANGAR	27.97	26.97	1.00	TRANSITIONAL	ON	LIGHT
20	TREE	35.85	23.27	12.58	TRANSITIONAL	ON	TRIM
21	TREE GROUP	90.4	48.13	42.27	TRANSITIONAL	ON	TRIM
22	TREE GROUP	94.53	25.74	68.79	TRANSITIONAL	ON	TRIM
23	BUILDING	48.14	28.36	19.78	TRANSITIONAL	ON	LIGHT
24	HANGAR	47.83	40.84	6.99	TRANSITIONAL	ON	LIGHT
25	POLE	54.78	53.26	1.52	TRANSITIONAL	ON	LIGHT
26	POLE	49.15	30.56	18.59	TRANSITIONAL	ON	LIGHT
27	BUILDING (TERMINAL)	38.92	36.36	2.56	TRANSITIONAL	ON	LIGHT
28	POLE	52.89	45.07	7.82	TRANSITIONAL	ON	LIGHT
29	POLE	37.9	36.37	1.53	TRANSITIONAL	ON	LIGHT
30	POLE	31.53	23.24	8.29	TRANSITIONAL	ON	LIGHT
31	POLE	36.53	8.66	27.87	TRANSITIONAL	ON	LIGHT
32	POLE	30.78	26.15	4.63	TRANSITIONAL	ON	LIGHT
33	POLE	31.28	25.76	5.52	TRANSITIONAL	ON	LIGHT
34	FENCE	15.4	9.26	6.14	TRANSITIONAL	ON	NO ACTION
35	TREE GROUP	106.6	11.57	95.03	TRANSITIONAL	ON	TRIM
36	ANTENNA	60.6	44.42	16.18	TRANSITIONAL	ON	LIGHT
37	POLE	38.06	21.87	16.19	TRANSITIONAL	ON	LIGHT
38	WIND SOCK	30.31	9.71	20.60	TRANSITIONAL	ON	FIXED-BY-FUNCTION
39	TREE GROUP	77	9.32	67.68	TRANSITIONAL	ON	TRIM
40	PUBLIC ROAD	27.19	22.25	4.94	TRANSITIONAL	ON	NO ACTION
41	RAILROAD	35.31	26.45	8.86	TRANSITIONAL	ON	NO ACTION
42	RAILROAD	35.81	9.84	25.97	TRANSITIONAL	ON	NO ACTION
43	TREE GROUP	110.1	9.52	100.58	TRANSITIONAL	ON	TRIM
44	TREE GROUP	113.4	9.52	103.88	TRANSITIONAL	ON	TRIM
45	TREE GROUP	103.53	80.75	22.78	TRANSITIONAL	ON	TRIM
46	TREE GROUP	89.8	80.85	8.95	TRANSITIONAL	ON	TRIM
47	TREE GROUP	94.5	25.42	69.08	TRANSITIONAL	ON	TRIM
48	TREE GROUP	94.1	73.29	20.81	TRANSITIONAL	ON	TRIM
49	TREE GROUP	94.22	65.63	28.59	TRANSITIONAL	ON	TRIM
50	TREE GROUP	107.22	51.50	55.72	TRANSITIONAL	ON	TRIM
51	TREE GROUP	103	98.27	4.73	TRANSITIONAL	ON	TRIM
52	TREE GROUP	65.3	46.04	19.26	TRANSITIONAL	ON	TRIM
53	TREE GROUP	68.7	13.57	55.13	TRANSITIONAL	ON	TRIM
54	TREE GROUP	69.3	65.19	4.11	TRANSITIONAL	ON	TRIM
55	TREE GROUP	101.3	80.91	20.39	TRANSITIONAL	ON	TRIM
56	TREE GROUP	99.1	51.06	48.04	TRANSITIONAL	ON	TRIM
57	TREE GROUP	92.9	14.19	78.71	TRANSITIONAL	ON	TRIM
58	TREE GROUP	66.7	28.67	38.03	TRANSITIONAL	ON	TRIM
59	TREE GROUP	52.7	17.02	35.68	TRANSITIONAL	ON	TRIM
60	TREE GROUP	43.6	13.14	30.46	TRANSITIONAL	ON	TRIM

PART 77 OBSTRUCTIONS

ID	DESCRIPTION	OBJECT ELEVATION (FEET MSL)	SURFACE HEIGHT ALLOWED (FEET MSL)	OBJECT PENETRATION+ /CLEARANCE- (FEET)	SURFACE PENETRATING	ON/OFF AIRPORT	DISPOSITION
61	TREE GROUP	14.6	5.76	8.84	TRANSITIONAL	ON	TRIM
62	TREE GROUP	117.9	109.52	8.38	RUNWAY 13 OUTER APPROACH	ON	TRIM
63	TREE GROUP	12.4	5.66	6.74	PRIMARY	ON	TRIM
64	NAVAID (MALSR)	10.82	5.66	5.16	PRIMARY	ON	FIXED-BY-FUNCTION
65	BUSH	8.03	6.07	1.96	PRIMARY	ON	TRIM
66	BUILDING (GS)	15.95	6.24	9.71	PRIMARY	ON	FIXED-BY-FUNCTION
67	SIGN	10.73	7.05	3.68	PRIMARY	ON	NO ACTION
68	BUSH	9.6	7.15	2.45	PRIMARY	ON	TRIM
69	NAVAID (RUNWAY LIGHT)	7.11	5.47	1.64	PRIMARY	ON	FIXED-BY-FUNCTION
70	NATURAL HIGH POINT (GROUND)	7.27	6.48	0.79	PRIMARY	ON	GRADE
71	SIGN	9.24	6.06	3.18	PRIMARY	ON	NO ACTION
72	NATURAL HIGH POINT (GROUND)	6.52	5.78	0.74	PRIMARY	ON	GRADE
73	NATURAL HIGH POINT (GROUND)	6.77	5.78	0.99	PRIMARY	ON	GRADE
74	NATURAL HIGH POINT (GROUND)	7.39	5.56	1.83	PRIMARY	ON	GRADE
75	SIGN	9.52	5.47	4.05	PRIMARY	ON	NO ACTION
76	SIGN	11.77	9.52	2.25	PRIMARY	ON	NO ACTION
77	SIGN	12.23	9.67	2.56	PRIMARY	ON	NO ACTION
78	NATURAL HIGH POINT (GROUND)	10.23	9.55	0.68	PRIMARY	ON	NO ACTION
79	PUBLIC ROAD	27.81	9.52	18.29	PRIMARY	ON	NO ACTION
80	RAILROAD	35.81	9.52	26.29	PRIMARY	ON	NO ACTION
81	PUBLIC ROAD	27.56	9.52	18.04	PRIMARY	ON	NO ACTION
82	PUBLIC ROAD	18.31	9.52	8.79	PRIMARY	ON	NO ACTION
83	FENCE	17.56	9.48	8.08	PRIMARY	ON	NO ACTION
84	RAILROAD	35.94	9.48	26.46	PRIMARY	ON	NO ACTION
85	FENCE	16.78	9.46	7.32	PRIMARY	ON	NO ACTION
86	PUBLIC ROAD	27.44	9.51	17.93	PRIMARY	ON	NO ACTION
87	TREE CLUSTER	20.94	9.32	11.62	PRIMARY	ON	NO ACTION
88	NATURAL HIGH POINT (GROUND)	10.53	9.50	1.03	PRIMARY	ON	GRADE
89	NATURAL HIGH POINT (GROUND)	10.45	9.35	1.10	PRIMARY	ON	GRADE
90	NATURAL HIGH POINT (GROUND)	11.53	9.32	2.21	PRIMARY	ON	GRADE
91	NATURAL HIGH POINT (GROUND)	9.4	8.52	0.88	PRIMARY	ON	GRADE
92	NATURAL HIGH POINT (GROUND)	9.15	8.22	0.93	PRIMARY	ON	GRADE
93	NATURAL HIGH POINT (GROUND)	9.03	7.88	1.15	PRIMARY	ON	GRADE
94	NATURAL HIGH POINT (GROUND)	9.03	7.68	1.35	PRIMARY	ON	GRADE
95	NAVAID (AWOS)	38.41	21.69	16.72	TRANSITIONAL	ON	FIXED-BY-FUNCTION
96	BUILDING	69.23	63.69	5.54	TRANSITIONAL	ON	LIGHT
97	NATURAL HIGH POINT (GROUND)	8.52	7.49	1.03	PRIMARY	ON	GRADE
98	NATURAL HIGH POINT (GROUND)	8.9	7.41	1.49	PRIMARY	ON	GRADE
99	SIGN	10.87	7.46	3.41	PRIMARY	ON	NO ACTION
100	NATURAL HIGH POINT (GROUND)	7.87	7.10	0.77	PRIMARY	ON	GRADE
101	NATURAL HIGH POINT (GROUND)	8.87	7.65	1.22	PRIMARY	ON	GRADE
102	SIGN	11.28	7.91	3.37	PRIMARY	ON	NO ACTION
103	NATURAL HIGH POINT (GROUND)	8.77	8.26	0.51	PRIMARY	ON	GRADE
104	NATURAL HIGH POINT (GROUND)	9.02	8.57	0.45	PRIMARY	ON	GRADE
105	NATURAL HIGH POINT (GROUND)	9.62	8.94	0.68	PRIMARY	ON	GRADE
106	NATURAL HIGH POINT (GROUND)	9.77	8.94	0.83	PRIMARY	ON	GRADE
107	NAVAID (WINDSOCK)	30.02	9.52	20.50	PRIMARY	ON	FIXED-BY-FUNCTION
108	NATURAL HIGH POINT (GROUND)	9.8	9.63	0.17	PRIMARY	ON	GRADE
109	NAVAID (RUNWAY LIGHT)	11.1	9.68	1.42	PRIMARY	ON	FIXED-BY-FUNCTION
110	NATURAL HIGH POINT (GROUND)	9.77	9.66	0.11	PRIMARY	ON	GRADE
111	NAVAID (RUNWAY LIGHT)	9.99	9.47	0.52	PRIMARY	ON	FIXED-BY-FUNCTION
112	NATURAL HIGH POINT (GROUND)	9.21	9.19	0.02	PRIMARY	ON	GRADE
113	SIGN	10.27	7.61	2.66	PRIMARY	ON	NO ACTION
114	NATURAL HIGH POINT (GROUND)	8.37	7.78	0.59	PRIMARY	ON	GRADE
115	NATURAL HIGH POINT (GROUND)	7.49	6.44	1.05	PRIMARY	ON	GRADE
116	NAVAID (WINDSOCK)	15.99	6.33	9.66	PRIMARY	ON	FIXED-BY-FUNCTION
117	COMMUNICATIONS TOWER	167.55	185.00	-17.45	HORIZONTAL	ON	NO ACTION
118	COMMUNICATIONS TOWER	217.3	218.01	-0.71	CONICAL	ON	NO ACTION

NOTES

1. **All Obstruction data, runway coordinates and elevations for ARP, runway ends, and displaced thresholds have been obtained from the 2016 Quantum Spatial survey. Please note that the coordinates and elevation values are different from the published values on the FAA 5010. Therefore, the FAA 5010 for SGJ needs to be updated.**
2. Future Runway 13R-31L Preliminary runway end elevations were obtained using Google Earth.
3. Roadway and obstacle obstructions within the first 100 feet MSL of the approach surfaces are identified and analyzed on the approach plan and profile sheets.
4. All Object Elevations are current as of this ALP Update and are subject to change.

PASSERO ASSOCIATES
engineering architecture

Northeast Florida Regional Airport
Fly Smart!

Client:

St. Augustine-St. Johns County Airport Authority
4900 U.S. Highway 1, North
St. Augustine, FL 32095

Passero Associates
4730 Casa Cola Way, Suite 200
St. Augustine, FL 32095
(904) 757-6106
www.passero.com

Principal-in-Charge: Andrew M. Holesko
Project Manager: Lisa Cheung
Designed by: Chris Johnson

Revisions

No.	Date	By	Description

Airport Layout Plan Update

Airspace Profile (NPI/PIR)

DRAFT
Northeast Florida Regional Airport

Town/City: City of St. Augustine
County: St. Johns
State: Florida

Project No. 23081.70

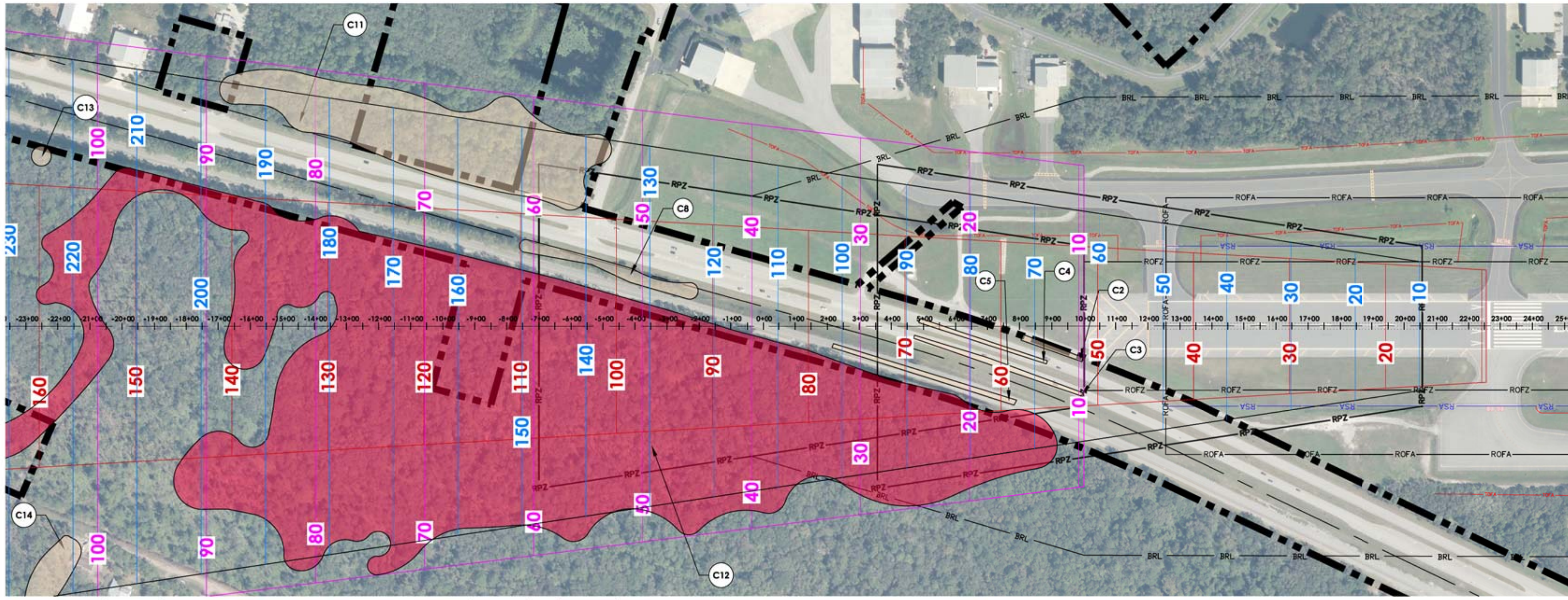
Drawing No. Sheet 9D

Date February 2020

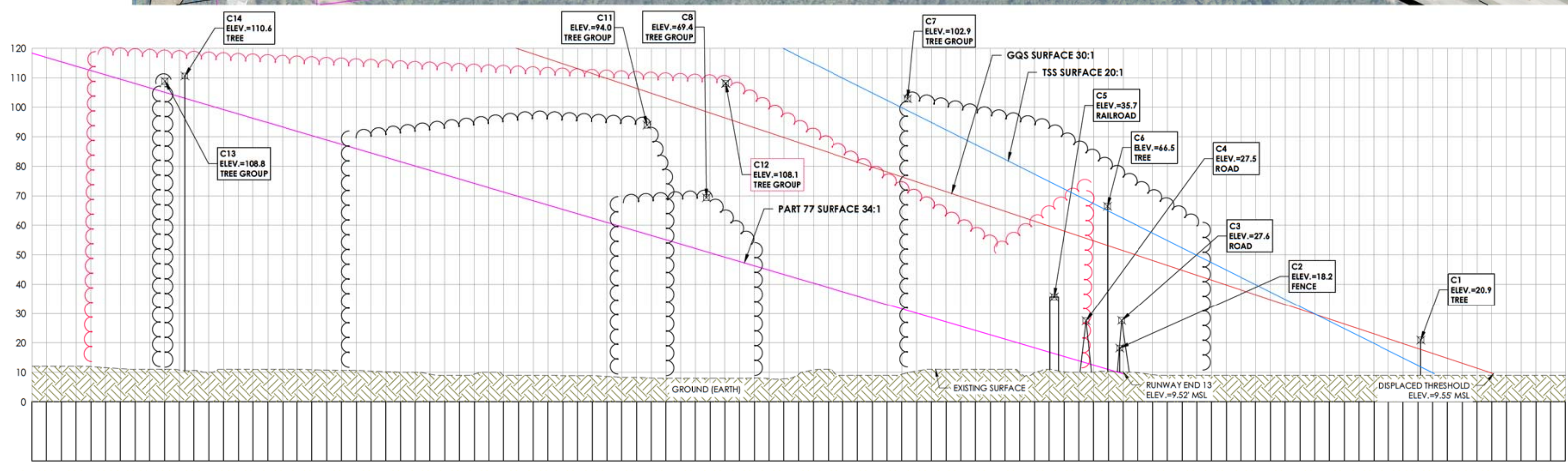
LEGEND

RSA - Runway Safety Area
ROFA - Runway Object Free Area
RPZ - Runway Protection Zone
TSS - Threshold Siting Surface
AS - Approach Surface
GQS - Glide Path Qualification

- Tree Group Profile
- FAA 5010 Tree Obstruction Area Profile
- Tree Group Plan
- FAA 5010 Tree Obstruction Area Plan
- Obstruction Point Profile



PASSERO ASSOCIATES
engineering architecture



RUNWAY END 13 PROFILE

SCALE: HORIZONTAL - 1" = 200'
VERTICAL - 1" = 10'

NOTES:

1. ALL OBSTRUCTION DATA, RUNWAY COORDINATES AND ELEVATIONS FOR ARP, RUNWAY ENDS, AND DISPLACED THRESHOLDS HAVE BEEN OBTAINED FROM THE 2016 QUANTUM SPATIAL SURVEY. PLEASE NOTE THAT THE COORDINATES AND ELEVATION VALUES ARE DIFFERENT FROM THE PUBLISHED VALUES ON THE FAA 5010. THEREFORE, THE FAA 5010 FOR SGJ NEEDS TO BE UPDATED.
2. TREES IDENTIFIED IN THE FAA 5010 MASTER RECORD ARE INCLUDED WITHIN THE RED OBSTRUCTION AREA IDENTIFIED IN THE PLAN AND PROFILE.
3. ALL OBJECT ELEVATIONS ARE CURRENT AS OF THIS ALP UPDATE AND ARE SUBJECT TO CHANGE.

NO TSS OBSTRUCTIONS

GQS OBSTRUCTIONS

ID	DESCRIPTION	OBJECT ELEVATION	SURFACE HEIGHT ALLOWED	GQS Surface Penetration	ON/OFF AIRPORT	DISPOSITION
C12	TREE GROUP (5010)	93.5	89.3	4.2	ON/OFF	TRIM

PART 77 OBSTRUCTIONS

ID	DESCRIPTION	OBJECT ELEVATION	SURFACE HEIGHT ALLOWED	34:1 P77 PENETRATION	ON/OFF AIRPORT	DISPOSITION
C2	FENCE	18.2	9.9	8.3	OFF	LIGHT OR MARK
C3	ROAD	27.6	9.7	17.9	OFF	NONE
C4	ROAD	27.5	13.2	14.3	OFF	NONE
C5	RAIL ROAD	35.7	16.4	19.3	OFF	NONE
C8	TREE GROUP	69.4	51.1	18.3	OFF	TRIM
C11	TREE GROUP	94	57.0	37	ON/OFF	TRIM
C12	TREE GROUP (5010)	108.1	49.1	59	ON/OFF	TRIM
C13	TREE	108.8	105.1	3.7	ON	TRIM
C14	TREE GROUP	110.6	103.1	7.5	ON	TRIM

NFRA
Northeast Florida Regional Airport
Fly Smart!

Client:

St. Augustine-St. Johns County Airport Authority
4900 U.S. Highway 1, North
St. Augustine, FL 32095

Passero Associates
4730 Casa Cola Way, Suite 200
St. Augustine, FL 32095
(904) 757-6106
www.passero.com

Principal-in-Charge: Andrew M. Holesko
Project Manager: Lisa Cheung
Designed by: Wayne B. Zian

Revisions

No.	Date	By	Description

Airport Layout Plan Update

Inner Portion of the Runway 13 Approach Surface

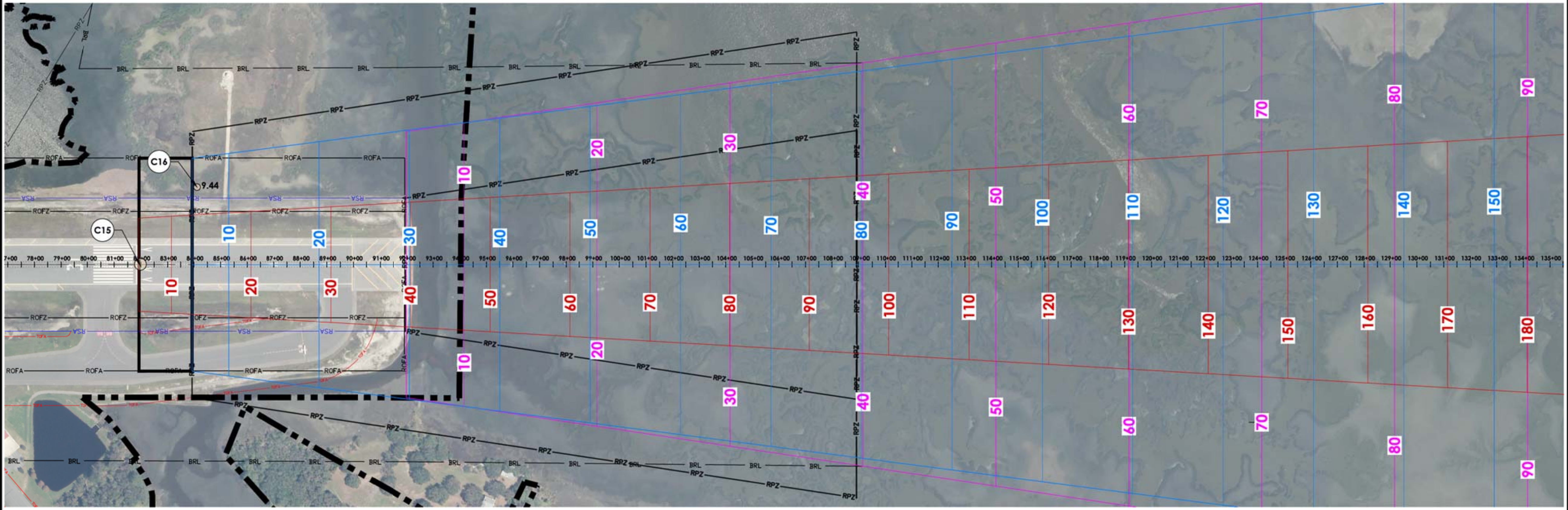
DRAFT
Northeast Florida Regional Airport

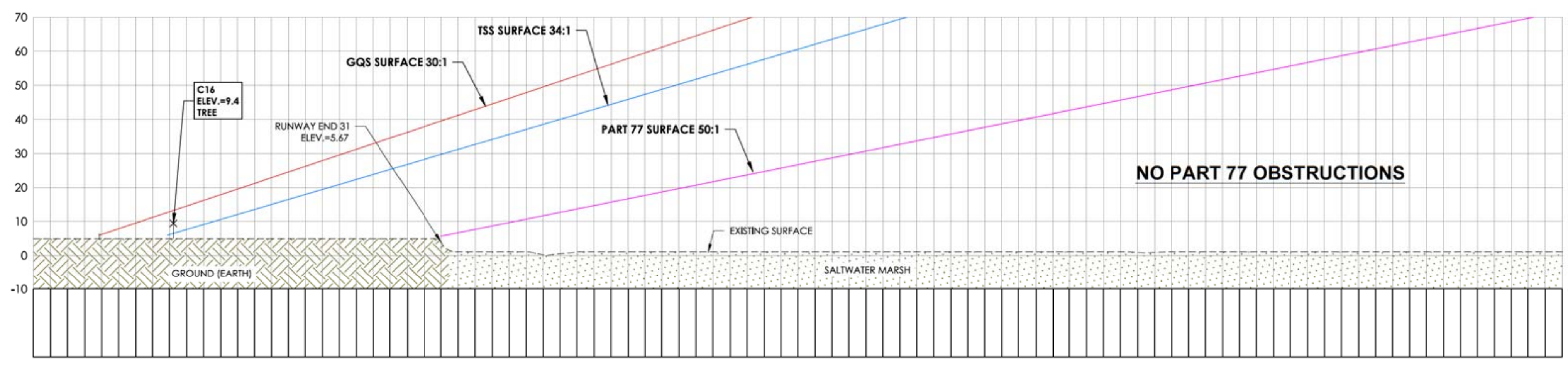
Town/City: City of St. Augustine
County: St. Johns
State: Florida

Project No. 23081.70

Drawing No. Sheet 10

Date February 2020





RUNWAY END 31

SCALE: HORIZONTAL - 1" = 200'
VERTICAL - 1: = 10'

LEGEND

RSA - Runway Safety Area
ROFA - Runway Object Free Area
RPZ - Runway Protection Zone
TSS - Threshold Siting Surface
AS - Approach Surface
GQS - Glide Path Qualification

- Tree Group Profile

- Tree Group Plan

- Obstruction Point Profile

GQS OBSTRUCTIONS

ID	DESCRIPTION	OBJECT ELEVATION	SURFACE HEIGHT ALLOWED	GQS Surface Penetration	ON/OFF AIRPORT	DISPOSITION
C15	RUNWAY	6.4	6.0	0.4	ON	FIXED BY FUNCTION

TSS OBSTRUCTIONS

ID	DESCRIPTION	OBJECT ELEVATION	SURFACE HEIGHT ALLOWED	34:1 TSS PENETRATION	ON/OFF AIRPORT	DISPOSITION
C16	TREE	9.4	6.500	2.9	ON	REMOVE

NOTES:

1. ALL OBSTRUCTION DATA, RUNWAY COORDINATES AND ELEVATIONS FOR ARP, RUNWAY ENDS, AND DISPLACED THRESHOLDS HAVE BEEN OBTAINED FROM THE 2016 QUANTUM SPATIAL SURVEY. PLEASE NOTE THAT THE COORDINATES AND ELEVATION VALUES ARE DIFFERENT FROM THE PUBLISHED VALUES ON THE FAA 5010. THEREFORE, THE FAA 5010 FOR SGJ NEEDS TO BE UPDATED.
2. ALL OBJECT ELEVATIONS ARE CURRENT AS OF THIS ALP UPDATE AND ARE SUBJECT TO CHANGE.

PASSERO ASSOCIATES
engineering architecture

Northeast Florida Regional Airport
Fly Smart!

Client:
St. Augustine-St. Johns County Airport Authority
4900 U.S. Highway 1, North
St. Augustine, FL 32095

Passero Associates
4730 Casa Cola Way, Suite 200
St. Augustine, FL 32095
(904) 757-6106
www.passero.com

Principal-in-Charge: Andrew M. Holesko
Project Manager: Lisa Cheung
Designed by: Wayne B. Zian

Revisions

No.	Date	By	Description

Airport Layout Plan Update

Inner Portion of the Runway 31 Approach Surface

DRAFT
Northeast Florida Regional Airport

Town/City: City of St. Augustine
County: St. Johns
State: Florida

Project No. 23081.70

Drawing No. Sheet 11

Date: February 2020

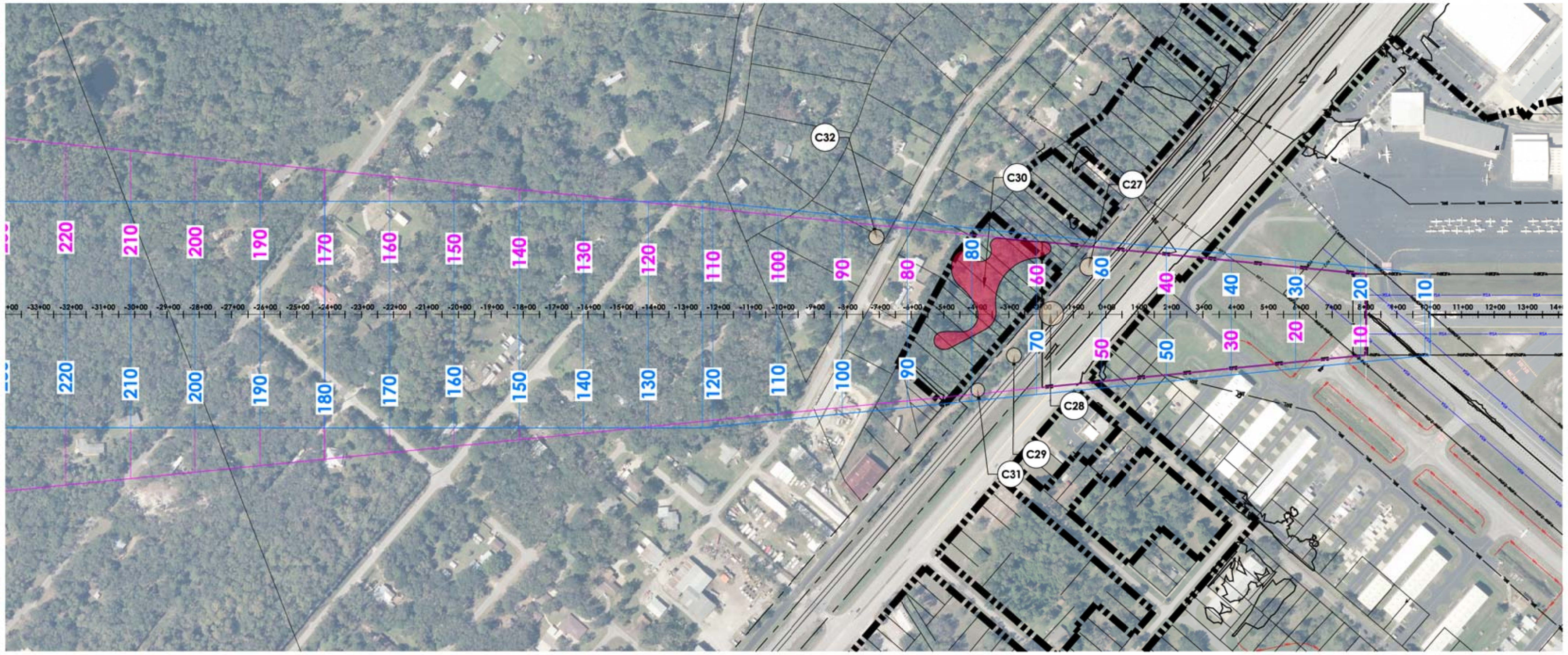
LEGEND

RSA - Runway Safety Area
ROFA - Runway Object Free Area
RPZ - Runway Protection Zone
TSS - Threshold Siting Surface
AS - Approach Surface

- Tree Group Profile
- FAA 5010 Tree Obstruction Area Profile
- Tree Group Plan
- FAA 5010 Tree Obstruction Area Plan
- Obstruction Point Profile

NOTES:

1. ALL OBSTRUCTION DATA, RUNWAY COORDINATES AND ELEVATIONS FOR ARP, RUNWAY ENDS, AND DISPLACED THRESHOLDS HAVE BEEN OBTAINED FROM THE 2016 QUANTUM SPATIAL SURVEY. PLEASE NOTE THAT THE COORDINATES AND ELEVATION VALUES ARE DIFFERENT FROM THE PUBLISHED VALUES ON THE FAA 5010. THEREFORE, THE FAA 5010 FOR SGJ NEEDS TO BE UPDATED.
2. TREES IDENTIFIED IN THE FAA 5010 MASTER RECORD ARE INCLUDED WITHIN THE RED OBSTRUCTION AREA IDENTIFIED IN THE PLAN AND PROFILE.
3. ALL OBJECT ELEVATIONS ARE CURRENT AS OF THIS ALP UPDATE AND ARE SUBJECT TO CHANGE.

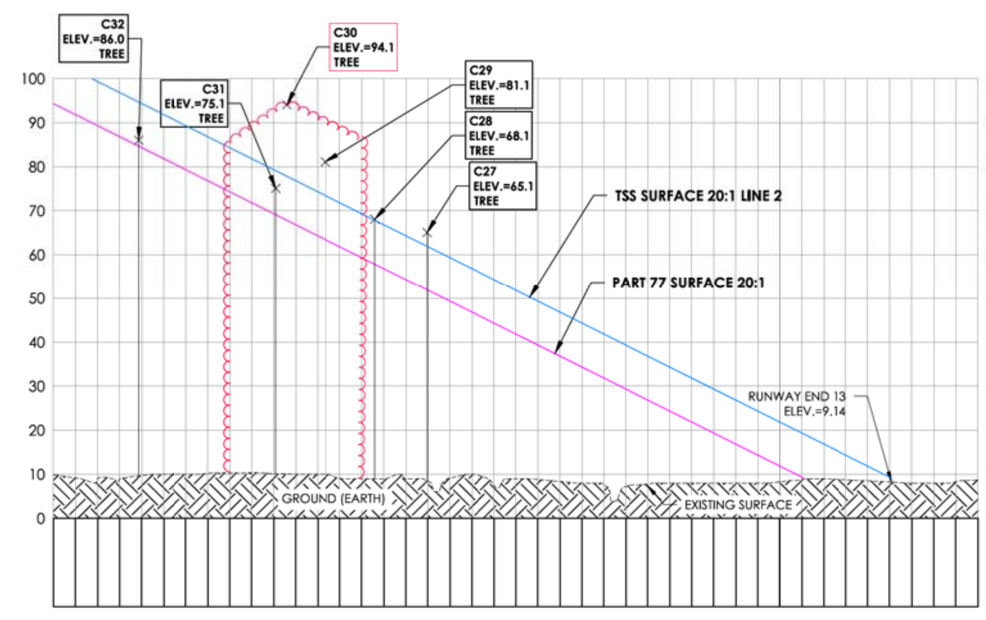


PART 77 OBSTRUCTIONS

ID	DESCRIPTION	OBJECT ELEVATION	SURFACE HEIGHT ALLOWED	20:1 P77 PENETRATION	ON/OFF AIRPORT	DISPOSITION
C27	TREE	65.1	52.1	13	OFF	REMOVE
C28	TREE	68.1	57.8	10.3	OFF	REMOVE
C29	TREE	81.1	63.4	17.7	OFF	REMOVE
C30	TREE GROUP (5010)	94.1	69.2	24.9	ON/OFF	REMOVE
C31	TREE	75.1	67.8	7.3	OFF	REMOVE
C32	TREE	86	84.8	1.2	OFF	REMOVE

TSS OBSTRUCTIONS

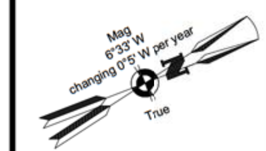
ID	DESCRIPTION	OBJECT ELEVATION	SURFACE HEIGHT ALLOWED	20:1 TSS PENETRATION	ON/OFF AIRPORT	DISPOSITION
C27	TREE	65.1	62	3.1	OFF	REMOVE
C28	TREE	68.1	67.9	0.2	OFF	REMOVE
C29	TREE	81.1	73.4	7.7	OFF	REMOVE
C30	TREE GROUP (5010)	94.1	77.9	16.2	ON/OFF	REMOVE



RUNWAY 2 END PROFILE

SCALE: HORIZONTAL - 1" = 200'
VERTICAL - 1: = 10'

PASSERO ASSOCIATES
engineering architecture



Northeast Florida Regional Airport
Fly Smart!

Client:

St. Augustine-St. Johns County Airport Authority
4900 U.S. Highway 1, North
St. Augustine, FL 32095

Passero Associates
4730 Casa Cola Way, Suite 200
St. Augustine, FL 32095
(904) 757-6106
www.passero.com

Principal-in-Charge: Andrew M. Holesko
Project Manager: Lisa Cheung
Designed by: Wayne B. Zian

Revisions

No.	Date	By	Description

Airport Layout Plan Update

Inner Portion of the Runway 02 Approach Surface

DRAFT
Northeast Florida Regional Airport

Town/City: City of St. Augustine
County: St. Johns
State: Florida

Project No. 23081.70

Drawing No. Sheet 12

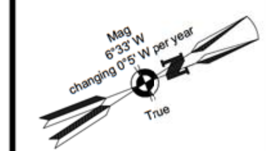
Date February 2020

LEGEND

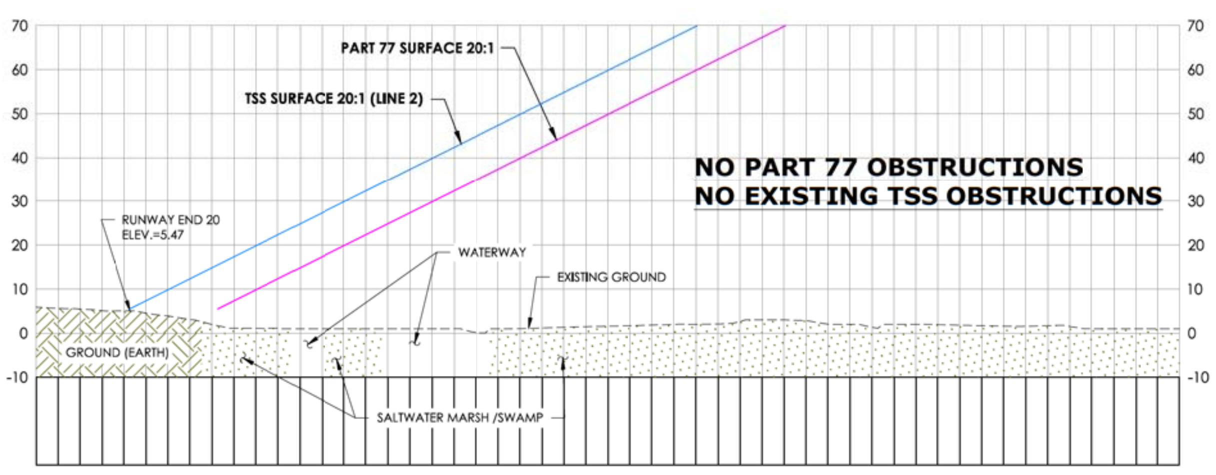
- RSA - Runway Safety Area
- ROFA - Runway Object Free Area
- RPZ - Runway Protection Zone
- TSS - Threshold Siting Surface
- AS - Approach Surface
- Tree Group Profile
- Tree Group Plan
- Obstruction Point Profile

NOTES:

1. ALL OBSTRUCTION DATA, RUNWAY COORDINATES AND ELEVATIONS FOR ARP, RUNWAY ENDS, AND DISPLACED THRESHOLDS HAVE BEEN OBTAINED FROM THE 2016 QUANTUM SPATIAL SURVEY. PLEASE NOTE THAT THE COORDINATES AND ELEVATION VALUES ARE DIFFERENT FROM THE PUBLISHED VALUES ON THE FAA 5010. THEREFORE, THE FAA 5010 FOR SGJ NEEDS TO BE UPDATED.
2. ALL OBJECT ELEVATIONS ARE CURRENT AS OF THIS ALP UPDATE AND ARE SUBJECT TO CHANGE.



0 200 400 Feet



RUNWAY 20 END

SCALE: HORIZONTAL - 1" = 200'
VERTICAL - 1: = 10'

PASSERO ASSOCIATES
engineering architecture

Northeast Florida Regional Airport
Fly Smart!

Client:

St. Augustine-St. Johns County Airport Authority
4900 U.S. Highway 1, North
St. Augustine, FL 32095

Passero Associates
4730 Casa Cola Way, Suite 200
St. Augustine, FL 32095
(904) 757-6106
www.passero.com

Principal-in-Charge	Andrew M. Holesko
Project Manager	Lisa Cheung
Designed by	Wayne B. Zian

Revisions

No.	Date	By	Description

Airport Layout Plan Update

Inner Portion of the Runway 20 Approach Surface

DRAFT
Northeast Florida Regional Airport

Town/City: City of St. Augustine
County: St. Johns
State: Florida

Project No.
23081.70

Drawing No.
Sheet 13

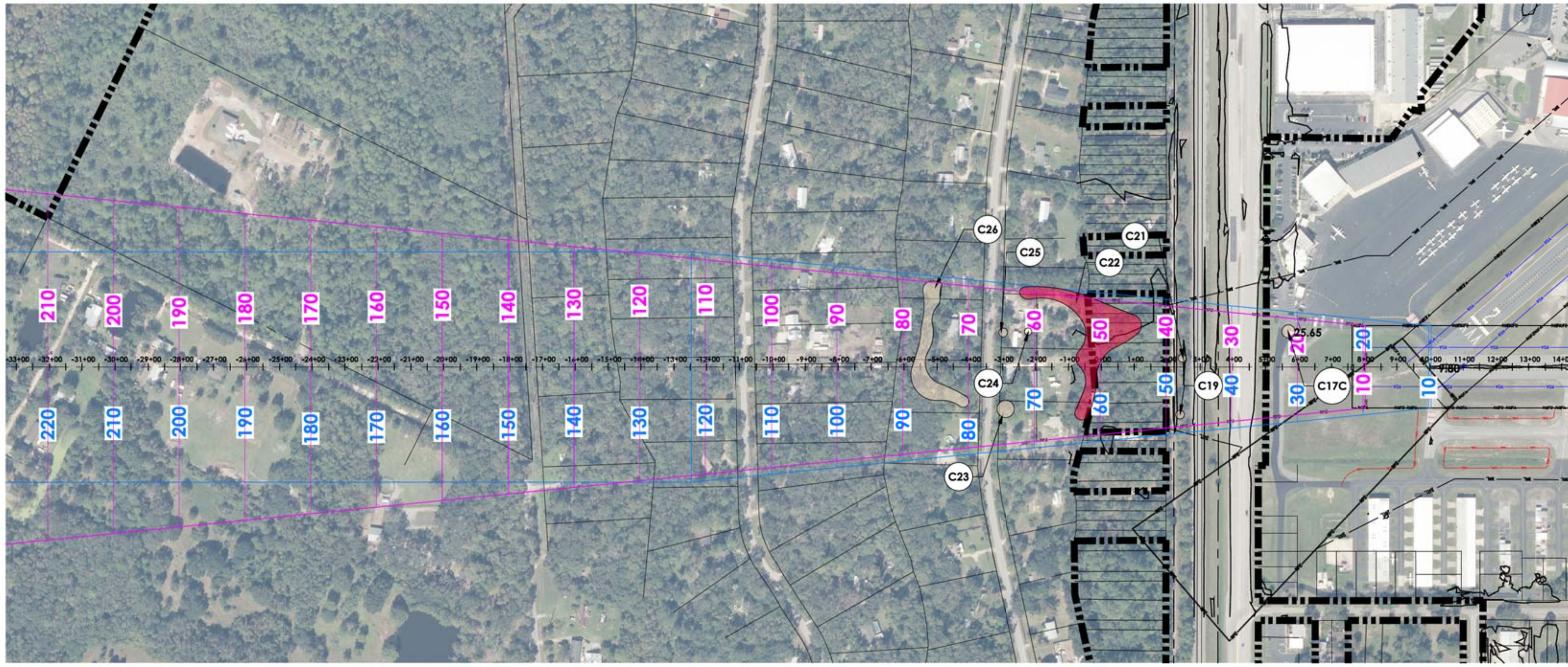
Date
February 2020

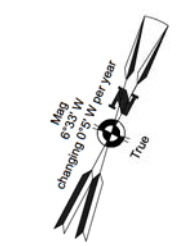
LEGEND

- RSA - Runway Safety Area
- ROFA - Runway Object Free Area
- RPZ - Runway Protection Zone
- TSS - Threshold Siting Surface
- AS - Approach Surface
- Tree Group Profile
- FAA 5010 Tree Obstruction Area Profile
- Tree Group Plan
- FAA 5010 Tree Obstruction Area Plan
- Obstruction Point Profile

NOTES:

1. ALL OBSTRUCTION DATA, RUNWAY COORDINATES AND ELEVATIONS FOR ARP, RUNWAY ENDS, AND DISPLACED THRESHOLDS HAVE BEEN OBTAINED FROM THE 2016 QUANTUM SPATIAL SURVEY. PLEASE NOTE THAT THE COORDINATES AND ELEVATION VALUES ARE DIFFERENT FROM THE PUBLISHED VALUES ON THE FAA 5010. THEREFORE, THE FAA 5010 FOR SGJ NEEDS TO BE UPDATED.
2. TREES IDENTIFIED IN THE FAA 5010 MASTER RECORD ARE INCLUDED WITHIN THE RED OBSTRUCTION AREA IDENTIFIED IN THE PLAN AND PROFILE.
3. ALL OBJECT ELEVATIONS ARE CURRENT AS OF THIS ALP UPDATE AND ARE SUBJECT TO CHANGE.



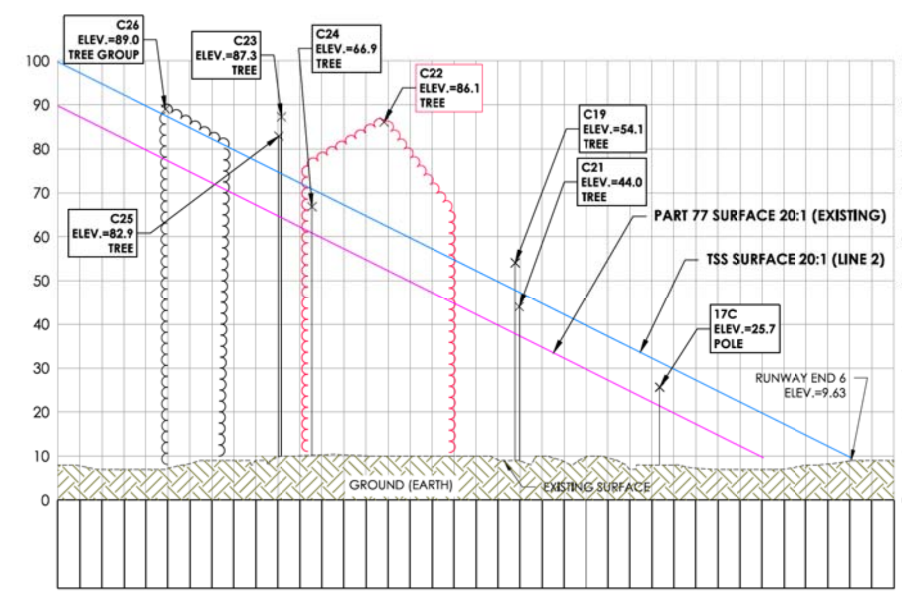


PART 77 OBSTRUCTIONS (EXISTING)

ID	DESCRIPTION	OBJECT ELEVATION	SURFACE HEIGHT ALLOWED	20:1 P77 PENETRATION	ON/OFF AIRPORT	DISPOSITION
C19	TREE	54.1	37.800	16.3	OFF	TRIM
C21	TREE	44	37.400	6.6	OFF	TRIM
C22	TREE GROUP (5010)	86.1	52.700	33.4	ON/OFF	TRIM
C23	TREE GROUP	87.3	64.400	22.9	OFF	TRIM
C24	TREE	66.9	60.900	6	OFF	TRIM
C25	TREE	82.9	64.700	18.2	OFF	TRIM
C26	TREE GROUP	89	77.500	11.5	OFF	TRIM
C17C	POLE	25.7	21.400	4.3	ON	REMOVED , LOWERED, LIGHT/MARK OR DISPLACE RUNWAY THRESHOLD

TSS OBSTRUCTIONS (EXISTING)

ID	DESCRIPTION	OBJECT ELEVATION	SURFACE HEIGHT ALLOWED	20:1 TSS PENETRATION	ON/OFF AIRPORT	DISPOSITION
C19	TREE	54.1	47.8	6.3	OFF	REMOVE
C22	TREE GROUP (5010)	86.1	62.7	23.4	ON/OFF	REMOVE
C23	TREE GROUP	87.3	74.5	12.8	OFF	REMOVE
C25	TREE	82.9	74.7	8.2	OFF	REMOVE
C26	TREE GROUP	89	87.5	1.5	OFF	REMOVE



RUNWAY 6 END

SCALE: HORIZONTAL - 1" = 200'
VERTICAL - 1: = 10'

PASSERO ASSOCIATES
engineering architecture

NFRA
Northeast Florida Regional Airport
Fly Smart!

Client:

St. Augustine-St. Johns County Airport Authority
4900 U.S. Highway 1, North
St. Augustine, FL 32095

Passero Associates
4730 Casa Cola Way, Suite 200
St. Augustine, FL 32095
(904) 757-6106
www.passero.com

Principal-in-Charge: Andrew M. Holesko
Project Manager: Lisa Cheung
Designed by: Wayne B. Zian

Revisions

No.	Date	By	Description

Airport Layout Plan Update

Inner Portion of the Runway 06 Approach Surface

DRAFT
Northeast Florida Regional Airport

Town/City: City of St. Augustine
County: St. Johns
State: Florida

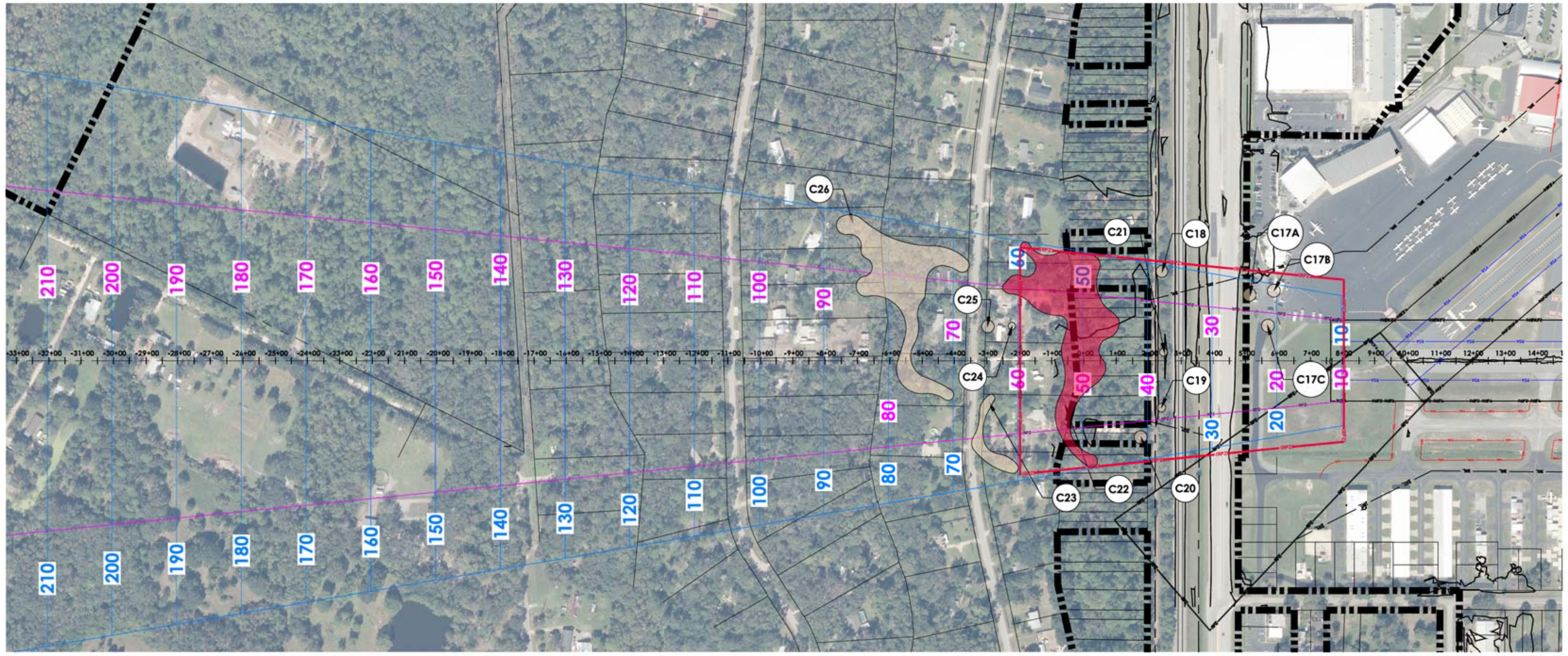
Project No. 23081.70

Drawing No. Sheet 14A

Date February 2020

NOTES:

1. ALL OBSTRUCTION DATA, RUNWAY COORDINATES AND ELEVATIONS FOR ARP, RUNWAY ENDS, AND DISPLACED THRESHOLDS HAVE BEEN OBTAINED FROM THE 2016 QUANTUM SPATIAL SURVEY. PLEASE NOTE THAT THE COORDINATES AND ELEVATION VALUES ARE DIFFERENT FROM THE PUBLISHED VALUES ON THE FAA 5010. THEREFORE, THE FAA 5010 FOR SGJ NEEDS TO BE UPDATED.
2. TREES IDENTIFIED IN THE FAA 5010 MASTER RECORD ARE INCLUDED WITHIN THE RED OBSTRUCTION AREA IDENTIFIED IN THE PLAN AND PROFILE.
3. ALL OBJECT ELEVATIONS ARE CURRENT AS OF THIS ALP UPDATE AND ARE SUBJECT TO CHANGE.



LEGEND

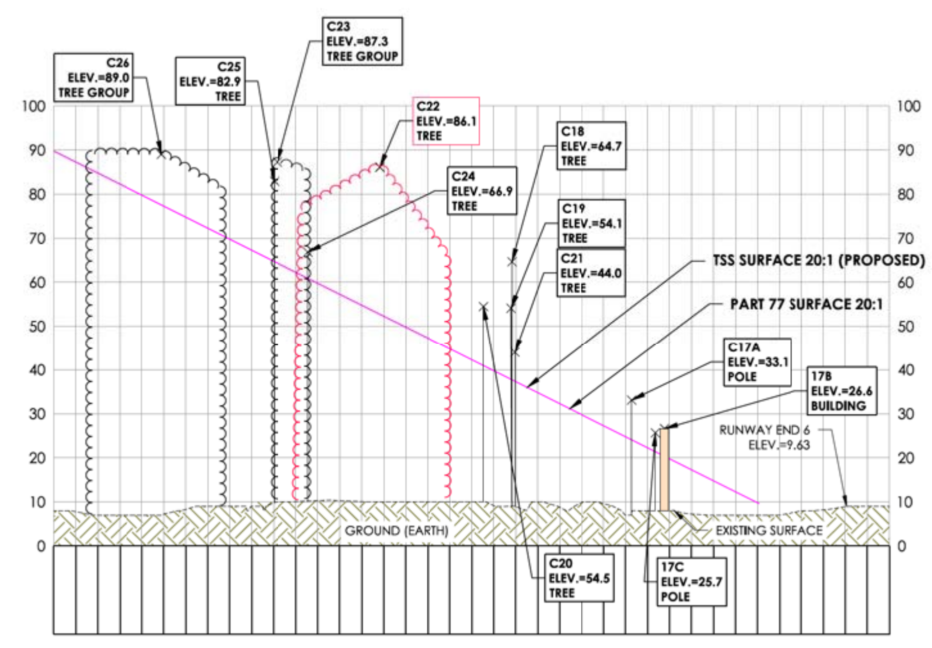
RSA - Runway Safety Area
ROFA - Runway Object Free Area
RPZ - Runway Protection Zone
RPZ - Future Runway Protection Zone
TSS - Threshold Siting Surface
AS - Approach Surface
- Tree Group Profile
- FAA 5010 Tree Obstruction Area Profile
- Tree Group Plan
- FAA 5010 Tree Obstruction Area Plan
- Obstruction Point Profile

PART 77 OBSTRUCTIONS (PROPOSED)

ID	DESCRIPTION	OBJECT ELEVATION	SURFACE HEIGHT ALLOWED	20:1 P77 PENETRATION	ON/OFF AIRPORT	DISPOSITION
C19	TREE	54.1	37.800	16.3	OFF	TRIM
C21	TREE	44	37.400	6.6	OFF	TRIM
C22	TREE GROUP (5010)	86.1	52.700	33.4	ON/OFF	TRIM
C23	TREE GROUP	87.3	64.400	22.9	OFF	TRIM
C24	TREE	66.9	60.900	6	OFF	TRIM
C25	TREE	82.9	64.700	18.2	OFF	TRIM
C26	TREE GROUP	89	77.500	11.5	OFF	TRIM
C17C	POLE	25.7	21.400	4.3	ON	REMOVED , LOWERED, LIGHT/MARK OR DISPLACE RUNWAY THRESHOLD

TSS OBSTRUCTIONS (PROPOSED)

ID	DESCRIPTION	OBJECT ELEVATION	SURFACE HEIGHT ALLOWED	20:1 TSS PENETRATION	ON/OFF AIRPORT	DISPOSITION
C17A	TREE	33.1	24.1	9	ON	REMOVE
C17B	POLE	26.6	20.4	6.2	ON	LIGHT
C17C	POLE	25,6	20.4	5.2	ON	LIGHT
C18	TREE	64.7	37.8	26.9	OFF	REMOVE
C19	TREE	54.1	37.5	16.6	OFF	REMOVE
C20	TREE	54.5	41	13.5	OFF	REMOVE
C21	TREE	44	37.4	6.6	OFF	REMOVE
C22	TREE GROUP (5010)	86.1	52.7	33.4	ON/OFF	REMOVE
C23	TREE GROUP	87.3	64.5	22.8	OFF	REMOVE
C24	TREE	66.9	60.7	6.2	OFF	REMOVE
C25	TREE	82.9	64.8	18.1	OFF	REMOVE
C26	TREE GROUP	89	77.5	11.5	OFF	REMOVE



RUNWAY 6 END PROFILE

SCALE: HORIZONTAL - 1" = 200'
VERTICAL - 1: = 10'

PASSERO ASSOCIATES
engineering architecture

NFRA
Northeast Florida Regional Airport
Fly Smart!

Client:

St. Augustine-St. Johns County Airport Authority
4900 U.S. Highway 1, North
St. Augustine, FL 32095

Passero Associates
4730 Casa Cola Way, Suite 200
St. Augustine, FL 32095
(904) 757-6106
www.passero.com

Principal-in-Charge Andrew M. Holesko
Project Manager Lisa Cheung
Designed by Wayne B. Zian

Revisions

No.	Date	By	Description

Airport Layout Plan Update

Inner Portion of the Runway 06 Approach Surface (Proposed)

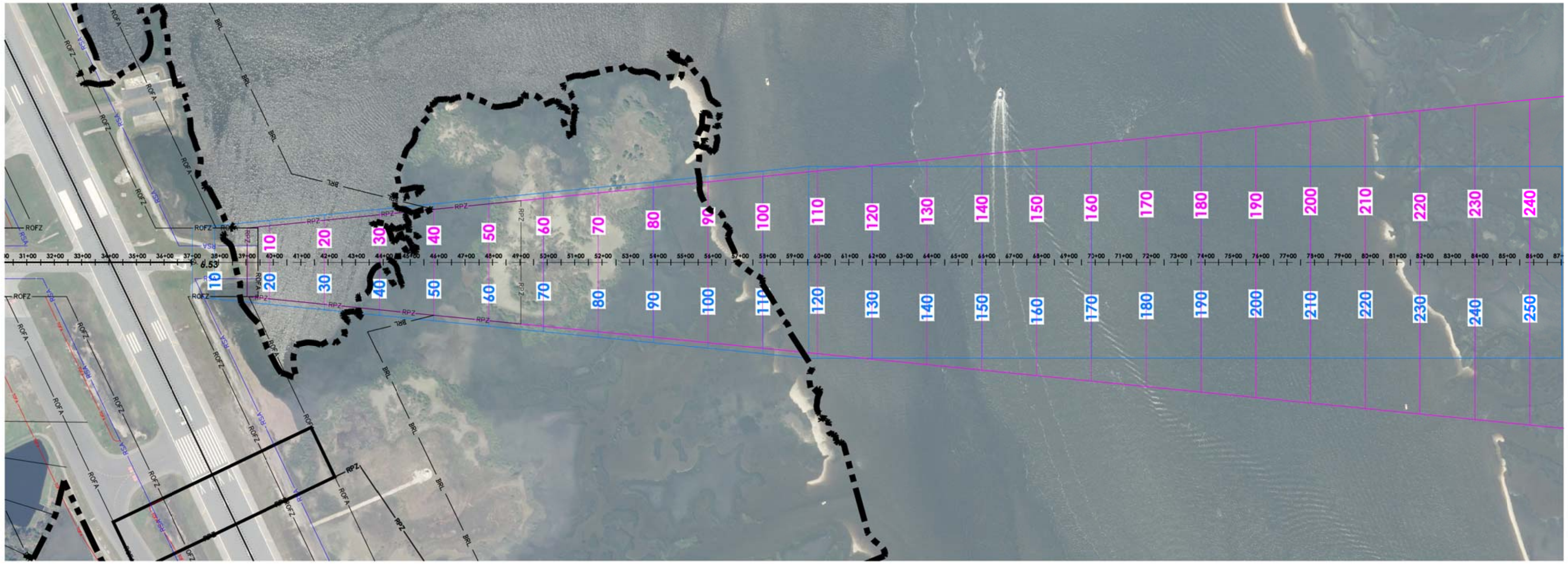
DRAFT
Northeast Florida Regional Airport

Town/City: City of St. Augustine
County: St. Johns State: Florida

Project No. 23081.70

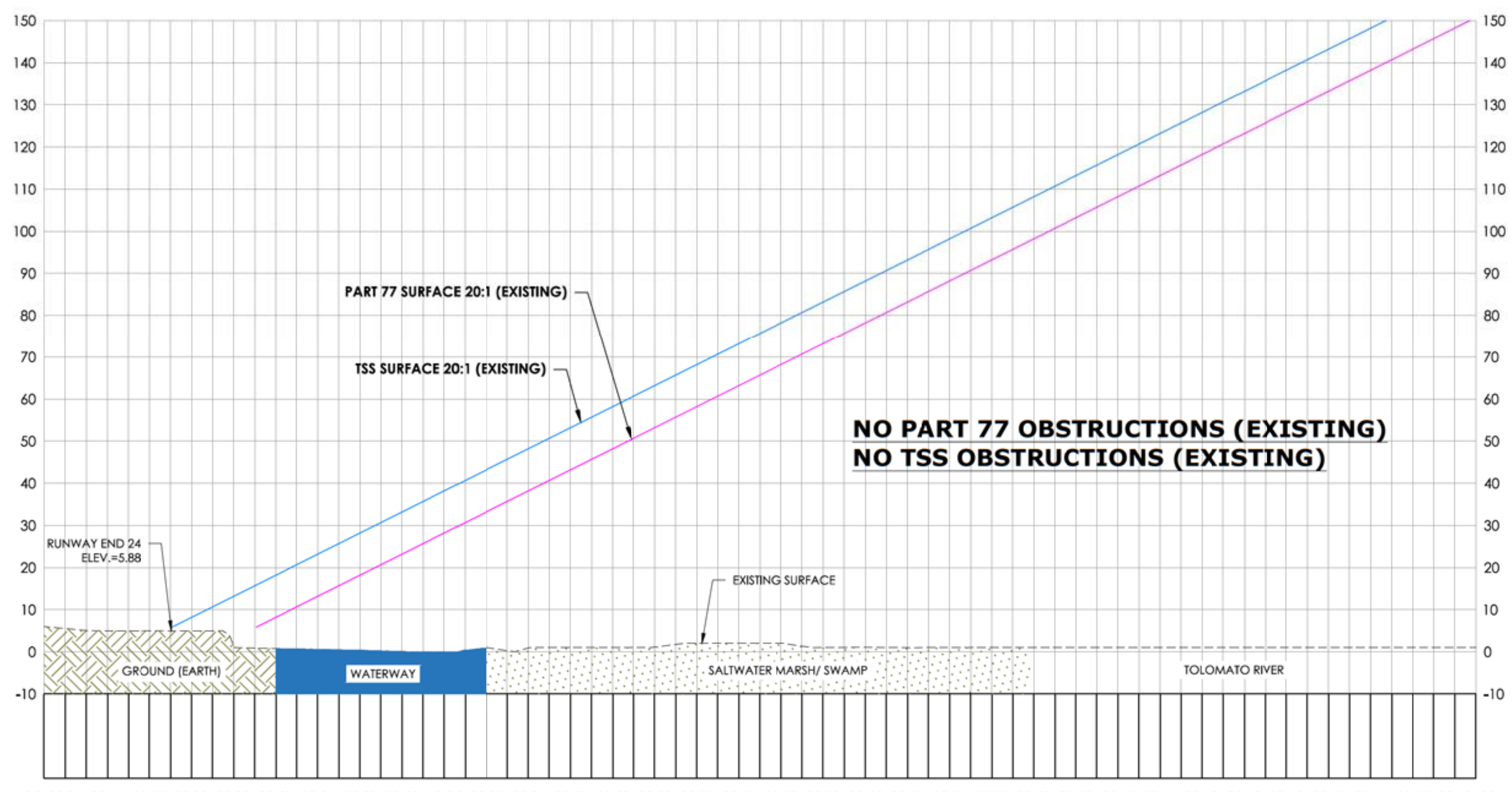
Drawing No. Sheet 14B

Date February 2020



PA
PASSERO ASSOCIATES
engineering architecture

0 200 400
Feet



RUNWAY 24 END
SCALE: HORIZONTAL - 1" = 200'
VERTICAL - 1: = 10'

LEGEND

RSA - Runway Safety Area
ROFA - Runway Object Free Area
RPZ - Runway Protection Zone
TSS - Threshold Siting Surface
AS - Approach Surface

- Tree Group Profile
- Tree Group Plan
- Obstruction Point Profile

NOTES:

1. ALL OBSTRUCTION DATA, RUNWAY COORDINATES AND ELEVATIONS FOR ARP, RUNWAY ENDS, AND DISPLACED THRESHOLDS HAVE BEEN OBTAINED FROM THE 2016 QUANTUM SPATIAL SURVEY. PLEASE NOTE THAT THE COORDINATES AND ELEVATION VALUES ARE DIFFERENT FROM THE PUBLISHED VALUES ON THE FAA 5010. THEREFORE, THE FAA 5010 FOR SGJ NEEDS TO BE UPDATED.

2. ALL OBJECT ELEVATIONS ARE CURRENT AS OF THIS ALP UPDATE AND ARE SUBJECT TO CHANGE.

NFRA
Northeast Florida Regional Airport
Fly Smart!

Client:

St. Augustine-St. Johns County Airport Authority
4900 U.S. Highway 1, North
St. Augustine, FL 32095

Passero Associates
4730 Casa Cola Way, Suite 200
St. Augustine, FL 32095
(904) 757-6106
www.passero.com

Principal-in-Charge: Andrew M. Holesko
Project Manager: Lisa Cheung
Designed by: Wayne B. Zian

Revisions

No.	Date	By	Description

Airport Layout Plan Update

Inner Portion of the Runway 24 Approach Surface

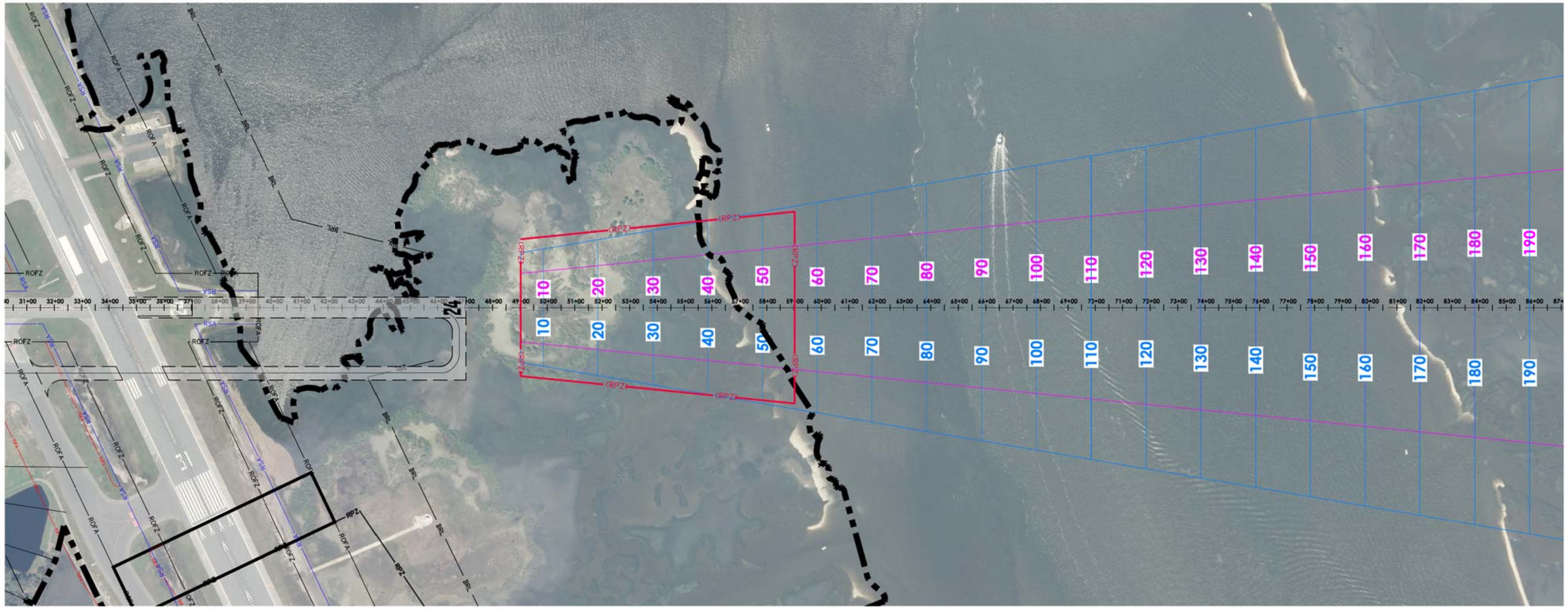
DRAFT
Northeast Florida Regional Airport

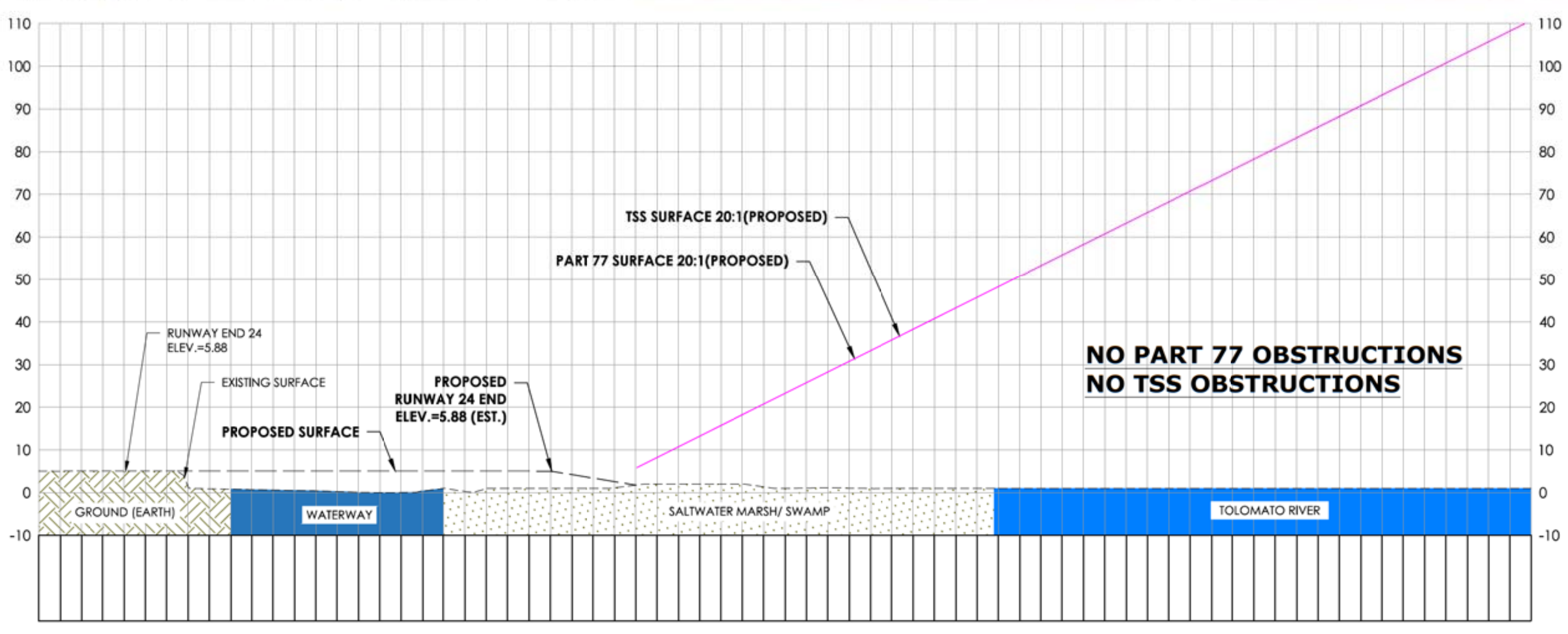
Town/City: City of St. Augustine
County: St. Johns
State: Florida

Project No.
23081.70

Drawing No.
Sheet 15A

Date
February 2020





RUNWAY END 24

SCALE: HORIZONTAL - 1" = 200'
VERTICAL - 1: = 10'

LEGEND

RSA - Runway Safety Area
ROFA - Runway Object Free Area
RPZ - Runway Protection Zone
RPZ - Future Runway Protection Zone
TSS - Threshold Siting Surface
AS - Approach Surface

- Tree Group Profile
- Tree Group Plan
- Obstruction Point Profile

NOTES:

1. ALL OBSTRUCTION DATA, RUNWAY COORDINATES AND ELEVATIONS FOR ARP, RUNWAY ENDS, AND DISPLACED THRESHOLDS HAVE BEEN OBTAINED FROM THE 2016 QUANTUM SPATIAL SURVEY. PLEASE NOTE THAT THE COORDINATES AND ELEVATION VALUES ARE DIFFERENT FROM THE PUBLISHED VALUES ON THE FAA 5010. THEREFORE, THE FAA 5010 FOR SGJ NEEDS TO BE UPDATED.

2. ALL OBJECT ELEVATIONS ARE CURRENT AS OF THIS ALP UPDATE AND ARE SUBJECT TO CHANGE.

PASSERO ASSOCIATES
engineering architecture

Mag 6°33' W changing 0°5' W per year
True

0 200 400 Feet

Northeast Florida Regional Airport
Fly Smart!

Client:

St. Augustine-St. Johns County Airport Authority
4900 U.S. Highway 1, North
St. Augustine, FL 32095

Passero Associates
4730 Casa Cola Way, Suite 200
St. Augustine, FL 32095
(904) 757-6106
www.passero.com

Principal-in-Charge Andrew M. Holesko
Project Manager Lisa Cheung
Designed by Wayne B. Zian

Revisions

No.	Date	By	Description

Airport Layout Plan Update

Inner Portion of the Runway 24 Approach Surface (Proposed)

DRAFT

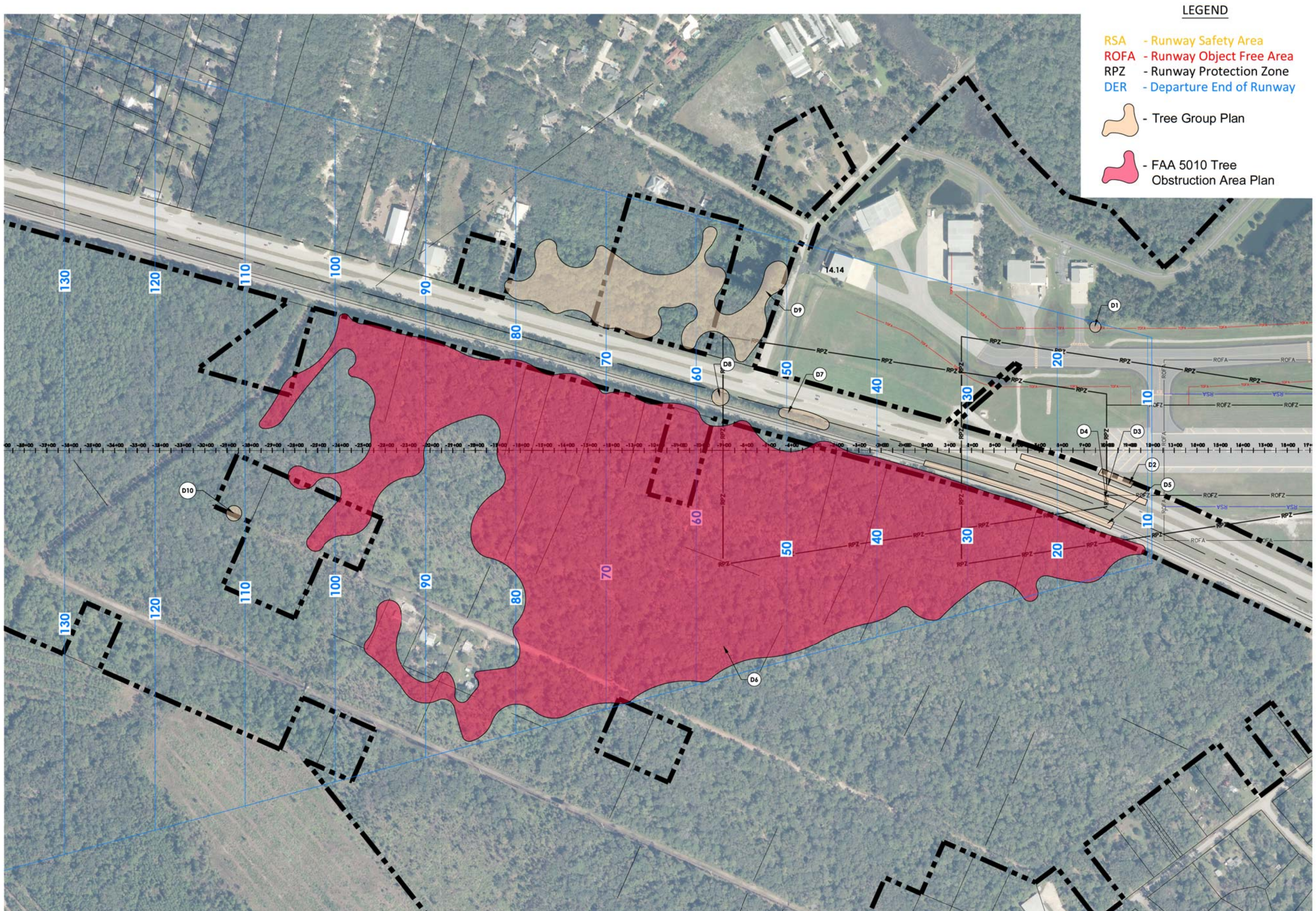
Northeast Florida Regional Airport

Town/City: City of St. Augustine
County: St. Johns State: Florida

Project No. 23081.70

Drawing No. Sheet 15B

Date February 2020



PA
PASSERO ASSOCIATES
engineering architecture

0 200 400 Feet

NFRA
Northeast Florida Regional Airport
Fly Smart!

Client:

St. Augustine-St. Johns County Airport Authority
4900 U.S. Highway 1, North
St. Augustine, FL 32095

Passero Associates

Principal-in-Charge: Andrew M. Holesko
Project Manager: Lisa Cheung
Designed by: Wayne B. Zian

Revisions

No.	Date	By	Description

Airport Layout Plan Update
Departure Surface
Runway 31 Plan

DRAFT
Northeast Florida
Regional Airport

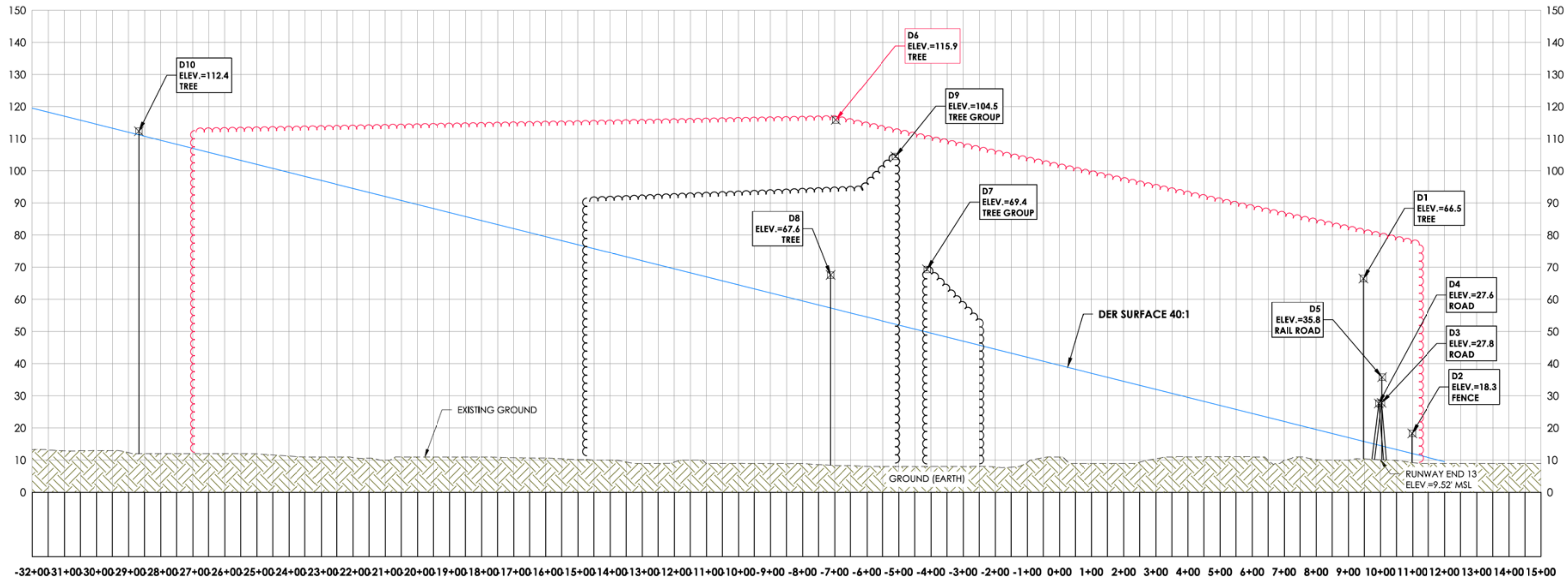
Town/City: City of St. Augustine
County: St. Johns
State: Florida

Project No.
23081.70

Drawing No.
Sheet 16A

Date
February 2020

PASSERO ASSOCIATES
engineering architecture



RUNWAY END 13

SCALE: HORIZONTAL - 1" = 200'
VERTICAL - 1: = 10'

ID	DESCRIPTION	OBJECT ELEVATION	SURFACE HEIGHT ALLOWED	40:1 DER Penetration	ON/OFF AIRPORT	DISPOSITION
D1	TREE	66.5	15.8	50.7	ON	TRIM
D2	FENCE	18.3	12.1	6.2	ON	LIGHT OR MARK
D3	ROAD	27.8	14.4	13.4	OFF	NONE
D4	ROAD	27.6	14.6	13	OFF	NONE
D5	RAILROAD	35.8	14.4	21.4	OFF	NONE
D6	TREE GROUP (5010)	115.9	56.9	59	OFF	TRIM
D7	TREE GROUP	69.4	49.8	19.6	OFF	TRIM
D8	TREE	67.6	57.3	10.3	OFF	TRIM
D9	TREE GROUP	104.5	52.3	52.2	ON/OFF	TRIM
D10	TREE	112.4	111.2	1.2	ON/OFF	TRIM

LEGEND

- Tree Group Profile
- FAA 5010 Tree Obstruction Area Profile
- Obstruction Point Profile

NOTES:

1. ALL OBSTRUCTION DATA, RUNWAY COORDINATES AND ELEVATIONS FOR ARP, RUNWAY ENDS, AND DISPLACED THRESHOLDS HAVE BEEN OBTAINED FROM THE 2016 QUANTUM SPATIAL SURVEY. PLEASE NOTE THAT THE COORDINATES AND ELEVATION VALUES ARE DIFFERENT FROM THE PUBLISHED VALUES ON THE FAA 5010. THEREFORE, THE FAA 5010 FOR SGJ NEEDS TO BE UPDATED.
2. TREES IDENTIFIED IN THE FAA 5010 MASTER RECORD ARE INCLUDED WITHIN THE RED OBSTRUCTION AREA IDENTIFIED IN THE PLAN AND PROFILE.
3. ALL OBJECT ELEVATIONS ARE CURRENT AS OF THIS ALP UPDATE AND ARE SUBJECT TO CHANGE.

NFRA
Northeast Florida Regional Airport
Fly Smart!

Client:

St. Augustine-St. Johns County Airport Authority
4900 U.S. Highway 1, North
St. Augustine, FL 32095

Passero Associates
4730 Casa Cola Way, Suite 200
St. Augustine, FL 32095
(904) 757-6106
www.passero.com

Principal-in-Charge: Andrew M. Holesko
Project Manager: Lisa Cheung
Designed by: Wayne B. Zian

Revisions

No.	Date	By	Description

Airport Layout Plan Update
Departure Surface
Runway 31 Profile

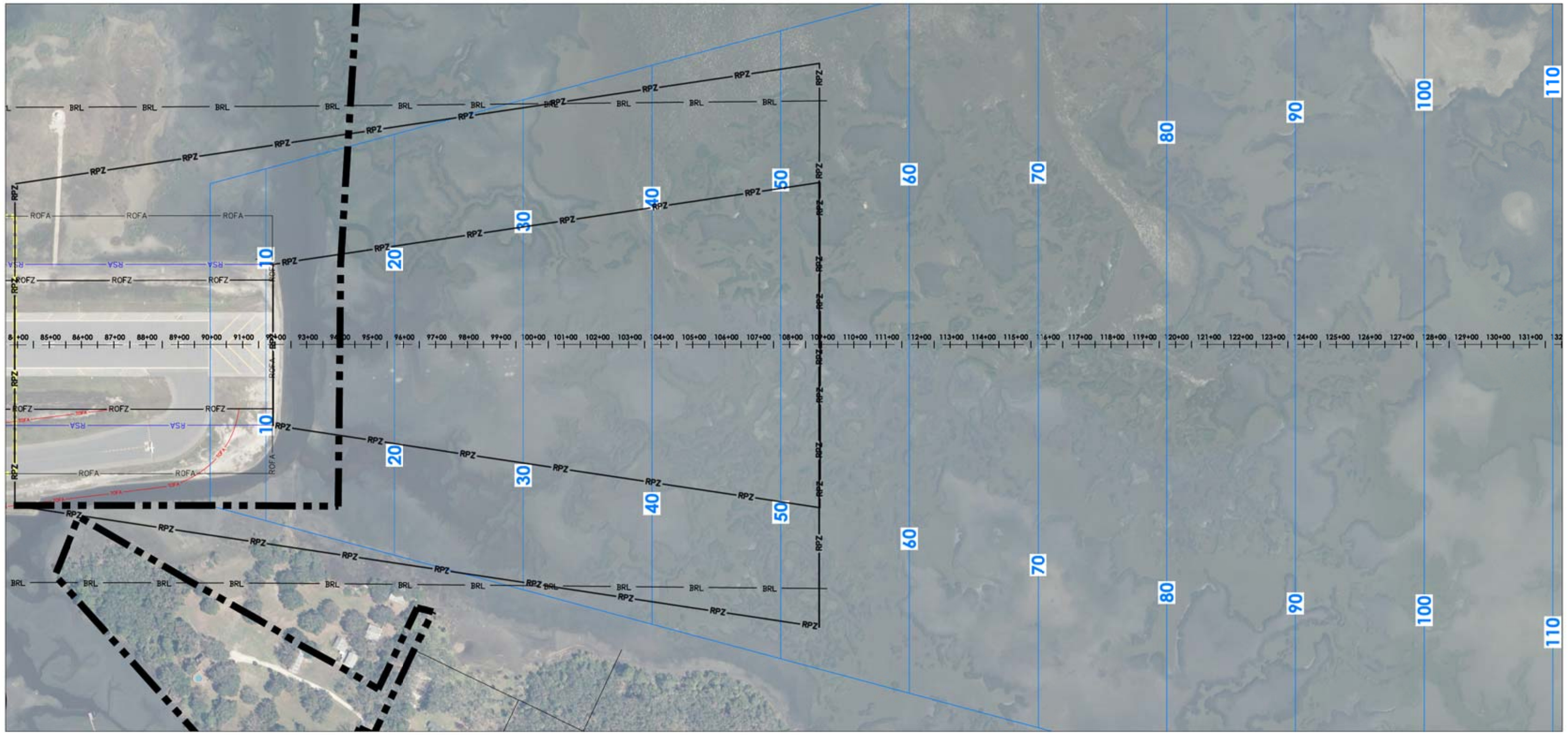
DRAFT
Northeast Florida Regional Airport

Town/City: City of St. Augustine
County: St. Johns
State: Florida

Project No.
23081.70

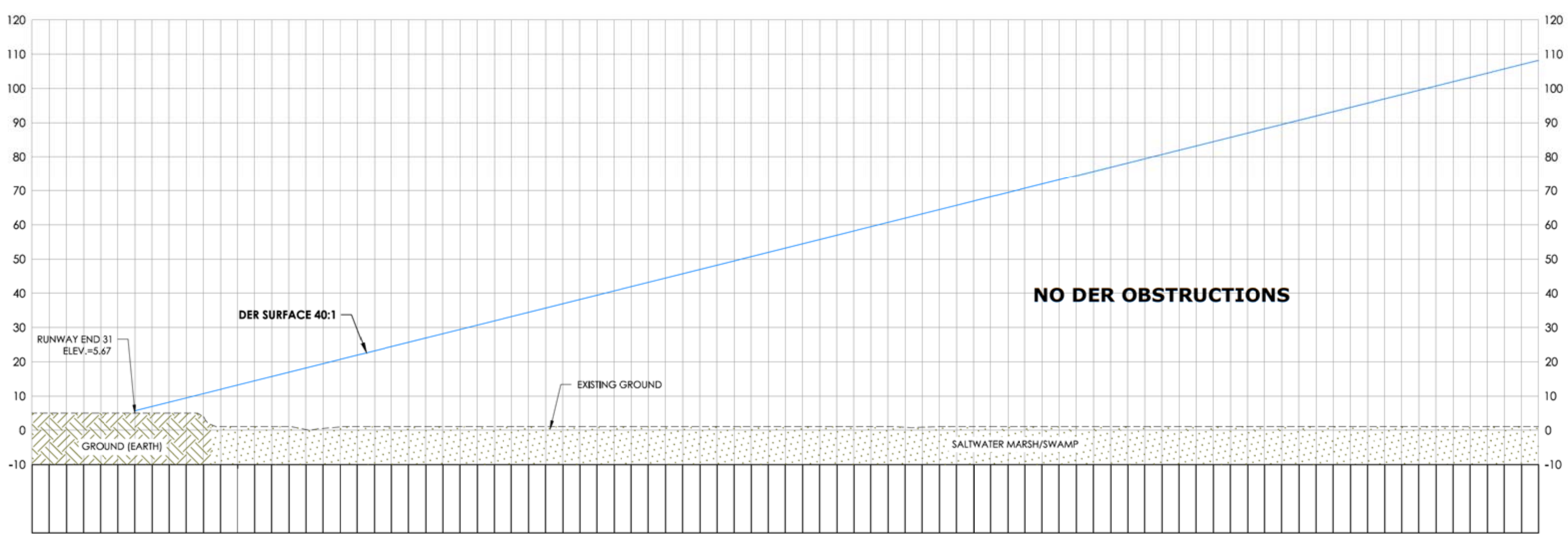
Drawing No.
Sheet 16B

Date
February 2020



LEGEND

RSA - Runway Safety Area
ROFA - Runway Object Free Area
RPZ - Runway Protection Zone
DER - Departure End of Runway
- Tree Group Profile
- Tree Group Plan
- Obstruction Point Profile



RUNWAY 31 END

SCALE: HORIZONTAL - 1" = 200'
VERTICAL - 1: = 10'

PASSERO ASSOCIATES
engineering architecture

Northeast Florida Regional Airport
Fly Smart!

Client:

St. Augustine-St. Johns County Airport Authority
4900 U.S. Highway 1, North
St. Augustine, FL 32095

Passero Associates
4730 Casa Cola Way, Suite 200
St. Augustine, FL 32095
(904) 757-6106
www.passero.com

Principal-in-Charge	Andrew M. Holesko
Project Manager	Lisa Cheung
Designed by	Wayne B. Zian

Revisions

No.	Date	By	Description

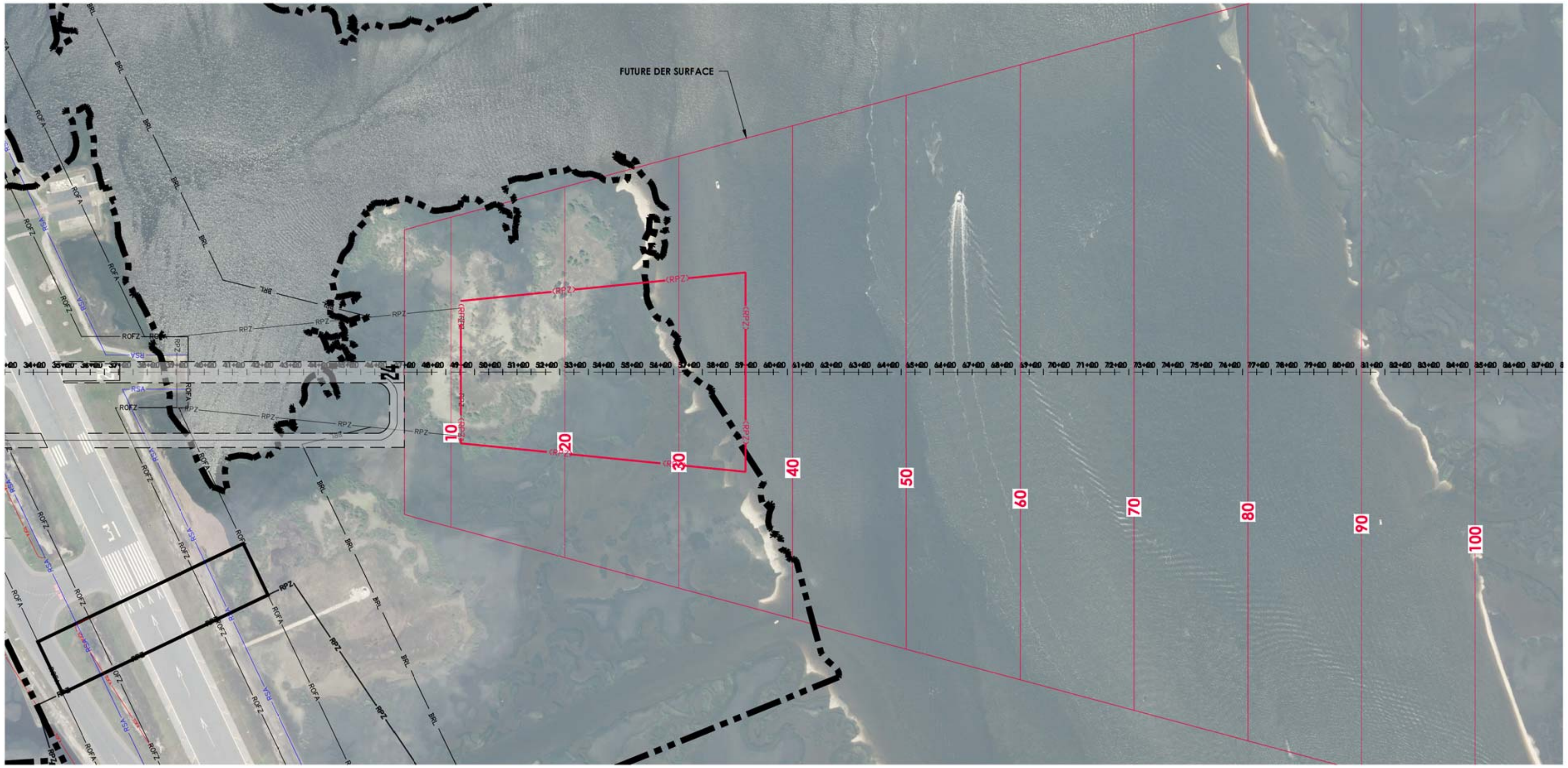
Airport Layout Plan Update
Departure Surface
Runway 6
Plan and Profile
(Proposed)
DRAFT
Northeast Florida
Regional Airport

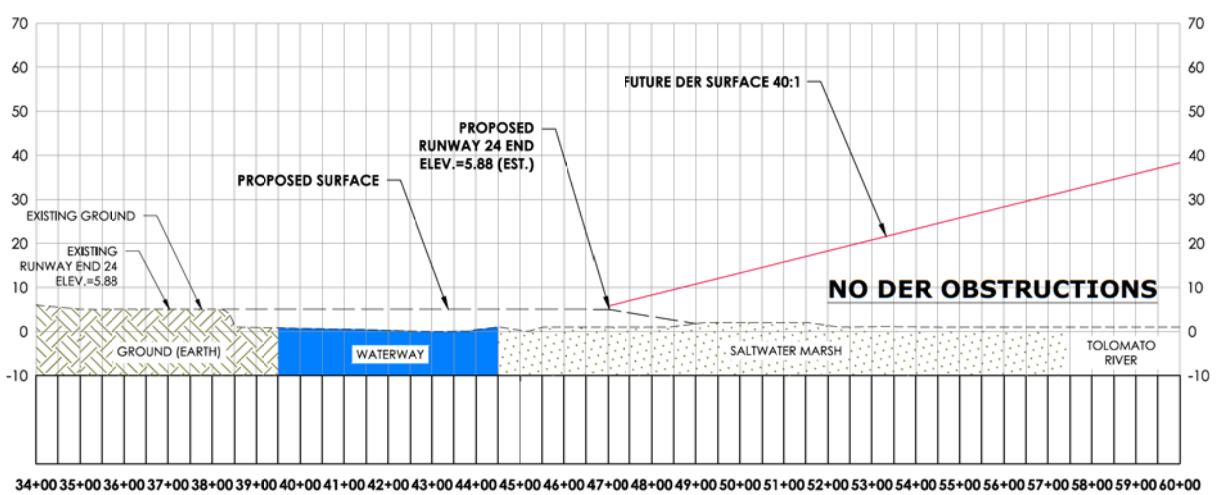
Town/City: City of St. Augustine
County: St. Johns
State: Florida

Project No.
23081.70

Drawing No.
Sheet 17

Date
February 2020





RUNWAY 24 END

SCALE: HORIZONTAL - 1" = 200'
VERTICAL - 1: = 10'

LEGEND

RSA - Runway Safety Area
ROFA - Runway Object Free Area
RPZ - Runway Protection Zone
DER - Departure End of Runway

- Tree Group Profile
- Tree Group Plan
- Obstruction Point Profile

PASSERO ASSOCIATES
engineering architecture

N

0 400 800 Feet

NFRA
Northeast Florida Regional Airport
Fly Smart!

Client:
St. Augustine-St. Johns County Airport Authority
4900 U.S. Highway 1, North
St. Augustine, FL 32095

Passero Associates
4730 Casa Cola Way, Suite 200, St. Augustine, FL 32095 (904) 757-6106 www.passero.com

Principal-in-Charge: Andrew M. Holesko
Project Manager: Lisa Cheung
Designed by: Wayne B. Zian

Revisions

No.	Date	By	Description

Airport Layout Plan Update
Departure Surface
Runway 13
Plan and Profile

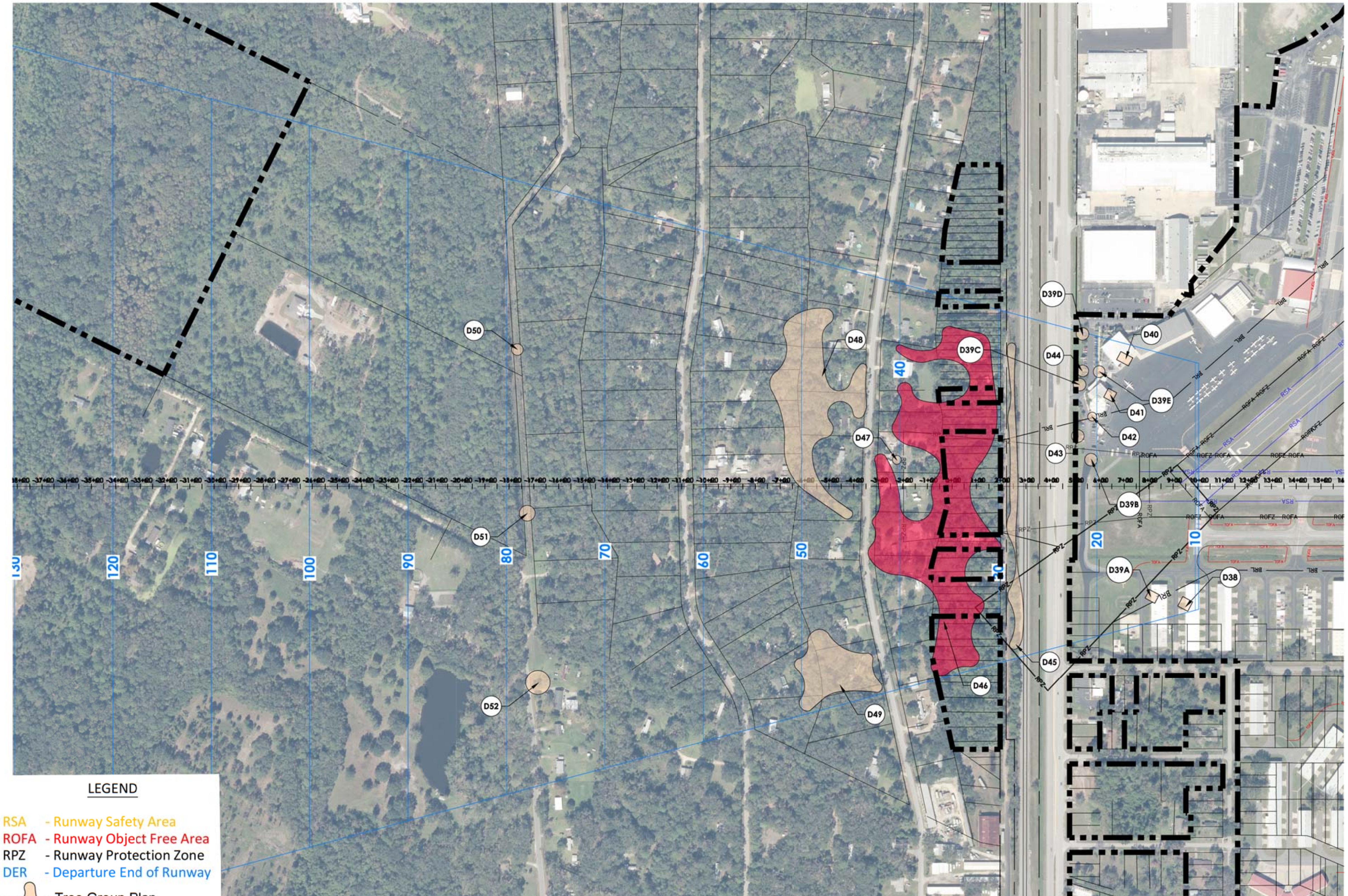
DRAFT
Northeast Florida Regional Airport

Town/City: City of St. Augustine
County: St. Johns
State: Florida

Project No. 23081.70

Drawing No. Sheet 18

Date February 2020



LEGEND

- RSA - Runway Safety Area
- ROFA - Runway Object Free Area
- RPZ - Runway Protection Zone
- DER - Departure End of Runway
- Tree Group Plan
- FAA 5010 Tree Obstruction Area Plan

PASSERO ASSOCIATES
engineering architecture

Northeast Florida Regional Airport
Fly Smart!

Client:

St. Augustine-St. Johns County Airport Authority
4900 U.S. Highway 1, North
St. Augustine, FL 32095

Passero Associates
4730 Casa Cola Way, Suite 200
St. Augustine, FL 32095
(904) 757-6106
www.passero.com

Principal-in-Charge	Andrew M. Holesko
Project Manager	Lisa Cheung
Designed by	Wayne B. Zian

Revisions

No.	Date	By	Description

Airport Layout Plan Update
Departure Surface
Runway 24
Plan (Proposed)

DRAFT
Northeast Florida
Regional Airport

Town/City: City of St. Augustine
County: St. Johns
State: Florida

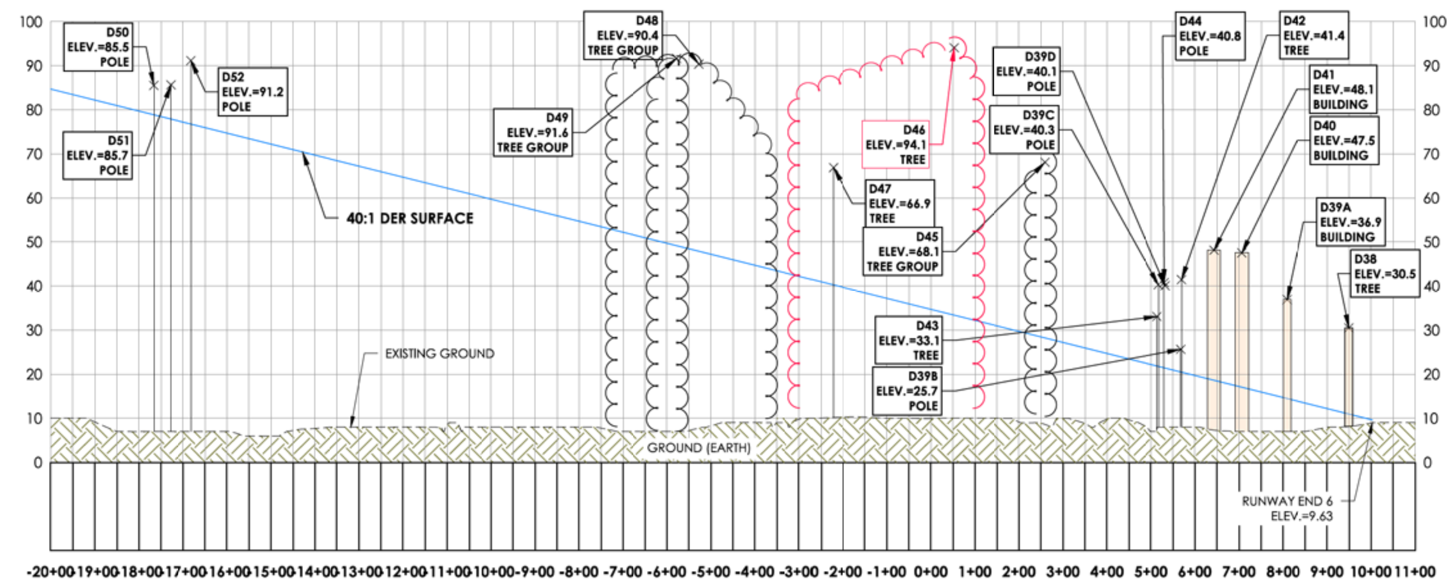
Project No.
23081.70

Drawing No.
Sheet 19A

Date
February 2020

LEGEND

- Tree Group Profile
- FAA 5010 Tree Obstruction Area Profile
- Obstruction Point Profile



RUNWAY 6 END

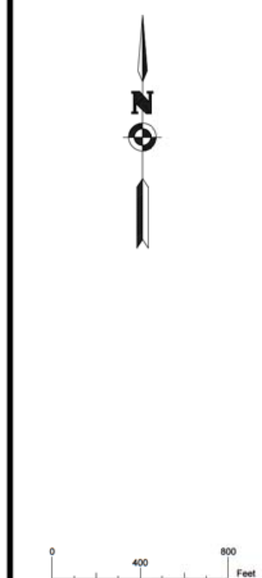
SCALE: HORIZONTAL - 1" = 200'
VERTICAL - 1: = 10'

ID	DESCRIPTION	OBJECT ELEVATION	SURFACE HEIGHT ALLOWED	40:1 DER Penetration	ON/OFF AIRPORT	DISPOSITION
D38	BUILDING	30.5	11.0	19.5	ON	MARK OR LIGHT
D39A	BUILDING	36.9	14.5	22.4	ON	MARK OR LIGHT
D39B	POLE	25.7	20.5	5.2	ON	REMOVED, LOWERED, MARK/ LIGHT OR DISPLACE RUNWAY THRESHOLD
D39C	POLE	40.3	21.8	18.5	ON	REMOVED, LOWERED, MARK/ LIGHT OR DISPLACE RUNWAY THRESHOLD
D39D	POLE	40.1	21.4	18.7	ON	REMOVED, LOWERED, MARK/ LIGHT OR DISPLACE RUNWAY THRESHOLD
D39E	POLE	47.8	19.7	28.1	ON	REMOVED, LOWERED, MARK/ LIGHT OR DISPLACE RUNWAY THRESHOLD
D40	BUILDING	47.5	17.1	30.4	ON	MARK OR LIGHT
D41	BUILDING	48.1	18.6	29.5	ON	MARK OR LIGHT
D42	POLE	41.4	20.5	20.9	ON	REMOVED, LOWERED, MARK/ LIGHT OR DISPLACE RUNWAY THRESHOLD
D43	TREE	33.1	21.9	11.2	ON	TRIM
D44	POLE	40.8	21.4	19.4	ON	REMOVED, LOWERED, MARK/ LIGHT OR DISPLACE RUNWAY THRESHOLD
D45	TREE GROUP	68.1	28.2	39.9	OFF	TRIM
D46	TREE GROUP (5010)	94.5	35.6	58.9	ON/OFF	TRIM
D47	TREE	66.9	40.3	26.6	OFF	TRIM
D48	TREE GROUP	90.4	47.9	42.5	OFF	TRIM
D49	TREE GROUP	94.1	46.1	48	OFF	TRIM
D50	POLE	85.5	78.9	6.6	OFF	REMOVED, LOWERED, MARK/ LIGHT OR DISPLACE RUNWAY THRESHOLD
D51	POLE	85.7	77.9	7.8	OFF	REMOVED, LOWERED, MARK/ LIGHT OR DISPLACE RUNWAY THRESHOLD
D52	POLE	91.2	76.8	14.4	OFF	REMOVED, LOWERED, MARK/ LIGHT OR DISPLACE RUNWAY THRESHOLD

NOTES:

1. ALL OBSTRUCTION DATA, RUNWAY COORDINATES AND ELEVATIONS FOR ARP, RUNWAY ENDS, AND DISPLACED THRESHOLDS HAVE BEEN OBTAINED FROM THE 2016 QUANTUM SPATIAL SURVEY. PLEASE NOTE THAT THE COORDINATES AND ELEVATION VALUES ARE DIFFERENT FROM THE PUBLISHED VALUES ON THE FAA 5010. THEREFORE, THE FAA 5010 FOR SGJ NEEDS TO BE UPDATED.
2. TREES IDENTIFIED IN THE FAA 5010 MASTER RECORD ARE INCLUDED WITHIN THE RED OBSTRUCTION AREA IDENTIFIED IN THE PLAN AND PROFILE.
3. ALL OBJECT ELEVATIONS ARE CURRENT AS OF THIS ALP UPDATE AND ARE SUBJECT TO CHANGE.

PASSERO ASSOCIATES
engineering architecture



Northeast Florida Regional Airport
Fly Smart!

Client:

St. Augustine-St. Johns County Airport Authority
4900 U.S. Highway 1, North
St. Augustine, FL 32095

Passero Associates
4730 Casa Cola Way, Suite 200
St. Augustine, FL 32095
(904) 757-6106
www.passero.com

Principal-in-Charge Andrew M. Holesko
Project Manager Lisa Cheung
Designed by Wayne B. Zian

Revisions

No.	Date	By	Description

Airport Layout Plan Update
Departure Surface
Runway 24
Profile (Proposed)

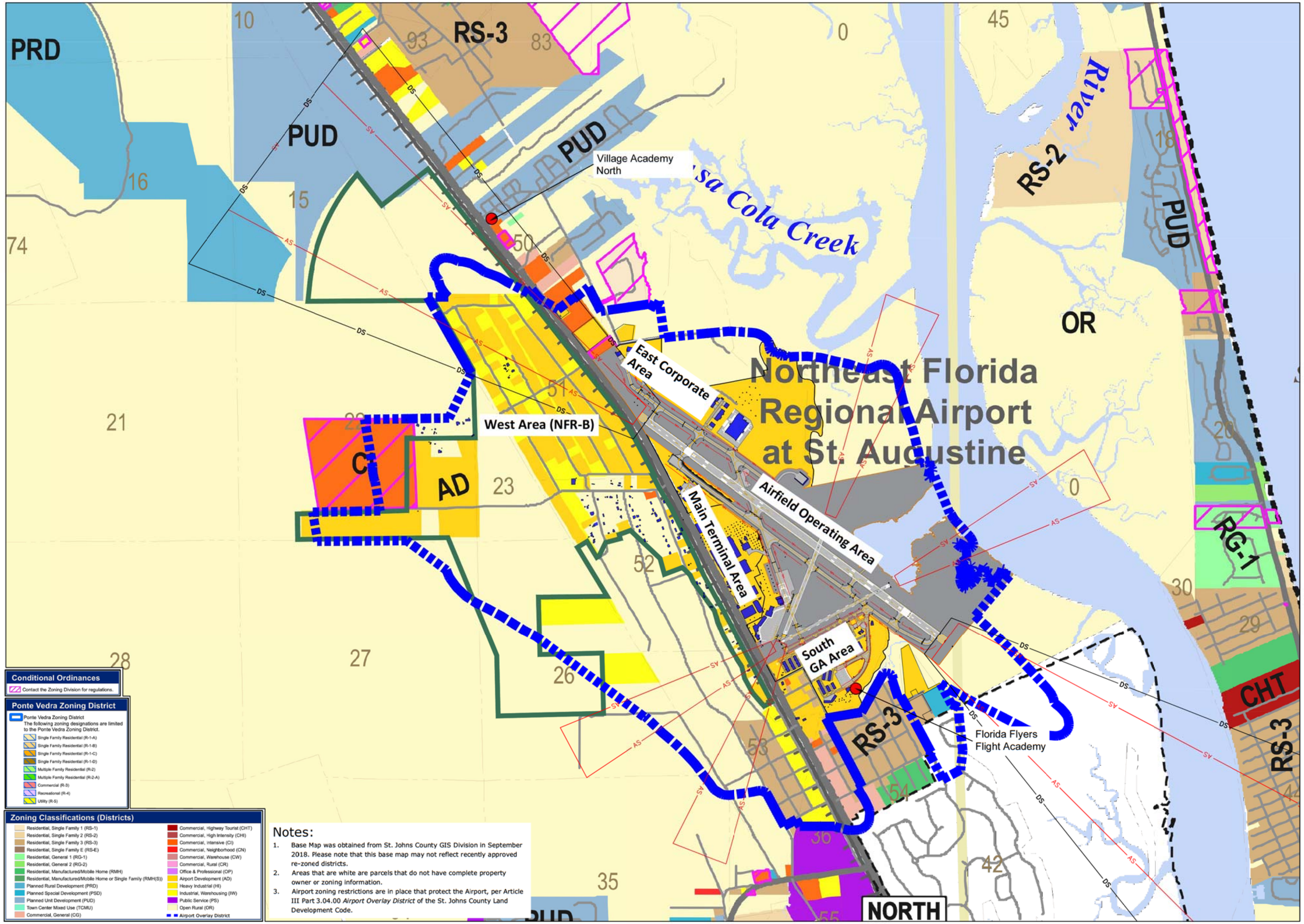
DRAFT
Northeast Florida
Regional Airport

Town/City: City of St. Augustine
County: St. Johns State: Florida

Project No.
23081.70

Drawing No.
Sheet 19B

Date
February 2020



Notes:

1. Base Map was obtained from St. Johns County GIS Division in September 2018. Please note that this base map may not reflect recently approved re-zoned districts.
2. Areas that are white are parcels that do not have complete property owner or zoning information.
3. Airport zoning restrictions are in place that protect the Airport, per Article III Part 3.04.00 *Airport Overlay District* of the St. Johns County Land Development Code.

PASSERO ASSOCIATES
engineering architecture

NFRA
Northeast Florida Regional Airport
Fly Smart!

Client:

St. Augustine-St. Johns County Airport Authority
4900 U.S. Highway 1, North
St. Augustine, FL 32095

Passero Associates
4730 Casa Cola Way, Suite 200
St. Augustine, FL 32095
(904) 757-6106
www.passero.com

Principal-in-Charge: Andrew M. Holesko
Project Manager: Lisa Cheung
Designed by: Chris Johnson

Revisions

No.	Date	By	Description

Airport Layout Plan Update

Land Use Plan (On-Airport)

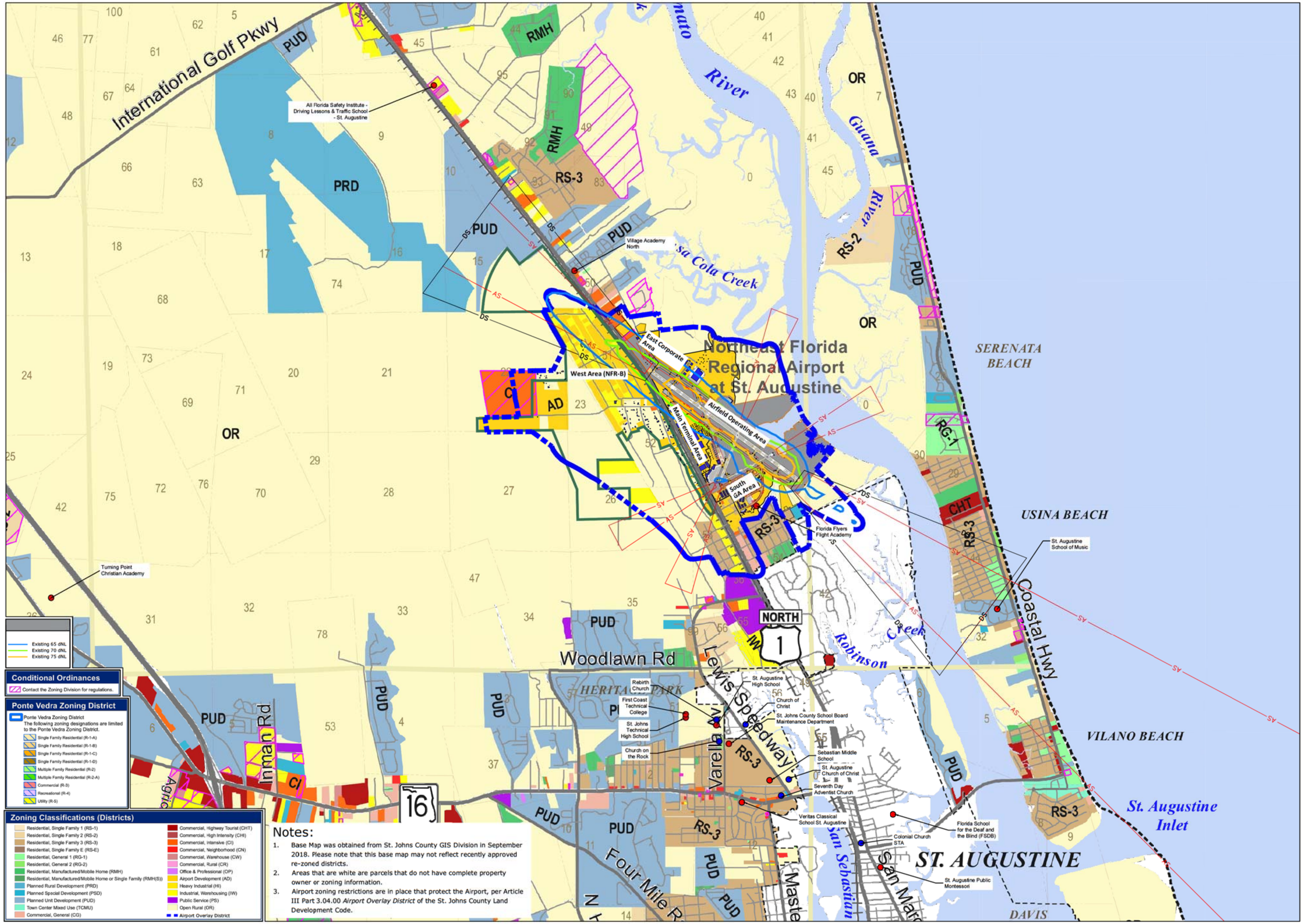
DRAFT
Northeast Florida Regional Airport

Town/City: City of St. Augustine
County: St. Johns
State: Florida

Project No. 23081.70

Drawing No. Sheet 20A

Date February 2020



Notes:

1. Base Map was obtained from St. Johns County GIS Division in September 2018. Please note that this base map may not reflect recently approved re-zoned districts.
2. Areas that are white are parcels that do not have complete property owner or zoning information.
3. Airport zoning restrictions are in place that protect the Airport, per Article III Part 3.04.00 *Airport Overlay District* of the St. Johns County Land Development Code.

PASSERO ASSOCIATES
engineering architecture

Mag 6°33' W changing 0°5' W per year
True
0 2000 4000 Feet

NFRA
Northeast Florida Regional Airport
Fly Smart!

Client:

St. Augustine-St. Johns County Airport Authority
4900 U.S. Highway 1, North
St. Augustine, FL 32095

Passero Associates
4730 Casa Cola Way, Suite 200 St. Augustine, FL 32095
(904) 757-6106 www.passero.com

Principal-in-Charge: Andrew M. Holesko
Project Manager: Lisa Cheung
Designed by: Chris Johnson

Revisions

No.	Date	By	Description

Airport Layout Plan Update

Land Use Plan (Off-Airport)

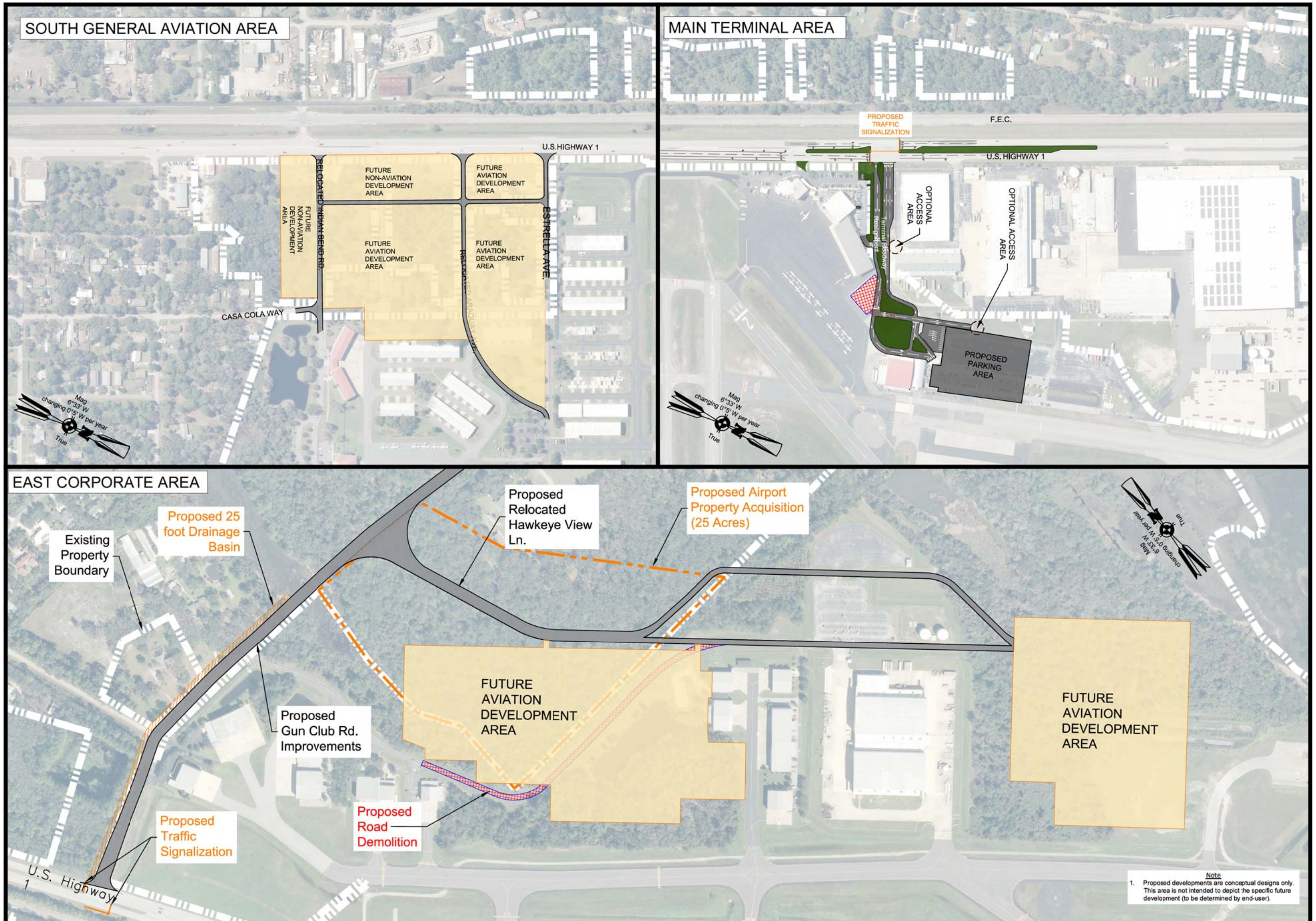
DRAFT
Northeast Florida Regional Airport

Town/City: City of St. Augustine
County: St. Johns
State: Florida

Project No.
23081.70

Drawing No.
Sheet 20B

Date
February 2020



PASSERO ASSOCIATES
engineering architecture

0 200 400 Feet

Northeast Florida Regional Airport
Fly Smart!

Client:

St. Augustine-St. Johns County Airport Authority
4900 U.S. Highway 1, North
St. Augustine, FL 32095

Passero Associates
4730 Casa Cola Way, Suite 200
St. Augustine, FL 32095
(904) 757-6106
www.passero.com

Principal-in-Charge	Andrew M. Holesko
Project Manager	Lisa Cheung
Designed by	Chris Johnson

Revisions

No.	Date	By	Description

Airport Layout Plan Update

Ground Access Plan NFRA

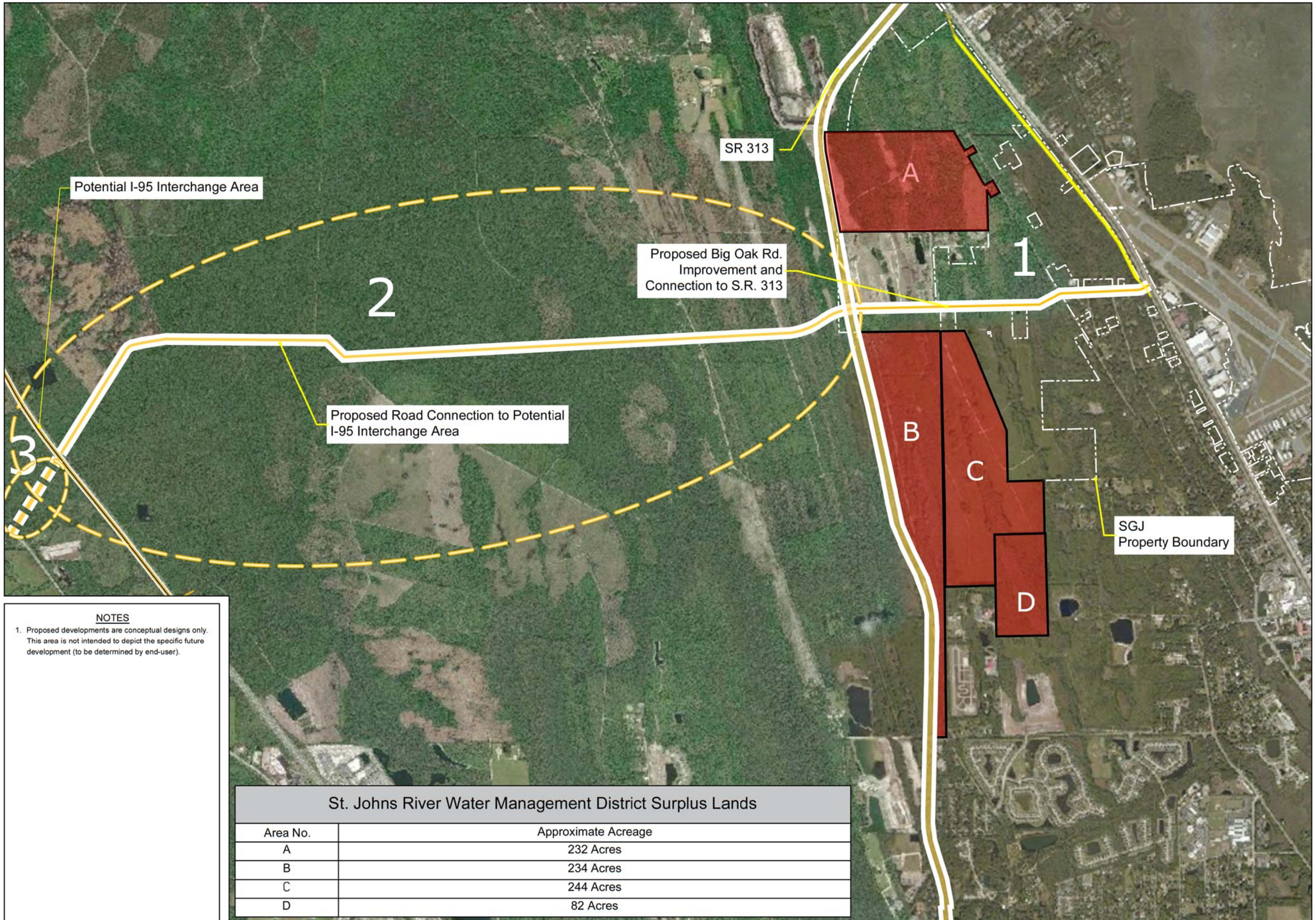
DRAFT
Northeast Florida Regional Airport

Town/City: City of St. Augustine
County: St. Johns State: Florida

Project No.
23081.70

Drawing No.
Sheet 21A

Date
February 2020



NOTES

1. Proposed developments are conceptual designs only. This area is not intended to depict the specific future development (to be determined by end-user).

St. Johns River Water Management District Surplus Lands	
Area No.	Approximate Acreage
A	232 Acres
B	234 Acres
C	244 Acres
D	82 Acres

PASSERO ASSOCIATES
engineering architecture

0 1,200 2,400 Feet

Northeast Florida Regional Airport
Fly Smart!

Client:

St. Augustine-St. Johns County Airport Authority
4900 U.S. Highway 1, North
St. Augustine, FL 32095

Passero Associates
4730 Casa Cola Way, Suite 200 St. Augustine, FL 32095 (904) 757-6106 www.passero.com

Principal-in-Charge Andrew M. Holesko
Project Manager Lisa Cheung
Designed by Chris Johnson

Revisions

No.	Date	By	Description

Airport Layout Plan Update

Ground Access Plan NFR-B

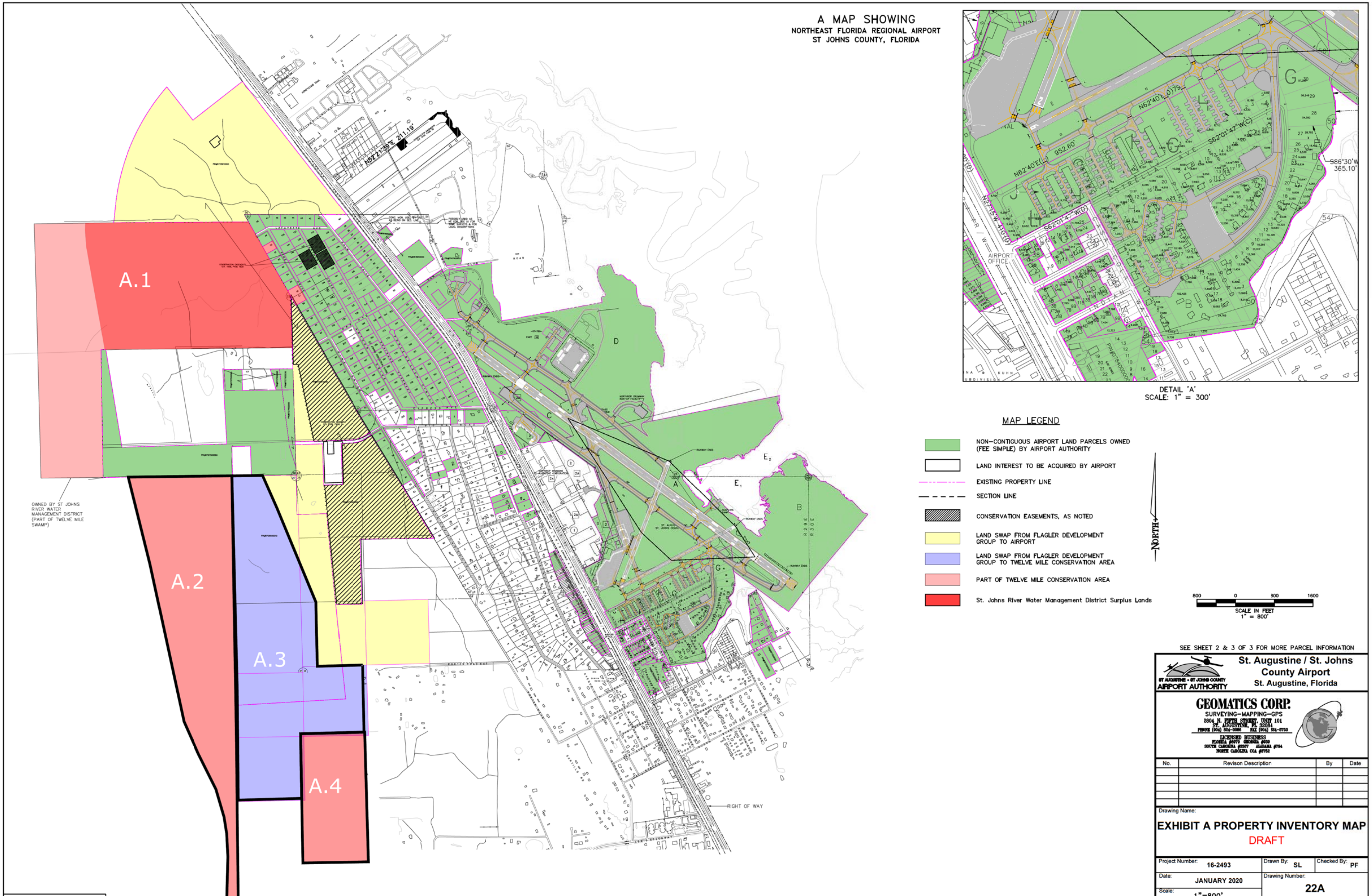
DRAFT
Northeast Florida Regional Airport

Town/City: City of St. Augustine
County: St. Johns State: Florida

Project No. 23081.70

Drawing No. Sheet 21B

Date February 2020



A MAP SHOWING
NORTHEAST FLORIDA REGIONAL AIRPORT
ST JOHNS COUNTY, FLORIDA
A.1
A.2
A.3
A.4
OWNED BY ST JOHNS RIVER WATER MANAGEMENT DISTRICT (PART OF TWELVE MILE SWAMP)
RIGHT OF WAY
D
C
A
B
E1
E2
G
AIRPORT OFFICE
N62°40'E
952.60'
S86°30'W
365.10'
DETAIL 'A'
SCALE: 1" = 300'
MAP LEGEND
NON-CONTIGUOUS AIRPORT LAND PARCELS OWNED (FEE SIMPLE) BY AIRPORT AUTHORITY
LAND INTEREST TO BE ACQUIRED BY AIRPORT
EXISTING PROPERTY LINE
SECTION LINE
CONSERVATION EASEMENTS, AS NOTED
LAND SWAP FROM FLAGLER DEVELOPMENT GROUP TO AIRPORT
LAND SWAP FROM FLAGLER DEVELOPMENT GROUP TO TWELVE MILE CONSERVATION AREA
PART OF TWELVE MILE CONSERVATION AREA
St. Johns River Water Management District Surplus Lands
NORTH
800 0 800 1600
SCALE IN FEET
1" = 800'
SEE SHEET 2 & 3 OF 3 FOR MORE PARCEL INFORMATION
ST AUGUSTINE • ST JOHNS COUNTY AIRPORT AUTHORITY
St. Augustine / St. Johns County Airport
St. Augustine, Florida
GEOMATICS CORP.
SURVEYING–MAPPING–GPS
2804 N. FIFTH STREET, UNIT 101
ST. AUGUSTINE, FL 32084
PHONE (904) 824-3086 FAX (904) 824-5753
LICENSED BUSINESS
FLORIDA #6979 GEORGIA #939
SOUTH CAROLINA #3387 ALABAMA #794
NORTH CAROLINA COA #3752
No. | Revison Description | By | Date
Drawing Name:
EXHIBIT A PROPERTY INVENTORY MAP
DRAFT
Project Number: 16-2493
Drawn By: SL
Checked By: PF
Date: JANUARY 2020
Drawing Number: 22A
Scale: 1"=800'
PROJECT No: D-16-2493

EXHIBIT A PROPERTY INVENTORY MAP

STRAP	DESCRIPTION	GRANTOR/GRANTEE	INTEREST	ACREAGE	TYPE OF CONVEYANCE INSTRUMENT	BOOK/PAGE	FAA GRANT NUMBER/YEAR	PFC PROJECT NUMBER (if applicable)	TYPE OF EASEMENT	DATE OF ACQUISITION/RECORDING	TYPE OF RELEASE (if applicable)	DATE OF RELEASE (if applicable)	DATE OF DISPOSAL (if applicable)	EXISTING ENCUMBRANCES ON PROPERTY
0725910000	1 PT OF PABLO SABATE GRANT SEC 50 & PTS OF GOV LOT 5 & 7 & ALL OF GOV LOT 6 IN SEC 15 & ALL OF SEC 23 & PTS OF GOV LOTS 2 & 3 & ALL OF GOV LOT 1 IN SEC 26 ALL BEING IN TOWNSHIP 6 RANGE 29 OR4308/1674	FDG CORDOVA PALMS	FEE SIMPLE	364.82	WD	4308/1674	N/A	N/A	N/A	12/27/2016	N/A	N/A	N/A	N/A
0727500000	2 LOTS 8 9 10 13 14 & 15 (EX 400 X 435FT IN OR920/610) (EX OR955/531 & 959/981 & EX OR970/231 & EX OR974/1644) (EX OR995/1187) OR1452/76	UNKNOWN	FEE SIMPLE	5.00	WD	1452/76	N/A	N/A	N/A	11/2/1999	N/A	N/A	N/A	N/A
0727500030	2-3 PT OF N1/2 OF SE1/4 (EX PTS IN OR993/66 & 1027/496) (EX PT IN OR995/1187) OR1572/1595(Q/C)	PELLICER, CHARLES	FEE SIMPLE	2.40	QC	1572/1595	N/A	N/A	N/A	5/16/2000	N/A	N/A	N/A	N/A
0727500080	2-8 PT OF GLS 8 9 10 13 14 & 15 (EX PT IN OR959/981) OR995/1187	TRADES BAY CO, INC.	FEE SIMPLE	96.45	WD	995/1187	N/A	N/A	N/A	6/9/1993	N/A	N/A	N/A	N/A
0727500090	2-9 PT OF N1/2 OF SE1/4 - THAT PT OF OR995/1187 LYING WITHIN OR959/981 OR1572/1595(Q/C)	PELLICER, CHARLES	FEE SIMPLE	5.21	QC	1572/1595	N/A	N/A	N/A	5/16/2000	N/A	N/A	N/A	N/A
0728500010	1-2 SEC 27-6-29 ALL OF GOV LOTS 1 8 9 & PT OF 16 & SEC 26-6-29 PTS OF GOV LOTS 2 3 7 8 OR4297/1468 & 1471 & 4299/540(C/D)	FDG CORDOVA PALMS	FEE SIMPLE	212.55	CD	4299/540	N/A	N/A	N/A	12/9/2016	N/A	N/A	N/A	N/A
0747400010	35-1 PART OF SABATE GRANT SEC 50 LYING N OF GAME CLUB RD AND E OF OLD BRICK RD OR1464/3	DOLAN, BARBARA	FEE SIMPLE	2.93	WD	1464/3	N/A	N/A	N/A	12/27/1999	N/A	N/A	N/A	N/A
0747800000	38 PT OF SABATE GRANT SEC 50 & DANIEL HURLBERT GRANT SEC 51 ALL LYING E OF US 1 R/W (EX PT IN OR19/90 422/505 & 507) (EX APPROX 24AC TO GRUMMAN ST AUG CORP BY LEASE DATED 10-20-87) (EX LEASE TO RINGPOWER CORP DATED 5-26-93)(EX LEASE TO FLA NATIONAL GUARD)(EX 8AC OF 20AC OPTION PARCEL LEASED TO GRUMMAN-ENGINE RUNUP FACILITY) (EX LEASE TO MARLBORO INDUSTR PARK-LUHRS-DATED 7-1-97) (EX LEASE TO REGENCY AVIATION INC DATED 10-1-98) (EX LEASE TO FUTURE FIRST AVIATION INC DATED 9-1-99) (EX LEASE TO SJC SHERIFFS OFFICE DATED 11-1-99) (EX LEASE TO SK LOGISTICS INC D: 2-17-04 & LEASE TO INFINITY AVAIATION D:4-16-04) (EX LEASE TO AIR REHAB & SALES & EX LEASES TO AVOX AVIATION LLC & TO SOUTHEAST AERO SALES INC & SOUTHEAST AERO SERVICES INC ALL DATED 2-26-07 BEING HANGARS #8 #9 & #10) DB212/593 DB215/212 DB216/458 460 466 & 502 & OR56/392 & OR207/702 & OR682/414	FAIRFIELD INDUSTRIES	FEE SIMPLE	123.97	N/A	682/414	N/A	N/A	N/A	8/1/1985	N/A	N/A	N/A	N/A
0747800020	38-2 TRI PART OF SABATE GRANT SEC 50 & DANIEL HURLBERT GRANT SEC 51 LYING E OF US 1 PT OF OR828/474 N'LY TRIANGLE	GRUMMAN CORPORATION	FEE SIMPLE	1.79	N/A	828/474	N/A	N/A	N/A	8/1/1989	N/A	N/A	N/A	N/A
0747800030	38-3 PT OF SABATE GRANT LYING E OF US 1 & S OF GUN CLUB ROAD APPROX 24 ACRES LEASED	AIRPORT AUTHORITY	FEE SIMPLE	24.00	OI	2661/584	N/A	N/A	N/A	4/2/2001	N/A	N/A	N/A	N/A
0747800040	38-4 PT OF SABATE GRANT LYING E OF GUN CLUB RD & N OF RUNWAY LEASE TO FLA NATIONAL GUARD	AIRPORT AUTHORITY	FEE SIMPLE	0.16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
0747800050	38-5 PT OF SABATE GRANT LYING E OF GUN CLUB RD & N OF RUNWAY LEASED	AIRPORT AUTHORITY	FEE SIMPLE	0.15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
0747800060	38-6 PT OF SABATE GRANT LYING E OF GUN CLUB RD & N OF RUNWAY LEASE TO MARLBORO INDUSTRIAL PARK LEASED	CORD, L	FEE SIMPLE	0.29	OI	2220/1010	N/A	N/A	N/A	5/13/2004	N/A	N/A	N/A	N/A
0747800070	38-7 PT OF SABATE GRANT & SEC 24 - PT OF 20AC OPTION PARCEL LEASED	NORTHROP GRUMMAN	FEE SIMPLE	8.00	OI	2661/584	N/A	N/A	N/A	4/2/2001	N/A	N/A	N/A	N/A
0747800080	38-8 PT OF SABATE GRANT LYING E OF GUN CLUB RD & N OF RUNWAY LEASED AKA CORPORATE HANGAR AREA HANGAR #1	AIRPORT AUTHORITY	FEE SIMPLE	0.78	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
0747800090	38-9 PT OF SABATE GRANT LYING E OF GUN CLUB RD & N OF RUNWAY LEASED AKA EAST CORPORATE HANGAR AREA HANGAR 2	AIRPORT AUTHORITY	FEE SIMPLE	0.75	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
0747800100	38-10 PT OF SABATE GRANT LYING E OF GUN CLUB RD & N OF RUNWAY LEASED AKA EAST CORPORATE HANGAR AREA HANGAR #3	AIRPORT AUTHORITY	FEE SIMPLE	0.56	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
0747800110	38-11 PT OF SABATE GRANT LYING 38-11 PT OF SABATE GRANT LYING E OF GUN CLUB RD & N OF RUNWAY LEASED AKA EAST CORPORATE HANGAR AREA HANGAR #4	AIRPORT AUTHORITY	FEE SIMPLE	0.66	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
0747800120	38-12 PART OF SABATE GRANT SEC 50 LYING E OF US 1 AND SOUTH OF GUN CLUB RD LEASED AKA EAST CORPORATE HANGAR AREA HANGAR #5	AIRPORT AUTHORITY	FEE SIMPLE	2.35	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
0747800140	38-14 PART OF SABATE GRANT SEC 50 LYING E OF US 1 & S OF GUN CLUB RD LEASED AKA EAST CORPORATE HANGAR AREA HANGAR # 7	AIRPORT AUTHORITY	FEE SIMPLE	1.98	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
0747800150	38-15 PT OF SABATE GRANT LYING E OF GUN CLUB RD & N OF RUNWAY LEASED AKA EAST CORPORATE HANGAR AREA HANGARS #8 #9 & #10	AIRPORT AUTHORITY	FEE SIMPLE	1.08	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
0748000000	39 PT OF SABATE GRANT - PT OF OR75 PG400 & PT OF OR828 PG474 LEASED TO GRUMMAN	GRUMMAN CORPORATION	FEE SIMPLE	9.39	N/A	828/474	N/A	N/A	N/A	8/1/1989	N/A	N/A	N/A	N/A
0748000010	39-1 THAT PT OF SABATE GRANT AS DESCRIBED IN OR75 PG400 (EX R/W US 1) (EX PT LEASED TO GRUMMAN ST AUG CORP & SUBLEASED TO US GOVT-US COAST GUARD AIR STATION) OR75/400	COPSEY. J	FEE SIMPLE	2.48	N/A	75/400	N/A	N/A	N/A	8/1/1965	N/A	N/A	N/A	N/A
0748400000	45 SECS 24 25 50 & 51-6S-29E & 30-6S-30E PART OF SABATE GRANT & MARSH LAND (EX 19.45AC IN DB215/212, 14.16AC IN OR56/392, 0.013 AC OR207/702 & & R/W OF US 1 IN DB210/324) (EX PT TO AERO SPORT INC BY LEASE DATED 7-24-78 & AMENDED 1-16-79 4-17-79 & 4-20-84) (EX PT LEASED TO GRUMMAN AS ENGINE RUNUP FACILITY)(EX PTS LEASED TO GRUMMAN AS FENCED AIRCRAFT PARKING & STORAGE PARCELS 1 A B & C) & INCL 2.10AC OF PARKING NO LONGER LEASED BACK TO AUTHORITY OR75/20 103/141 & 145 & 19/90	BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND OF THE STATE OF FLORIDA	FEE SIMPLE	360.62	LS	3480/1536	N/A	N/A	N/A	10/6/2011	N/A	N/A	N/A	N/A
0748400010	45-1 PT OF SABATE GRANT LYING E OF US 1 APPROX 450FT ON RD (EX PT TO PGA TOUR INVEST INC BY LEASE DATED 8-17-88 AMEND BY LETTER DATED 11-1-88)(EX PT DBA FLY-BY CAFE BY AGREEMENT DATED 10-1-97) BY LEASE DATED 7-24-78 AMENDED 1-16-79 4-17-79 & 4-20-84	AIRPORT AUTHORITY	FEE SIMPLE	9.78	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
0748400020	45-2 PT OF SABATE GRANT LYING E OF US 1 PT OF LANDS LEASED TO AERO SPORT INC - SUB-LEASE TO FBO (FIXED BASE OPERATIONS) 12/2005-EXEMPT	AIRPORT AUTHORITY	FEE SIMPLE	0.47	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
0748400060	45-6 PT OF SABATE GRANT LYING NE OF US1 LEASED DBA FLY BY CAFÉ	AIRPORT AUTHORITY	FEE SIMPLE	0.04	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
0748400070	45-7 PT OF SABATE GRANT LYING E OF US 1 - PARCEL 1 OF LEASE DATED 8-29-80 IN OR464/338 & PARCELS A B & C (BEING FENCED STORAGE FOR US AIRCRAFT) BY LETTER DATED 2-15-84 WITH AIRPORT AUTHORITY & MEMORANDUM OF AGREEMENT WITH AEROSPORT DATED 1-11-85 (EX 2.10AC OF PARKING LOT NOT LEASED COMBINED WITH 074840-0000)	AIRPORT AUTHORITY	FEE SIMPLE	6.72	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
0748800004	PT SABATE GRANT LYING W OF 60 FT RD & E OF D HURLBERT GRANT LOTS 4 & 5 ST AUG NORTH UNREC PLAT OR800/264	STRASSER, M	FEE SIMPLE	0.28	N/A	800/264	N/A	N/A	N/A	10/1/1988	N/A	N/A	N/A	N/A
0748800006	PT OF SABATE GRANT LYING W OF 60FT RD & E OF DANIEL HURLBERT GRANTS LOTS 6 & 7 ST AUGUSTINE NORTH UNIT I UNREC PLAT OR943/1437	MCCUBBIN, C M	FEE SIMPLE	0.29	WD	943/1437	N/A	N/A	N/A	5/22/1992	N/A	N/A	N/A	N/A
0748800008	PT OF SABATE GRANT LYING W OF 60FT RD E OF DANIEL HURLBERT GRANT LOTS 8 & 9 ST AUG NORTH UT 1 UNREC PLAT OR755/1361 (A/D) & 789/492	CAMPBELL, SUZANNE	FEE SIMPLE	0.31	CD	906/948	N/A	N/A	N/A	8/26/1991	N/A	N/A	N/A	N/A
0748800010	PT SABATE GRANT LYING W OF 60 FT RD & E OF DANIEL HURLBERT GT LOTS 10 & 11 ST AUG NORTH UT 1 UNREC PLAT OR820/0782 (P/R DEED)	MILLER, J&R	FEE SIMPLE	0.34	N/A	820/782	N/A	N/A	N/A	5/1/1989	N/A	N/A	N/A	N/A
0748800012	PT OF SABATE GRANT LYING W OF 60FT RD & E OF D HULBERT GRANT LOTS 12 13 & 14 ST AUG NORTH UT 1 UNREC PLAT OR888/1767	GIANDOMENICO, R	FEE SIMPLE	0.53	N/A	888/1767	N/A	N/A	N/A	3/1/1991	N/A	N/A	N/A	N/A
0748800015	PT SABATE GRANT LYING W OF 60 FT RD & E OF D HURLBERT GRANTS LOTS 15 & 16 ST AUG NORTH UT 1 UNREC PLAT OR879/562	DUSSINGER, STELLA	FEE SIMPLE	0.37	N/A	879/562	N/A	N/A	N/A	12/1/1990	N/A	N/A	N/A	N/A
0748800017	PT SABATE GRANT LYING W OF 60 FT RD & E OF D HURLBERT GRANTS LOTS 17 18 & 19 ST AUG NORTH UT 1 UNREC PLAT OR849/398	KING, D	FEE SIMPLE	0.58	N/A	849/398	N/A	N/A	N/A	2/1/1990	N/A	N/A	N/A	N/A
0748800020	PT SABATE GRANT LYING W OF 60 FT RD & E OF D HURLBERT GRANT LOTS 20 & 21 ST AUG NORTH UT 1 UNREC PLAT OR920/832 & 949/338(C/D)	HUBBARD, ROBERT	FEE SIMPLE	0.40	CD	949/338	N/A	N/A	N/A	12/30/1991	N/A	N/A	N/A	N/A
0748800027	PT SABATE GRANT LYING N OF 60 FT RD & E OF D HURLBERT GRANT LOTS 27 & 28 ST AUG NORTH UT 1 UNREC PLAT OR847/158	POKORNOWSKI, MARIE	FEE SIMPLE	0.39	N/A	847/158	N/A	N/A	N/A	2/1/1990	N/A	N/A	N/A	N/A
0748800029	PT SABATE GRANT LYING W OF 60 PT SABATE GRANT LYING W OF 60 FT RD & E OF D HURLBERT GRANT LOTS 29 & 30 ST AUG NORTH UT 1 UNREC PLAT OR1565/929	JONES, GARY WILLIAM, JR.	FEE SIMPLE	0.39	WD	1565/929	N/A	N/A	N/A	2/6/2001	N/A	N/A	N/A	N/A
0748800033	PT SABATE GRANT LYING W OF 60 FT RD & E OF D HURLBERT GRANT LOTS 33 & 34 ST AUG NORTH UT 1 UNREC PLAT) OR916/1803	BURLEIGH, G&H	FEE SIMPLE	0.33	WD	916/1803	N/A	N/A	N/A	11/27/1991	N/A	N/A	N/A	N/A
0748800035	PT SABATE GRANT LYING W OF 60 FT RD & E OF D HURLBERT GRANT LOTS 35 & 36 ST AUG NORTH UT 1 UNREC PLAT OR920/832 & 949/338(C/D)	HUBBARD, ROBERT	FEE SIMPLE	0.32	CD	949/338	N/A	N/A	N/A	12/30/1991	N/A	N/A	N/A	N/A
0748800037	PT SABATE GRANT LYING W OF 60 FT RD LYING W OF & ALONG FEC R/W LOTS 37 & 38 ST AUG US 1 NORTH UNIT 1 UNREC PLAT OR897/815	GEISLER, T KITTELSON, S NERMYR, J	FEE SIMPLE	0.30	N/A	897/815	N/A	N/A	N/A	5/1/1991	N/A	N/A	N/A	N/A
0748800039	PT SABATE GRANT LYING W OF 60 FT RD & E OF DANIEL HURLBERT GRANT LOTS 39 & 40 ST AUG US 1 NORTH UNIT 1 UNREC PLAT OR886/440	PEPE, F (GRANDCHILDREN)	FEE SIMPLE	0.30	N/A	886/440	N/A	N/A	N/A	2/1/1991	N/A	N/A	N/A	N/A
0748800041	PT OF SABATE GRANT LYING W OF 60FT RD & E OF DANIEL HURLBERT GRANT LOTS 41 & 42 ST AUG US 1 NORTH UNIT 1 UNREC PLAT OR1188/470	BALL, MARTHA	FEE SIMPLE	0.29	WD	1188/470	N/A	N/A	N/A	8/1/1996	N/A	N/A	N/A	N/A
0748800043	PT SABATE GRANT LYING W OF 60 FT RD & E OF D HULBERT GRANT 120FT ON RD LOTS 43 THRU 46 ST AUG US 1 NORTH UT 1 UNREC PLAT OR919/1281 & OR919/1285	SIRAGUSA, M	FEE SIMPLE	0.65	WD	919/1281	N/A	N/A	N/A	12/20/1991	N/A	N/A	N/A	N/A
0748800051	PT SABATE GRANT LYING W OF 60 FT RD & E OF D HURLBERT GRANT LOTS 51 & 52 ST AUG NORTH UT 1 UNREC PLAT OR893/664	SUTHERLAND, G. ELAINE	FEE SIMPLE	0.34	N/A	893/664	N/A	N/A	N/A	4/1/1991	N/A	N/A	N/A	N/A
0748800064	PART SABATE GRANT LYING W OF 60FT RD & E OF DANIEL HURLBERT GRANT TRACTS 64 & 65 ST AUG US 1 NORTH UNIT 1 UNREC PLAT OR887/860	KEMERER, CHARLES	FEE SIMPLE	0.36	N/A	887/860	N/A	N/A	N/A	2/1/1991	N/A	N/A	N/A	N/A
0748800070	PT SABATE GRANT LYING W OF 60 FT RD & E OF D HURLBERT GRANT LOTS 70 THRU 80 ST AUG NORTH UT 1 UNREC PLAT OR622/383 & 395 & 896/921	PEPE, F (GRANDCHILDREN)	FEE SIMPLE	1.63	N/A	896/921	N/A	N/A	N/A	5/1/1991	N/A	N/A	N/A	N/A
0748800081	PT SABATE GRANT LYING W OF 60 FT RD & E OF D HURLBERT GRANT LOTS 81 & 82 ST AUG NORTH UT 1 UNREC PLAT OR903/1091	HUBBARD, BARBARA	FEE SIMPLE	0.28	WD	903/1091	N/A	N/A	N/A	7/29/1991	N/A	N/A	N/A	N/A
0783100040	3-35 USINA & KUHN BLK 2 LOTS 4 & 5 (EX ANY PT IN R/W OF US 1) OR3939/76 LEASED	SCOTT A. BORRILLO	FEE SIMPLE	0.28	WD	3939/76	N/A	N/A	N/A	9/30/2014	N/A	N/A	N/A	N/A
0784000000	PLAT VAC (OR3107/1695) USINA & KUHN SUB BEING THAT PT FKA LOTS 8 THRU 14 BLK 1 & LOTS 6 THRU 28 BLK 2 (EX WELL IN SW CORNER OF LOT 10 TO SJC IN OR2868/401) (EX 5 X 5FT IN SW CORNER OF LOT 11) (EX W28FT R/W US 1 IN DB208/474 DB209/279 & DB219/517) & PLAT VAC (OR3107/1691) JACKSON PK FKA LOTS 14 & 16 BLK 1 & BLK 22 LYING N OF S'LY 50FT (EX PT IN DB93/419 & EX W28FT IN R/W OF US 1 B210/542) & PLAT VAC (OR3107/1699) ARAQUAY PK FKA UT 1 BLK A LOTS 1 & 2 (EX W28FT IN R/W OF US 1 IN DB228/281) & LOT 3 & UNPLATTED PT OF BLK 1 LYING S OF LOT 2 OR3385/1927	SYNOVUS BANK	FEE SIMPLE	6.80	WD	3385/1927	N/A	N/A	N/A	12/10/2010	N/A	N/A	N/A	N/A
0794700000	3-66 ARAQUAY PARK UT 1 BLK A LOTS 4 & 5 & W1/2 LOT 6 OR3166/1111	CURTIS W REGISTER & MARGARET A. REGISTER & MARK REGISTER & JANICE REGISTER	FEE SIMPLE	0.42	WD	3166/1111	N/A	N/A	N/A	2/20/2009	N/A	N/A	N/A	N/A
0794800000	3-66 ARAQUAY PARK UT 1 BLK A E1/2 LOT 6 & ALL LOTS 7 & 8 OR1284/253	MAGUIRE, CRAIG A	FEE SIMPLE	0.42	WD	1284 / 253	N/A	N/A	N/A	12/17/1997	N/A	N/A	N/A	N/A
0795000000	3-66 ARAQUAY PARK UT 1 BLK A LOT 9 OR801/0799	GROSSBERG, N&R	FEE SIMPLE	0.17	N/A	801 / 799	N/A	N/A	N/A	11/1/1988	N/A	N/A	N/A	N/A
0795200140	3-66 ARAQUAY PARK UT 1 BLK A LOT 14 & UNPLAT PT LYING S OF LOT 14 (EX S PT OR752/679) OR2129/1188	CHAPMAN, GLADYS	FEE SIMPLE	0.22	WD	2129/1188	N/A	N/A	N/A	1/27/2004	N/A	N/A	N/A	N/A
0795200145	2-66 ARAQUAY PARK S PT OF UNPLATED PT LYING S OF LOT 14 BLK A OR1487/1703	CHAPMAN, WILLIAM	FEE SIMPLE	0.22	WD	1487/1703	N/A	N/A	N/A	4/11/2000	N/A	N/A	N/A	N/A
0795330000	3-66 ARAQUAY PARK PT OF UNPLAT PT OF BLK A LYING S OF LOTS 4 5 6 7 8 & 9 OR801/799	GROSSBERG, N&R	FEE SIMPLE	0.28	N/A	801/799	N/A	N/A	N/A	11/1/1988	N/A	N/A	N/A	N/A
0797900000	3-66 ARAQUAY PARK UT 1 BLK D LOTS 1 2 & 3 (EX W28FT R/W RD #5) OR3707/418	BANK OF ST AUGUSTINE	FEE SIMPLE	0.42	CD	3755/707	N/A	N/A	N/A	3/28/2013	N/A	N/A	N/A	N/A
0798000000	3-66 ARAQUAY PARK UT 1 BLK D LOTS 4 5 & 6 (EX W28FT IN R/W OF SR 5) OR3763/1155	THE PANTRY, INC.	FEE SIMPLE	0.42	WD	3763/1155	N/A	N/A	N/A	7/12/2013	N/A	N/A	N/A	N/A

PROJECT No: D-16-2493

EXHIBIT A PROPERTY INVENTORY MAP

STRAP	DESCRIPTION	GRANTOR/GRANTEE	INTEREST	ACREAGE	TYPE OF CONVEYANCE INSTRUMENT	BOOK/PAGE	FAA GRANT NUMBER/YEAR	PFC PROJECT NUMBER (if applicable)	TYPE OF EASEMENT	DATE OF ACQUISITION/RECORDING	TYPE OF RELEASE (if applicable)	DATE OF RELEASE (if applicable)	DATE OF DISPOSAL (if applicable)	EXISTING ENCUMBRANCES ON PROPERTY
0798100000	3-66 ARAQUAY PARK UT 1 BLK D LOTS 7 & 9 OR913/1484	RICE, L GLENN	FEE SIMPLE	0.34	WD	913 / 1484	N/A	N/A	N/A	11/1/1991	N/A	N/A	N/A	N/A
0798100080	3-66 ARAQUAY PARK UT 1 BLK D LOTS 8 & 12 OR1295/908	ARMSTRONG, J (TRUST)	FEE SIMPLE	0.34	TR	1295 / 908	N/A	N/A	N/A	1/30/1998	N/A	N/A	N/A	N/A
0798200000	3-66 ARAQUAY PARK UT 1 BLK D LOT 10 OR1295/908	ARMSTRONG, J (TRUST)	FEE SIMPLE	0.16	TR	1295 / 908	N/A	N/A	N/A	1/30/1998	N/A	N/A	N/A	N/A
0798300000	3-66 ARAQUAY PARK UT 1 BLK D LOT 11 OR913/1484	RICE, L&M	FEE SIMPLE	0.17	WD	913 / 1484	N/A	N/A	N/A	11/1/1991	N/A	N/A	N/A	N/A
0798400000	3-66 ARAQUAY PARK UT 1 BLK D LOT 13 OR3402/936(T/D)	TAX DEED ST JOHNS CO	FEE SIMPLE	0.17	TD	3402/936	N/A	N/A	N/A	1/26/2011	N/A	N/A	N/A	N/A
0798500000	3-66 ARAQUAY PARK UT 1 BLK D LOT 14 OR3173/1437	YVONNE WILEY STEELE	FEE SIMPLE	0.17	WD	3173/1437	N/A	N/A	N/A	3/13/2009	N/A	N/A	N/A	N/A
0798600000	3-66 ARAQUAY PARK UT 1 BLK D LOT 15 OR2194/169	GULLETTE, S MATHEWS, S COGGAN, E	FEE SIMPLE	0.17	WD	2194/169	N/A	N/A	N/A	5/6/2004	N/A	N/A	N/A	N/A
0798800180	3-66 ARAQUAY PARK UT 1 BLK D LOTS 16 & 18 OR2140/1497	GLISSON	FEE SIMPLE	0.34	WD	2140/1497	N/A	N/A	N/A	2/17/2004	N/A	N/A	N/A	N/A
0798900000	3-66 ARAQUAY PARK UT 1 BLK D LOTS 17 & 19 & W20FT LOTS 21 & 22 OR3159/1017	WAYNE C. NEFF &	FEE SIMPLE	0.39	WD	3159/1017	N/A	N/A	N/A	1/30/2009	N/A	N/A	N/A	N/A
0799000000	3-66 ARAQUAY PARK UT 1 BLK D LOT 20 OR2129/1190	WILLIAMS	FEE SIMPLE	0.16	WD	2129/1190	N/A	N/A	N/A	1/27/2004	N/A	N/A	N/A	N/A
0799400000	3-66 ARAQUAY PARK UT 1 BLK D LOTS 25 & 26 OR1469/1880	VAZQUEZ	FEE SIMPLE	0.36	WD	1469/1880	N/A	N/A	N/A	1/24/2000	N/A	N/A	N/A	N/A
0802200000	3-66 ARAQUAY PK UT 1 BLK G LOTS 1 2 & 3 (EX W.28FT R/W OF US 1 SHOWN IN DB220/216) OR3776/1942	WALKER, HERBERT R WALKER, LEONARD R WALKER, NANCY LEE	FEE SIMPLE	0.42	WD	3777/1942	N/A	N/A	N/A	7/12/2013	N/A	N/A	N/A	N/A
0802400000	3-66 ARAQUAY PARK UT 1 BLK G LOT 4 (EX W28FT R/W SR 5) & LOT 8 OR724/704	ARMSTRONG, B	FEE SIMPLE	0.30	N/A	724/704	N/A	N/A	N/A	11/1/1986	N/A	N/A	N/A	N/A
0802500000	3-66 ARAQUAY PARK UT 1 BLK G LOTS 5 & 6 (EX W28FT R/W OF RD 1 IN DB228/280) OR236/835	CALLAHAN, LESTER E CALLAHAN, MARY A ET AL	FEE SIMPLE	0.26	N/A	236/835	N/A	N/A	N/A	5/16/1973	N/A	N/A	N/A	N/A
0802800000	3-66 ARAQUAY PARK UT 1 BLK G LOTS 11 & 13 OR841/0733	ROWE, E	FEE SIMPLE	0.34	N/A	841/733	N/A	N/A	N/A	12/1/1989	N/A	N/A	N/A	N/A
0802800140	3-145 ARAQUAY PARK UT 2 BLK G LOTS 14 16 & 18 OR989/1389	HARDESTY, D	FEE SIMPLE	0.49	WD	989/1389	N/A	N/A	N/A	4/30/1993	N/A	N/A	N/A	N/A
0802900000	3-66 ARAQUAY PARK UT 1 BLK G LOT 15 OR2133/427	CAVANAUGH, FRANK J	FEE SIMPLE	0.17	WD	2133/427	N/A	N/A	N/A	1/29/2004	N/A	N/A	N/A	N/A
0803000000	3-66 ARAQUAY PARK UT 1 BLK G LOTS 17 & 19 OR913/1374	PITCOCK, R	FEE SIMPLE	0.33	WD	913/1374	N/A	N/A	N/A	11/1/1991	N/A	N/A	N/A	N/A
0803000200	3-145 ARAQUAY PARK UT 2 BLK G LOT 20 OR1142/691 (C/D)	HARDESTY, D	FEE SIMPLE	0.16	CD	1142/1691	N/A	N/A	N/A	11/17/1995	N/A	N/A	N/A	N/A
0803200000	3-145 ARAQUAY PARK UT 2 BLK G LOT 24 OR2141/595	COTHRON, JOSEPH M	FEE SIMPLE	0.22	WD	2141/595	N/A	N/A	N/A	2/17/2004	N/A	N/A	N/A	N/A
0803300000	3-145 ARAQUAY PARK UT 2 BLK G LOT 25 OR1376/1834	FORSON, GERTRUDE	FEE SIMPLE	0.27	WD	1376/1834	N/A	N/A	N/A	1/6/1999	N/A	N/A	N/A	N/A
0808300180	3-51 JACKSON PARK LOTS 18 & 19 BLK 1 OR2325/1910	ANA M. DROPPS &	FEE SIMPLE	0.33	WD	2325/1910	N/A	N/A	N/A	11/22/2004	N/A	N/A	N/A	N/A
0817510000	3-51 JACKSON PARK - E423 FT OF NORTH BLVD OR864/237	FALKNER, CHARLES	FEE SIMPLE	0.49	WD	864/237	N/A	N/A	N/A	7/27/1990	N/A	N/A	N/A	N/A
0817550000	3-20 NORTH ST AUG E52FT OF BLK P & ALL BLK Q (EX 1AC IN OR293/811) (OR JACKSON PARK MB 3-51 PT OF N600FT OF RESERVED BLK 432FT ON NORTH BLVD EX 1AC IN SE COR IN OR293/811)(EX PT OR1033/1314) OR2245/42	ROGERS, LARRY ROGERS, BERYL C.	FEE SIMPLE	2.00	WD	2245/42	N/A	N/A	N/A	7/9/2004	N/A	N/A	N/A	N/A
0817550020	3-20 NORTH ST AUG E'LY PT OF BLK P & W'LY PT OF BLK Q (OR PT OF JACKSON PARK MB3-51 RESERVED LOT) 243.85FT ON NORTH BLVD X 600.7 X 227.6 X 600.35FT OR2394/631	HALEY, S HENDERSON, R	FEE SIMPLE	3.11	WD	2394/631	N/A	N/A	N/A	3/11/2005	N/A	N/A	N/A	N/A
0817710000	3-51 JACKSON PARK (1) W PT OF BLK S (EX .5AC IN OR384/277 702/865 867 725/1906 725/1940 & EX .85AC IN OR777/465 & EX OR864/237 & EX OR913/1398 & EXOR973/1102 & EX OR1037/382 & EX DR1056/844) OR327/307 & 352/104(QC) & 1095/236	FALKNER, C&H	FEE SIMPLE	0.80	WD	1095/236	N/A	N/A	N/A	2/9/1995	N/A	N/A	N/A	N/A
0817710010	3-51 JACKSON PARK (1-1) PT OF BLK S 132.24 ON N BLVD X 125FT OR1224/1168	AIRPORT AUTHORITY	FEE SIMPLE	0.38	WD	1224/1168	N/A	N/A	N/A	2/13/1997	N/A	N/A	N/A	N/A
0817710020	3-51 JACKSON PARK (1-2) PT OF BLK S 177.5FT ON N BLVD X 145FT OR973/1100	FALKNER, CRAIG R	FEE SIMPLE	0.59	WD	973/1100	N/A	N/A	N/A	12/31/1992	N/A	N/A	N/A	N/A
0817710030	3-51 JACKSON PARK (1-3) PT OF N295.1FT OF TRACT 2 OR834/1657	KRAMAR, I	FEE SIMPLE	0.80	N/A	834/1657	N/A	N/A	N/A	10/1/1989	N/A	N/A	N/A	N/A
0817710040	3-51 JACKSON PARK (1-4) PT OF N135FT OF S575FT OF TRACT S OR1117/1483	FALKNER, J&K	FEE SIMPLE	0.80	WD	1117/1483	N/A	N/A	N/A	7/10/1995	N/A	N/A	N/A	N/A
0817710050	3-51 JACKSON PARK (1-5) PT OF S142 OF N'LY 437FT OF TRACT S OR846/175	FARLESS, SAMUEL	FEE SIMPLE	0.30	N/A	846/175	N/A	N/A	N/A	2/1/1990	N/A	N/A	N/A	N/A
0817710060	3-51 JACKSON PARK (1-6) PT OF S181 OF N525FT OF TRACT S OR840/452	OSBORNE, J&P	FEE SIMPLE	0.85	N/A	840/452	N/A	N/A	N/A	12/1/1989	N/A	N/A	N/A	N/A
0817710070	3-51 JACKSON PARK (1-7) PTS OF TRACT S LYING NE & SW OF 30FT EASEMENT OR864/237	FALKNER, CHARLES	FEE SIMPLE	1.68	N/A	864/237	N/A	N/A	N/A	7/1/1990	N/A	N/A	N/A	N/A
0817710080	3-51 JACKSON PARK (1-8) PT OF TRACT S LYING NW OF 30FT ESMT INCLUDING 30 X 400FT STRIP OR913/1398	FALKNER, CHARLES	FEE SIMPLE	1.14	WD	913/1398	N/A	N/A	N/A	11/1/1991	N/A	N/A	N/A	N/A
0817710090	3-51 JACKSON PARK (1-9) PT OF BLK S 159.41FT ON EASEMENT OR973/1102	FALKNER, CHARLES	FEE SIMPLE	1.43	WD	973/1102	N/A	N/A	N/A	12/31/1992	N/A	N/A	N/A	N/A
0817710100	3-51 JACKSON PARK (1-10) PT OF BLK S 126.68FT ON N BLVD X 125FT OR1056/842	FALKNER, MICHAEL	FEE SIMPLE	0.36	WD	1056/842	N/A	N/A	N/A	5/27/1994	N/A	N/A	N/A	N/A
0817710110	3-51 JACKSON PARK (1-11) W PT OF BLK S 30 X 574.89FT STRIP (EX PT IN OR913/1398) OR1056/844	FALKNER, C&H	FEE SIMPLE	0.30	WD	1056/844	N/A	N/A	N/A	5/27/1994	N/A	N/A	N/A	N/A
0818700001	1 2 & 3 PT OF DANIEL HURLBURT GRANT & SEC 52-6-29 LYING W OF FEC RW ST JOHNS INDUSTRIAL PARK UNREC PLAT - UNDEDICATED R/W'S WITHIN UNREC PLAT OR197/120 & 1963/1778(Q/C)	ROLAND INT'L CORP	FEE SIMPLE	37.00	QC	1963/1778	N/A	N/A	N/A	6/2/2003	N/A	N/A	N/A	N/A
0818700010	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 1 OR877/595	MAKOSCH, HELMUT	FEE SIMPLE	1.20	N/A	877/595	N/A	N/A	N/A	11/1/1990	N/A	N/A	N/A	N/A
0818700020	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 2 OR297/551-553 & 813/369	COWART	FEE SIMPLE	1.01	N/A	813/369	N/A	N/A	N/A	2/1/1989	N/A	N/A	N/A	N/A
0818700030	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 3 OR1499/1308	CURRY, THOMAS M. CURRY, VIRGINIA	FEE SIMPLE	1.01	WD	1499/1308	N/A	N/A	N/A	5/30/2000	N/A	N/A	N/A	N/A
0818700040	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACTS 4 5 19 20 109 110 111 120 122 & 123 OR792/1303 & 795/1493	FL GENERAL EQUITIES	FEE SIMPLE	11.26	N/A	795/1493	N/A	N/A	N/A	8/1/1988	N/A	N/A	N/A	N/A
0818700060	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC TRACT 6 OR840/1292	BARRERA MANUEL MAHMUD	FEE SIMPLE	1.01	N/A	840/1292	N/A	N/A	N/A	12/18/1989	N/A	N/A	N/A	N/A
0818700070	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 7 OR840/1291	NARANJO JOSE SARMIENTO	FEE SIMPLE	1.10	N/A	840/1291	N/A	N/A	N/A	12/18/1989	N/A	N/A	N/A	N/A
0818700080	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC TRACT 8 OR841/724	BRITO, I	FEE SIMPLE	1.09	N/A	841/724	N/A	N/A	N/A	12/1/1989	N/A	N/A	N/A	N/A
0818700090	PART OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 9 OR847/1182	CABRERA, I	FEE SIMPLE	1.08	N/A	847/1182	N/A	N/A	N/A	2/1/1990	N/A	N/A	N/A	N/A
0818700100	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC TRACT 10 OR843/1309	GARCIA, A & HERNANDEZ, E	FEE SIMPLE	0.90	N/A	843/1309	N/A	N/A	N/A	12/1/1989	N/A	N/A	N/A	N/A
0818700110	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 11 & 12 OR366/564 & 565 & 778/84	DE ALIZO, M	FEE SIMPLE	2.36	N/A	778/84	N/A	N/A	N/A	3/1/1988	N/A	N/A	N/A	N/A
0818700130	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 13 OR877/598	PEREZ ANTONIO MORALES	FEE SIMPLE	1.09	N/A	877/598	N/A	N/A	N/A	3/1/1990	N/A	N/A	N/A	N/A
0818700140	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 14 OR877/601	PEREZ, J	FEE SIMPLE	1.10	N/A	877/601	N/A	N/A	N/A	3/1/1990	N/A	N/A	N/A	N/A
0818700150	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 15 OR299/119 & 776/694	HARMAN, H	FEE SIMPLE	1.01	N/A	776/694	N/A	N/A	N/A	3/1/1988	N/A	N/A	N/A	N/A
0818700160	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 16 OR863/0476	BRAVERMAN, ALICE	FEE SIMPLE	1.01	N/A	863/476	N/A	N/A	N/A	7/1/1990	N/A	N/A	N/A	N/A
0818700170	PT OF DANIEL HURLBURT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACTS 17 & 18 OR825/402	DARYANANI, L	FEE SIMPLE	2.02	N/A	825/402	N/A	N/A	N/A	3/1/1989	N/A	N/A	N/A	N/A
0818700210	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 21 OR906/110	DIAZ, SIMON JUAN	FEE SIMPLE	1.01	N/A	906/110	N/A	N/A	N/A	8/15/1991	N/A	N/A	N/A	N/A
0818700220	PART OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 22 OR773/0303	SMITH, L&K	FEE SIMPLE	1.01	N/A	773/303	N/A	N/A	N/A	11/1/1987	N/A	N/A	N/A	N/A
0818700230	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 23 OR850/1322	MUNOZ, F	FEE SIMPLE	1.74	N/A	850/1322	N/A	N/A	N/A	3/1/1990	N/A	N/A	N/A	N/A
0818700250	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACTS 25 & 26 OR768/638	PETERS, R	FEE SIMPLE	2.02	N/A	768/638	N/A	N/A	N/A	11/1/1987	N/A	N/A	N/A	N/A
0818700270	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACTS 27 & 28 OR877/599	LOPEZ, GUSTABO	FEE SIMPLE	2.02	N/A	877/599	N/A	N/A	N/A	3/1/1990	N/A	N/A	N/A	N/A
0818700290	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACTS 29 30 & 31 OR754/1372	FL GENERAL EQUITIES	FEE SIMPLE	3.03	N/A	754/1372	N/A	N/A	N/A	8/1/1987	N/A	N/A	N/A	N/A
0818700320	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 32 OR861/1390	DESILVA, JOSE	FEE SIMPLE	1.01	N/A	861/1390	N/A	N/A	N/A	3/1/1990	N/A	N/A	N/A	N/A
0818700330	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 33 OR877/603	DESILVA, J&I	FEE SIMPLE	1.01	N/A	877/603	N/A	N/A	N/A	3/1/1990	N/A	N/A	N/A	N/A
0818700340	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 34 OR1447/1512	GONZALES	FEE SIMPLE	1.01	WD	1447/1512	N/A	N/A	N/A	10/8/1999	N/A	N/A	N/A	N/A
0818700350	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACTS 35 & 36 OR585/117 & 118 & 813/371	GONZALEZ, R&M	FEE SIMPLE	2.02	N/A	813/371	N/A	N/A	N/A	2/1/1989	N/A	N/A	N/A	N/A
0818700370	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC TRACT 37 OR2121/863	DASILVA, MARIA ISABEL	FEE SIMPLE	1.01	WD	2121/863	N/A	N/A	N/A	12/3/2003	N/A	N/A	N/A	N/A
0818700380	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 38 OR2121/863	DASILVA, MARIA ISABEL	FEE SIMPLE	1.01	WD	2121/863	N/A	N/A	N/A	12/3/2003	N/A	N/A	N/A	N/A
0818700390	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 39 OR2121/863	DE DASILVA, M	FEE SIMPLE	1.01	WD	2121/863	N/A	N/A	N/A	12/3/2003	N/A	N/A	N/A	N/A
0818700410	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACTS 41 44 45 51 55 60 OR754/1372	FL GENERAL EQUITIES	FEE SIMPLE	6.02	N/A	754/1372	N/A	N/A	N/A	8/1/1987	N/A	N/A	N/A	N/A
0818700420	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 42 OR3039/116	MARTINEZ, SANTIAGO & BELEN	FEE SIMPLE	1.00	WD	3039/116	N/A	N/A	N/A	12/11/2007	N/A	N/A	N/A	N/A
0818700430	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 43 OR1648/757	DeLARRINOA, MARIA	FEE SIMPLE	1.00	WD	1648/757	N/A	N/A	N/A	2/11/2000	N/A	N/A	N/A	N/A
0818700460	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 46 OR939/657	INVERSIONES, L	FEE SIMPLE	1.00	CD	939/657	N/A	N/A	N/A	11/15/1989	N/A	N/A	N/A	N/A
0818700470	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 47 OR840/796 & 939/657(C/D)	INVERSIONES, L	FEE SIMPLE	1.28	CD	939/657	N/A	N/A	N/A	11/15/1989	N/A	N/A	N/A	N/A
0818700480	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 48 OR939/657	INVERSIONES, L	FEE SIMPLE	2.28	CD	939/657	N/A	N/A	N/A	11/15/1989	N/A	N/A	N/A	N/A
0818700490	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 49 OR2886/1168	CURRY, THOMAS M. CURRY, VIRGINIA	FEE SIMPLE	1.35	WD	2886/1168	N/A	N/A	N/A	3/20/2007	N/A	N/A	N/A	N/A
0818700520	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC TRACT 52 OR1335/1751	EDMUNDSON, F&M	FEE SIMPLE	1.00	TR	1335/1751	N/A	N/A	N/A	7/22/1998	N/A	N/A	N/A	N/A
0818700530	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 53 OR2886/1168	CURRY, THOMAS M. CURRY, VIRGINIA	FEE SIMPLE	1.00	WD	2886/1168	N/A	N/A	N/A	3/20/2007	N/A	N/A	N/A	N/A
0818700540	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 54 OR838/387	RICE, M	FEE SIMPLE	1.00	N/A	838/387	N/A	N/A	N/A	11/1/1989	N/A	N/A	N/A	N/A
0818700580	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC TRACT 58 OR1390/405	CURRY, THOMAS	FEE SIMPLE	1.00	WD	1390/405	N/A	N/A	N/A	2/23/1999	N/A	N/A	N/A	N/A
0818700590	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 59 OR624/278 & 810/1004	JENSON, D	FEE SIMPLE	1.00	N/A	810/1004	N/A	N/A	N/A	8/1/1989	N/A	N/A	N/A	N/A
0818700610	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 61 OR4024/348	CHARLES A. TUSON &	FEE SIMPLE	1.00	WD	4024/348	N/A	N/A	N/A	4/30/2015	N/A	N/A	N/A	N/A
0818700620	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC TRACT 62 OR1295/902	BROWN, GERALD	FEE SIMPLE	1.00	WD	1295/902	N/A	N/A	N/A	1/30/1998	N/A	N/A	N/A	N/A
0818700630	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC TRACT 63 OR1454/880	ROGET, SILVERIO	FEE SIMPLE	1.00	WD	1454/880	N/A	N/A	N/A	7/9/1999	N/A	N/A	N/A	N/A

DRAFT

No.	Revision Description	By	Date

St. Augustine / St. Johns County Airport
St. Augustine, Florida

ST. AUGUSTINE • ST. JOHNS COUNTY AIRPORT AUTHORITY

GEOMATICS CORP.
SURVEYING–MAPPING–GPS
2804 N. FIFTH STREET, UNIT 101
ST. AUGUSTINE, FL 32084
PHONE (904) 824-3086 FAX (904) 824-5753
LICENSED BUSINESS
FLORIDA #6979 GEORGIA #939
SOUTH CAROLINA #3357 ALABAMA #794
NORTH CAROLINA COA #5752

Drawing Name: EXHIBIT A PROPERTY INVENTORY MAP DATA SHEET
Drawn By: SL
Checked By: PF
Project Number: 16-2493
Drawing Number: 22B
Date: JANUARY 2020
Scale: N/A

EXHIBIT A PROPERTY INVENTORY TABLE														
STRAP	DESCRIPTION	GRANTOR/GRANTEE	INTEREST	ACREAGE	TYPE OF CONVEYANCE INSTRUMENT	BOOK/PAGE	FAA GRANT NUMBER/YEAR	PFC PROJECT NUMBER (if applicable)	TYPE OF EASEMENT	DATE OF ACQUISITION/RECORDING	TYPE OF RELEASE (if applicable)	DATE OF RELEASE (if applicable)	DATE OF DISPOSAL (if applicable)	EXISTING ENCUMBRANCES ON PROPERTY
0818700640	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 64 OR1340/1055	PONS-PEREZ, MARIA	FEE SIMPLE	1.00	WD	1340/1055	N/A	N/A	N/A	8/7/1998	N/A	N/A	N/A	N/A
0818700650	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 65 OR2683/248	COMMERCIAL INVESTORS GROUP, INC.	FEE SIMPLE	1.00	WD	2683/248	N/A	N/A	N/A	4/13/2006	N/A	N/A	N/A	N/A
0818700660	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 66 OR2683/248	COMMERCIAL INVESTORS GROUP, INC.	FEE SIMPLE	1.00	WD	2683/248	N/A	N/A	N/A	4/13/2006	N/A	N/A	N/A	N/A
0818700670	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 67 68 69 70 & 71 OR754/1372	FL GENERAL EQUITIES	FEE SIMPLE	5.02	N/A	754/1372	N/A	N/A	N/A	8/1/1987	N/A	N/A	N/A	N/A
0818700720	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 72 OR1454/876	GONZALEZ, EMILIO	FEE SIMPLE	0.98	WD	1454/876	N/A	N/A	N/A	7/1/1999	N/A	N/A	N/A	N/A
0818700730	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACTS 73 & 74 OR1648/750	OTAMENDI, GOICOECHEA	FEE SIMPLE	2.01	WD	1648/750	N/A	N/A	N/A	8/22/2001	N/A	N/A	N/A	N/A
0818700750	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 75 OR1007/1437	CONSOLIDATED BANK	FEE SIMPLE	1.00	WD	1007/1437	N/A	N/A	N/A	8/17/1993	N/A	N/A	N/A	N/A
0818700760	PART DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC TRACTS 76 77 78 79 80 & 81 OR810/1006	PERIMAJO CORPORATION	FEE SIMPLE	6.03		810/1006	N/A	N/A	N/A	1/1/1989	N/A	N/A	N/A	N/A
0818700950	PART OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 95 OR738/1031 & 810/1715	CAMPO, C	FEE SIMPLE	1.11		810/1715	N/A	N/A	N/A	2/1/1989	N/A	N/A	N/A	N/A
0818701030	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 103 OR1302/1074	OSHEA, JOSEPH	FEE SIMPLE	1.00	WD	1302/1074	N/A	N/A	N/A	3/10/1998	N/A	N/A	N/A	N/A
0818701050	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 105 OR1648/750	OTAMENDI, GOICOECHEA	FEE SIMPLE	1.02	WD	1648/750	N/A	N/A	N/A	8/22/2001	N/A	N/A	N/A	N/A
0818701060	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 106 OR938/579	STAMMBERGER, C&R	FEE SIMPLE	1.10	WD	938/579	N/A	N/A	N/A	4/1/1992	N/A	N/A	N/A	N/A
0818701070	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 107 OR938/581	STAMMBERGER, MARTIN	FEE SIMPLE	1.18	WD	938/581	N/A	N/A	N/A	4/7/1992	N/A	N/A	N/A	N/A
0818701080	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 108 OR1416/1850	AGUIRRE, JESUS G	WARRANTY DEED	1.25	WD	1416/1850	N/A	N/A	N/A	6/11/1999	N/A	N/A	N/A	N/A
0818701120	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACTS 112 116 & 117 OR754/1372	ST. JOHNS RIVER W.M.D.	FEE SIMPLE	3.66	CE	1838/1630	N/A	N/A	CONSERVATION	9/25/2002	N/A	N/A	N/A	N/A
0818701130	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 113 OR1416/1860	MOSQUERA, DANIEL S	FEE SIMPLE	1.04		1416/1860	N/A	N/A	N/A	6/11/1999	N/A	N/A	N/A	N/A
0818701140	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 114 OR1390/405	CURRY, THOMAS	FEE SIMPLE	1.04	WD	1390/405	N/A	N/A	N/A	2/23/1999	N/A	N/A	N/A	N/A
0818701150	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 115 OR1578/1181	HUCKFELDT, BERNARD	FEE SIMPLE	1.08	WD	1578/1181	N/A	N/A	N/A	3/2/2001	N/A	N/A	N/A	N/A
0818701180	PART OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 118 OR652/1175 (T/D) & 810/1002	ST. JOHNS RIVER W.M.D.	FEE SIMPLE	1.00	CE	1838/1630	N/A	N/A	CONSERVATION	9/25/2002	N/A	N/A	N/A	N/A
0818701190	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 119 OR1416/1837	ST. JOHNS RIVER W.M.D.	FEE SIMPLE	1.00	CE	1838/1630	N/A	N/A	CONSERVATION	9/25/2002	N/A	N/A	N/A	N/A
0818701210	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 121 OR1416/1852	HOIRES F, ISSAC	FEE SIMPLE	1.00	WD	1416/1852	N/A	N/A	N/A	6/11/1999	N/A	N/A	N/A	N/A
0818701240	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 124 OR1301/1682	BAMAN, SUDHAKER	FEE SIMPLE	1.00	WD	1301/1682	N/A	N/A	N/A	2/27/1998	N/A	N/A	N/A	N/A
0818701250	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 125 OR1416/1835	TERRALAVORO, MANNELLO	FEE SIMPLE	1.00	WD	1416/1835	N/A	N/A	N/A	6/11/1999	N/A	N/A	N/A	N/A
0818701260	PART OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACTS 126 131 132 & 140 OR754/1372	SJRWMD	FEE SIMPLE	4.92	CE	1838/1630	N/A	N/A	CONSERVATION	9/25/2002	N/A	N/A	N/A	N/A
0818701270	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 127 OR1416/1850	AGUIRRE, JESUS G	FEE SIMPLE	1.09	WD	1416/1850	N/A	N/A	N/A	6/11/1999	N/A	N/A	N/A	N/A
0818701280	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC TRACT 128 OR3513/1662	CURRY, THOMAS M. CURRY, VIRGINIA	FEE SIMPLE	1.00	WD	3513/1662	N/A	N/A	N/A	1/9/2012	N/A	N/A	N/A	N/A
0818701290	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 129 OR3895/190	CURRY, THOMAS M. CURRY, VIRGINIA	FEE SIMPLE	1.00	WD	3895/190	N/A	N/A	N/A	6/20/2014	N/A	N/A	N/A	N/A
0818701300	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 130 OR1416/1843	ST. JOHNS RIVER W.M.D.	FEE SIMPLE	1.00	CE	1838/1630	N/A	N/A	CONSERVATION	9/25/2002	N/A	N/A	N/A	N/A
0818701370	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 137 OR1224/1166	TRINGALI, MASTER (TRUST)	FEE SIMPLE	1.00	WD	1224/1166	N/A	N/A	N/A	2/18/1997	N/A	N/A	N/A	N/A
0818701390	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 139 OR3379/1411	MILLER, DOROTHY O.	FEE SIMPLE	1.00	WD	3379/1411	N/A	N/A	N/A	11/15/2010	N/A	N/A	N/A	N/A
0818701410	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 141 OR1648/739	SANJUAN, PILAR	FEE SIMPLE	1.00	WD	1648/739	N/A	N/A	N/A	12/17/1999	N/A	N/A	N/A	N/A
0818701420	PART OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACTS 142 145 & 147 OR754/1372	FL GENERAL EQUITIES	FEE SIMPLE	3.01	N/A	754/1372	N/A	N/A	N/A	8/1/1987	N/A	N/A	N/A	N/A
0818701430	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 143 OR1416/1852	HOIRES F, ISSAC	WARRANTY DEED	1.00	WD	1416/1852	N/A	N/A	N/A	6/11/1999	N/A	N/A	N/A	N/A
0818701440	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 144 OR1295/1499	BELING, D	FEE SIMPLE	1.00	WD	1295/1499	N/A	N/A	N/A	2/10/1998	N/A	N/A	N/A	N/A
0818701500	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 150 OR2886/1168	CURRY, THOMAS M. CURRY, VIRGINIA	FEE SIMPLE	1.00	WD	2886/1168	N/A	N/A	N/A	3/20/2007	N/A	N/A	N/A	N/A
0818701520	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 152 OR1950/930	GATCHELL, GREGORY	FEE SIMPLE	1.00	WD	1950/930	N/A	N/A	N/A	5/7/2003	N/A	N/A	N/A	N/A
0818701530	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACTS 153 & 154 OR847/1185	NARANJO, JOSE	FEE SIMPLE	2.22	N/A	847/1185	N/A	N/A	N/A	2/1/1990	N/A	N/A	N/A	N/A
0818701550	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 155 OR1446/1199	DEL PINO	FEE SIMPLE	1.00	WD	1446/1199	N/A	N/A	N/A	4/28/1999	N/A	N/A	N/A	N/A
0818701560	PART OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACTS 156 & 157 OR1923/625	ROLAND INT'L CORP	FEE SIMPLE	2.10	WD	1923/625	N/A	N/A	N/A	3/24/2003	N/A	N/A	N/A	N/A
0818701580	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACTS 158 159 & 160 OR1315/231-233	MORALES, JOAQUIN	FEE SIMPLE	3.67	WD	1315/231	N/A	N/A	N/A	3/31/1998	N/A	N/A	N/A	N/A
0818701610	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 161 OR1416/1856	PADRON, MORENO	FEE SIMPLE	1.43	WD	1416/1856	N/A	N/A	N/A	6/11/1999	N/A	N/A	N/A	N/A
0818701620	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 162 OR1648/747	DeTARRAT, ETAL	FEE SIMPLE	1.54	WD	1648/747	N/A	N/A	N/A	12/17/1999	N/A	N/A	N/A	N/A
0818701630	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 163 OR1390/405	CURRY, THOMAS	FEE SIMPLE	1.08	WD	1390/405	N/A	N/A	N/A	2/23/1999	N/A	N/A	N/A	N/A
0818701650	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 165 OR843/1286	GARCIA, A&R	FEE SIMPLE	1.05	N/A	843/1286	N/A	N/A	N/A	12/1/1989	N/A	N/A	N/A	N/A
0818701660	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 166 OR910/699	HERNANDEZ, EMILIO	FEE SIMPLE	1.03	WD	910/699	N/A	N/A	N/A	9/15/1991	N/A	N/A	N/A	N/A
0818701670	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 167 OR910/701	TRANDAFILIDYS, SIMEON	FEE SIMPLE	1.03	WD	910/701	N/A	N/A	N/A	9/15/1991	N/A	N/A	N/A	N/A
0818701680	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 168 OR910/703	GARCIA, S	FEE SIMPLE	1.03	WD	910/703	N/A	N/A	N/A	9/15/1991	N/A	N/A	N/A	N/A
0818701690	PART OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 169 OR841/724	BRITO, I	FEE SIMPLE	1.21	N/A	841/724	N/A	N/A	N/A	12/1/1989	N/A	N/A	N/A	N/A
0818701700	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACTS 170 & 171 OR847/1183	BARRERA, MANUEL	FEE SIMPLE	1.98	N/A	847/1183	N/A	N/A	N/A	2/1/1990	N/A	N/A	N/A	N/A
0818701720	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACTS 172 & 173 OR1416/1839	CARBRERA, ISIDRO	FEE SIMPLE	2.07	WD	1416/1839	N/A	N/A	N/A	6/11/1999	N/A	N/A	N/A	N/A
0818701740	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 174 OR1141/526	TRINGALI, MASTER (TRUST)	FEE SIMPLE	1.00	WD	1141/526	N/A	N/A	N/A	11/22/1995	N/A	N/A	N/A	N/A
0818701750	PART OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 175 OR371/645 & 810/1000	MATYAS, B&C	FEE SIMPLE	1.00	WD	810/1000	N/A	N/A	N/A	2/1/1989	N/A	N/A	N/A	N/A
0818701760	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACTS 176 THRU 180 OR1416/1847	GONZALEZ, MANUEL	FEE SIMPLE	5.02	WD	1416/1847	N/A	N/A	N/A	6/11/1999	N/A	N/A	N/A	N/A
0818701830	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 183 OR1416/1854	PADRON, MORENO	FEE SIMPLE	1.00	WD	1416/1854	N/A	N/A	N/A	6/11/1999	N/A	N/A	N/A	N/A
0818701840	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 184 OR1416/1858	PADRON, MORENO	FEE SIMPLE	1.00	WD	1416/1858	N/A	N/A	N/A	6/11/1999	N/A	N/A	N/A	N/A
0818701850	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 185 OR1416/1858	PADRON, MORENO	FEE SIMPLE	1.00	WD	1416/1858	N/A	N/A	N/A	6/11/1999	N/A	N/A	N/A	N/A
0818701860	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 186 OR1648/745	DEMASIDES, EVANGELINA	FEE SIMPLE	1.00	WD	1648/745	N/A	N/A	N/A	12/17/1999	N/A	N/A	N/A	N/A
0818701870	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 187 OR1648/745	DEMASIDES, EVANGELINA	FEE SIMPLE	1.00	WD	1648/745	N/A	N/A	N/A	12/17/1999	N/A	N/A	N/A	N/A
0818701880	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 188 OR1224/1166	TRINGALI, MASTER (TRUST)	FEE SIMPLE	1.00	WD	1224/1166	N/A	N/A	N/A	2/18/1997	N/A	N/A	N/A	N/A
0818701890	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 189 OR1498/1195	CURRY, THOMAS	FEE SIMPLE	1.00	WD	1498/1195	N/A	N/A	N/A	5/23/2000	N/A	N/A	N/A	N/A
0818701910	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACTS 191 & 192 OR1923/625	ROLAND INT'L CORP	FEE SIMPLE	2.75	WD	1923/625	N/A	N/A	N/A	3/24/2003	N/A	N/A	N/A	N/A
0818701950	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 195 OR2886/1168	CURRY, THOMAS M. CURRY, VIRGINIA	FEE SIMPLE	1.00	WD	2886/1168	N/A	N/A	N/A	3/20/2007	N/A	N/A	N/A	N/A
0818701960	PART OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 196 OR754/1372	FL GENERAL EQUITIES	FEE SIMPLE	1.00	N/A	754/1372	N/A	N/A	N/A	8/1/1987	N/A	N/A	N/A	N/A
0818701970	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 197 OR1454/878	KLEIN, MARVIN	FEE SIMPLE	1.00	WD	1454/878	N/A	N/A	N/A	5/17/1999	N/A	N/A	N/A	N/A
0818701980	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 198 OR1416/1841	DEARINO, MARIA	FEE SIMPLE	1.00	WD	1416/1841	N/A	N/A	N/A	6/11/1999	N/A	N/A	N/A	N/A
0818701990	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 199 OR1498/1195	CURRY, THOMAS	FEE SIMPLE	1.00	WD	1498/1195	N/A	N/A	N/A	5/23/2000	N/A	N/A	N/A	N/A
0818702000	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 200 OR1416/1845	ARMAS, MELITON F	FEE SIMPLE	1.00	WD	1416/1845	N/A	N/A	N/A	6/11/1999	N/A	N/A	N/A	N/A
0818702010	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 201 OR1531/459	PITA, ANTONIO	FEE SIMPLE	1.00	WD	1531/459	N/A	N/A	N/A	9/28/2000	N/A	N/A	N/A	N/A
0818702060	PART OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACTS 206 207 & 209 OR754/1372	FL GENERAL EQUITIES	FEE SIMPLE	3.01	N/A	754/1372	N/A	N/A	N/A	8/1/1987	N/A	N/A	N/A	N/A
0818702080	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 208 OR1923/625	FL GENERAL/ROLAND	FEE SIMPLE	1.00	WD	1923/625	N/A	N/A	N/A	3/24/2003	N/A	N/A	N/A	N/A
0818702100	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACTS 210 & 211 OR1416/1841	CARASUSAN, M&J	FEE SIMPLE	2.01	WD	1416/1841	N/A	N/A	N/A	6/11/1999	N/A	N/A	N/A	N/A
0818702120	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 212 OR1446/1193	BLANCO, CASTILLO	FEE SIMPLE	1.00	WD	1446/1193	N/A	N/A	N/A	5/27/1999	N/A	N/A	N/A	N/A
0818702130	PT OF DANIEL HURLBERT GRANT ST JOHNS INDUSTRIAL PARK UNREC PLAT TRACT 213 OR507/586 OR814/287	TEMPLETON, L	FEE SIMPLE	1.00	N/A	814/287	N/A	N/A	N/A	7/1/1988	N/A	N/A	N/A	N/A
0818900000	4 PT OF DANIEL HURLBERT GRANT OR698/961	MAY, D	FEE SIMPLE	3.14	N/A	698/961	N/A	N/A	N/A	2/1/1986	N/A	N/A	N/A	N/A
0818950000	5 PTS OF SEC 51 & 50 LYING N OF GUN CLUB RD E OF US 1 & W OF OLD DIXIE HWY (EX N73FT OR524/146 & PT IN OR582/509 & 510 654/1218 & 1219 & 655/38 & 1870 & EX PT IN OR746/188) OR1055/783	LYNCH, JEAN	FEE SIMPLE	8.40	WD	1055/783	N/A	N/A	N/A	5/24/1994	N/A	N/A	N/A	N/A
0818950120	5-12 PT OF GUN CLUB RD LYING E OF US 1 TO THE E LINE OF SEC 51 OR773/21 & 937/2(Q/C)	F.D.O.T.	FEE SIMPLE	0.80	QC	937/2	N/A	N/A	N/A	12/2/1991	N/A	N/A	N/A	N/A

PROJECT No: D-16-2493

EXHIBIT A PROPERTY INVENTORY TABLE														
STRAP	DESCRIPTION	GRANTOR/GRANTEE	INTEREST	ACREAGE	TYPE OF CONVEYANCE INSTRUMENT	BOOK/PAGE	FAA GRANT NUMBER/YEAR	PFC PROJECT NUMBER (if applicable)	TYPE OF EASEMENT	DATE OF ACQUISITION/RECORDING	TYPE OF RELEASE (if applicable)	DATE OF RELEASE (if applicable)	DATE OF DISPOSAL (if applicable)	EXISTING ENCUMBRANCES ON PROPERTY
0818960000	6 PART DANIEL HURLBERT GRANT LYING E OF US 1 & S OF GUN CLUB ROAD 592FT ON US 1 (EX LEASE TO RING POWER D:2-17-04) OR614/665(PR/D) & 937/2(Q/C) & 1974/1505(Q/C)	F.D.O.T.	FEE SIMPLE	5.61	QC	1974/1505	N/A	N/A	N/A	7/24/2002	N/A	N/A	N/A	N/A
0818960010	6-1 PART OF DANIEL HURLBERT GRANT LYING E OF US 1 & S OF GUN CLUB RD - LEASED AKA HANGAR #6	AIRPORT AUTHORITY	FEE SIMPLE	1.16	N/A		N/A	N/A	N/A		N/A	N/A	N/A	N/A
0819060000	1-2 PART OF GRANT TO DANIEL HURLBERT LYING N OF 60FT RD OR902/750	PARTIN, DANIEL	FEE SIMPLE	3.21	N/A	902/750	N/A	N/A	N/A	7/1/1991	N/A	N/A	N/A	N/A
0819070040	1-4 PART OF GRANT TO DANIEL HURLBERT LYING W OF FEC RY 221FT ON RD OR915/204	CRIBBS, VERNON	FEE SIMPLE	0.02	WD	915/204	N/A	N/A	N/A	11/15/1991	N/A	N/A	N/A	N/A
0819310040	PT OF GRANT TO DANIEL HURLBERT OAK GROVE UNREC PLAT UNIT 1 LOT 4 BLK 1 OR1172/1383	WILKES, MELGIA	FEE SIMPLE	0.92	WD	1172/1383	N/A	N/A	N/A	5/14/1996	N/A	N/A	N/A	N/A
0819310060	PT OF GRANT TO DANIEL HURLBERT OAK GROVE UNREC PLAT UNIT 1 LOT 6 BLK 1 OR915/177	MCCARTHY, HAROLD	FEE SIMPLE	1.30	WD	915/177	N/A	N/A	N/A	11/15/1991	N/A	N/A	N/A	N/A
0819310070	PT OF GRANT TO DANIEL HURLBERT OAK GROVE UNREC PLAT UNIT 1 LOT 7 BLK 1 OR900/52	SIDDONS, JEFFERY	FEE SIMPLE	1.33	N/A	900/52	N/A	N/A	N/A	6/1/1991	N/A	N/A	N/A	N/A
0819320110	PT OF GRANT TO DANIEL HURLBERT OAK GROVE UNREC PLAT UNIT 1 LOT 11 BLK 2 OR918/827	WALTON, DANE	FEE SIMPLE	1.16	WD	918/827	N/A	N/A	N/A	12/16/1991	N/A	N/A	N/A	N/A
0819320120	PT OF GRANT TO DANIEL HURLBERT OAK GROVE UNREC PLAT UNIT 1 LOT 12 BLK 2 OR1136/791	WILSON, SONIA	FEE SIMPLE	1.13	WD	1136/791	N/A	N/A	N/A	10/27/1995	N/A	N/A	N/A	N/A
0819320130	PT OF GRANT TO DANIEL HURLBERT OAK GROVE UNREC PLAT UNIT 1 LOT 13 BLK 2 OR1224/1164	RUNION, ROY	FEE SIMPLE	1.10	WD	1224/1164	N/A	N/A	N/A	2/26/1996	N/A	N/A	N/A	N/A
0819410010	PT OF GRANT TO DANIEL HURLBERT OAK GROVE UNREC PLAT UNIT 2 LOT 1 BLK 1 OR915/843	HERSHEY, JIMMIE	FEE SIMPLE	1.01	WD	915/843	N/A	N/A	N/A	11/15/1991	N/A	N/A	N/A	N/A
0819610055	PT OF GRANT TO DANIEL HURLBERT OAK GROVE UNREC PLAT UNIT 4 S1/2 OF LOT 5 & ALL LOT 6 BLK 1 OR615/289 & 846/1201	BERGERON, RONALD	FEE SIMPLE	1.62	N/A	846/1201	N/A	N/A	N/A	2/1/1990	N/A	N/A	N/A	N/A
0819620060	PT OF GRANT TO DANIEL HURLBERT OAK GROVE UNREC PLAT UNIT 4 LOT 6 BLK 2 OR899/689	MAULDIN, RICKIE	FEE SIMPLE	0.92	N/A	899/689	N/A	N/A	N/A	6/1/1991	N/A	N/A	N/A	N/A
0819640020	PART OF GRANT TO DANIEL HURLBERT OAK GROVE UNREC PLAT UNIT 4 LOT 2 BLK 4 OR835/927 888/960	MARTIN, LAWRENCE	FEE SIMPLE	1.04	N/A	888/960	N/A	N/A	N/A	3/1/1994	N/A	N/A	N/A	N/A
0819640080	PART OF GRANT TO DANIEL HURLBERT OAK GROVE UNREC PLAT UNIT 4 LOT 2 BLK 4 OR835/927 888/960	COX, FLOYD LEE JR.	FEE SIMPLE	1.04	WD	1029/866	N/A	N/A	N/A	12/29/1993	N/A	N/A	N/A	N/A

EXHIBIT A FUTURE PROPERTY ACQUISITION TABLE		
ID	Approximate Acreage	GRANTOR
A.1	232 Acres	ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
A.2	234 Acres	ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
A.3	244 Acres	ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
A.4	82 Acres	ST. JOHNS RIVER WATER MANAGEMENT DISTRICT

PROPERTY ACQUISITIONS LEGEND								
PARCEL ID	DESCRIPTION	INTEREST	GRANTOR / GRANTEE	ACREAGE	SJCPA PIN	BOOK/PAGE	DATE OF RECORDING	GRANT NO. / W.P.I. NO
2	ORIGINAL AIRPORT LEASED (LONG TERM) TO GRUMMAN - ST. AUGUSTINE CORP.	FEE SIMPLE	N/A	N/A	N/A	N/A	N/A	N/A
2	AIRPORT PROPERTY LEASED TO GRUMMAN - ST. AUGUSTINE CORP.	FEE SIMPLE	N/A	N/A	N/A	N/A	N/A	N/A
2A	PROPERTY OWNED BY GRUMMAN - ST. AUGUSTINE CORP. SUBJECT TO THROUGH THE FENCE LEASE OPERATIONS	FEE SIMPLE	N/A	N/A	N/A	N/A	N/A	N/A
1	ORIGINAL AIRPORT SOLD TO FAIRCHILD - HILLER CORP. (W.D. 215 Pg. 212 & 213 DATED NOV 12, 1954) FAA RELEASED NO. 8, 1954	FEE SIMPLE	FAIRCHILD CORP	N/A	N/A	W.D. 215-212-213	11/12/1954	N/A
2	ORIGINAL AIRPORT PROPERTY SOLD TO FAIRCHILD - HILLER CORP. (OR 56 Pg. 392 DATED MAY 4, 1964) FAA RELEASED JULY 2, 1963.	FEE SIMPLE	FAIRCHILD-STRATOS CORP	14.1600	N/A	OR 56/392	5/4/1964	N/A
	BY LETTER, LIMITS OF GRUMMAN AIRCRAFT PARKING LEASE AMENDED TO INCLUDE 43.5' OF EXISTING APRON AREA PARALLEL TO TAXIWAY "A" AND TO SQUARE SOUTH END BASED UPON EXISTING APRON LAYOUT.	FEE SIMPLE	N/A	N/A	N/A	N/A	N/A	N/A
A	ORIGINAL AIRPORT PROPERTY ACQUIRED BY CITY, PLUS CITY CLAIMED MARSH AREAS EAST OF THE WATERWAY MEANDER. CITY WAS UPLAND BENEFICIARY OF MARSHLANDS. STATE WAS OWNER. LATER AIRPORT WAS TRANSFERRED BY CITY TO AIRPORT AUTHORITY (OR 71 Pg 70-72). AUTHORITY NOW CONTROLS MARSHLANDS.	FEE SIMPLE	CITY OF ST. AUGUSTINE	276.0000	N/A	OR71/70-72	4/26/1965	N/A
B	PROPERTY ACQUIRED BY AIRPORT AUTHORITY (FEB. 1967) FOR RUNWAY EXTENSION PURPOSES(FROM LAND ACQUISITION MAP	FEE SIMPLE	N/A	N/A	N/A	2/1/67	N/A	N/A
C	PROPERTY ACQUIRED BY AIRPORT AUTHORITY (FEB 1967) FOR RUNWAY EXTENSION PURPOSES. (FROM LAND ACQUISITION MAP).	FEE SIMPLE	N/A	N/A	N/A	2/1/67	N/A	N/A
D	PROPERTY ACQUIRED BY AIRPORT AUTHORITY (1965) FOR RUNWAY EXTENSION PURPOSES. (AIRPORT LAYOUT PLAN).	FEE SIMPLE	N/A	N/A	N/A	1965	N/A	N/A
E_1	EASEMENT GRANTED BY THE STATE BOARD OF PUBLIC INSTRUCTION TO THE ST. AUGUSTINE AIRPORT AUTHORITY (OR. 74 PG. 290 DATED JULY 20, 1965).	RIGHT OF WAY EASEMENT	STATE BOARD OF EDUCATION (GIFT)	N/A	N/A	OR74/290	7/20/1965	N/A
E_2	EASEMENT GRANTED BY THE TRUSTEES OF THE FLORIDA INTERNAL IMPROVEMENT FUND TO THE ST. AUGUSTINE AIRPORT AUTHORITY (W.D. 110 Pg 377 DATED JULY 18, 1963	FEE SIMPLE	GENOVAR, W. & COPSEY, J.	6.5600	N/A	WD110/377	7/18/1963	N/A
F	AIRPORT PROPERTY ACQUIRED BY THE AIRPORT AUTHORITY (W.D. 110 Pg 377 DATED JULY 18 , 1963).	FEE SIMPLE	GENOVAR, W. & COPSEY, J.	6.5600	N/A	WD110/377	7/18/1963	N/A
G	AIRPORT PROPERTY ACQUIRED AS PER MAP DATED NOV 1974 PREPARED BY LOREN N. JONES, R.S. N 894	FEE SIMPLE	N/A	2.7978	N/A	N/A	11/01/74	N/A
H	AIRPORT PROPERTY ACQUIRED AS PER MAP PREPARED BY LOREN N. JONES.	FEE SIMPLE	N/A	3.2079	N/A	N/A	N/A	N/A
J	EASEMENT FOR DRAINAGE TO FLORIDA DEPARTEMNT OF TRANSPORTATION	FEE SIMPLE	N/A	N/A	N/A	N/A	N/A	N/A
K	EASEMENT FOR DRAINAGE TO ST. JOHNS COUNTY (20' WIDE).	FEE SIMPLE	N/A	N/A	N/A	N/A	N/A	N/A

DRAFT

No.	Revison Description	By	Date

ST AUGUSTINE • ST JOHNS COUNTY AIRPORT AUTHORITY

St. Augustine / St. Johns County Airport
St. Augustine, Florida

GEOMATICS CORP.
SURVEYING–MAPPING–GPS
2804 N. FIFTH STREET, UNIT 101
ST. AUGUSTINE, FL 32084
PHONE (904) 824-3086 FAX (904) 824-5753
LICENSED BUSINESS
FLORIDA #6979 GEORGIA #939
SOUTH CAROLINA #3387 ALABAMA #794
NORTH CAROLINA COA #3752

Drawing Name:
EXHIBIT A PROPERTY INVENTORY MAP DATA SHEET

Project Number: 16-2493
Drawn By: SL
Checked By: PF
Date: JANUARY 2020
Drawing Number: 22C
Scale: N/A

Chapter Nine

Implementation Plan

9. IMPLEMENTATION PLAN

The preceding chapters identified airside and landside projects necessary for Northeast Florida Regional Airport (NFRA) to accommodate forecast levels of demand throughout a 20+ year planning period. This chapter will present the financial development plan for each proposed project, with a focus on the airport's ability to fund the Capital Improvement Program (or CIP).

The CIP is divided into three development phases, including a six-year short-term development program (from 2020 to 2025), the mid-term development program (2026 - 2030) and then a ten+ year, long-term development plan (the year 2031 and beyond).

9.1. Approach

The overall approach within this implementation plan addresses three areas. First, to develop the Capital Improvement Plan (i.e., projects, costs and schedule); Second, to gather and review historic financial records that have successfully supported previous airport capital improvements, and; Finally, to determine if future airport funds are adequate to support the airport's share of future improvements.

9.2. Capital Improvement Plan

Development of the Capital Improvement Plan (CIP) is driven by future facility needs and divided into three planning periods:

- Short-Term: 2020-2025
- Intermediate-Term: 2026-2030
- Long-Term: 2031 (and beyond)

The CIP was also separated into specific airport improvements that will address direct facility needs for the airport, as well as other / related improvements adjacent (and near) the airport that would benefit the airport, but may not be led or financially supported by the airport, because other agencies or businesses are more appropriate for this role.

Current development costs for each project are shown in the CIP. To be eligible for grant funding assistance from the Federal Aviation Administration (FAA) or the Florida Department of Transportation (FDOT), projects must be listed on an airport's current CIP, and shown on the current Airport Layout Plan (ALP) drawings.

Tables 9-1 and **9-2** provide a summary of overall Project Costs for the CIP by planning period, which are further detailed later in this chapter.

Table 9-1. Airport Sponsored Development Costs

Planning Period	Total Cost for Airport Projects
Short-Term Projects (2020-2025)	33,900,000
Intermediate-Term Projects (2026-2030)	51,600,000
Long-Term Projects (2031 and beyond)	**109,250,000**
Total	**194,750,000**

Source: Passero Associates, LLC (2019)

As shown In **Table 9-1**, airport sponsored development totals $194,750,000 for all three planning periods. Additional project details are shown later in the chapter.

Table 9-2. Other Related Development Costs (conceptually supported by Airport)

Planning Period	Total Cost for Other/Related Projects (by others)
Short Term Projects (2020-2025)	8,3500,000
Intermediate Term Projects (2026-2030)	133,550,000
Long Term Projects (2031 beyond)	285,600,000
Total	**502,650,000**

Source: Passero Associates, LLC (2019)

As shown in **Table 9-2**, other (related) development costs total $502,650,000 for the planning period. Additional project details are shown later in the chapter.

9.3. Capital Funding Sources

Historically, the Airport has consistently accessed and assigned a combination of federal and state grant programs, local (airport) funds, private financing and other funding sources to support capital improvements. Specific funding sources for the capital improvements depend on many factors, including project eligibility, availability of grant funds, type and use of proposed facilities, potential debt-related factors, competition with other similar projects and prioritized scheduling of actual project development.

For planning purposes, assumptions were made related to the funding source of each capital improvement. Some of the funding programs which may be available to support identified CIP projects at the Airport are presented below.

9.3.1.1. Federal Aviation Administration (FAA)

The FAA's Airport Improvement Program (or AIP) is the main source of airport development grant funding in the U.S., providing approximately $3.5 Billion to airports each year. The AIP provides grants to airport sponsors for the planning and development of public-use airports that are included in the National Plan of Integrated Airport Systems (NPIAS), and is 100 percent funded by the Airport and Airway Trust Fund (AATF), which derives its' revenue from aviation-related excise taxes on airline passengers, air cargo and aviation fuel. Eligible projects receive 90% funding from the FAA's AIP.

AIP Entitlement Grants

As a public airport listed in the NPIAS, SGJ is granted an annual entitlement of funds from the AIP to support the continued development of the Airport. AIP entitlements funds have ranged from $150,000 to $1,000,000 at SGJ.

AIP Discretionary Grants

After entitlement funding is assigned, the FAA then allocates additional AIP grants through discretionary funding. After a grant application is submitted to the FAA, projects compete for discretionary based on their ability to best address safety, security and capacity improvements. SGJ has consistently been able to access FAA discretionary funding for needed improvements.

9.3.1.2 State of Florida

The State of Florida provides numerous funding programs to support airport improvements, mainly through the state's Department of Transportation (or FDOT), and other related programs.

FDOT Aviation Grant Program

Pursuant to Florida Statues, Sections 332.003 – 332.007, the Florida Department of Transportation (FDOT) developed the Aviation Grant Program to provide for a safe, cost-effective, and efficient statewide aviation transportation system. The Aviation Grant Program provides financial assistance to Florida's airports in the areas of safety, security, preservation, capacity improvement, land acquisition, planning, and economic development. Program funds assist local governments and airport authorities in planning, designing, constructing, and maintaining public-use aviation facilities.

The Aviation Grant Program provides stand-alone or matching funding, with local and FAA funds. FDOT grant funds range from 5% to 100% of project costs. SGJ has consistently been able to access FDOT funding, through numerous programs, for needed improvements.

FDOT Strategic Intermodal System (or SIS)

The FDOT's Strategic Intermodal System (SIS) is the state's high priority network of transportation facilities, important to the state's economy and mobility. The Governor and Legislature established the SIS in 2003 to focus the state's limited transportation resources on the facilities most significant for interregional, interstate, and international travel. The SIS is the state's highest priority for transportation capacity investments and a primary focus for implementing the Florida Transportation Plan (FTP), the state's long-range transportation vision and policy plan.

To-date, SGJ is not a designated SIS facility, and therefore not yet eligible for SIS program funding. Future updates to the SIS program may include SGJ as a SIS facility.

FDOT State Infrastructure Bank

The State Infrastructure Bank (SIB) was authorized by the National Highway Systems Designation Act of 1995, and the State of Florida was designated as a pilot state for the program. SIBs can be used to:

- Provide credit enhancements;
- Subsidize interest rates;
- Ensure the issuance of letters of credit and credit instruments;

- Finance purchase and lease agreements with respect to transit projects; and
- Provide bonds or debt financing, and methods of leveraging funds that are approved by the Secretary of DOT and relate to the project with respect to which the assistance is being provided.

The SIB program loans interest-free money to eligible projects. These projects must show proof of purpose and need, be contained in the area's Long-Range Plan and Transportation Improvement Program, as well as have the funds committed to the project in order to pay back the SIB loan. Typically, the loan payback ranges from one to 15 years.

To-date, SGJ has not requested funds from the SIB. Yet, it does remain as a viable option for project funding in the future.

Enterprise Florida and the Department of Economic Opportunity (DEO)

Enterprise Florida, Inc. (EFI) is a public-private partnership between Florida's business and government leaders and is the principal economic development organization for the state. EFI's mission is to expand and diversify the state's economy through job creation. In pursuit of its mission, EFI works closely with a statewide network of economic development partners and is funded both by the State of Florida and by private-sector businesses.

Florida's Department of Economic Opportunity (or DEO) utilizes public and private sector expertise to attract, retain and grow businesses and create jobs in Florida. Florida has industry specific resources for certain cluster industries, including clean technology, life sciences, information technology, aviation and aerospace, logistics and distribution, homeland security and defense, and financial and professional services.

The DEO also manages the Community Development Block Grant Program (CDBG), which provides funds to local governments in urban and rural areas, for the following improvements:

- Water and Sewer Improvements,
- Rehabilitation of Substandard Housing,
- Street and Sidewalk Improvements,
- Economic Development Activities that Create Jobs for Low-and Moderate-Income People,
- Downtown Revitalization, including Facade Improvements, Streetscaping, and Underground Utilities,
- Park Facilities and Community Centers, and
- Drainage / Stormwater Improvements.

To-date, SGJ has not requested funds from EFI or DEO. Yet, it does remain as a viable option for project funding in the future.

9.3.1.3 Airport (local) Funding

The Airport funds capital improvements from cash generated from operations, leases and reserves. Historically, the airport generates approximately $1,000,000 in positive cash flow, to develop projects on its' own, or match grant funds from other sources. For example: A typical airport development project may be funded 90% by the FAA, 5% by the FDOT and 5% by the airport. Or, a project may be funded 50% by the FDOT and 50% by the airport, based on the specific scope and eligibility of the project.

The airport has consistently been able to fund and match its' share of airport development grants.

9.3.1.4 Third Party (Other) Funding

A variety of projects depicted on the ALP are anticipated to be developed with private and/or other third-party funding. These projects may include the development of individual corporate hangars by private individuals or corporations, or larger-scale aviation / commercial / manufacturing / distribution or infrastructure development.

In addition, the development of some commercial, land/infrastructure and ground access improvements are better suited to other agencies, such as the long-term interest of providing new access to Interstate 95 from the general vicinity of the airport, or the development of additional rail-related facilities adjacent to the FEC rail system, or non-aviation commercial development along U.S. Highway 1.

9.3.2. Projected Projects

Tables 9-3 through **9-7** provide a list projects for each planning period. Only the short-term projects are detailed within the grant financing breakdown. The intermediate and long-term projects are generically identified with potential funding sources (i.e., the FAA, FDOT, Airport and other, only).

Table 9-3. Short-Term Development (Airport and Other Lands)

Year	Project	Airport Location	Cost	FAA				State				Airport	Other
				FAA: Entitlement	FAA: Discretionary	State: FAA Grants Match	Airport: FAA Grants Match	State: Non-FAA Grants (revenue projects)	State: Non-FAA Grants (airfield projects)	State: FDOT (Multi-modal or SIS)	State: Other (CDBG or DEO)	Airport: State Grants Match	Private / Agency (or other)
2020	Taxiway D Relocation and Widening (Construct)	AOA	3,000,000	1,000,000	1,700,000	150,000	50,000	-	-	-	-	-	-
2020	Airfield Security - Radar System (Construct)	AOA	575,000	-	517,500	28,750	28,750	-	-	-	-	-	-
2020	Hangar A / Office (Construct)	South GA	2,000,000	-	-	-	-	1,000,000	-	-	-	1,000,000	-
2020	Big Oak / West Access Road (Planning, PD & E Study - Phase 1)	West Airport Area	100,000	-	-	-	-	-	-	50,000	-	50,000	-
2021	Taxiway B Rehabilitation - Center Section (Design)	AOA	300,000	270,000		15,000	15,000	-	-	-	-	-	-
2021	Land Acquisition (800 acres from SJRWMD)	West Airport Area	2,500,000	-	-	-	-	1,250,000	-	-	-	1,250,000	-
2021	Airline Terminal Apron Rehabilitation (Construct)	AOA	3,750,000	-	3,375,000	187,500	187,500	-	-	-	-	-	-
2022	Taxiway B Rehabilitation - Center Section (Construct)	AOA	4,600,000	1,000,000	3,140,000	230,000	230,000	-	-	-	-	-	-
2022	Big Oak Public/Multi-Use Facility Phase 1-Site (Design-Construct)	West Airport Area	2,000,000	-	-	-	-	-	-	-	1,000,000	500,000	500,000
2023	Airport Access Road East - Gun Club/Hawkeye View Lane (Design)	East Corporate Area	250,000	250,000	-	12,500	12,500	-	-	-	-	-	-
2023	Big Oak Public/Multi-Use Facility Phase 1-Buildings (Design-Construct)	West Airport Area	1,500,000	-	-	-	-	-	-	-	750,000	375,000	375,000

2023	Stormwater-Infrastructure West of US1 (Phase 1)	West Airport Area	1,500,000	-	-	-	-	750,000	-	-	-	750,000	-
2024	Airport Access Road East - Gun Club/Hawkeye View Lane (Construct)	East Corporate Area	2,300,000	-	2,070,000	115,000	115,000	-	-	-	-	-	-
2024	Terminal Access Road Widening/Signalization (at US 1) - (Design)	Terminal Area	400,000	-	-	-	-	-	-	300,000	-	100,000	-
2024	Land Acquisition in South GA	South GA	400,000	-	-	-	-	200,000	-	-	-	200,000	-
2024	Aviation Fuel Farm (Design-Construct)	South GA	1,300,000	-	-	-	-	650,000	-	-	-	650,000	-
2024	Taxiway F Rehabilitation (Design)	AOA	60,000	54,000	-	3,000	3,000	-	-	-	-	-	-
2024	Taxiway G Rehabilitation (Design)	AOA	90,000	81,000	-	4,500	4,500	-	-	-	-	-	-
2025	Terminal Access Road Widening/Signalization (at US 1) - (Construct)	Terminal Area	3,500,000	-	-	-	-	-	2,625,000	-	-	875,000	-
2025	T-Hangar Taxilane Rehabilitation (Design-Construct)	South GA	750,000	675,000	-	37,500	37,500	-	-	-	-	-	-
2025	Corporate Hangar Construction	East Corporate Area	3,000,000	-	-	-	-	1,500,000	-	-	-	1,500,000	-
2025	ARFF Building Expansion (Design-Construct)	South GA	1,800,000	-	1,620,000	90,000	90,000	-	-	-	-	-	-
2025	ARFF Vehicle - Index B	South GA	1,000,000	-	900,000	50,000	50,000	-	-	-	-	-	-
2025	Airline Terminal Building Expansion (Design-Construct)	Terminal Area	3,000,000	-	-	-	-	1,500,000	-	-	-	1,500,000	-
2025	Big Oak / West Access Road (Planning, PD & E Study - Phase 2)	West Airport Area	750,000	-	-	-	-	-	375,000	-	-	375,000	-
2025	Taxiway F Rehabilitation (Construct)	AOA	600,000	-	540,000	30,000	30,000	-	-	-	-	-	-
2025	Taxiway G Rehabilitation (Construct)	AOA	1,200,000	550,000	530,000	60,000	60,000	-	-	-	-	-	-

Source: Passero Associates, LLC (2019)

Table 9-4. Intermediate Term Development (Airport)

		Project Cost Matching				
Project	Airport Location	Total Cost	FAA	FDOT	Local	Private/Agency (Other)
Runway 13-31 Pavement and Lighting Rehabilitation	AOA	10,000,000	9,000,000	500,000	500,000	-
Runway 6-24 Pavement and Lighting Rehabilitation	AOA	1,000,000	-	500,000	500,000	-
Runway 2-20 Pavement and Lighting Rehabilitation	AOA	1,000,000	-	500,000	500,000	-
Airport Beacon and Vault Rehabilitation	AOA	250,000	225,000	12,500	12,500	-
Taxiway A Pavement and Lighting Rehabilitation	AOA	2,500,000	2,250,000	125,000	125,000	-
Obstruction / Tree Removal (Runway 13-31)	AOA	400,000	360,000	20,000	20,000	-
Obstruction / Tree Removal (Runway 2-20)	AOA	400,000	-	200,000	200,000	-
Environmental Assessment (Runway 6-24 Extension)	AOA	450,000	-	225,000	225,000	-
ATCT Rehabilitation	South GA	2,500,000	-	1,250,000	1,250,000	-
South GA Infrastructure	South GA	3,000,000	-	1,500,000	1,500,000	-
Property Acquisition (Estrella Road, Indian Bend Road)	South GA	600,000	-	300,000	300,000	-
T-Hangar Taxilane Pavement and Lighting Rehabilitation (Adjacent to Taxiways F and G)	South GA	325,000	-	162,500	162,500	-
Aircraft Parking Apron Rehabilitation (Adjacent to Taxiways F and G)	South GA	475,000	427,500	23,750	23,750	-
Aircraft Parking Apron Expansion (Adjacent to Taxiway F and G)	South GA	1,400,000	1,260,000	70,000	70,000	-

T-Hangar K, L and M Rehabilitation	South GA	1,900,000	-	950,000	950,000	-
T-Hangars K-L-M Rehabilitation	South GA	1,300,000	-	650,000	650,000	-
Airport Conference Center Expansion	South GA	6,000,000	-	3,000,000	3,000,000	-
Airport Administration Building Expansion	South GA	1,400,000	-	700,000	700,000	-
Maintenance/Shop Hangar (FBO) Demolition and Replacement	Main Terminal	125,000	-	62,500	62,500	-
Maintenance/Storage Hangar (FBO) Demolition and Replacement	Main Terminal	125,000.	-	62,500	62,500	-
Traffic Signalization (Intersection of US 1 and Passenger Terminal)	Main Terminal	2,500,000	-	1,250,000	1,250,000	-
Airline Terminal Roadway Realignment	Main Terminal	2,300,000	2,070,000	115,000	115,000	-
Passenger Terminal Automobile Parking Rehabilitation	Main Terminal	450,000	-	225,000	225,000	-
Passenger Terminal Expansion (Phase 2)	Main Terminal	2,100,000	-	1,050,000	1,050,000	-
New Box Hangars (8) and Aprons East of Taxiway A	East Corporate Area	8,000,000	-	4,000,000	4,000,000	-
Environmental Assessment for Parallel Runway 13R-31L	AOA	750,000	-	375,000	375,000	-
Land Acquisition for Runway 2 and 6 RPZs	West Airport Area	350,000	315,000	17,500	17,500	-
Total		**51,600,000**	**15,907,500**	**17,846,250**	**17,846,250**	-

Source: Passero Associates, LLC (2019)

As shown in **Table 9-4**, intermediate CIP development costs specifically related to airport development total $51,600,000 for the period 2026 to 2030, with grant funding planned from numerous sources. The airport's share of proposed development is $17,846,250 over the five-year period.

Table 9-5. Intermediate Term Development (Other Related Development)

Project Cost Matching						
Project	**Airport Location**	**Total Cost**	**FAA**	**FDOT**	**Local**	**Private/Agency (Other)**
Commercial Development (Adjacent to Indian Bend Road)	South GA	5,250,000	-	-	2,625,000	2,625,000
Commercial Development (Adjacent to US Highway 1)	South GA	5,250,000	-	-	2,625,000	2,625,000
Environmental Assessment and Stormwater Master Plan for NFRB Development (Phase 1)	West Airport Area	1,250,000	-	625,000	625,000	-
Stormwater and Infrastructure Improvements (Phase 2)	West Airport Area	7,500,000	-	3,750,000	3,750,000	-
Site and Utilities for Public/Multi-Use Facility (Phase 2)	West Airport Area	5,000,000	-	2,500,000	2,500,000	-
Buildings for Public/Multi-Use Facility (Phase 2)	West Airport Area	300,000	-	150,000	150,000	-
Roadway Improvements (Big Oak to SR 313)	West Airport Area	4,000,000	-	2,000,000	2,000,000	-
Parallel Rail Tracks (Phase 1) to FEC Rail	West Airport Area	3,000,000	-	-	-	3,000,000
Infrastructure for Commercial/Manufacturing/Warehouse (Phase 1 & 2)	West Airport Area	27,000,000	-	13,500,000	13,500,000	-
Commercial/Manufacturing/Warehouse Adjacent to FEC Rail (Phase 1)	West Airport Area	75,000,000	-	37,500,000	37,500,000	-
Buildings for Public/Multi-Use Facility (Phase 2)	West Airport Area	5,250,000	-	-	2,625,000	2,625,000
Total		**$133,550,000**	-	**$60,025,000**	**$65,275,000**	**$8,250,000**

Source: Passero Associates, LLC (2019)

As shown in **Table 9-5**, intermediate CIP development costs for other (non-airport, direct) projects total $133,550,000 for the period 2026 to 2030, with grant funding potentially being available from numerous sources. The airport's share of this proposed development is $65,275,000 over the five-year period, if the Airport chooses to financially participate in this development.

Table 9-6. Long Term Development (Airport)

Project Cost Matching						
Project	**Airport Location**	**Total Cost**	**FAA**	**FDOT**	**Local**	**Private/Agency (Other)**
Taxiway B Pavement & Lighting Rehabilitation	AOA	5,750,000	5,175,000	287,500	287,500	-
Runway 6-24 Widening & Extension (EA & Mitigation)	AOA	2,250,000	2,025,000	112,500	112,500	-
Runway 6-24 Widening and Extension	AOA	14,000,000	12,600,000	700,000	700,000	-
Obstruction & Tree Removal (Runway 6-24)	AOA	400,000	360,000	20,000	20,000	-
Barge/Sea Plane Ramp Rehabilitation	AOA	1,900,000	-	950,000	950,000	-
Floating Dock Rehabilitation	AOA	150,000	-	75,000	75,000	-
ARFF Building Expansion	AOA	450,000	405,000	22,500	22,500	-
ARFF Vehicle (Index B) Purchase	AOA	600,000	540,000	30,000	30,000	-
Taxiway D Pavement and Lighting Rehabilitation	AOA	750,000	675,000	37,500	37,500	-
Airport Maintenance Building Rehabilitation / Expansion	South GA	350,000	-	175,000	175,000	-
T-Hangars N, P, Q, R, S, T and U Rehabilitation	South GA	2,600,000	-	1,300,000	1,300,000	-
Construct 6 New T-Hangars (total of 65 Additional Units)	South GA	900,000	-	450,000	450,000	-
Construct 11 New Box / Corporate Hangars	South GA	5,500,000	-	2,750,000	2,750,000	-
Estrella Ave & Casa Cola Way Rehabilitation	South GA	750,000	-	375,000	375,000	-
Relocation of Indian Bend and Araquay Road	South GA	1,000,000	-	500,000	500,000	-

Maintenance Hangar and Apron Rehabilitation (Near Conference Center)	South GA	400,000	-	200,000	200,000	-
Airport Conference Center Rehabilitation	South GA	700,000	-	350,000	350,000	-
Aircraft Wash Rack Rehabilitation	South GA	50,000	-	25,000	25,000	-
Transient Apron Rehabilitation	Main Terminal/AOA	2,250,000	2,025,000	112,500	112,500	-
Passenger Terminal Expansion & Rehabilitation	Main Terminal	6,000,000	5,400,000	300,000	300,000	-
One-Story Parking Garage (at Passenger Terminal)	Main Terminal	12,000,000	-	6,000,000	6,000,000	-
Environmental Assessment & Stormwater Master Plan (East Corporate Development)	East Corporate Area	750,000	675,000	37,500	37,500	-
Land Acquisition (25 Acres) plus improvements to Hawkeye View Lane, Gun Club Road and Traffic Signalization at US 1	East Corporate Area	7,250,000	-	3,625,000	3,625,000	-
Hangar-Taxilane-Apron Rehabilitation (North of Taxiway A)	East Corporate Area	2,200,000	-	1,100,000	1,100,000	-
Hangar-Taxilane-Apron Rehabilitation (East of Taxiway A)	East Corporate Area	2,800,000	-	1,400,000	1,400,000	-
FBO-MRO Facility (Including Site, Access and Parking)	East Corporate Area	25,000,000	-	12,500,000	12,500,000	-
Environmental Assessment and Mitigation for Parallel Runway 13R-31L	West Airport Area	3,000,000	2,700,000	150,000	150,000	-
Construction of Parallel Runway 13R-31L	West Airport Area	4,500,000	4,050,000	225,000	225,000	-
Aircraft Crossing Gates and Signalization (at US Highway 1)	West Airport Area	2,000,000	-	1,000,000	1,000,000	-
Taxiway B Extension Across U.S. Highway 1	West Airport Area	3,000,000	-	1,500,000	1,500,000	-
Total		**$109,250,000**	**$36,630,000**	**$36,310,000**	**$36,310,000**	-

Source: Passero Associates, LLC (2019)

As shown in **Table 9-6**, long-term CIP development costs specifically related to airport development total $109,250,000 for the period 2030 (and beyond), with grant funding planned from numerous sources. The airport's share of proposed development is $36,310,000 after the year 2030.

Table 9-7. Long Term Development (Other Related Development)

			Project Cost Matching			
Project	**Airport Location**	**Total Cost**	**FAA**	**FDOT**	**Local**	**Private/Agency (Other)**
Commercial Development (Adjacent to Indian Bend Road)	South GA	5,250,000	-	-	2,625,000	2,625,000
Commercial Development (Adjacent to U.S. Highway 1)	South GA	5,250,000	-	-	2,625,000	2,625,000
Environmental Assessment (Impact to State Lands Study) for access corridor (SR 313 to I-95)	West Airport Area	1,250,000	-	625,000	625,000	-
Stormwater and Infrastructure Improvements (Phase 3)	West Airport Area	7,500,000	-	3,750,000	3,750,000	-
Mitigation for Access Corridor (SR 313 to I-95)	West Airport Area	6,250,000	-	3,125,000	3,125,000	-
Access Corridor Construction (SR 313 to I-95)	West Airport Area	62,500,000	-	31,250,000	31,250,000	-
Parallel Rail Tracks (Phase 2) to FEC Rail	West Airport Area	3,000,000	-	-	-	3,000,000
Commercial/Manufacturing/Warehouse Adjacent to FEC Rail (Phase 2)	West Airport Area	75,000,000	-	37,500,000	37,500,000	-
MRO West - Infrastructure	West Airport Area	4,000,000	-	2,000,000	2,000,000	-
Utiliites, Access & Parking for MRO (West)	West Airport Area	10,000,000	-	5,000,000	5,000,000	-
MRO Facilities (West), Hangars, Taxilanes & Aprons	West Airport Area	100,000,000	-	50,000,000	50,000,000	-
Land Acquisition for Multi-Modal Facility (US Highway 1)	West Airport Area	600,000	-	300,000	300,000	-
Construction of Multi-Modal Facility (US Highway 1)	West Airport Area	5,000,000	-	2,500,000	2,500,000	-
Total		**$285,600,000**	**-**	**$136,050,000**	**$141,300,000**	**$8,250,000**

Source: Passero Associates, LLC (2019)

As shown in **Table 9-7**, long-term CIP development costs for other (non-airport, direct) projects total $285,600,000 for the period beyond 2030, with grant funding potentially being available from numerous sources. The airport's share of this proposed development is $141,300,000 beyond the year 2030, if the Airport chooses to participate in this development.

9.3.3. Airport Business Model

The Airport Authority maintains specific budgets for airport operations, revenues, expenses and capital improvements. Most major expenses are incurred related to airport operations and the airport's share of capital improvements. Revenues are typically obtained from ground leases, hangar rentals, fuel flowage fees, car rentals and other fees and charges levied on Airport users and tenants.

9.3.3.1. Historic Operating Revenue and Expenses

Airport revenues and expenses for the past five years (2014-2018) were reviewed from audited records provided by the Airport Authority and summarized below in Table 9-8. The cash flow for operating revenues less operating expenses yields an operating balance (or cash available) each year. The Capital Improvement Expenses and Grants Received was also reviewed for the past 5 years. If the amount due for capital improvements versus grants received was negative, then the airport would logically use the operating balance to pay the balance of capital improvements. **Table 9-8** highlights the summary of the cashflow analysis between 2014-2018.

Table 9-8. 2014-2018 Cash Flow for Northeast Florida Regional Airport

	Year				
Category	2014	2015	2016	2017	2018
Operating Revenue	4,585,713	4,650,412	4,588,181	4,588,390	4,876,235
Operating Expenses	3,371,125	3,505,493	3,583,365	3,087,021	3,565,957
Operating Balance	**1,214,588**	**1,144,919**	**1,004,816**	**1,501,369**	**1,310,278**
Capital Grants Received	1,501,345	2,782,591	3,966,912	3,447,595	923,354
Capital Grants Expenditures	2,663,465	3,519,087	5,559,290	5,269,507	1,041,500
Capital Improvement Balance	**(1,162,120)**	**(736,496)**	**(1,592,378)**	**(1,821,912)**	**(118,146)**
Final Balance (annual)	52,468	408,423	(587,562)	(320,543)	1,192,132

Source: Passero Associates, LLC (2019)

As shown in **Table 9-8**, the airport's annual operating balance (positive cash generation) ranged from $1,004,816 to $1,501,369 during this period. After grant matching, the airports final cash balance ranged from a low of ($587,562) to a high of $1,192,132.

9.3.3.3. Projected Operating Revenue and Expenses: Airport Related Projects

Previous tables show the projected expenses for capital improvements both at the airport and related development that may be sponsored by private interests and other agencies. This section supports and assists decisions related to determining adequate cash resources to undertake future projects, based on projected cash flows. To determine projected revenues, the average of the last five years served as the baseline reference. This baseline that was multiplied by the 10-year inflation rate of 1.8%, to obtain future operating revenues, expenses and projected end of year cash balances.

Tables 9-9 through **9-11** show the expected balance to undertake Airport sponsored projects only. Other capital projects, mainly private / commercial or located on the west side of U.S. 1, are contingent on private / other funding sponsors, and are not included in the following cash flow tables.

Table 9-9. Short-Term Cash Flow

Category	Year					
	2020	2021	2022	2023	2024	2025
Operating Revenue	4,826,976	4,913,861	5,002,311	5,092,352	5,184,015	5,277,327
Operating Expenses	3,546,914	3,610,759	3,675,753	3,741,916	3,809,271	3,877,837
Operating Balance	**1,280,061**	**1,303,102**	**1,326,558**	**1,350,436**	**1,374,744**	**1,399,489**
Capital Grants Received	4,446,250	5,097,500	5,870,000	2,137,520	3,477,500	11,082,500
Capital Grants Expenditures	5,675,000	6,550,000	6,600,000	3,275,000	4,550,000	15,600,000
Capital Improvement Balance	**(1,228,750)**	**(1,452,500)**	**(730,000)**	**(1,137,480)**	**(1,072,500)**	**(4,517,500)**
Final Balance (annual)	51,311	(149,398)	596,558	212,956	302,244	(3,118,011)

Source: Passero Associates, LLC (2019)

As shown in **Table 9-9**, the airport's projected annual operating balance (positive cash generation) will range from $1,280,061 in 2020 to $1,399,489 in 2025. That operational balance would then support the airport's share of capital improvements.

After matching grant funds, the airports final cash balance ranges from a low of ($3,118,011) in 2025 to a high of $596,558 in 2022. It should be noted that the Authority can successfully operate with a negative cash balance in any specific year. When total expenses exceed total revenues in a specific year, additional funding can be accessed from airport reserves, which increase when revenues exceed expenses in a specific year.

Table 9-10. Intermediate-Term Cash Flow

Category	
Operating Revenue	27,846,175
Operating Expenses	20,461,674
Operating Balance	**7,384,501**
Capital Grants Received	33,753,750
Capital Grants Expenditures	51,600,000
Capital Improvement Balance	**17,846,250**
Final Balance (aggregate)	(10,461,749)

Source: Passero Associates, LLC (2019)

As shown in **Table 9-10**, the airport's total operating cash balance during this period is $7,384,501. The airports total grant funding match is $17,846,250, resulting in a conceptual deficit (need) for additional grant or cash generation of $10,461,749.

Table 9-11. Long-Term Cash Flow

Category	Year
Operating Revenue	63,728,789
Operating Expenses	46,828,611
Operating Balance	**16,900,179**
Capital Grants Received	72,940,000
Capital Grants Expenditures	109,250,000
Capital Improvement Balance	**36,310,000**
Final Balance (aggregate)	(19,409,821)

Source: Passero Associates, LLC (2019)

As shown in **Table 9-11**, the airport's total operating cash balance in this period is $16,900,179. The airports total grant funding match is $36,310,000, resulting in a conceptual deficit (need) for additional grant or cash generation of $19,409,821.

9.4. Conclusion

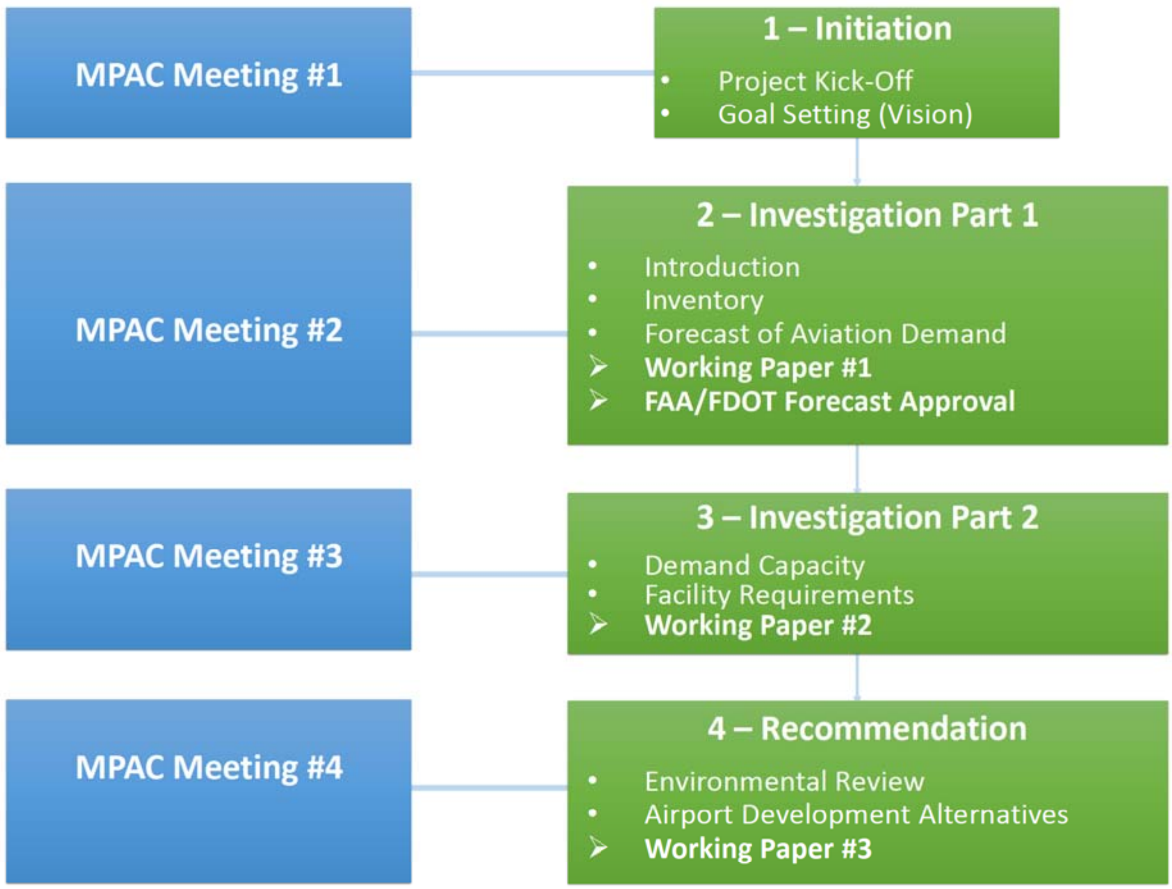
The Authority has a successful, proven ability to support an active and robust airport development program. Within the short-term CIP, the Authority generates adequate cashflow to support its' share of airport improvements in all years except 2025. Even in the year 2025, the Authority has the ability to fund the improvements listed.

The intermediate and long-term CIP's list project funding needs greater than existing operations can support. That does not mean that those projects will not occur. It simply means that projects after the year 2025 will need updated cost and funding projections, additional grant sources, or possible movement of a project within a specific development year.

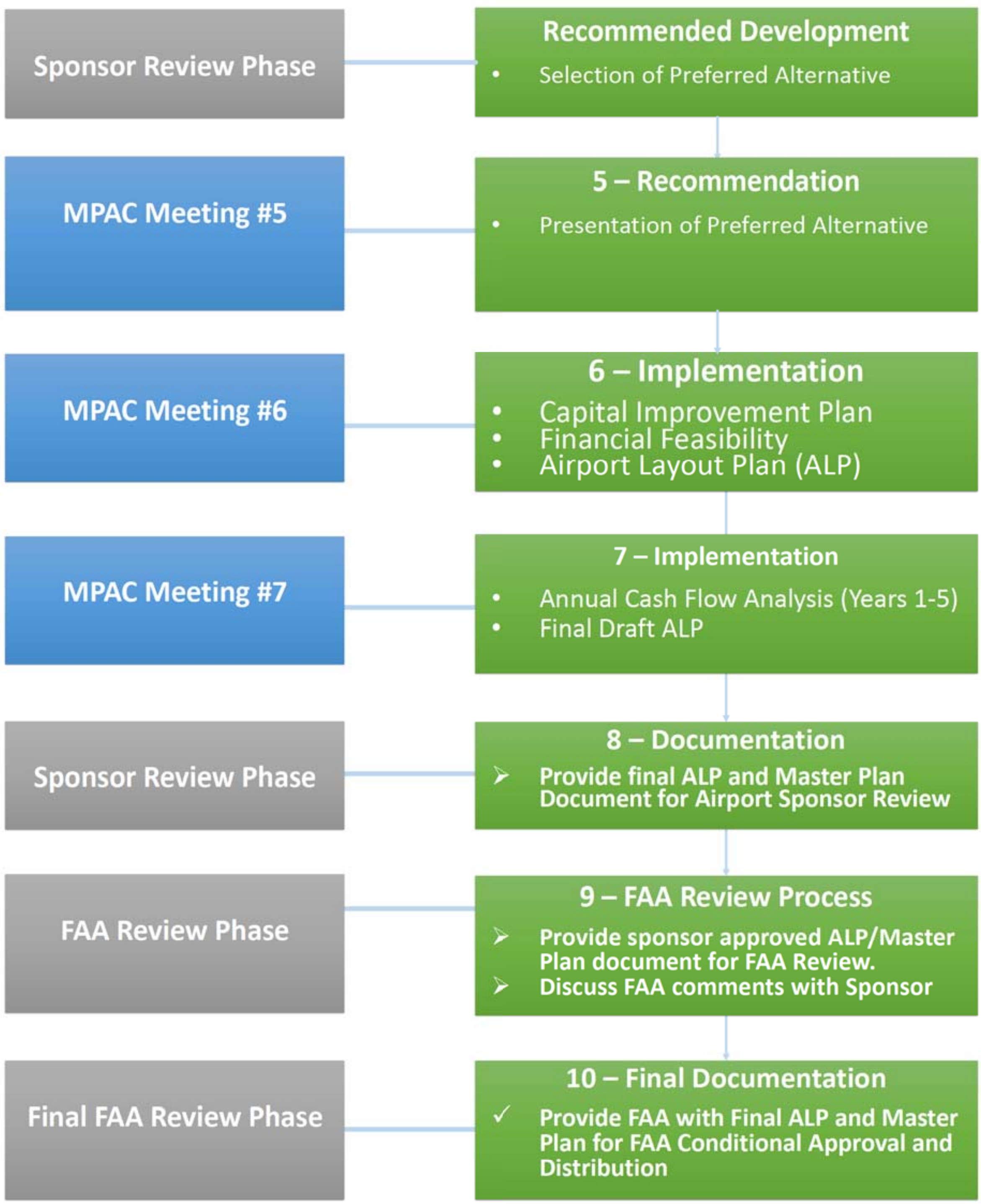
Appendices

Appendix A
Technical Advisory Committee, Master Plan Process & Public Outreach

MASTER PLAN PROCESS



MASTER PLAN PROCESS (Cont'd.)



Northeast Florida Regional Airport

Master Plan Advisory Committee (MPAC)

Representing
NFRA
Atlantic Aviation
Corporate User/Commercial Aviation
General Aviation
Local Resident
Northrup Grumman
SAAPA
St. Augustine & St. Johns County Board of REALTORS
SJC Economic Development
SJC Planning
Airport Authority
ATC
FAA
FDOT
Florida Inland Navigation District
North Florida Transportation Planning Organization
Space Florida
City of St Augustine
St Johns Aerospace Academy

NFRA
AGENDA

Airport Master Plan Update
Master Plan Advisory Committee (MPAC)
Meeting #1

February 22, 2017

Airport Conference Center, 4730 Casa Cola Way, St. Augustine, FL 32095, 2nd Floor

1. Introductions
2. Study Overview and Specialty Studies
3. Goal Setting & Objectives
    a. Survey
4. Planning Process and Meetings
5. Public Outreach: MPAC

NOTES:

Airport Planning Consultant Contacts:

Lisa Cheung
Airport Planner
Email: lcheung@passero.com
Office Phone: 585-760-8506

Andrew Holesko
Director of Aviation Services
Email: Aholesko@passero.com
Office: 904.757.6106
Cell: 904-753-2093

Mailings:
Passero Associates
13453 North Main Street, Suite 104
Jacksonville, Florida 32218

Northeast Florida Regional Airport

Airport Planning Process

Study Tasks/Challenges

1. Long-Term Commercial Service Airline Facilities
2. Long-Term Fixed Base Operator (FBO) Facilities
3. Long-Term, additional aircraft Maintenance-Repair-Overhaul (MRO) Facilities
4. Long-term airfield capacity constraints (land use, transportation corridors, natural features)
5. Ground Access (immediate airport area, proposed State Rd 313)
6. Intermodal Access (US1, FEC Railway and proposed State Rd 313)
7. Inland Port/Aviation development opportunities (US1, FEC Railway and proposed State Rd 313)
8. On-Airport Parking Plan
9. Feasibility and need for passenger and tenant support facilities (professional office, hotels, consolidated car rental facilities)

Northeast Florida Regional Airport

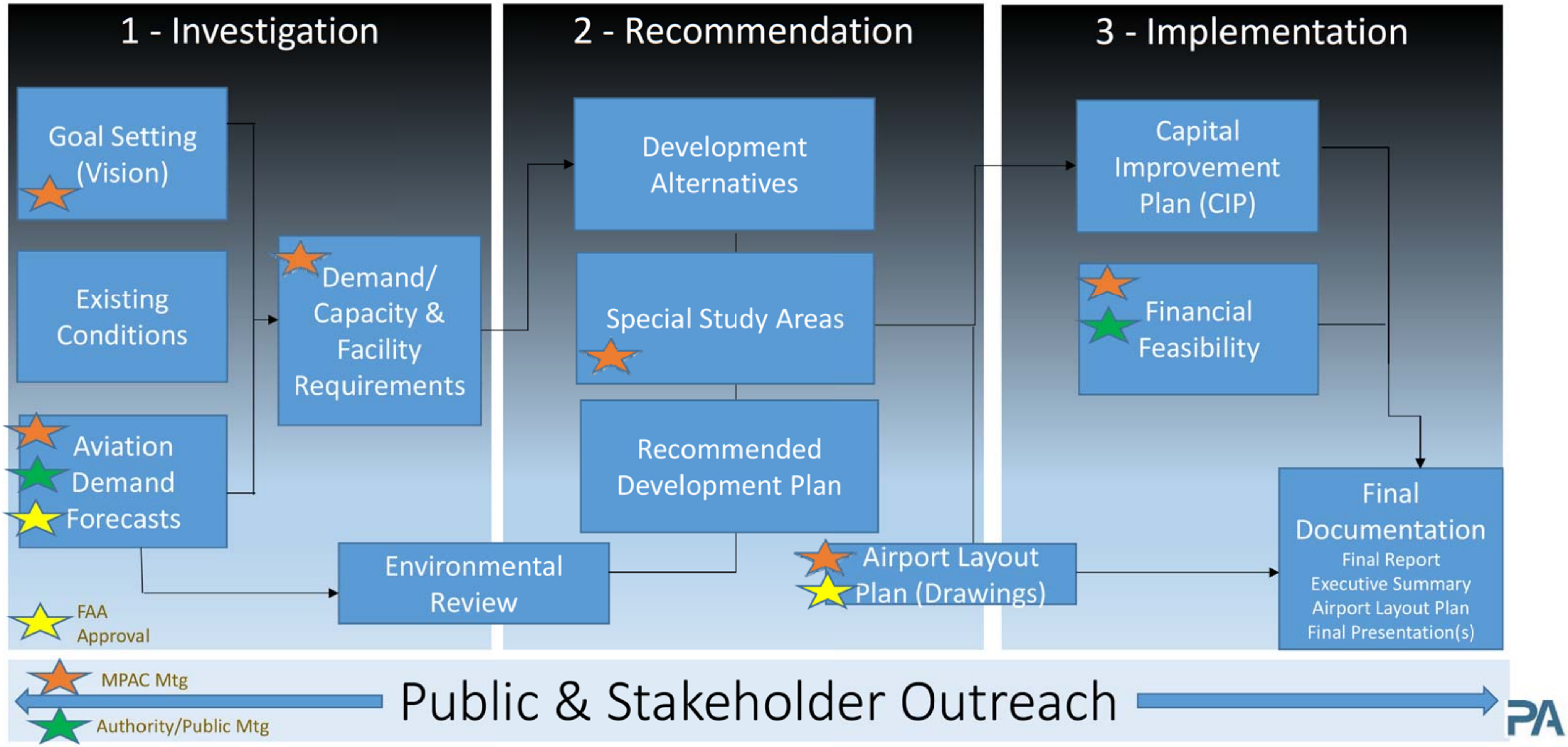
Airport Planning Process

Special Study Areas – Consultant Assignments

1. Passero – PM (Prime Consultant)
2. Aerial Mapping, Obstruction Survey and AGIS - Quantum Spatial
3. Exhibit A – Property Map Update – Geomatics Corp
4. Wetlands and Environmental Sensitive Areas – Environmental Resources Solutions, Inc.
5. Ground Access Planning – Matthews Design Group
6. Financial Feasibility – Liebowitz-Horton
7. Drainage/Stormwater Planning – EG Solutions
8. Passenger Forecasts and Public/Stakeholder Outreach –Volaire Aviation
9. Multi-modal Planning - Hanson Professional Services, Inc
10. Airport Security Assessment – BMEL Business Solutions (Stellar Security Group)
11. Runway Development Alternatives – Kimley -Horne

Northeast Florida Regional Airport

Airport Planning Process



NFRA
AGENDA

Airport Master Plan Update
Master Plan Advisory Committee (MPAC) Meeting #2

June 21, 2017

Airport Conference Center, 4730 Casa Cola Way, St. Augustine, FL 32095, 2nd Floor

1. Approval of Meeting Minutes: MPAC #1
2. Inventory and Forecast Review
3. Next Steps
    a. Demand Capacity/Facility Requirements
    b. Multi-modal opportunities

NOTES:

Airport Planning Consultant Contacts:

Lisa Cheung
Airport Planner
Email: lcheung@passero.com
Office: 585-760-8506

Andrew Holesko
Director of Aviation Services
Email: Aholesko@passero.com
Office: 904.757.6106
Cell: 904-753-2093

Chris Johnson
Airport Planner
Email: cjohnson@passero.com
Office: 904-224-7084

Mailings:
Passero Associates
13453 North Main Street, Suite 104
Jacksonville, Florida 32218

NFRA
AGENDA

Airport Master Plan Update
Master Plan Advisory Committee (MPAC) Meeting #3

January 31, 2018

Airport Conference Center, 4730 Casa Cola Way, St. Augustine, FL 32095, 2nd Floor

1. Approval of Meeting Minutes: MPAC #2
2. Review of Demand Capacity/Facility Requirements
3. Alternative Analysis: Introduction to Evaluation Criteria
4. Next Steps
    a. Present and Finalize Alternatives
    b. Preparation of Airport Layout Plan
    c. Preparation of Capital Improvement Program

NOTES:

Airport Planning Consultant Contacts:

Lisa Cheung
Airport Planner
Email: lcheung@passero.com
Office: 585-760-8506

Andrew Holesko
Director of Aviation Services
Email: Aholesko@passero.com
Office: 904.757.6106
Cell: 904-753-2093

Chris Johnson
Airport Planner
Email: cjohnson@passero.com
Office: 904-224-7084

Mailings:
Passero Associates
13453 North Main Street, Suite 104
Jacksonville, Florida 32218

NFRA
AGENDA

Airport Master Plan Update

Master Plan Advisory Committee (MPAC) Meeting #4

May 30, 2018

Airport Conference Center, 4730 Casa Cola Way, St. Augustine, FL 32095, 2nd Floor

1. Planning Process (Progress)
2. Brief Review of Demand Capacity / Facility Requirement (Deficiencies and Needs)
3. Review of Alternative Evaluation Screening Criteria
4. Review of Alternatives
5. Select preferred alternative (for further development)
6. Next Steps
    a. Preferred Alternative
    b. Environmental Overview (preferred alternative)
    c. Preparation of Airport Layout Plan Drawings
    d. Preparation of Capital Improvement Program (costs and implementation schedule)

NFRA
AGENDA

Airport Master Plan Update

Master Plan Advisory Committee (MPAC)

Meeting #5

June 29, 2018

Airport Conference Center, 4730 Casa Cola Way, St. Augustine, FL 32095, 2nd Floor

1. Review of Airport Functional Areas
2. Review of Preferred Alternatives
3. Review of Consolidated Preferred Alternative (NFRA)
4. Review of Consolidated Preferred Alternative (NFRB)
5. Next Steps
    a. Environmental Overview (preferred alternative)
    b. Preparation of Airport Layout Plan Drawings
    c. Preparation of Capital Improvement Program (costs and implementation schedule)

NFRA
AGENDA

Airport Master Plan Update

Master Plan Advisory Committee (MPAC) Meeting #6

December 13, 2018

Airport Conference Center, 4730 Casa Cola Way, St. Augustine, FL 32095, 2nd Floor

1. Master Plan Process
2. Review of Airport Functional Areas
3. AOA Functional Area Development
4. South GA Functional Area Development
5. Main Terminal Functional Area Development
6. East Corporate Area Functional Area Development
7. West Airport Area (NFR-B) Functional Area Development
8. Airport Grant Funds (FAA, FDOT, SIS, etc.)
9. Next Steps
    a. Annual Cash Flow Analysis (Years 1-5)
    b. Final Plan Documentation and Presentations
    c. Agency Approvals

NFRA

AGENDA

Airport Master Plan Update

Master Plan Advisory Committee (MPAC) Meeting #7

June 26, 2019

Airport Conference Center, 4730 Casa Cola Way, St. Augustine, FL 32095, 2nd Floor

1. Master Plan Process
2. Review of Functional Areas
3. Master Plan Chapter Overview (Chapter 1-8)
4. Plan Implementation (Chapter 9)
   a. Historical Revenue, Expenses and CIP
   b. Projected Revenue, Expenses and CIP
   c. Other Projects (Partnerships with Others)
   d. Feasibility Conclusion
5. Next Steps
   a. Plan Documentation and Presentations
   b. Agency Review and Approvals

Appendix B
Grant History

Fiscal Y	Service	State	Locatior	Airport I	Grant Se	AIP Fed	Work Description
2006	R	FL	SGJ	Northeast I	21	$4,407,868	Construct Apron , Construct Taxiway
2008	R	FL	SGJ	Northeast I	22	$111,240	Widen Taxiway
2008	R	FL	SGJ	Northeast I	23	$703,000	Conduct Environmental Study
2009	P	FL	SGJ	Northeast I	26	$218,200	Identify the airport's environmental footprint
2009	P	FL	SGJ	Northeast I	25	$675,379	Construct Aircraft Rescue & Fire Fighting Building , Rehabilitate Runway - 13/31
2009	P	FL	SGJ	Northeast I	24	$2,576,975	Rehabilitate Taxiway
2010	P	FL	SGJ	Northeast I	28	$68,252	Wildlife Hazard Assessments
2010	P	FL	SGJ	Northeast I	29	$889,066	Construct Aircraft Rescue & Fire Fighting Building
2010	P	FL	SGJ	Northeast I	30	$4,403,206	Construct Runway Safety Area - 13/31
2010	P	FL	SGJ	Northeast I	27	$6,488,120	Rehabilitate Runway - 13/31
2011	GA	FL	SGJ	Northeast I	31	$6,353,692	Improve Runway Safety Area - 13/31
2012	GA	FL	SGJ	Northeast I	32	$231,750	Conduct Miscellaneous Study , Rehabilitate Taxiway
2013	GA	FL	SGJ	Northeast I	33	$1,205,222	Improve Airport Drainage , Widen Taxiway
2014	GA	FL	SGJ	Northeast I	34	$331,839	Acquire Aircraft Rescue & Fire Fighting Vehicle
2014	GA	FL	SGJ	Northeast I	35	$2,662,974	Rehabilitate Taxiway
2015	GA	FL	SGJ	Northeast I	36	$150,000	Rehabilitate Runway - 13/31
2015	GA	FL	SGJ	Northeast I	37	$1,146,301	Install Runway Vertical/Visual Guidance System - 13/31
2016	P	FL	SGJ	Northeast I	39	$768,253	Conduct Airport Master Plan Study
2016	P	FL	SGJ	Northeast I	38	$180,000	Rehabilitate Apron

Notes about the Data

The grant data are generated at the end of each fiscal year and will not reflect subsequent grant amendments. This data will not reflect any funding or project amendments. Airport locations that received funds as part of a State Block Grant Program (SBGP) may have also received grants directly from the FAA prior to inclusion into the SBGP---specifically during periods when the airport was designated as a primary airport and/or opted out of the SBGP. Because of this the data available from this tool may not necessarily be complete for States participating in the SBGP.

Appendix C

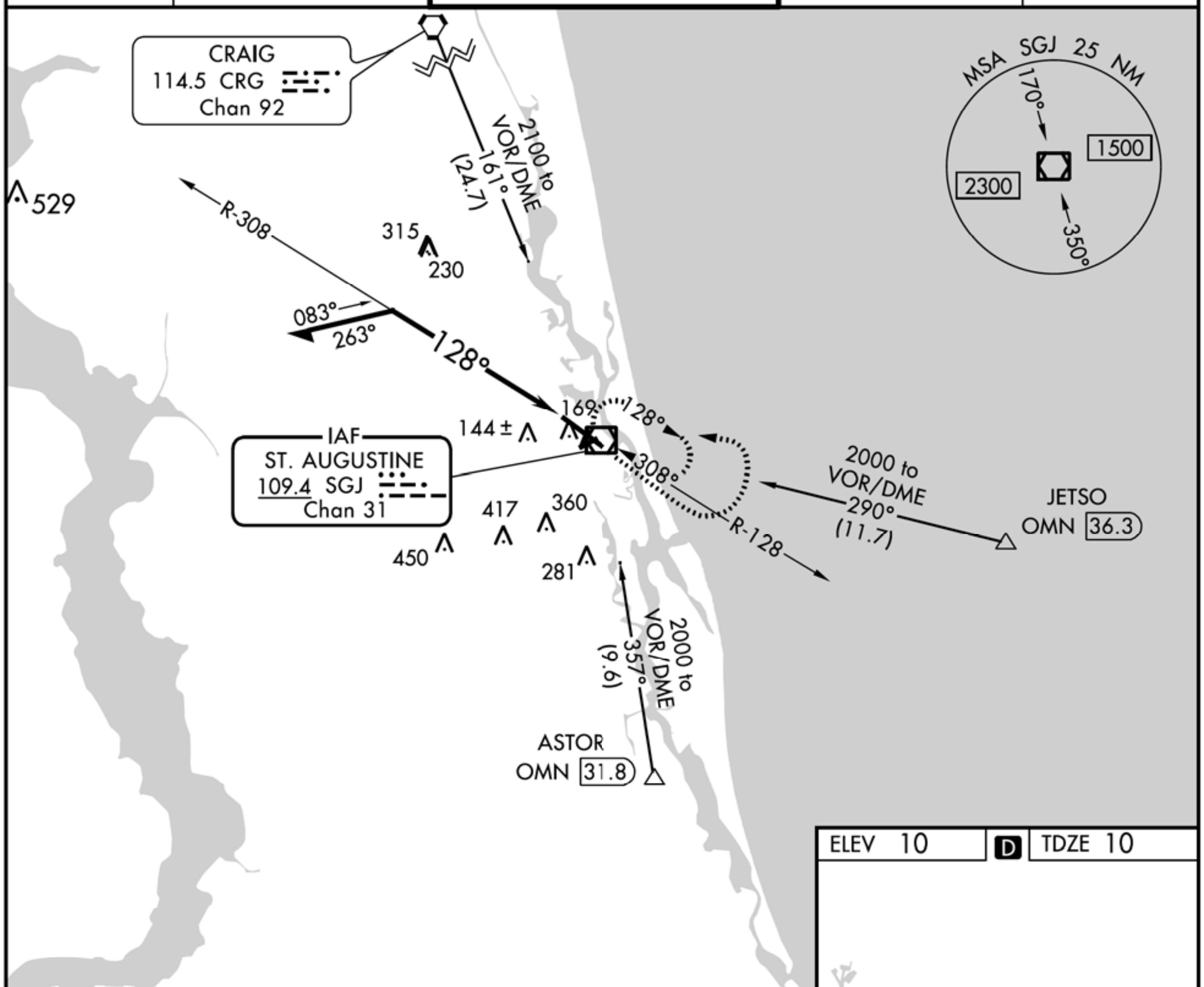
Approach Plates and Departure Procedures

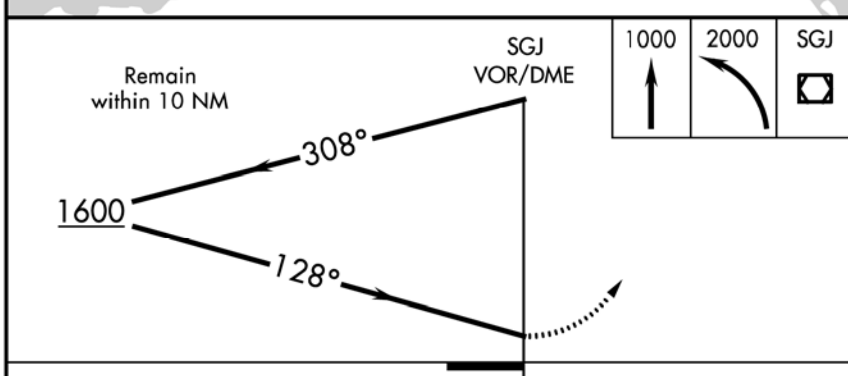
VOR RWY 13
NORTHEAST FLORIDA RGNL (SGJ)

VOR/DME SGJ 109.4 Chan 31	APP CRS 128°	Rwy ldg 6144 TDZE 10 Apt Elev 10

When local altimeter not received, use Jacksonville NAS (Towers Field) altimeter setting and increase all MDA 60 feet and S-13 visibility Cat C/D and Circling Cat C ⅛ mile. Helicopter visibility reduction below ¾ SM NA.	MISSED APPROACH: Climb to 1000 then climbing left turn to 2000 direct SGJ VOR/DME and hold.

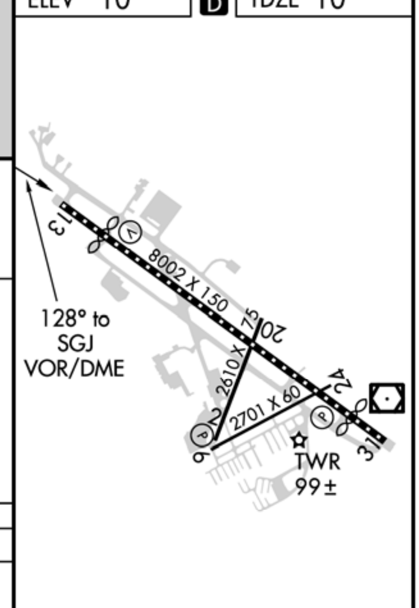
ATIS	JACKSONVILLE APP CON	ST AUGUSTINE TOWER ★	GND CON	UNICOM
119.625	120.75	127.625 (CTAF) L 269.475	121.175 251.125	122.95





CATEGORY	A	B	C	D
S-13	620-1 610 (700-1)		620-1¾ 610 (700-1¾)	
CIRCLING	620-1 610 (700-1)		620-1¾ 610 (700-1¾)	620-2 610 (700-2)

ELEV 10 TDZE 10



MIRL Rwys 2-20 and 6-24
HIRL Rwy 13-31

SE-3, 08 DEC 2016 to 05 JAN 2017

SE-3, 08 DEC 2016 to 05 JAN 2017

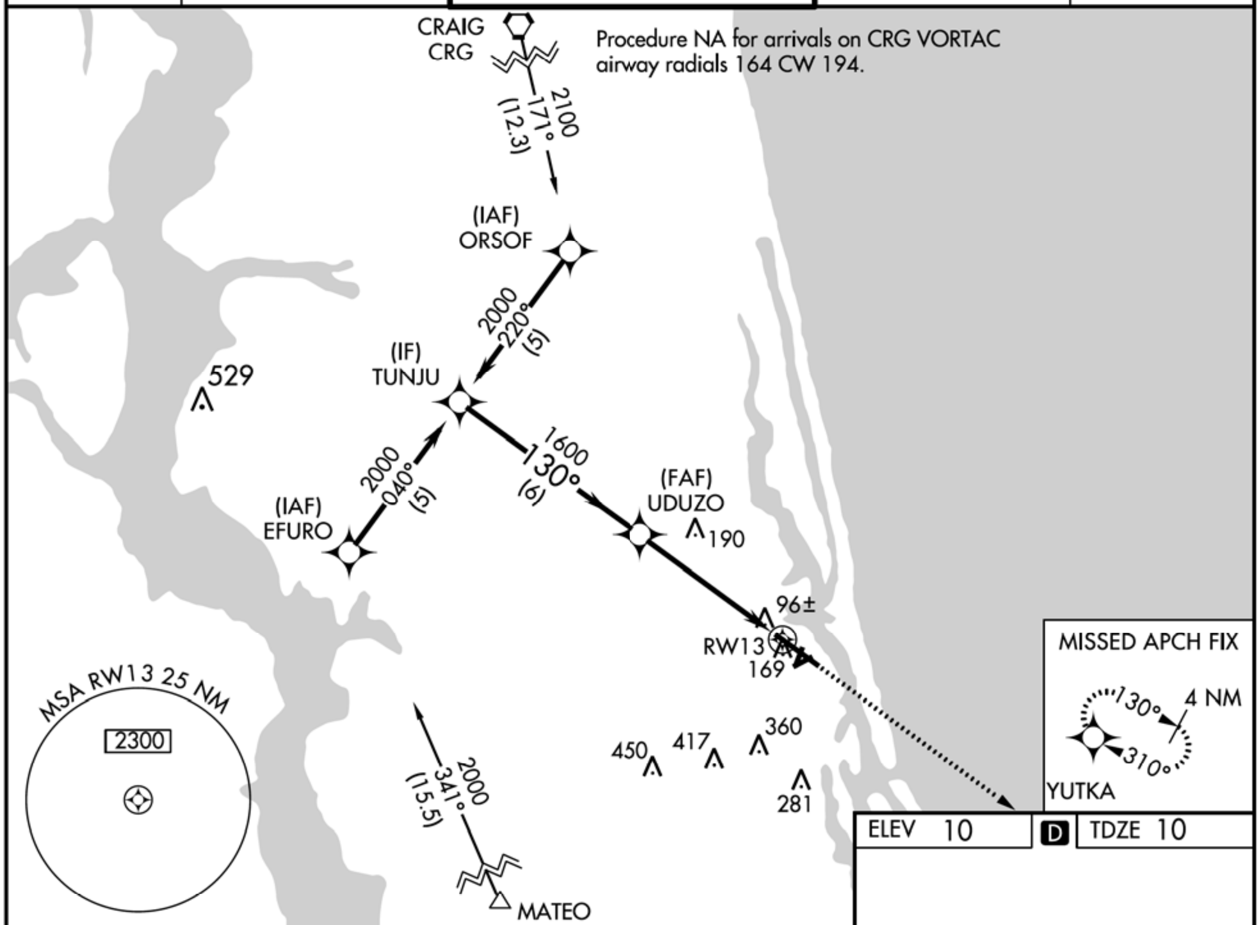
WAAS CH 77711 W13A	APP CRS 130°	Rwy ldg 6144 TDZE 10 Apt Elev 10

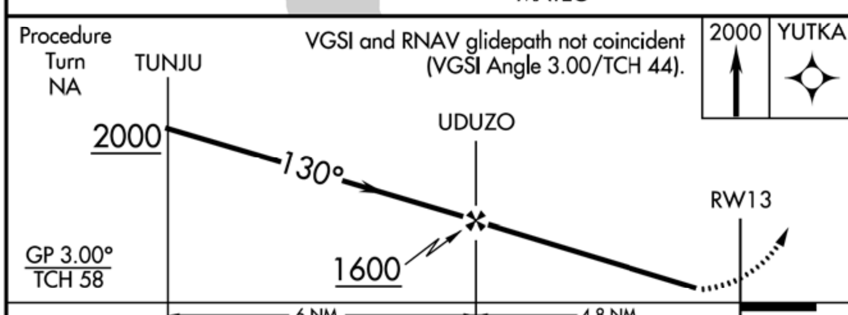
RNAV (GPS) RWY 13
NORTHEAST FLORIDA RGNL (SGJ)

Baro-VNAV NA when using Jacksonville NAS/Towers Field altimeter setting. For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -15°C (5°F) or above 54°C (130°F). DME/DME RNP-0.3 NA. Helicopter visibility reduction below ¾ SM NA. When local altimeter setting not received, use Jacksonville NAS (Towers Field) altimeter setting and increase all DA 57 feet and all MDA 60 feet; increase LPV and LNAV/VNAV all Cats and LNAV Cat C and Circling Cat C visibility ¼ mile.

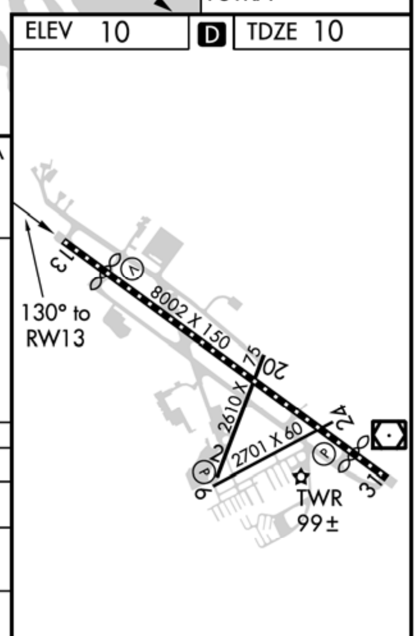
MISSED APPROACH: Climb to 2000 direct YUTKA and hold.

ATIS	JACKSONVILLE APP CON	ST AUGUSTINE TOWER ★	GND CON	UNICOM
119.625	120.75	127.625 (CTAF) L 269.475	121.175 251.125	122.95





CATEGORY	A	B	C	D
LPV DA	357-1¼ 347 (400-1¼)			
LNAV/ VNAV DA	391-1¼ 381 (400-1¼)			
LNAV MDA	460-1 450 (500-1)		460-1¼ 450 (500-1¼)	460-1½ 450 (500-1½)
CIRCLING	480-1 470 (500-1)	580-1 570 (600-1)	580-1½ 570 (600-1½)	580-2 570 (600-2)



MIRL Rwys 2-20 and 6-24 L
HIRL Rwy 13-31 L

SE-3, 08 DEC 2016 to 05 JAN 2017

SE-3, 08 DEC 2016 to 05 JAN 2017

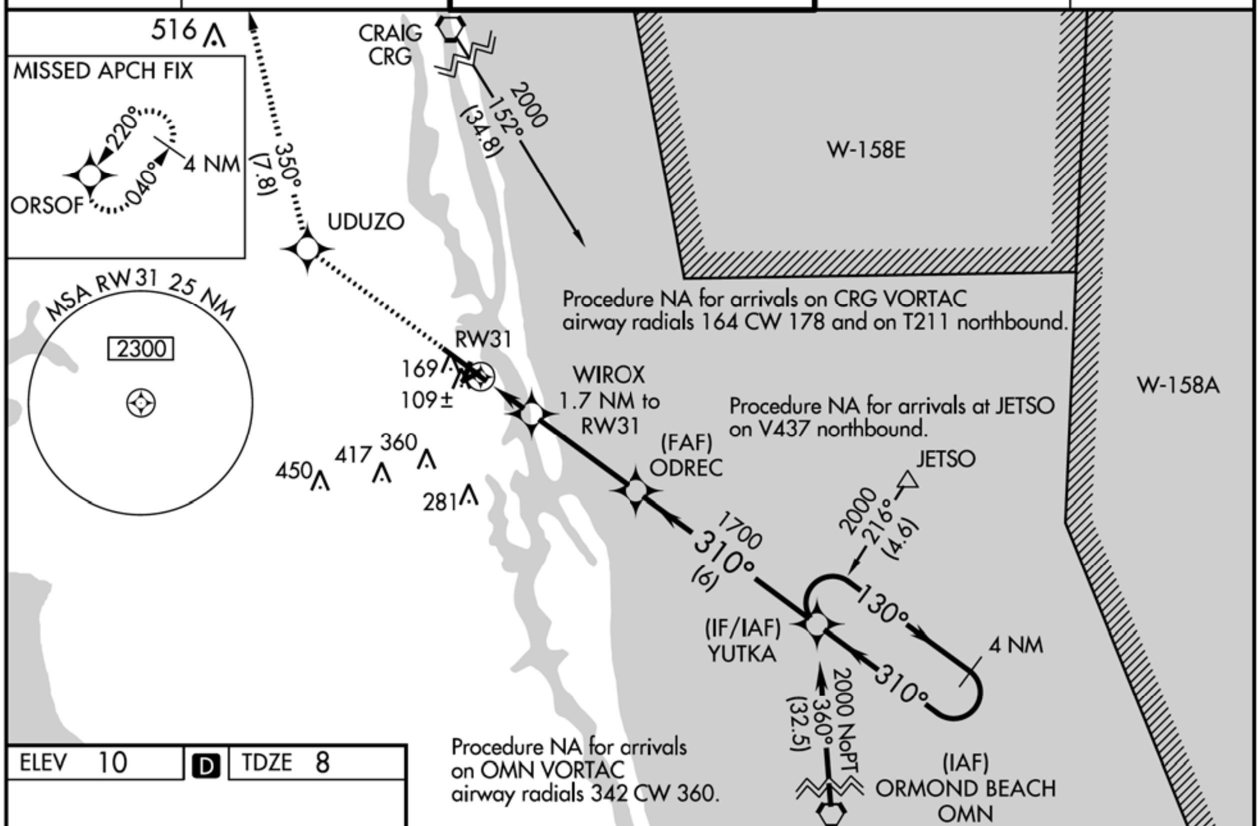
RNAV (GPS) RWY 31
NORTHEAST FLORIDA RGNL (SGJ)

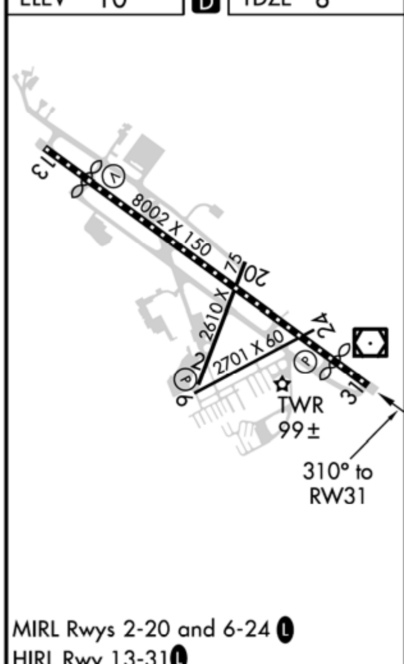
WAAS CH 77727 W31A	APP CRS 310°	Rwy ldg 5925 TDZE 8 Apt Elev 10

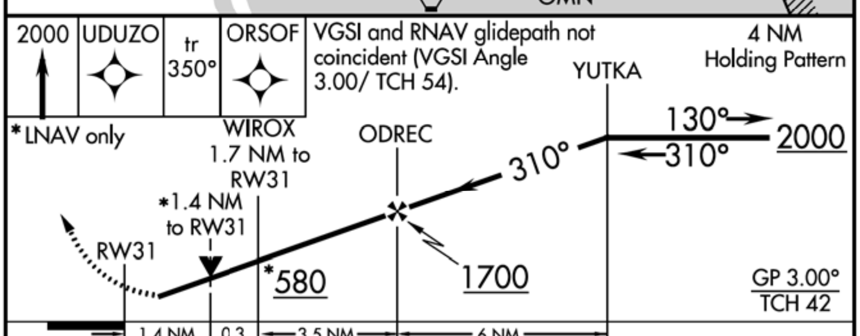
Baro-VNAV and VDP NA when using Jacksonville NAS (Towers Field) altimeter setting. For uncompensated Baro-VNAV systems, LNAV/VNAV NA below -15°C (5°F) or above 54°C (130°F). DME/DME RNP-0.3 NA. When local altimeter setting not received, use Jacksonville NAS (Towers Field) altimeter setting and increase all DA 57 feet and all MDA 60 feet; increase LPV all Cats visibility ⅛ mile and increase LNAV/VNAV all Cats and LNAV Cats C/D and Circling Cat C visibility ¼ mile.

MISSED APPROACH: Climb to 2000 direct UDUZO and on track 350° to ORSOF and hold.

ATIS	JACKSONVILLE APP CON	ST AUGUSTINE TOWER ★	GND CON	UNICOM
119.625	120.75	127.625 (CTAF) L 269.475	121.175 251.125	122.95







CATEGORY	A	B	C	D
LPV DA	258-⅞ 250 (300-⅞)			
LNAV/VNAV DA	292-⅞ 284 (300-⅞)			
LNAV MDA	520-1 512 (600-1)		520-1⅜ 512 (600-1⅜)	
CIRCLING	520-1 510 (600-1)	580-1 570 (600-1)	580-1½ 570 (600-1½)	580-2 570 (600-2)

SE-3, 08 DEC 2016 to 05 JAN 2017

SE-3, 08 DEC 2016 to 05 JAN 2017

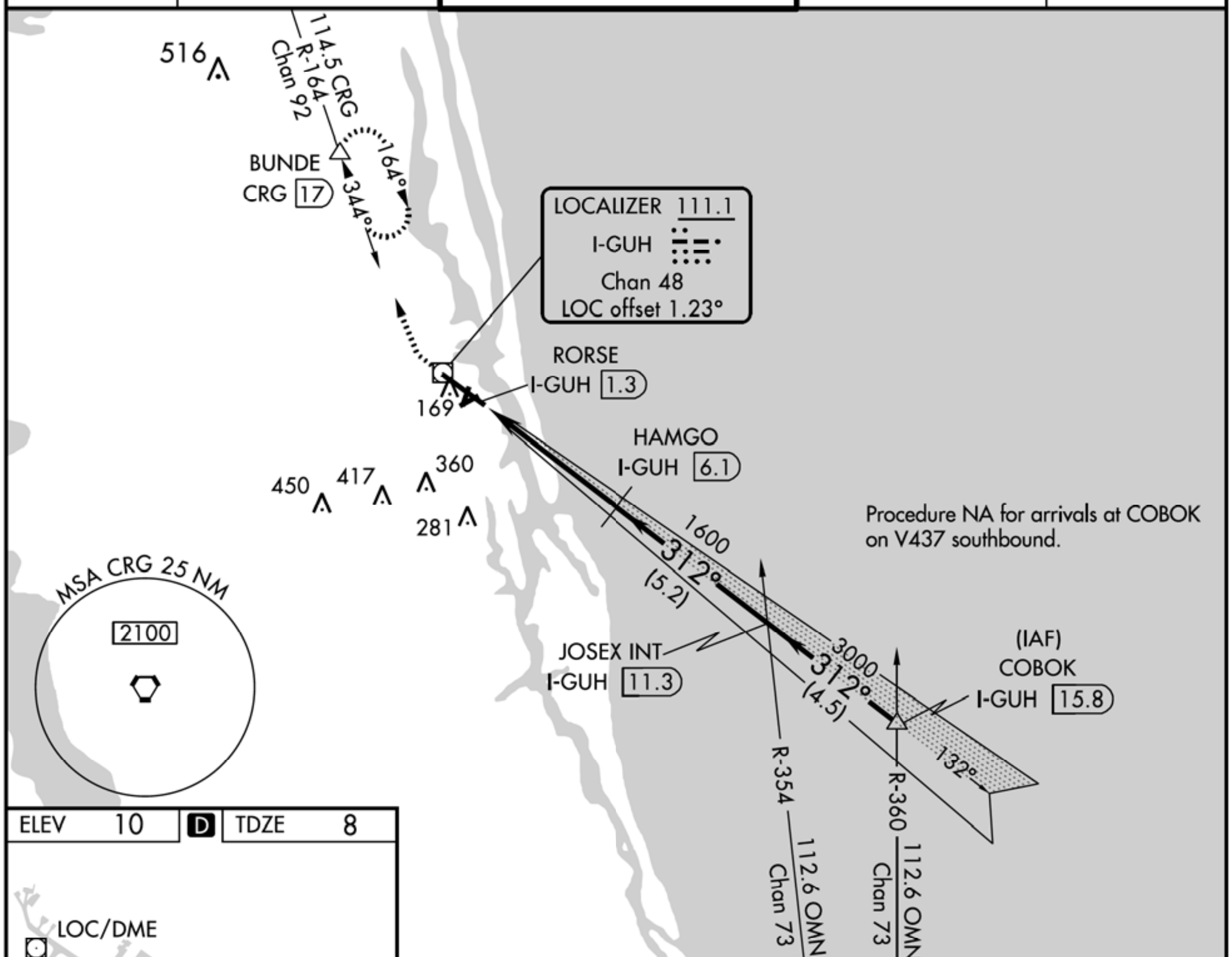
ILS or LOC/DME RWY 31

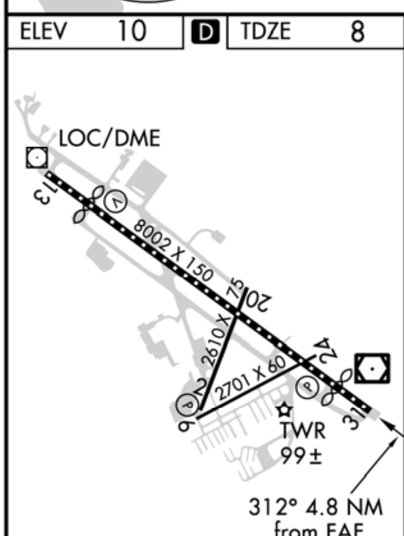
NORTHEAST FLORIDA RGNL (SGJ)

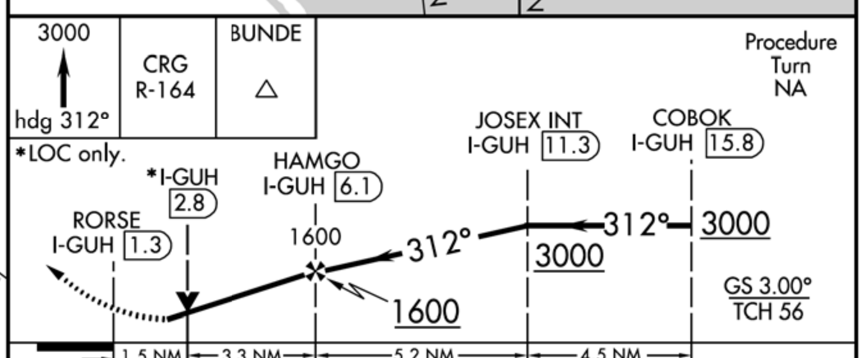
LOC/DME I-GUH 111.1 Chan 48	APP CRS 312°	Rwy ldg 5925 TDZE 8 Apt Elev 10

DME REQUIRED. When local altimeter setting not received, use Jacksonville NAS (Towers Field) altimeter setting and increase all DA 57 feet and all MDA 60 feet, and increase S-ILS 31 all Cats and Circling Cat C visibility ¼ mile. VDP NA with Jacksonville NAS (Towers Field) altimeter setting. (A NA)	MISSED APPROACH: Climb to 3000 on heading 312° and CRG R-164 to BUNDE/CRG 17 DME and hold, continue climb-in-hold to 3000.

ATIS	JACKSONVILLE APP CON	ST AUGUSTINE TOWER ★	GND CON	UNICOM
119.625	120.75	127.625 (CTAF) L 269.475	121.175 251.125	122.95







CATEGORY	A	B	C	D
S-ILS 31	258-¾ 250 (300-¾)			
S-LOC 31	520-1 512 (600-1)		520-1½ 512 (600-1½)	520-1¾ 512 (600-1¾)
CIRCLING	520-1 510 (600-1)	580-1 570 (600-1)	580-1½ 570 (600-1½)	580-2 570 (600-2)

MIRL Rwys 2-20 and 6-24 L
HIRL Rwy 13-31 L

SE-3, 08 DEC 2016 to 05 JAN 2017

SE-3, 08 DEC 2016 to 05 JAN 2017

NAME	ALTERNATE MINIMUMS

PUNTA GORDA, FL

PUNTA GORDA (PGD)........ **ILS or LOC Rwy 4**[12]
RNAV (GPS) Rwy 4[3]
RNAV (GPS) Rwy 15[3]
RNAV (GPS) Rwy 22[3]
RNAV (GPS) Rwy 33[3]
VOR Rwy 4[3]
VOR Rwy 22[3]

NA when local weather not available.
[1]NA when control tower closed.
[2]ILS, LOC, Category D, 800-2¼.
[3]Category D, 800-2¼.

ST. AUGUSTINE, FL

NORTHEAST FLORIDA
RGNL (SGJ)...................... **RNAV (GPS) Rwy 13**[1]
RNAV (GPS) Rwy 31[1]
VOR Rwy 13[2]

[1]NA when local weather not available.
[2]NA when control tower closed.

ST. PETERSBURG, FL

ALBERT
WHITTED (SPG).................. **RNAV (GPS) Rwy 7**
RNAV (GPS) Rwy 18
RNAV (GPS) Rwy 36
VOR Rwy 18[1]

NA when local weather not available.
[1]Categories A, B, 900-2.

ST. PETERSBURG-CLEARWATER, FL

ST. PETE- CLEARWATER
INTL (PIE).......................... **ILS or LOC Rwy 18**[45]
ILS or LOC Rwy 36[24]
RNAV (GPS)-A[1]
RNAV (GPS) Rwy 36[1]
VOR Rwy 4[13]

[1]NA when local weather not available.
[2]ILS, Categories A, B, C, D, 700-2; Category E, 1000-3; LOC, Category E, 1000-3.
[3]Categories A, B, 1000-2; Category C, D, 1000-3.
[4]NA when control tower closed.
[5]ILS, Categories C, D, 700-2; Category E, 1000-3; LOC, Category E, 1000-3

SAN JUAN, PR

LUIS MUNOZ
MARIN INTL (SJU).............. **ILS or LOC Rwy 10**[1]
VOR or TACAN Rwy 8[2]
VOR or TACAN Rwy 10[3]
VOR or TACAN Rwy 26[2]

[1]ILS, Category E, 700-2¼. LOC, Category E, 800-2¼.
[2]Category E, 900-3.
[3]Category E, 800-2¼.

NAME	ALTERNATE MINIMUMS

SARASOTA/BRADENTON, FL

SARASOTA/BRADENTON
INTL (SRQ)........................... **ILS or LOC Rwy 14**
ILS or LOC Rwy 32

NA when control tower closed.

SEBRING, FL

SEBRING RGNL (SEF)...... **RNAV (GPS) RWY 14**
RNAV (GPS) RWY 32

NA when local weather not available.

STUART, FL

WITHAM FIELD (SUA)........ **RNAV (GPS) Rwy 12**
RNAV (GPS) Rwy 30

NA when local weather not available.

TALLAHASSEE, FL

TALLAHASSEE
INTL (TLH)........................ **ILS or LOC Rwy 27**[123]
ILS or LOC/DME Rwy 36[12]
RADAR-1[5]
RNAV (GPS) Rwy 9[25]
RNAV (GPS) Rwy 18[25]
RNAV (GPS) Rwy 27[125]
RNAV (GPS) Rwy 36[25]
VOR/DME or TACAN Rwy 36[24]
VOR Rwy 18[25]

[1]NA when control tower closed.
[2]NA when local weather not available.
[3]ILS, Categories A, B, C 800-2; Category D, 800-2¼; Category E, 1000-3; LOC, Category D, 800-2¼; Category E, 1000-3.
[4]Category E, 1000-3.
[5]Category D, 800-2¼.

TAMPA, FL

PETER O
KNIGHT (TPF).................... **RNAV (GPS) Rwy 22**
RNAV (GPS) Rwy 36

NA when local weather not available.

TAMPA
EXECUTIVE (VDF).............. **ILS or LOC Rwy 23**[1]
RNAV (GPS) Rwy 5
RNAV (GPS) Rwy 18
RNAV (GPS) Rwy 23

NA when local weather not available.
[1]ILS, Categories B, C, 800-2.

ST. AUGUSTINE, FL

NORTHEAST FLORIDA RGNL (SGJ)

TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES
ORIG 07298 (FAA)

NOTE: **Rwy 2,** trees 1355' from DER, 314' right of centerline, 100' AGL/104' MSL. **Rwy 20,** aircraft on ramp abeam DER, 158' right of centerline, up to 32' AGL/41' MSL. Aircraft on taxiway 182' from DER, on centerline, up to 32' AGL/42' MSL. Buildings beginning 220' from DER, 402' right of centerline, up to 34' AGL/44' MSL. Hangars beginning 174' from DER, 180' left of centerline, up to 16' AGL/26' MSL. Vehicles on road and train on railroad beginning 419' from DER, 599' right of centerline, up to 23' AGL/37' MSL. Numerous trees beginning 589' from DER, 652' right of centerline, up to 100' AGL/114' MSL. Numerous trees beginning 754' from DER, 586' left of centerline, up to 100' AGL/109' MSL. **Rwy 24,** hangars beginning abeam DER, 400' left of centerline, up to 16' AGL/26' MSL. Aircraft on ramp 55' from DER, 119' right of centerline up to 32' AGL/41' MSL. Buildings beginning 150' from DER, 191' right of centerline, up to 34' AGL/44' MSL. Vehicles on road and train on railroad beginning 571' from DER, on centerline, up to 23' AGL/37' MSL. Numerous trees beginning 742' from DER, left and right of centerline, up to 100' AGL/114' MSL. **Rwy 31,** numerous trees beginning 87' from DER, 418' left of centerline, up to 89' AGL/98' MSL. Vehicles on road and train on railroad beginning at DER, 237' left of centerline, up to 23' AGL/37' MSL. Numerous trees beginning 242' from DER, 2' right of centerline, up to 85' AGL/99' MSL.

ST. PETERSBURG, FL

ALBERT WHITTED (SPG)

TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES
AMDT 2 01163 (FAA)

TAKEOFF MINIMUMS: **Rwy 36,** 300-1 or std. with a min. climb of 320' per NM until 500.

DEPARTURE PROCEDURE: **Rwys 18,25,** climb runway heading to 500 before turning right. **Rwys 7,36,** climb runway heading to 500 before turning left.

NOTE: **Rwy 25,** 70' MSL/63' AGL building 350' from DER, 375' left of runway centerline.

ST. PETERSBURG-CLEARWATER, FL

ST PETE-CLEARWATER INTL (PIE)

TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES
AMDT 3A 14093 (FAA)

TAKEOFF MINIMUMS: **Rwys 18R, 36L,** NA - VFR runway. **Rwy 22,** 200-1¼ or std. w/min. climb of 230' per NM to 300, or alternatively, with standard takeoff minimums and a normal 200' per NM climb gradient, takeoff must occur no later than 1700' prior to DER.

DEPARTURE PROCEDURE: **Rwy 9,** climb heading 093° to 500 before proceeding southbound.

NOTE: **Rwy 4,** trees beginning 174' from DER, 279' right of centerline, up to 61' AGL/65' MSL. Bush 495' from DER, 258' right of centerline, 27' AGL/31' MSL. Bush 511' from DER, 326' left of centerline, 17' AGL/21' MSL. Trees beginning 523' from DER, 225' left of centerline, up to 17' AGL/21' MSL. Boats beginning 775' from DER, on centerline, up to 25' AGL/25' MSL. **Rwy 9,** trees beginning 805' from DER, 470' right of centerline, up to 47' AGL/51' MSL. Tree 1617' from DER, 816' left of centerline, 60' AGL/64' MSL. **Rwy 18L,** building 689' from DER, 418' right of centerline, 34' AGL/44' MSL. Signs beginning 909' from DER, 98' right of centerline, up to 50' AGL/58' MSL. Poles beginning 970' from DER, 114' right of centerline, up to 51' AGL/58' MSL. Poles beginning 1015' from DER, 103' left of centerline, up to 40' AGL/47' MSL. Sign 1336' from DER, 198' left of centerline, 46' AGL/53' MSL. Tree 2100' from DER, 996' right of centerline, 96' AGL/105' MSL. Antenna on hopper 2583' from DER, 801' right of centerline, 76' AGL/89' MSL. **Rwy 22,** tower 123' from DER, 359' left of centerline, 24' AGL/33' MSL. Trees beginning 1235' from DER, 270' left of centerline, up to 65' AGL/70' MSL. Tree 1629' from DER, 88' right of centerline, 61' AGL/70' MSL. Tower 5591' from DER, 266' right of centerline, 153' AGL/168' MSL. **Rwy 27,** poles beginning 188' from DER, 138' right of centerline, up to 69' AGL/75' MSL. Vehicles on road 200' from DER, 418' right of centerline, 10' AGL/24' MSL. Building 552' from DER, 450' right of centerline, 26' AGL/34' MSL. Poles beginning 605' from DER, 179' left of centerline, up to 40' AGL/49' MSL. Trees beginning 1540' from DER, 224' left of centerline, up to 57' AGL/66' MSL. Antenna on tank 2188' from DER, 712' left of centerline, 70' AGL/80' MSL. **Rwy 36R,** boats beginning 646' from DER, 655' left of centerline, up to 25' AGL/25' MSL.

30 MAR 2017 to 27 APR 2017

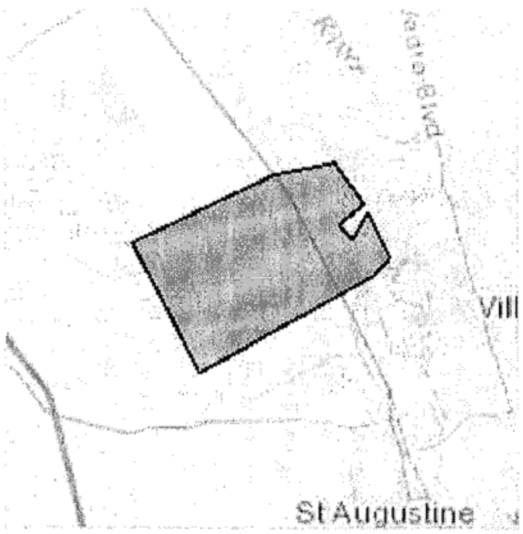
Appendix D
Environmental Information

IPaC Information for Planning and Conservation **U.S. Fish & Wildlife S**

IPaC resource list

Location

St. Johns County, Florida



Local office

North Florida Ecological Services Field Office

(904) 731-3336
(904) 731-3045

7915 Baymeadows Way, Suite 200
Jacksonville, FL 32256-7517

Endangered species

This resource list is for informational purposes only and should not be used for planning or analyzing project level impacts.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency.

A letter from the local office and a species list which fulfills this requirement can only be obtained by requesting an official species list either from the Regulatory Review section in IPaC or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by creating a project and making a request from the Regulatory Review section.

Listed species[1] are managed by the Endangered Species Program of the U.S. Fish and Wildlife Service.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.

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

Birds

NAME	STATUS
Piping Plover Charadrius melodus There is a **final** critical habitat designated for this species. Your location is outside the designated critical habitat. http://ecos.fws.gov/ecp/species/6039	Threatened
Red Knot Calidris canutus rufa **No critical habitat** has been designated for this species. http://ecos.fws.gov/ecp/species/1864	Threatened
Red-cockaded Woodpecker Picoides borealis **No critical habitat** has been designated for this species. http://ecos.fws.gov/ecp/species/7614	Endangered
Wood Stork Mycteria americana **No critical habitat** has been designated for this species. http://ecos.fws.gov/ecp/species/8477	Threatened

Mammals

NAME STATUS

Anastasia Island Beach Mouse Peromyscus polionotus phasma — Endangered

No critical habitat has been designated for this species.
http://ecos.fws.gov/ecp/species/5522

West Indian Manatee Trichechus manatus — Endangered

There is a **final** critical habitat designated for this species.
Your location is outside the designated critical habitat.
http://ecos.fws.gov/ecp/species/4469

Reptiles

NAME STATUS

Eastern Indigo Snake Drymarchon corais couperi — Threatened

No critical habitat has been designated for this species.
http://ecos.fws.gov/ecp/species/646

Hawksbill Sea Turtle Eretmochelys imbricata — Endangered

There is a **final** critical habitat designated for this species.
Your location is outside the designated critical habitat.
http://ecos.fws.gov/ecp/species/3656

Leatherback Sea Turtle Dermochelys coriacea — Endangered

There is a **final** critical habitat designated for this species.
Your location is outside the designated critical habitat.
http://ecos.fws.gov/ecp/species/1493

Critical habitats

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

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any activity that results in the take (to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct) of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service[3]. There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

Any person or organization who plans or conducts activities that may result in the take of migratory birds is responsible for complying with the appropriate regulations and implementing appropriate conservation measures.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Conservation measures for birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Year-round bird occurrence data http://www.birdscanada.org/birdmon/default/datasummaries.jsp

The migratory birds species listed below are species of particular conservation concern (e.g. Birds of Conservation Concern) that may be potentially affected by activities in this location, not a list of every bird species you may find in this location. Although it is important to try to avoid and minimize impacts to all birds, special attention should be made to avoid and minimize impacts to birds of priority concern. To view available data on other bird species that may occur in your project area, please visit the AKN Histogram Tools and Other Bird Data Resources.

NAME	SEASON(S)
American Bittern Botaurus lentiginosus http://ecos.fws.gov/ecp/species/6582	Wintering
American Kestrel Falco sparverius paulus	Year-round

American Oystercatcher Haematopus palliatus http://ecos.fws.gov/ecp/species/8935	Year-round
Bachman's Sparrow Aimophila aestivalis http://ecos.fws.gov/ecp/species/6177	Year-round
Bald Eagle Haliaeetus leucocephalus http://ecos.fws.gov/ecp/species/1626	Year-round
Black Rail Laterallus jamaicensis http://ecos.fws.gov/ecp/species/7717	Breeding
Black Skimmer Rynchops niger http://ecos.fws.gov/ecp/species/5234	Year-round
Brown Booby Sula leucogaster	Wintering
Brown-headed Nuthatch Sitta pusilla	Year-round
Chuck-will's-widow Caprimulgus carolinensis	Breeding
Common Ground-dove Columbina passerina exigua	Year-round
Gull-billed Tern Gelochelidon nilotica http://ecos.fws.gov/ecp/species/9501	Breeding
Henslow's Sparrow Ammodramus henslowii http://ecos.fws.gov/ecp/species/3941	Wintering
Le Conte's Sparrow Ammodramus leconteii	Wintering
Least Bittern Ixobrychus exilis http://ecos.fws.gov/ecp/species/6175	Breeding
Least Tern Sterna antillarum	Breeding

Lesser Yellowlegs Tringa flavipes http://ecos.fws.gov/ecp/species/9679	Wintering
Loggerhead Shrike Lanius ludovicianus http://ecos.fws.gov/ecp/species/8833	Year-round
Marbled Godwit Limosa fedoa http://ecos.fws.gov/ecp/species/9481	Wintering
Nelson's Sparrow Ammodramus nelsoni	Wintering
Painted Bunting Passerina ciris	Breeding
Peregrine Falcon Falco peregrinus http://ecos.fws.gov/ecp/species/8831	Wintering
Prairie Warbler Dendroica discolor	Year-round
Prothonotary Warbler Protonotaria citrea	Breeding
Red Knot Calidris canutus rufa http://ecos.fws.gov/ecp/species/1864	Wintering
Red-headed Woodpecker Melanerpes erythrocephalus	Year-round
Reddish Egret Egretta rufescens http://ecos.fws.gov/ecp/species/7617	Year-round
Rusty Blackbird Euphagus carolinus	Wintering
Saltmarsh Sparrow Ammodramus caudacutus	Wintering
Seaside Sparrow Ammodramus maritimus	Year-round

Short-billed Dowitcher Limnodromus griseus — Wintering
http://ecos.fws.gov/ecp/species/9480

Short-eared Owl Asio flammeus — Wintering
http://ecos.fws.gov/ecp/species/9295

Swainson's Warbler Limnothlypis swainsonii — Migrating

Swallow-tailed Kite Elanoides forficatus — Breeding
http://ecos.fws.gov/ecp/species/8938

Whimbrel Numenius phaeopus — Wintering
http://ecos.fws.gov/ecp/species/9483

Wilson's Plover Charadrius wilsonia — Year-round

Wood Thrush Hylocichla mustelina — Breeding

Worm Eating Warbler Helmitheros vermivorum — Migrating

Yellow Rail Coturnicops noveboracensis — Wintering
http://ecos.fws.gov/ecp/species/9476

What does IPaC use to generate the list of migratory bird species potentially occurring in my specified location?

Landbirds:

Migratory birds that are displayed on the IPaC species list are based on ranges in the latest edition of the National Geographic Guide, Birds of North America (6th Edition, 2011 by Jon L. Dunn, and Jonathan Alderfer). Although these ranges are coarse in nature, a number of U.S. Fish and Wildlife Service migratory bird biologists agree that these maps are some of the best range maps to date. These ranges were clipped to a specific Bird Conservation Region (BCR) or USFWS Region/Regions, if it was indicated in the 2008 list of Birds of Conservation Concern (BCC) that a species was a BCC species only in a particular Region/Regions. Additional modifications have been made to some ranges based on more local or refined range information and/or information provided by U.S. Fish and Wildlife Service biologists with species expertise. All migratory birds that show in areas on land in IPaC are those that appear in the 2008 Birds of Conservation Concern report.

Atlantic Seabirds:

Ranges in IPaC for birds off the Atlantic coast are derived from species distribution models developed by the National Oceanic and Atmospheric Association (NOAA) National Centers for Coastal Ocean Science (NCCOS) using the best available seabird survey data for the offshore Atlantic Coastal region to date. NOAANCCOS assisted USFWS in developing seasonal species ranges from their models for specific use in IPaC. Some of these birds are not BCC species but were of interest for inclusion because they may occur in high abundance off the coast at different times throughout the year, which potentially makes them more susceptible to certain types of development and activities taking place in that area. For more refined details about the abundance and richness of bird species within your project area off the Atlantic Coast, see the Northeast Ocean Data Portal. The Portal also offers data and information about other types of taxa that may be helpful in your project review.

About the NOAANCCOS models: the models were developed as part of the NOAANCCOS project: Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf. The models resulting from this project are being used in a number of decision-support/mapping products in order to help guide decision-making on activities off the Atlantic Coast with the goal of reducing impacts to migratory birds. One such product is the Northeast Ocean Data Portal, which can be used to explore details about the relative occurrence and abundance of bird species in a particular area off the Atlantic Coast.

All migratory bird range maps within IPaC are continuously being updated as new and better information becomes available.

Can I get additional information about the levels of occurrence in my project area of specific birds or groups of birds listed in IPaC?

Landbirds:

The Avian Knowledge Network (AKN) provides a tool currently called the "Histogram Tool", which draws from the data within the AKN (latest,survey, point count, citizen science datasets) to create a view of relative abundance of species within a particular location over the course of the year. The results of the tool depict the frequency of detection of a species in survey events, averaged between multiple datasets within AKN in a particular week of the year. You may access the histogram tools through the Migratory Bird Programs AKN Histogram Tools webpage.

The tool is currently available for 4 regions (California, Northeast U.S., Southeast U.S. and Midwest), which encompasses the following 32 states: Alabama, Arkansas, California, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New Hampshire, New Jersey, New York, North, Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Vermont, Virginia, West Virginia, and Wisconsin.

In the near future, there are plans to expand this tool nationwide within the AKN, and allow the graphs produced to appear with the list of trust resources generated by IPaC, providing you with an additional level of detail about the level of occurrence of the species of particular concern potentially occurring in your project area throughout the course of the year.

Atlantic Seabirds:

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

Facilities

Wildlife refuges

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

THERE ARE NO REFUGES AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

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

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

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME
This can happen when the National Wetlands Inventory (NWI) map service is

unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

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

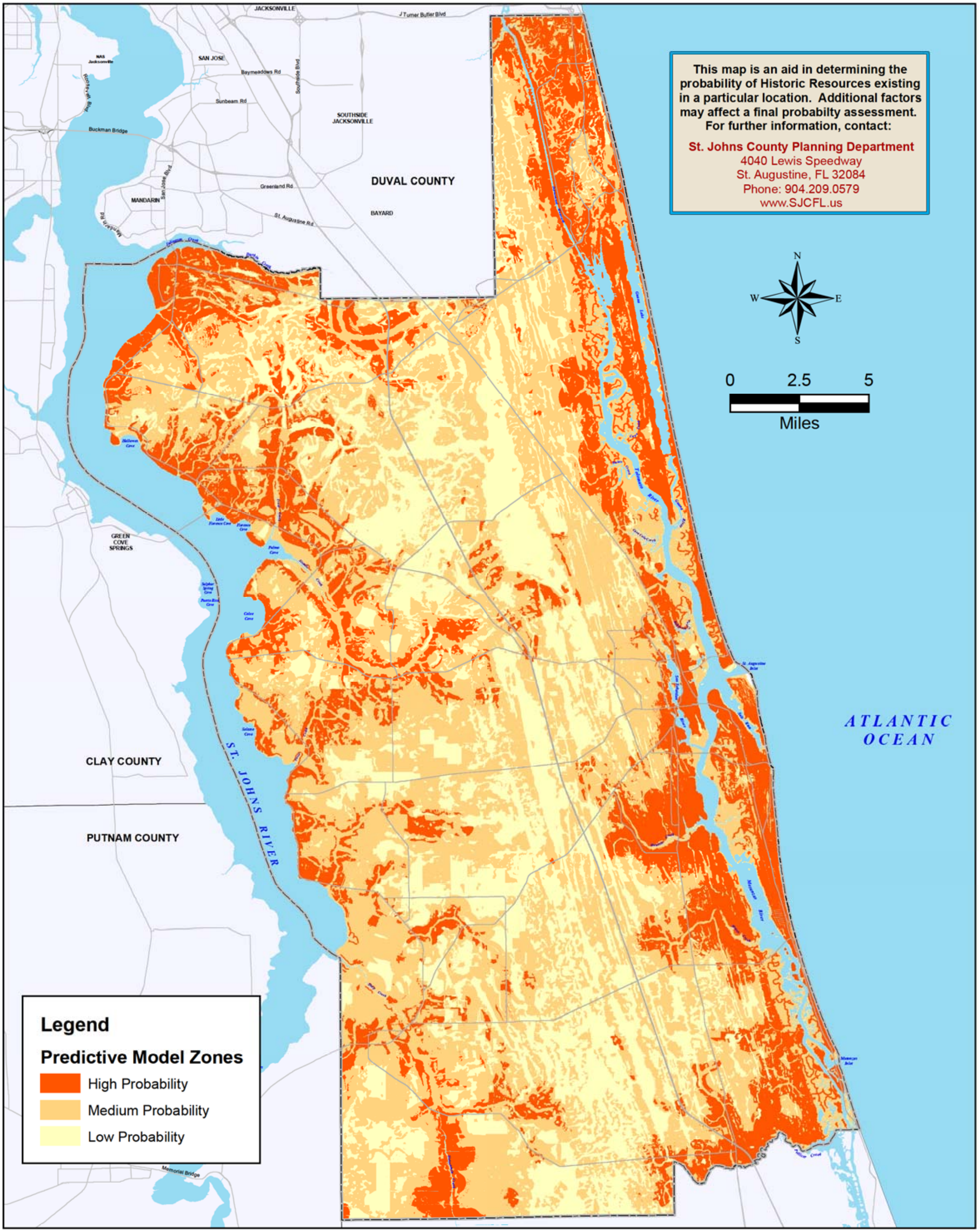
Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

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

Data precautions

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



DISCLAIMER: This map is for reference use only. Data provided are derived from multiple sources with varying levels of accuracy. The St. Johns County GIS Division disclaims all responsibility for the accuracy or completeness of the data shown hereon.

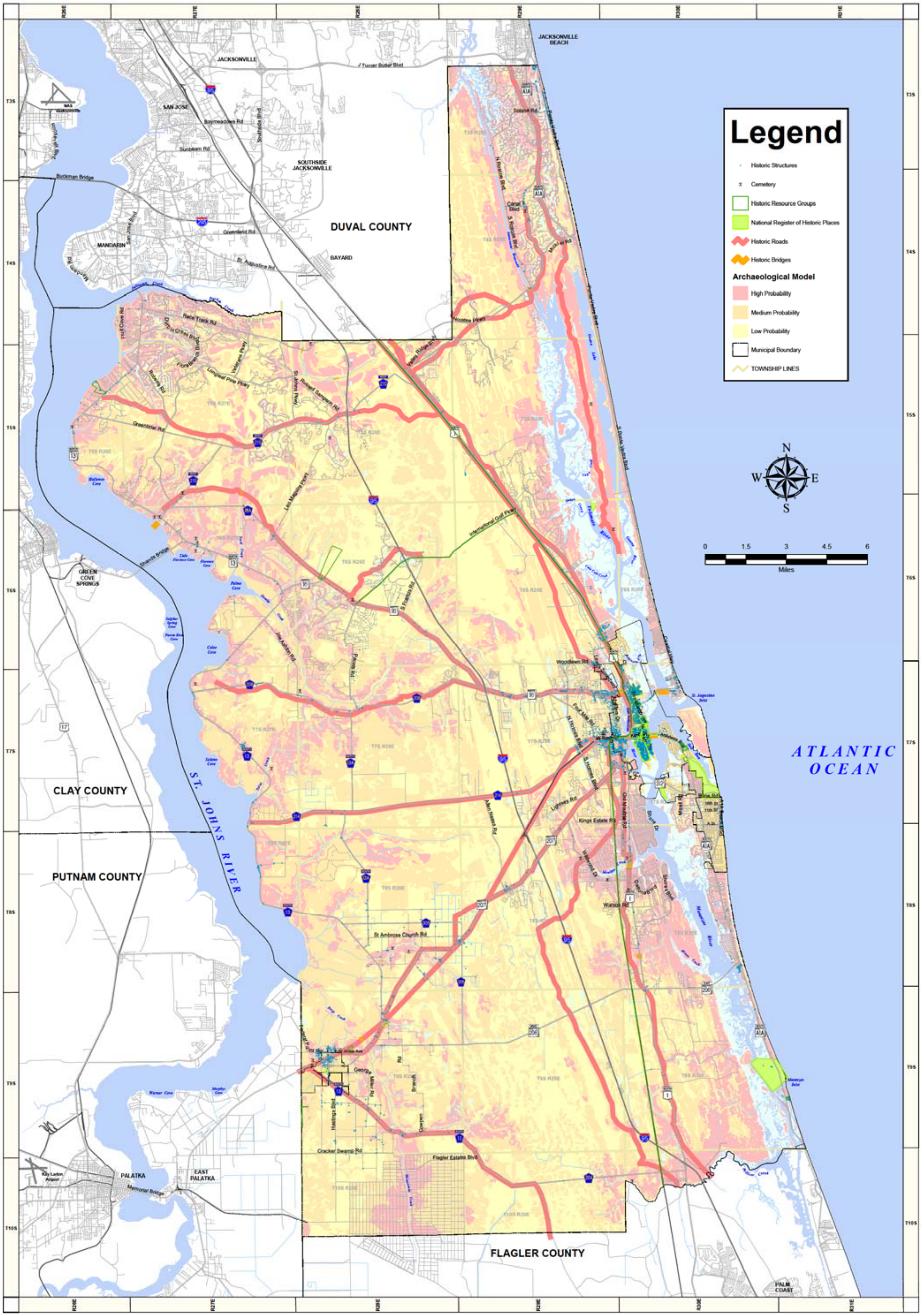
j12309

Archaeological Site Predictive Model

2007 Final Model Map

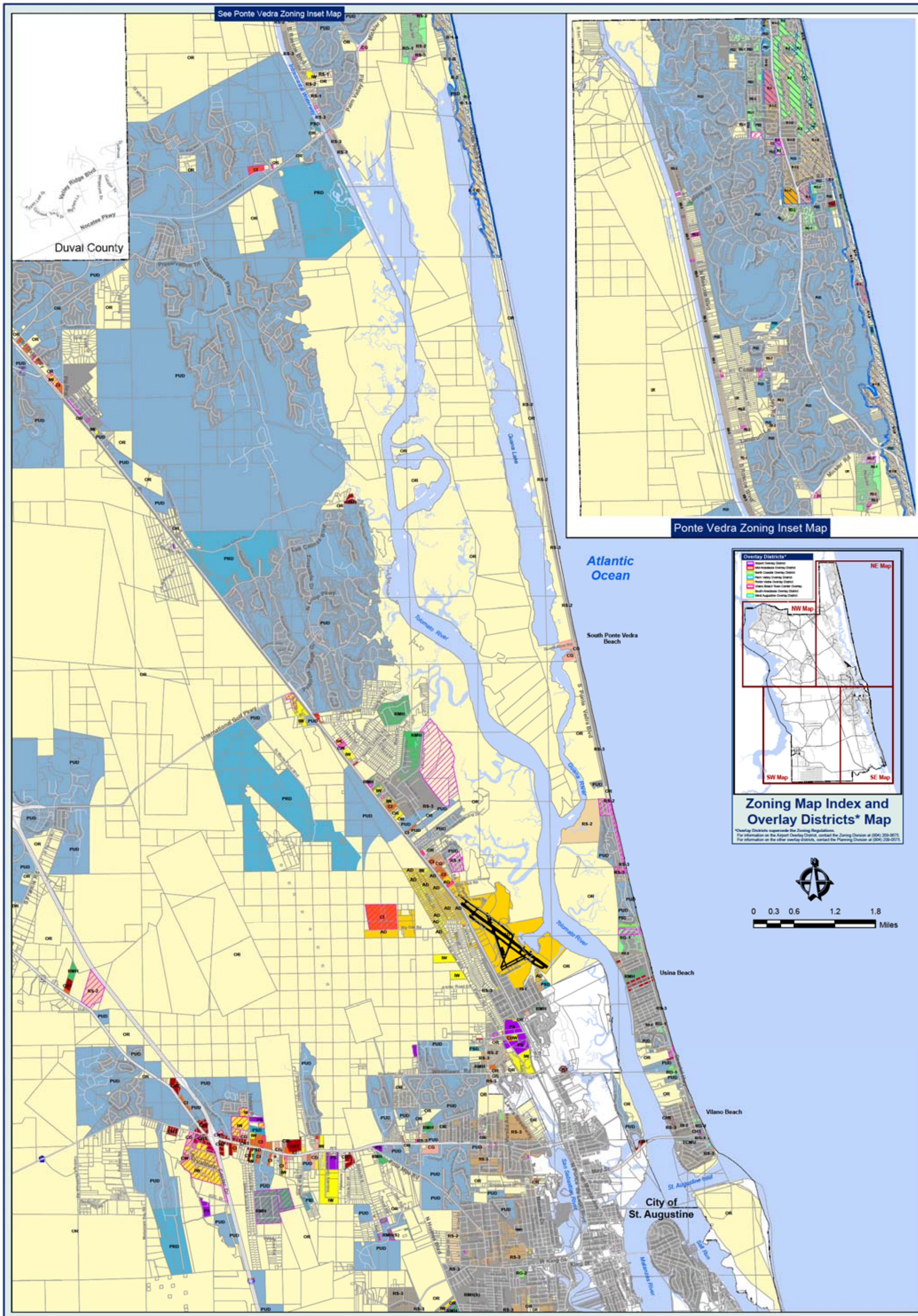
St. Johns County, Florida

St. Johns County Geographic Information Systems



IDENTIFIED HISTORIC RESOURCES

St. Johns County Geographic Information Systems
www.SJCFL.us



Northeast Quadrant Zoning Map

Map Prepared: December 8, 2016

DISCLAIMER:

(1) This map is for reference use only. Data provided are derived from multiple sources with varying levels of accuracy. The St. Johns County GIS Division disclaims all responsibility for the accuracy or completeness of the data shown hereon.

(2) Recently approved rezonings may not be reflected in the current zoning dataset.

(3) Areas that are white are parcels that do not have complete property owner or zoning information.

(4) Zoning classifications depicted are for convenience only and should be confirmed by the St. Johns County Zoning Division prior to legal use. Please call 904-209-0675, Fax 904-209-0576 or contact via email through listing available at www.SJCFL.us.

Zoning Classifications (Districts)

- Residential, Single Family 1 (RS-1)
- Residential, Single Family 2 (RS-2)
- Residential, Single Family 3 (RS-3)
- Residential, Single Family E (RS-E)
- Residential, General 1 (RG-1)
- Residential, General 2 (RG-2)
- Residential, Manufactured/Mobile Home (RMH)
- Residential, Manufactured/Mobile Home or Single Family (RMH(S))
- Planned Rural Development (PRD)
- Planned Special Development (PSD)
- Planned Unit Development (PUD)
- Town Center Mixed Use (TCMU)
- Commercial, General (CG)
- Commercial, Highway Tourist (CHT)
- Commercial, High Intensity (CHI)
- Commercial, Intensive (CI)
- Commercial, Neighborhood (CN)
- Commercial, Warehouse (CW)
- Commercial, Rural (CR)
- Office & Professional (OP)
- Airport Development (AD)
- Heavy Industrial (HI)
- Industrial, Warehousing (IW)
- Public Service (PS)
- Open Rural (OR)

Ponte Vedra Zoning District

- Ponte Vedra Zoning District

The following zoning designations are limited to the Ponte Vedra Zoning District.

- Single Family Residential (R-1-A)
- Single Family Residential (R-1-B)
- Single Family Residential (R-1-C)
- Single Family Residential (R-1-D)
- Multiple Family Residential (R-2)
- Multiple Family Residential (R-2-A)
- Commercial (R-3)
- Recreational (R-4)
- Utility (R-5)

Conditional Ordinances

- Contact the Zoning Division for regulations

Appendix E

FAA Approval of Aeronautical Forecast

U.S. Department
of Transportation
**Federal Aviation
Administration**

ORLANDO AIRPORTS DISTRICT OFFICE
5950 Hazeltine National Dr., Suite 400
Orlando, Florida 32822-5003
Phone: (407) 812-6331 Fax: (407) 812-6978

September 22, 2017

Mr. Edward R. Wuellner, AAE
Executive Director
Northeast Florida Regional Airport
4900 US Highway 1, North
St. Augustine, FL 32095

Dear Mr. Wuellner:

RE: Master Plan/Aviation Demand Forecast
Northeast Florida Regional Airport (SGJ)

We have reviewed the Master Plan Forecast of Aeronautical Demand received August 25, 2017 and find it consistent with the 2016 Federal Aviation Administration (FAA) Terminal Area Forecast (TAF). Based on this finding the Northeast Florida Regional Airport Preferred Master Plan Forecast is approved for use.

Should you have any questions, please feel free to contact me at (407) 812-6331, X-140.

Sincerely,

"Original Signed By Stephen Wilson"

Stephen Wilson
Community Planner

cc:
Lisa Cheung, Passero Associates

Appendix F

Runway Length Analysis

Runway Length Analysis

AC 150/5325-4A, *Runway Length Requirements for Airport Design* was used to determine the recommended runway length for SGJ's runways. The five steps and rationale outlined in the AC follows:

- Step 1- Identify the list of critical aircraft that have substantial use (i.e., 500 or more itinerant) of the runway for an established planning period of five years.
- Step 2 – Identify the aircraft that will require the longest runway lengths based on the highest maximum takeoff weight (MTOW). When the MTOW of listed aircraft is 60,000 lbs. or less, the recommended runway length is determined according to a family grouping of aircraft that have similar performance characteristics and operating weights. Regional jets are an exception to this due to their long-range capability, and the interchange of regional jet models based on passenger demand. When aircraft have a MTOW greater than 60,000 lbs., the runway length is determined by individual aircraft. In the latter case, the most critical aircraft is identified by the maximum MTOW, and also depends on wing flap settings, airport elevation and temperature, runway surface conditions (due to July being within hurricane season, the conditions will be wet and slippery) and effective runway gradient. This procedure also assumes there are no obstructions and the full length of the runway is available for takeoff, which is the case at SGJ.
- Step 3 – Refer to Table 1-1 in the AC and the airplanes identified in the previous step to determine the method that will be used for establishing the recommended runway length. This table categorizes potential design aircraft according to their MTOWs.
- Step 4 – Select the recommended runway lengths from those runway lengths identified in Step 3. This step will also prompt the use of processes identified in Chapters 2, 3 or 4, of AC 150/5325-4 as applicable
- Step 5 – Apply the necessary adjustment to the obtained runway length, based on the processes identified in Chapters 2, of AC 150/5325-43 or 4.

Applying these steps, individual analyses were conducted for the various operational categories at the airport, namely military operations, commercial operations and general aviation operations, as shown in Chapter 4.

Below are the curves from AC 150/5325-4A.

Figure 2-1. Small Airplanes with Fewer than 10 Passenger Seats
(Excludes Pilot and Co-pilot)

Example:

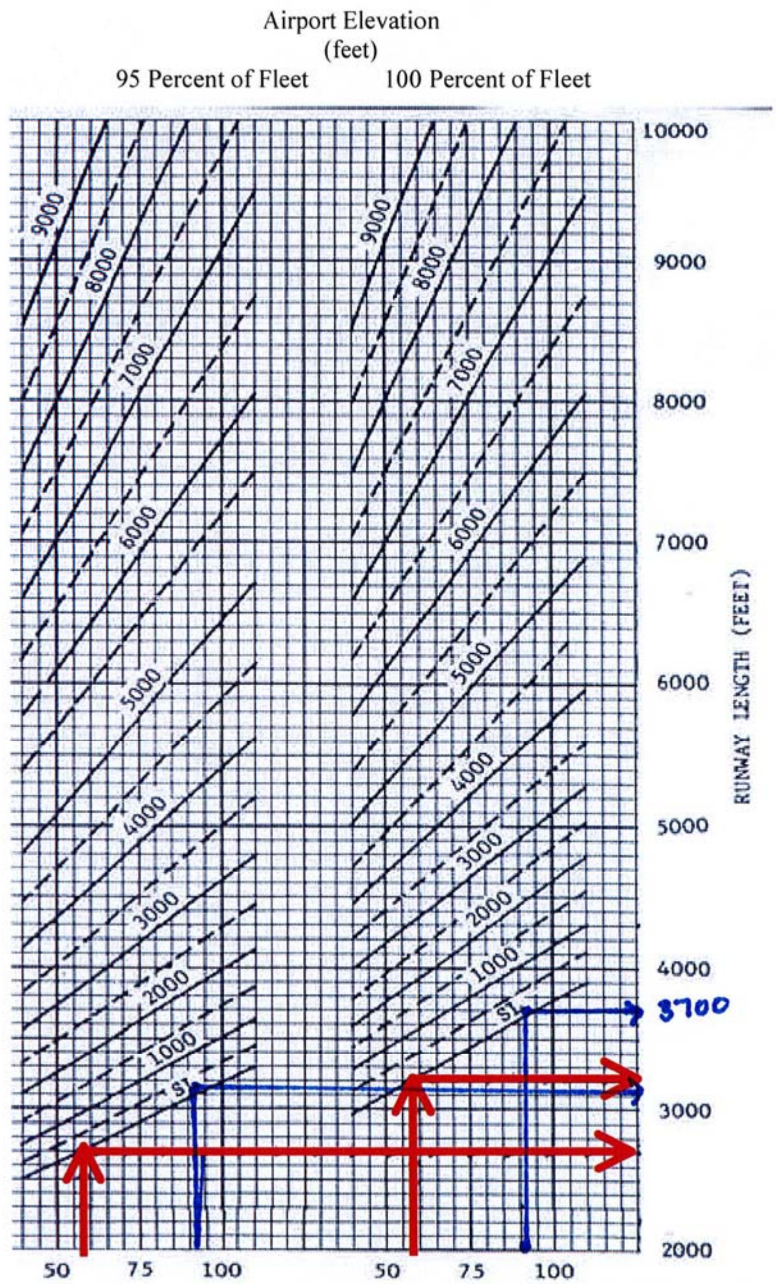
Temperature (mean day max hot month): 59° F (15° C)
Airport Elevation: Mean Sea Level

Note: Dashed lines shown in the table are mid values of adjacent solid lines.

Recommended Runway Length:

For 95% = 2,700 feet (823 m)
For 100% = 3,200 feet (975 m)

SGJ ELE = 9.9'
TEMP = 91.9°



Mean Daily Maximum Temperature of the Hottest Month of Year
(Degrees F)

Figure 2-2. Small Airplanes Having 10 or More Passenger Seats
(Excludes Pilot and Co-pilot)

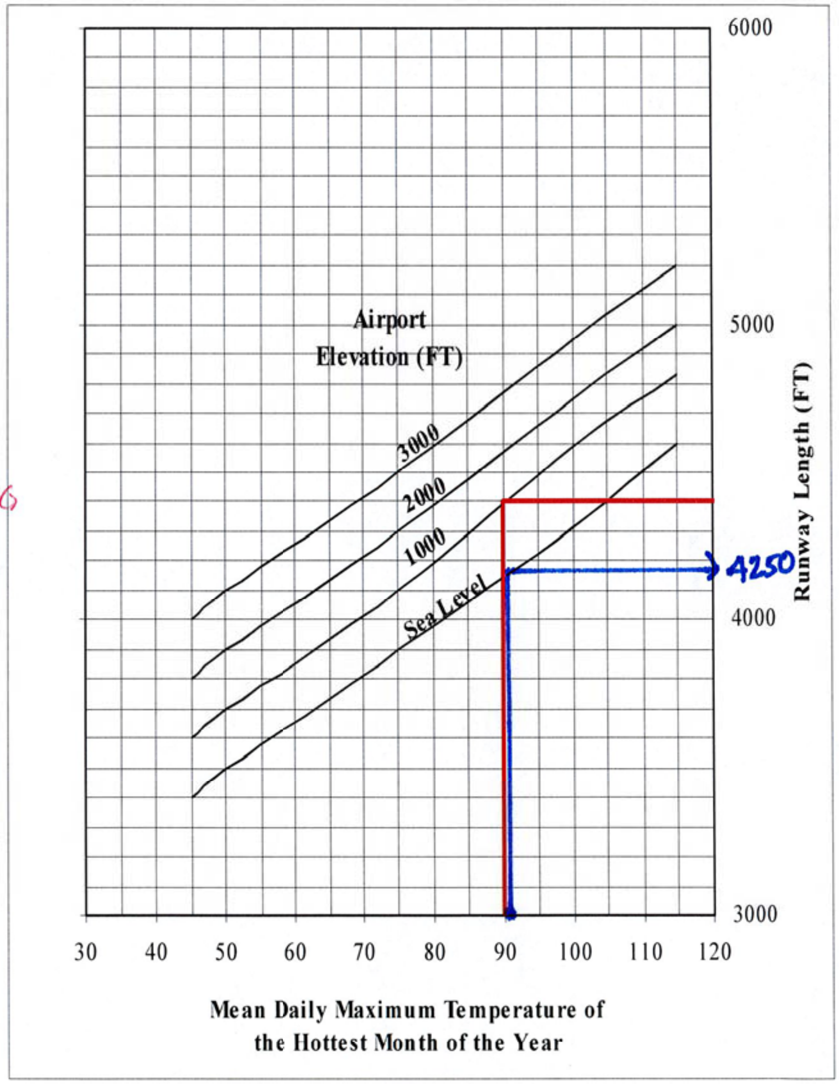
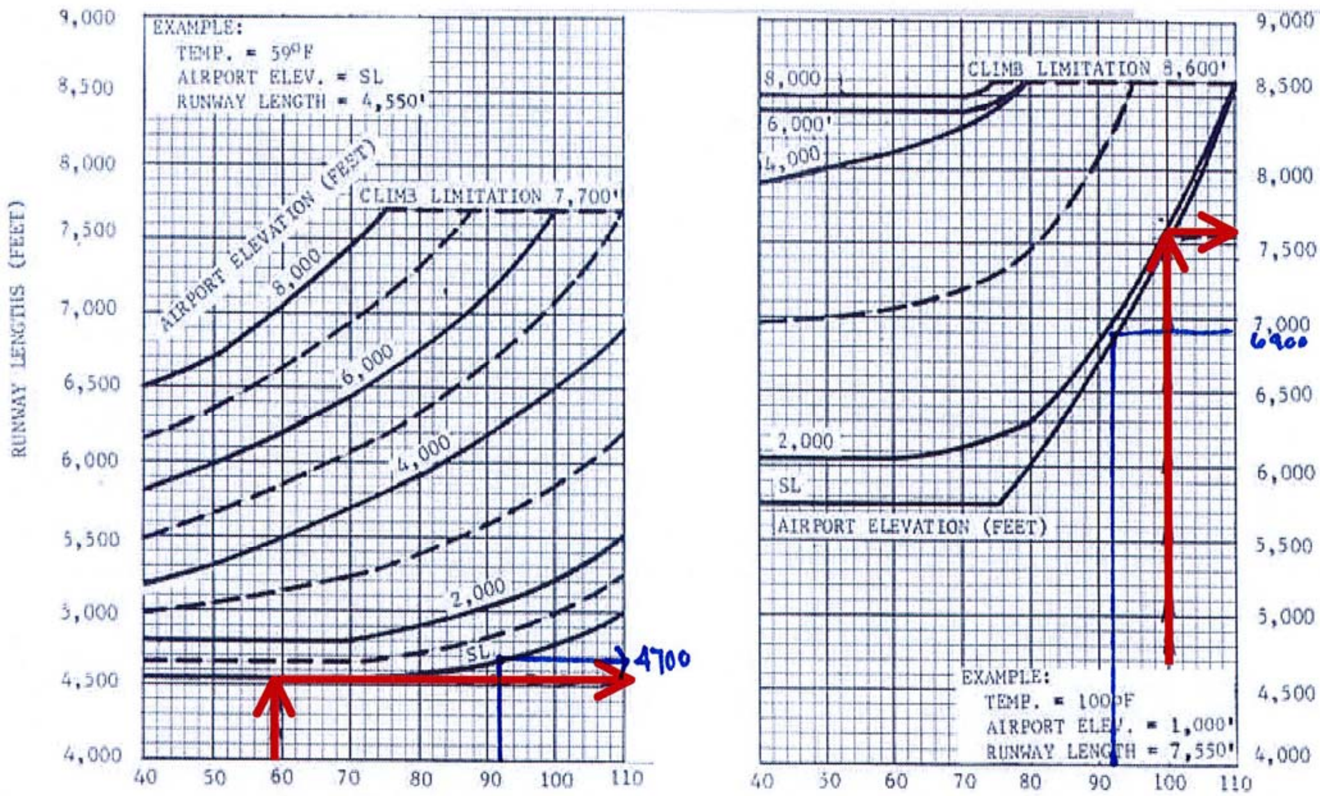
Representative Airplanes	Runway Length Curves
Raytheon B80 Queen Air **Raytheon** E90 King Air **Raytheon** B99 Airliner **Raytheon** A100 King Air (Raytheon formerly Beech Aircraft) **Britten-Norman** Mark III-I Trilander **Mitsubishi** MU-2L **Swearigen** Merlin III-A **Swearigen** Merlin IV-A **Swearigen** Metro II SGJ = 9.9' TEMP = 91.9° BEECH SUPER KING AIR 350 *BEECH 200 SUPER KING	**Example:** Temperature (mean day max hot month) 90° F (32° C) Airport Elevation (msl) 1,000 feet (328 m) Recommended Runway Length 4,400 feet (1,341 m) **Note:** For airport elevations above 3,000 feet (915 m), use the 100 percent of fleet grouping in figure 2-1.  **(Degrees F)**

Table 3-1. Airplanes that Make Up 75 Percent of the Fleet

Manufacturer	Model	Manufacturer	Model
Aerospatiale	Sn-601 Corvette	Dassault	Falcon 10
Bae	125-700	Dassault	Falcon 20
Beech Jet	400A	Dassault	Falcon 50/50 EX
Beech Jet	Premier I	Dassault	Falcon 900/900B
Beech Jet	2000 Starship	Israel Aircraft Industries (IAI)	Jet Commander 1121
Bombardier	Challenger 300	IAI	Westwind 1123/1124
Cessna	500 Citation/501Citation Sp	Learjet	20 Series
Cessna	Citation I/II/III	Learjet	31/31A/31A ER
Cessna	525A Citation II (CJ-2)	Learjet	35/35A/36/36A
Cessna	550 Citation Bravo	Learjet	40/45
Cessna	550 Citation II	Mitsubishi	Mu-300 Diamond
Cessna	551 Citation II/Special	Raytheon	390 Premier
Cessna	552 Citation	Raytheon Hawker	400/400 XP
Cessna	560 Citation Encore	Raytheon Hawker	600
Cessna	560/560 XL Citation Excel	Sabreliner	40/60
Cessna	560 Citation V Ultra	Sabreliner	75A
Cessna	650 Citation VII	Sabreliner	80
Cessna	680 Citation Sovereign	Sabreliner	T-39

SGJ TFMSC Data, 2016

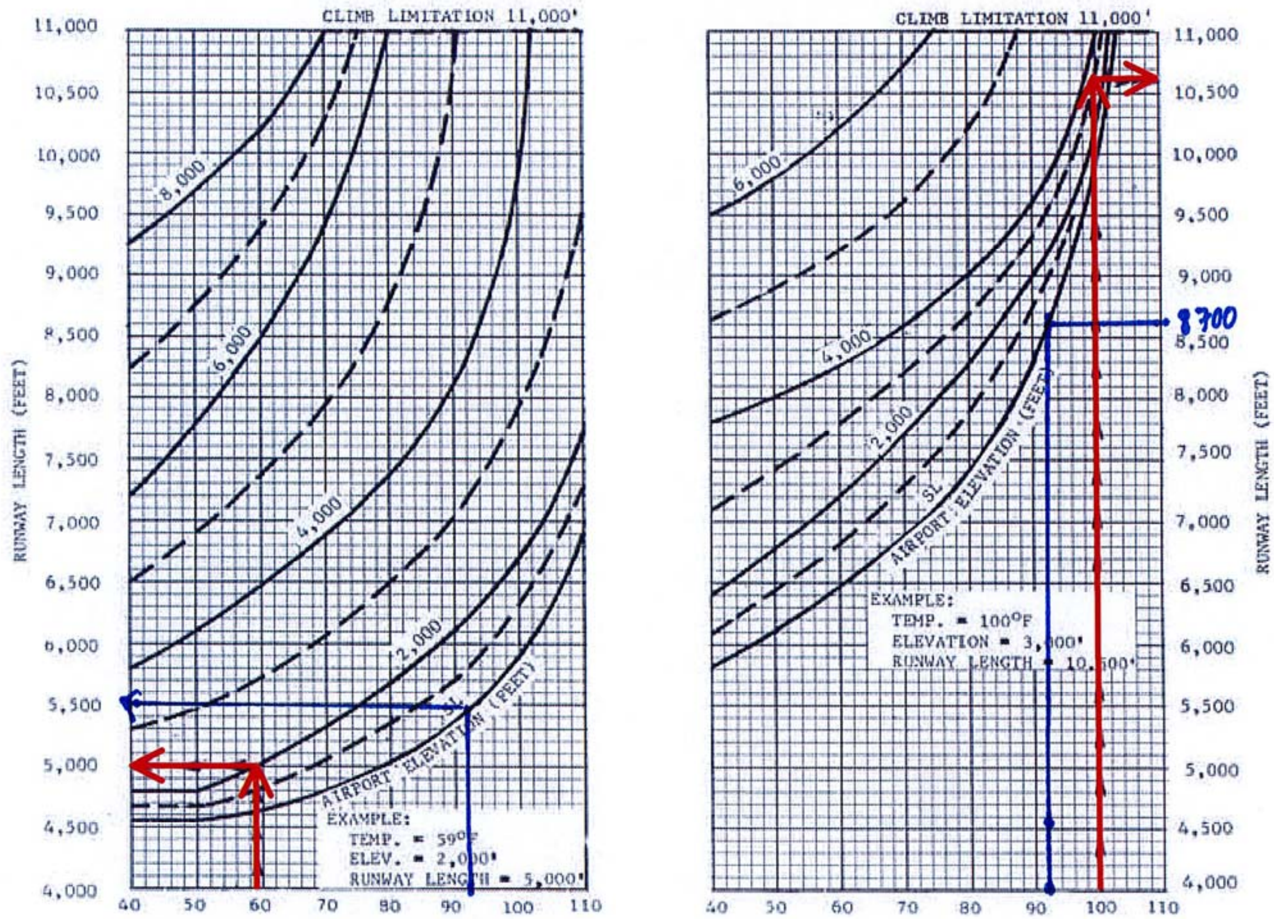
Figure 3-1. 75 Percent of Fleet at 60 or 90 Percent Useful Load



Mean Daily Maximum Temperature of Hottest Month of the Year in Degrees Fahrenheit

75 percent of feet at 60 percent useful load **75 percent of feet at 90 percent useful load**

Figure 3-2. 100 Percent of Fleet at 60 or 90 Percent Useful Load



Mean Daily Maximum Temperature of Hottest Month of the Year in Degrees Fahrenheit

100 percent of feet at 60 percent useful load

RWY 13-31 ≈ 4' × 10 = 40'

TAKEOFF 5500 + 48 = 5548 ≅ 5600

LANDING 5500 × 1.15 = 6325

BY AC ADJUST TO 5500'

100 percent of feet at 90 percent useful load

TAKEOFF: 8700 + 48 = 8748

LANDING: 8700 × 1.15 = 10,005

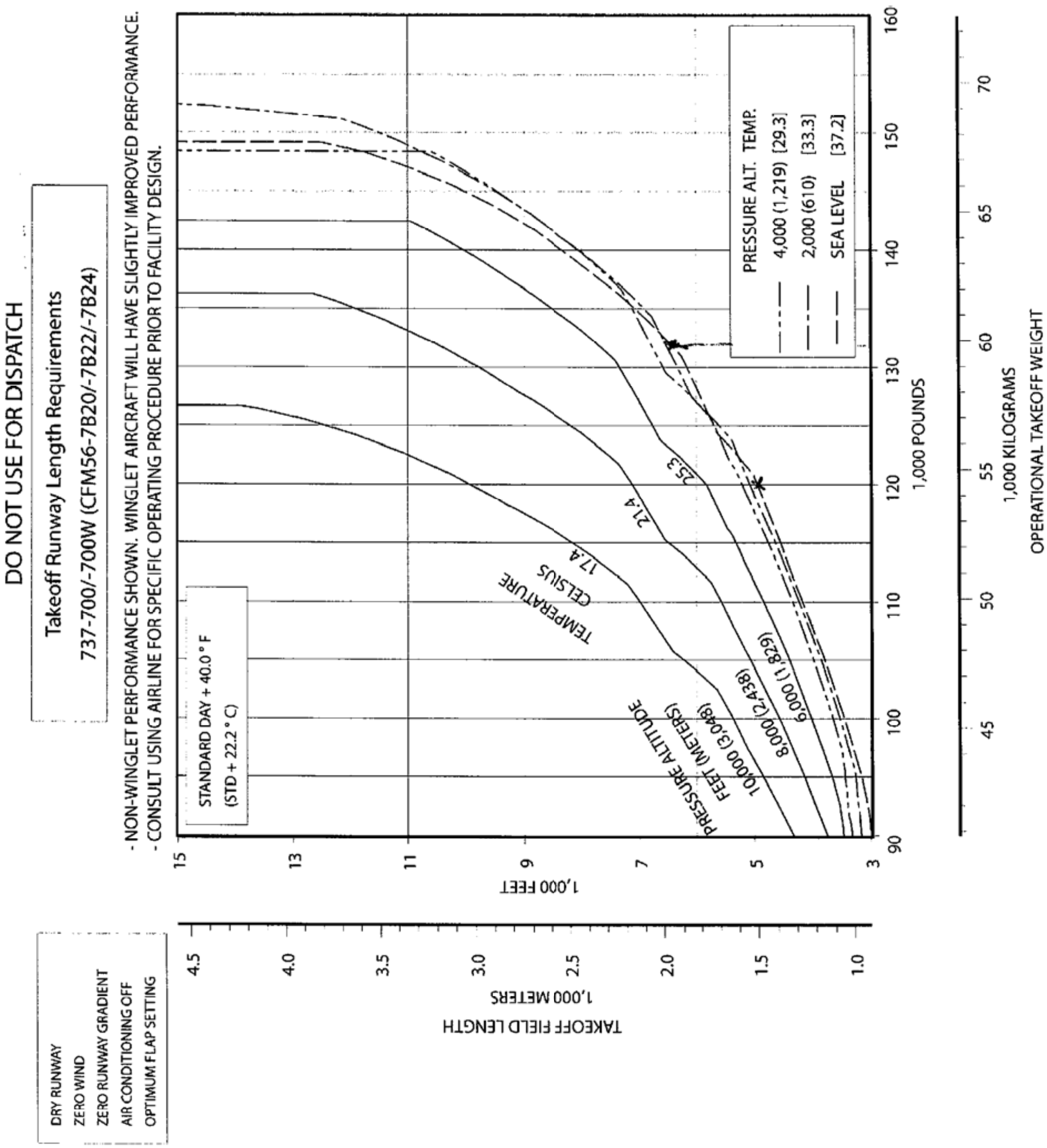
BY AC ADJUSTED TO 7000'

Table 3-2. Remaining 25 Percent of Airplanes that Make Up 100 Percent of Fleet

Manufacturer	Model
Bae	Corporate 800/1000
Bombardier	600 Challenger
Bombardier	601/601-3A/3ER Challenger
Bombardier	604 Challenger
Bombardier	BD-100 Continental
Cessna	S550 Citation S/II
Cessna	650 Citation III/IV
Cessna	750 Citation X
Dassault	Falcon 900C/900EX
Dassault	Falcon 2000/2000EX
Israel Aircraft Industries (IAI)	Astra 1125
IAI	Galaxy 1126
Learjet	45 XR
Learjet	55/55B/55C
Learjet	60
Raytheon/Hawker	Horizon
Raytheon/Hawker	800/800 XP
Raytheon/Hawker	1000
Sabreliner	65/75

Note: Airplanes in tables 3-1 and 3-2 combine to comprise 100% of the fleet.

SGJ TFMSC Data, 2016

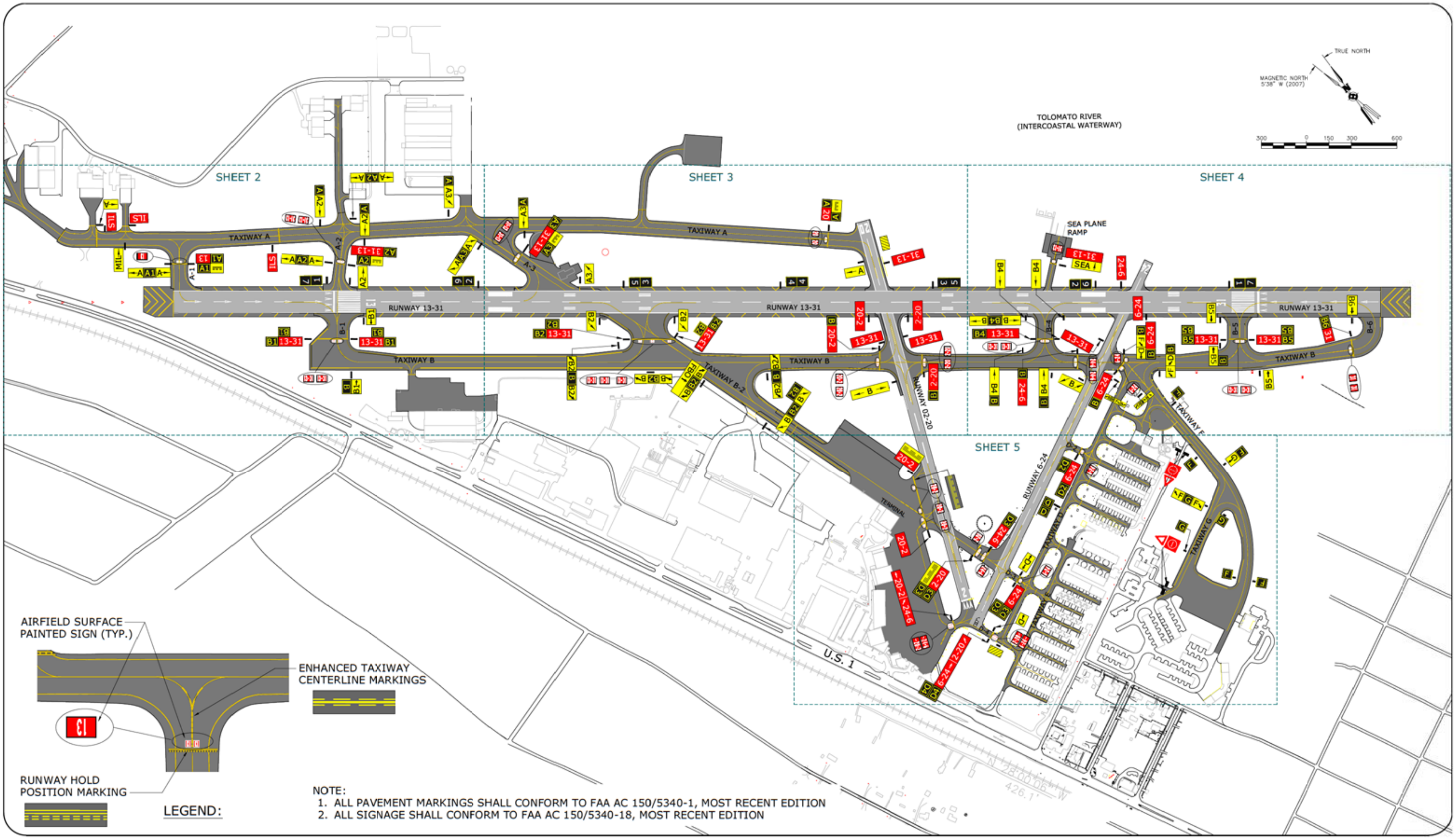


3.3.33 F.A.R. TAKEOFF RUNWAY LENGTH REQUIREMENTS

STANDARD DAY +40°F (STD + 22.2°C), DRY RUNWAY

MODEL 737-700 (CFM56-7B20/-7B22/-7B24 ENGINES AT 20,000 LB SLST)

Appendix G
Airport Signage Plan



NFRA
Northeast Florida Regional Airport
Fly Smart!

Revisions

No.	Date	By	Revision

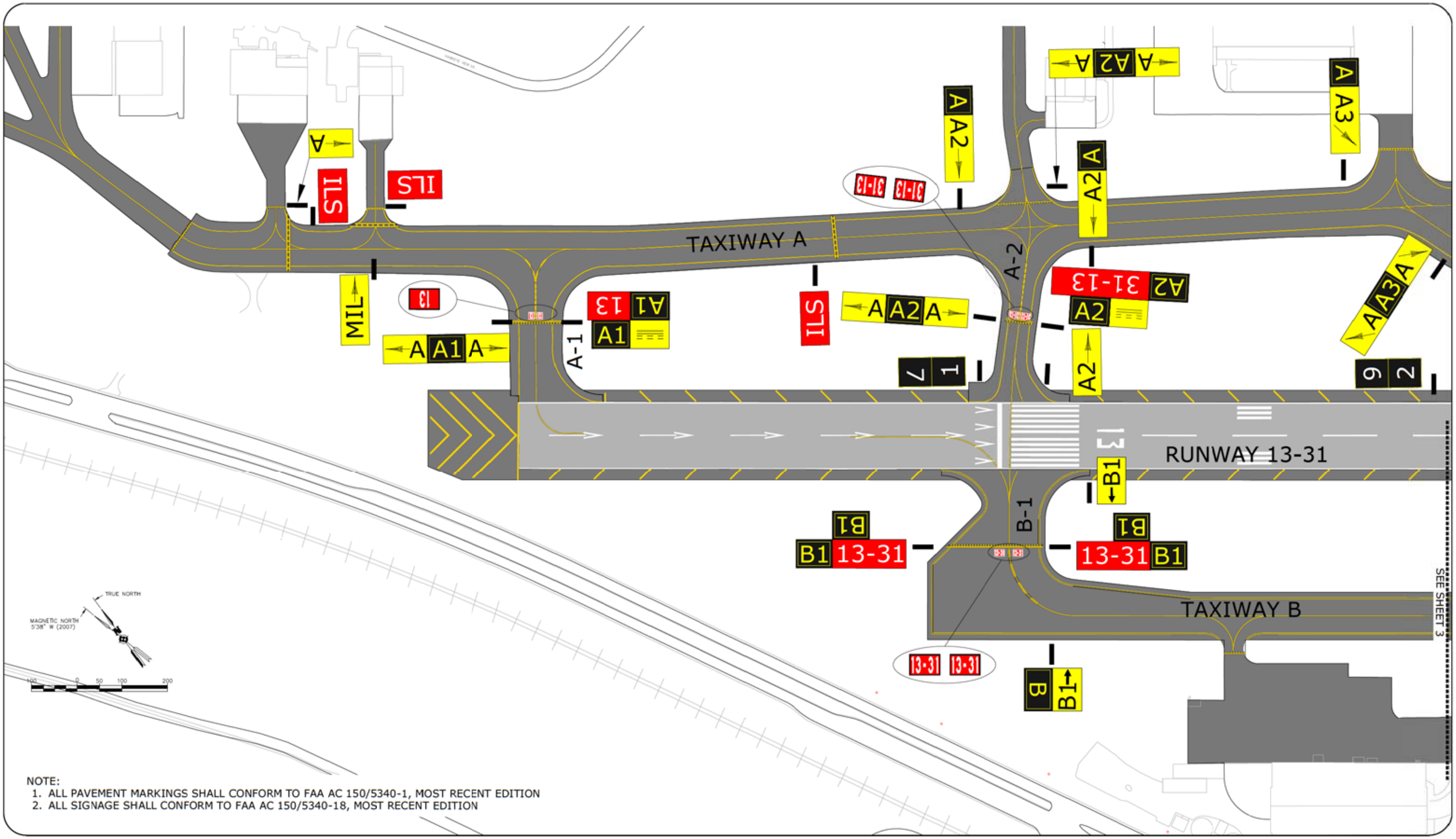
UNAUTHORIZED ALTERATIONS OR ADDITIONS TO THIS DRAWING IS IN VIOLATION OF STATE EDUCATION LAW ARTICLE 145 SECTION 7209 AND ARTICLE 147 SECTION 7307

Scale: As Shown
Principal-in-Charge: Andrew M. Holesko, C.M.
Project Manager
Designer

Passero Associates
13453 N. Main Street - Suite 104
Jacksonville, FL 32218
904-757-6106 Fax: 904-757-6107
Certificate of Authorization # 3428
PASSERO ASSOCIATES
engineering architecture

Drawing: AIRFIELD SIGNAGE AND MARKING PLAN
Project: Airfield Signage & Marking Update
Northeast Florida Regional Airport
St. Augustine, Florida
Owner: St. Augustine-St. Johns County Airport Authority
4796 US 1 North, St. Augustine, Florida 32095

Project No. 23081.32
Drawing No. 1
Date: December, 2016



NOTE:
1. ALL PAVEMENT MARKINGS SHALL CONFORM TO FAA AC 150/5340-1, MOST RECENT EDITION
2. ALL SIGNAGE SHALL CONFORM TO FAA AC 150/5340-18, MOST RECENT EDITION

NFRA Northeast Florida Regional Airport *Fly Smart!*

Revisions

No.	Date	By	Revision

UNAUTHORIZED ALTERATIONS OR ADDITIONS TO THIS DRAWING IS IN VIOLATION OF STATE EDUCATION LAW ARTICLE 145 SECTION 7209 AND ARTICLE 147 SECTION 7307

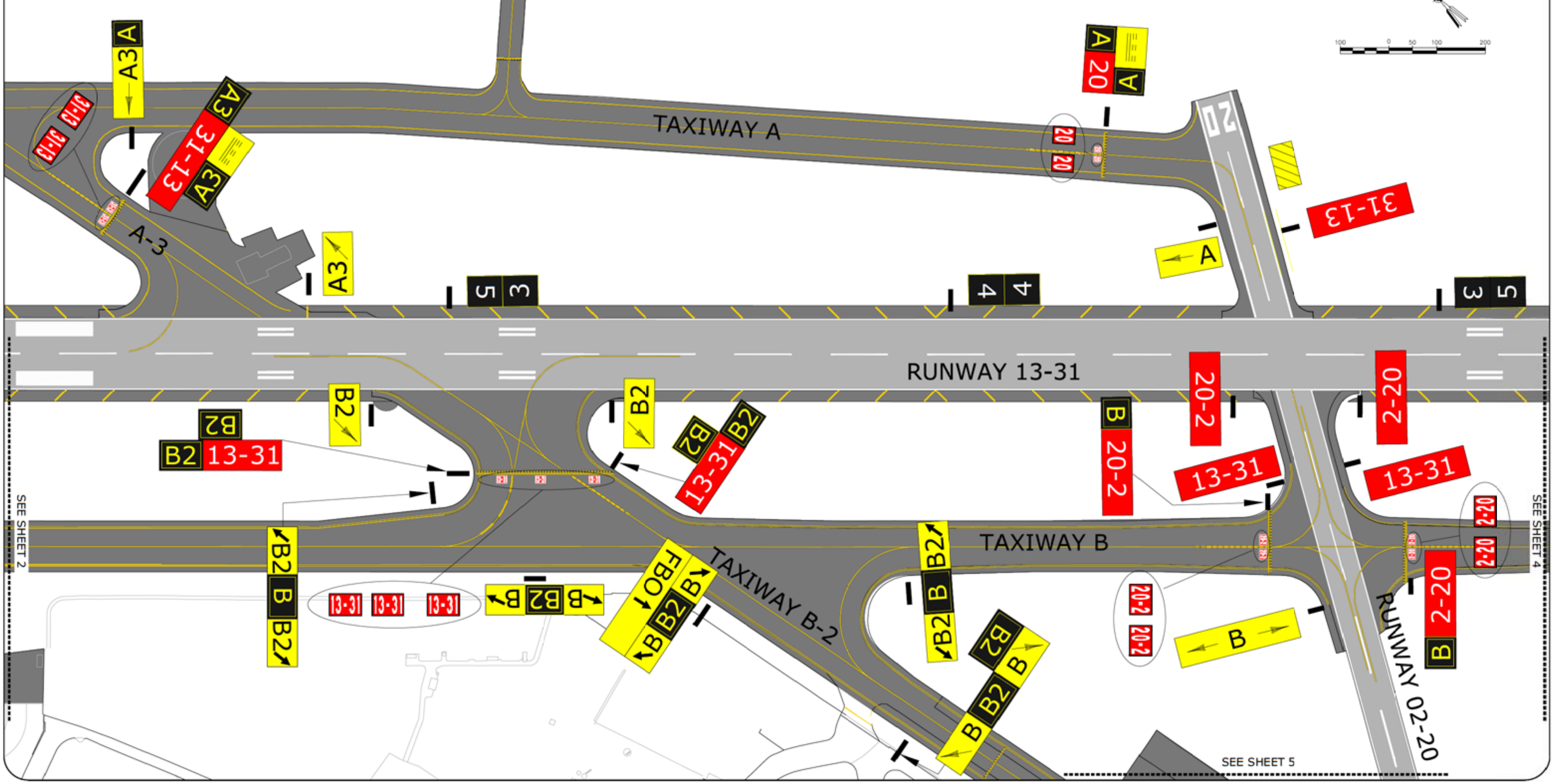
Scale: As Shown
Principal-In-Charge: Andrew M. Holesko, C.M.
Project Manager
Designer

Passero Associates
13453 N. Main Street - Suite 104
Jacksonville, FL 32218
904-757-6106 Fax: 904-757-6107
Certificate of Authorization # 3428
PASSERO ASSOCIATES engineering architecture

Drawing: AIRFIELD SIGNAGE AND MARKING PLAN
Project: Airfield Signage & Marking Update
Northeast Florida Regional Airport
St. Augustine, Florida
Owner: St. Augustine-St. Johns County Airport Authority
4796 US 1 North, St. Augustine, Florida 32095

Project No. 23081.32
Drawing No. 2
Date December, 2016

NOTE:
1. ALL PAVEMENT MARKINGS SHALL CONFORM TO FAA AC 150/5340-1, MOST RECENT EDITION
2. ALL SIGNAGE SHALL CONFORM TO FAA AC 150/5340-18, MOST RECENT EDITION



Revisions

No.	Date	By	Revision

UNAUTHORIZED ALTERATIONS OR ADDITIONS TO THIS DRAWING IS IN VIOLATION OF STATE EDUCATION LAW ARTICLE 145 SECTION 7209 AND ARTICLE 147 SECTION 7307

Scale: As Shown
Principal-in-Charge: Andrew M. Holesko, C.M.
Project Manager
Designer

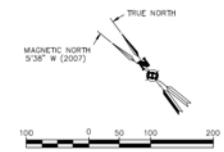
Passero Associates
13453 N. Main Street - Suite 104
Jacksonville, FL 32218
904-757-6106 Fax: 904-757-6107
Certificate of Authorization # 3428
PASSERO ASSOCIATES engineering architecture

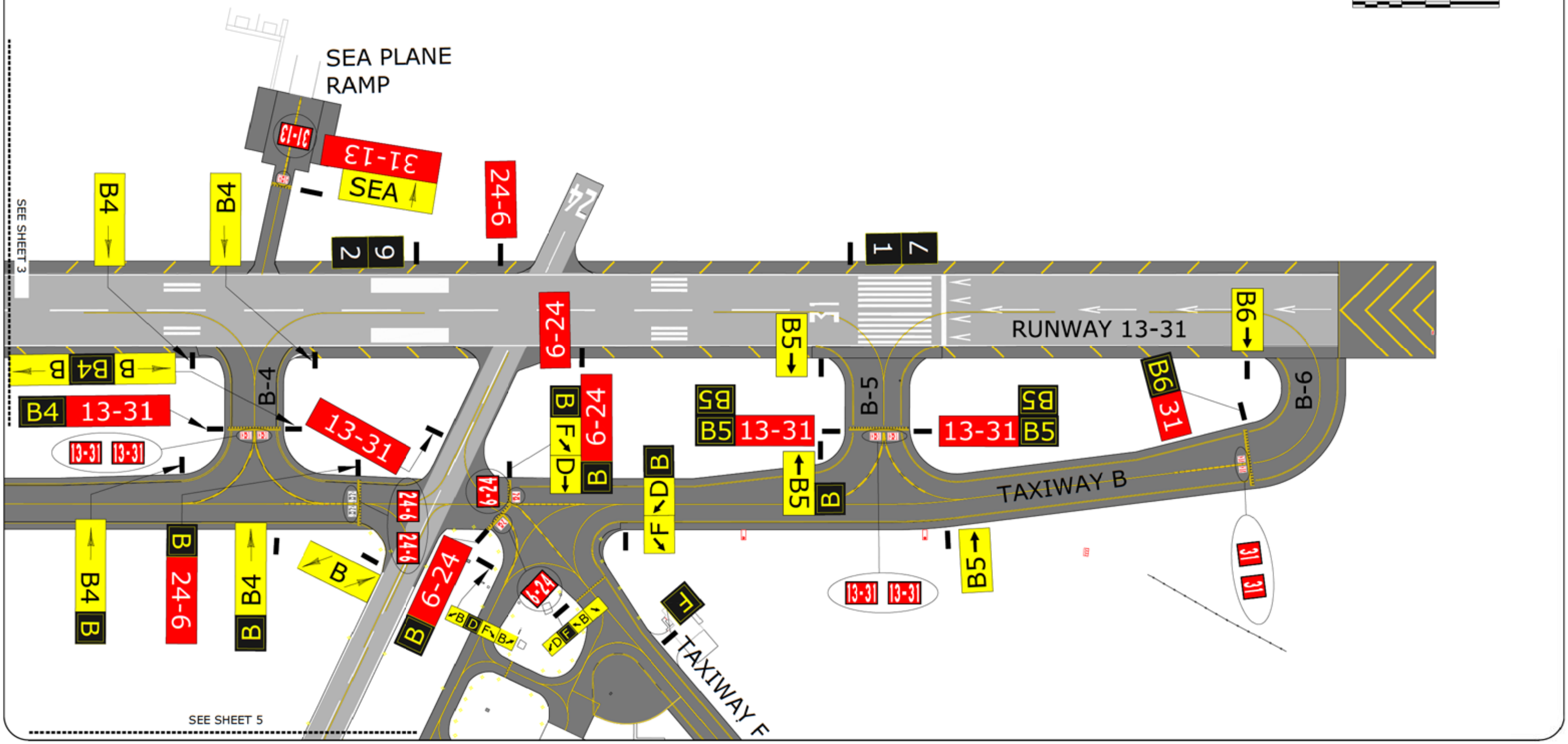
Drawing: AIRFIELD SIGNAGE AND MARKING PLAN
Project: Airfield Signage & Marking Update
Northeast Florida Regional Airport
St. Augustine, Florida
Owner: St. Augustine-St. Johns County Airport Authority
4796 US 1 North, St. Augustine, Florida 32095

Project No. 23081.32
Drawing No. 3
Date December, 2016

Northeast Florida Regional Airport
Fly Smart!

NOTE:
1. ALL PAVEMENT MARKINGS SHALL CONFORM TO FAA AC 150/5340-1, MOST RECENT EDITION
2. ALL SIGNAGE SHALL CONFORM TO FAA AC 150/5340-18, MOST RECENT EDITION





SEE SHEET 3

SEE SHEET 5

NFRA
Northeast Florida Regional Airport
Fly Smart!

Revisions

No.	Date	By	Revision

UNAUTHORIZED ALTERATIONS OR ADDITIONS TO THIS DRAWING IS IN VIOLATION OF STATE EDUCATION LAW ARTICLE 145 SECTION 7209 AND ARTICLE 147 SECTION 7307

Scale: As Shown
Principal-In-Charge: Andrew M. Holesko, C.M.
Project Manager
Designer

Passero Associates
13453 N. Main Street - Suite 104
Jacksonville, FL 32218
904-757-6106 Fax: 904-757-6107
Certificate of Authorization # 3428
PASSERO ASSOCIATES
engineering architecture

Drawing: AIRFIELD SIGNAGE AND MARKING PLAN

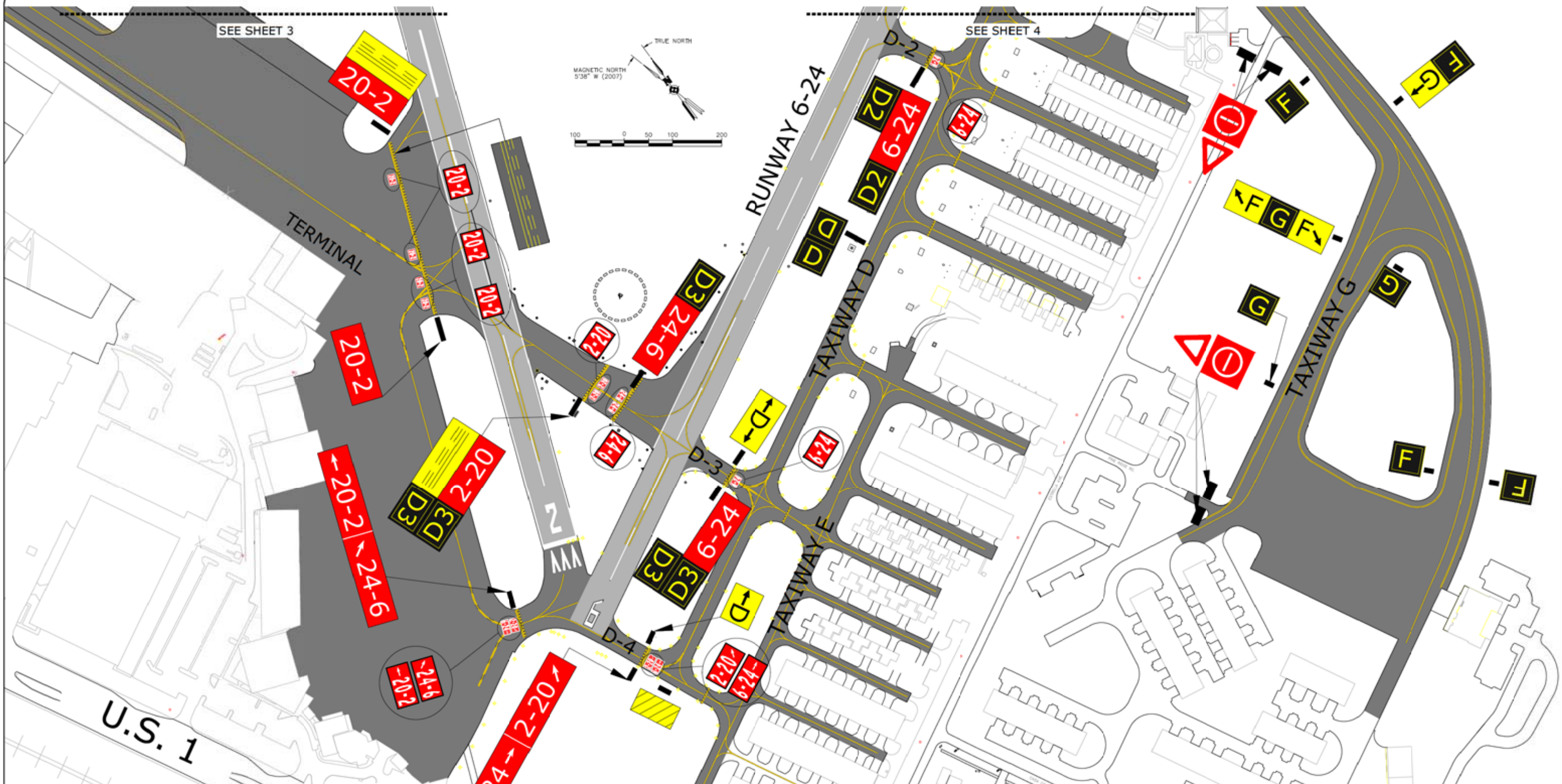
Project: Airfield Signage & Marking Update
Northeast Florida Regional Airport
St. Augustine, Florida

Owner: St. Augustine-St. Johns County Airport Authority
4796 US 1 North, St. Augustine, Florida 32095

Project No. 23081.32

Drawing No. 4

Date: December, 2016



NOTE:
1. ALL PAVEMENT MARKINGS SHALL CONFORM TO FAA AC 150/5340-1, MOST RECENT EDITION
2. ALL SIGNAGE SHALL CONFORM TO FAA AC 150/5340-18, MOST RECENT EDITION

NFRA
Northeast Florida Regional Airport
Fly Smart!

Revisions

No.	Date	By	Revision

UNAUTHORIZED ALTERATIONS OR ADDITIONS TO THIS DRAWING IS IN VIOLATION OF STATE EDUCATION LAW ARTICLE 145 SECTION 7209 AND ARTICLE 147 SECTION 7307

Scale: As Shown
Principal-In-Charge: Andrew M. Holesko, C.M.
Project Manager:
Designer:

Passero Associates
13453 N. Main Street - Suite 104
Jacksonville, FL 32218
904-757-6106 Fax: 904-757-6107
Certificate of Authorization # 3428
PA PASSERO ASSOCIATES engineering architecture

Drawing: AIRFIELD SIGNAGE AND MARKING PLAN
Project: Airfield Signage & Marking Update
Northeast Florida Regional Airport
St. Augustine, Florida
Owner: St. Augustine-St. Johns County Airport Authority
4796 US 1 North, St. Augustine, Florida 32095

Project No. 23081.32
Drawing No. 5
Date December, 2016

Appendix H

Preliminary Environmental Assessment and Stormwater Management Report

13 September 2017

Environmental Resource Solutions
Our Science. Your Success.

Ms. Lisa M. Cheung, Sr. Airport Planner
Passero Associates
242 West Main Street, Suite 100
Rochester, NY 14614

RE: Northeast Florida Regional Airport
Preliminary Assessment – Airport-Owned Parcels East of U.S. Highway 1
St. Johns County, Florida
ERS Job No. 16136

Dear Ms. Cheung:

Environmental Resource Solutions Inc. (ERS) has completed a preliminary remote wetland and wildlife assessment and general ecological constraints analysis on several parcels owned by the St. Augustine-St. Johns County Airport Authority, totaling 709.59 acres±, on the eastern side of U.S. Highway 1. This report details our findings.

The project assessment area includes airport-owned parcels near Northeast Florida Regional Airport in Sections 50, 51, 53, and 54, Township 6 South, Range 29 East, St. Johns County, Florida (Exhibit 1).

The purpose of the assessment and constraints analysis is to approximate the extent of jurisdictional wetlands and surface waters [as regulated by St. Johns River Water Management District (SJRWMD) and the U.S. Army Corps of Engineers (USACE)], identify any documented occurrences of federally-listed or state-listed protected species, and identify any other potential ecological constraints that should be taken into consideration during master planning efforts.

Various resources were consulted for this assessment, including, but not limited to, the following:

- *Soil Survey of St. Johns County, Florida* [U.S. Department of Agriculture – Natural Resource Conservation Service (USDA-NRCS)]
- U.S. Fish and Wildlife Service (FWS) National Wetlands Inventory (NWI) mapping
- SJRWMD land use/land cover Geographic Information System (GIS) mapping data (2009, 2004, 2000)
- SJRWMD infrared aerial photography (2009, 2004, 2000, 1984)
- ArcGIS Online true color aerial photography
- SJRWMD regulatory conservation easement locations (SJRWMD, June 2016)

According to the *Soil Survey of St. Johns County, Florida* (USDA-NRCS), eighteen soil types are present in the assessment area. Soil survey mapping is depicted on Exhibit 2. Mapped soil types and their numeric Soil Identification Numbers are listed below:

- Myakka-Myakka, wet, fine sands (3)
- St. Johns fine sand, depressional (5)
- Immokalee fine sand (7)
- St. Johns fine sand (13)
- Cassia fine sand (14)
- Pomello fine sand (15)
- Floridana fine sand, frequently flooded (18)
- Pellicer silty clay loam, frequently flooded (24)
- Parkwood fine sandy loam, frequently flooded (25)
- Riviera fine sand, frequently flooded (36)
- Pottsburg fine sand (40)
- St. Augustine fine sand, clayey substratum (45)
- Holopaw fine sand, frequently flooded (47)
- Winder fine sand, frequently flooded (48)
- Moultrie fine sand, frequently flooded (49)
- St. Augustine-Urban land complex (51)
- Durbin muck, frequently flooded (52)
- Adamsville variant fine sand (57)

The approximate boundaries of wetlands jurisdictional to SJRWMD and USACE were estimated for this report using various sources, including historic aerial photography, published soil survey mapping, SJRWMD land use/land cover habitat mapping, and aerial interpretation. No field work was conducted for this assessment. All wetland boundaries and acreages given in this report are estimates and are subject to change upon wetland delineation, agency verification of flagged wetland lines, and subsequent survey.

On-site communities were classified using the Florida Department of Transportation (FDOT) *Florida Land Use, Cover and Forms Classification System* (FLUCFCS, 1999), as shown on Exhibit 3 and the below table.

Table 1. Estimated upland, wetland, and surface water acreages.

FLUCFCS Code	Community Description	Uplands (acres)	Wetlands (acres)	Surface Waters (acres)
Uplands				
110	Low Density Residential	10.90		
141	Retail Sales and Services	4.42		
190	Open Land	6.93		
411	Pine Flatwoods	4.48		
434	Hardwood-Coniferous Mixed	42.64		
743	Spoil Areas	3.00		
811	Airport-Related Development	410.59		
814	Roads and Highways	0.29		
Wetlands				
617	Mixed Wetland Hardwoods		3.71	
630	Wetland Forested Mixed		47.81	
642	Saltwater Marshes		166.70	
Surface Waters				
510	Streams and Waterways			0.40
511	Upland Cut Ditches			0.25
534	Reservoirs Less Than 10 Acres in Size			7.47
TOTALS		**483.25**	**218.22**	**8.12**

Significant non-natural land uses within the assessment area include Low Density Residential (FLUCFCS Code 110), Retail Sales and Services (141), Open Land (190), Spoil Areas (743), Airport-Related Development (811), and Roads and Highways (814).

Two natural upland habitat types occur on the site: Pine Flatwoods (411) and Hardwood-Coniferous Mixed (434). The Pine Flatwoods (411) is dominated by slash pine (*Pinus elliottii*) in the canopy layer, accompanied by saw palmetto (*Serenoa repens*), gallberry (*Ilex glabra*), broom sedge (*Andropogon virginicus*), and bracken fern (*Pteridium aquilinum*) in the understory and groundcover strata. The Hardwood-Coniferous Mixed (434) community contains a similar vegetative composition in the lower vegetative strata, but the canopy layer is characterized by a mixture of hardwood and coniferous canopy species including slash pine, loblolly pine (*Pinus taeda*), live oak (*Quercus virginiana*), and laurel oak (*Quercus laurifolia*).

On-site forested wetland habitats include Mixed Wetland Hardwoods (617), Wetland Forested Mixed (630), and Saltwater Marshes (642). Mixed Wetland Hardwoods (617) are generally dominated by cypress (*Taxodium* spp.), red maple (*Acer rubrum*), tupelo (*Nyssa sylvatica* var. *biflora*), sweetgum (*Liquidambar styraciflua*), laurel oak, wax myrtle (*Myrica cerifera*), fetterbush (*Lyonia lucida*), Virginia chain fern (*Woodwardia virginica*), and royal fern (*Osmunda regalis*).

Wetland Forested Mixed (630) communities have a similar vegetative composition, with the addition of slash pine and loblolly pine, in the canopy layer, yielding a mixture of coniferous and hardwood species in which neither achieves dominance. Saltwater Marshes (642) are herbaceous wetlands dominated by smooth cordgrass (*Spartina alterniflora*), black needlerush (*Juncus roemerianus*), and saltmeadow cordgrass (*Spartina patens*).

Several surface water classifications occur within the assessment area. The Streams and Waterways (510) classification is used to describe an open-water area that occurs in the southeastern portion of the site, east of the airport. One Upland Cut Ditch (511) is located near the southern assessment area boundary. The classification of Reservoirs Less Than Ten Acres in Size (534) is used to describe stormwater ponds that exist throughout the site.

On-site wetlands appear to vary in quality and composition based on habitat type and adjacent land uses. All on-site wetlands were given preliminary scores using the Uniform Mitigation Assessment Method (UMAM). Preliminary estimated UMAM scores (out of 1.0) for each community type are as follows: 617 – 0.80, 630 – 0.70, and 642 – 0.90. These scores are provisional and are subject to change.

The functional loss for wetland impact is calculated by multiplying the estimated score by the proposed wetland acreage. The functional loss equals the approximate amount of mitigation credits that would need to be purchased to offset the wetland impact. Final mitigation bank purchase amount is subject to change based on agency approval of UMAM scores and assessment of secondary impacts to remaining wetlands.

Surface waters (such as Streams and Waterways, Upland Cut Ditches, and Reservoirs less than Ten Acres in Size) do not generally require mitigation for their impact, so they are not taken into account in the calculation of functional loss.

The assessment area is located in SJRWMD Basin 6 (Tolomato River & Intracoastal Nested). Several mitigation banks serve this basin. St. Marks Pond Mitigation Bank (SMPMB) offers forested freshwater and herbaceous freshwater wetland mitigation credits, and North Florida Saltwater Marsh Mitigation Bank (NFSMMB) offers saltwater wetland mitigation credits. The price per credit varies widely based how many credits are needed, the type of credits needed, and when they are required. Based on recent projects in the area, we estimate that mitigation will cost approximately $175,000.00 per freshwater wetland credit from SMPMB, and $400,000 per saltwater wetland mitigation credit from NFSMMB.

A Geographic Information System (GIS) database search and map review were conducted for the assessment area to identify documented occurrences of protected species or their habitat (Exhibits 4 and 5). Data compiled by the Florida Natural Areas Inventory (FNAI), which contains documented occurrences of species listed by the U.S. Fish and Wildlife Service (FWS, 50 CFR 17.11-12) and/or the Florida Fish and Wildlife Conservation Commission (FWC, Chapter 68A-27, Florida Administrative Code), were reviewed. The data used to search for documented occurrences listed by FWC and FWS is updated regularly to ensure accuracy. Wildlife species that may be affected by proposed development are discussed in detail below.

PROTECTED BIRD SPECIES

Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) is no longer a protected species under the Endangered Species Act, but it remains protected under the Bald and Golden Eagle Protection Act, the Migratory Bird Treaty Act, and state regulations. Adherence to the FWS 2007 Bald Eagle Monitoring Guidelines is recommended. FWC data shows a documented nest within the project boundary, along the western edge of the marsh (Exhibits 2 and 5). This nest, identified as FWC Nest ID #SJ013, was last documented as active in 1997.

In accordance with existing laws, regulations apply when construction takes place within 660' of an active eagle nest during the bald eagle nesting season (October 1st through May 15th).

If external construction can take place outside of the nesting season (May 15th through September 30th), no permits or monitoring are required. Interior construction can take place any time during the year without any issues regarding the nest.

Jacksonville Headquarters:
8711 Perimeter Park Blvd., Suite 1, Jacksonville, Florida 32216
T: (904)-285-1397, F: (904) 285-1929
Email: mail@ersenvironmental.com

SW Florida Regional Office:
19607 Lake Osceola Lane, Odessa, Florida 33556
T: (813) 404-3963
Email: sbrammell@ersenvironmental.com

However, if external construction takes place during nesting season, a permit will be required from FWC, which will include (at a minimum) the following monitoring specifications:

- First, the nest is monitored once a week for four hours at a time to see if the nest is occupied.
- If the nest is determined to be occupied, monitoring is required (again in four-hour blocks) three days a week while construction is ongoing. These monitoring iterations are only required when construction is active (i.e., not on weekends, holidays, or construction "off" days), and as long as the birds are actively nesting.
- When the eaglets are five weeks old, monitoring goes back to one day a week.
- Once the eaglets leave the nest, all monitoring efforts can stop. If the eaglets leave the nest prior to May 15th, nesting season is declared to be officially ended and construction can begin.

In summary, all monitoring/permitting requirements surrounding the eagle nest can be avoided if construction only takes place outside of the nesting season. The nesting season is from October 1st through May 15th, so exterior construction would have to be completed between May 16th and September 30th.

American Oystercatcher and Black Skimmer

The American oystercatcher (*Haematopus palliatus*) is a large shorebird with a black head and bright red bill. Oystercatchers require large areas of beach, sandbar, mud flat, and shellfish beds for foraging. The black skimmer (*Rynchops niger*), a coastal waterbird with a red, black-tipped bill and red legs, is found in coastal waters. It nests primarily on sandy beaches, small coastal islands, and dredge spoil islands. Both species are listed as Threatened by FWC.

An FNAI-documented occurrence of these two species lies approximately 4.2 miles southeast of the site. However, since the habitat type required by these species does not occur within the assessment area, no adverse effects are expected for the American oystercatcher or black skimmer.

Wading Birds

The site contains a considerable amount of forested wetlands that may serve as suitable habitat for listed avian species. Some habitats within the project area could potentially provide habitat for protected wading birds such as little blue heron (*Egretta caerulea*), tricolored heron (*Egretta tricolor*), and least tern (*Sternula antillarum*). All three of these species are listed as Threatened by FWC. The closest documented wading bird rookery is located approximately 3.2 miles northwest of the site, and was last documented as active in the 1970s FWC rookery survey. All of these species may utilize on-site wetlands, but are highly mobile and therefore unlikely to be adversely affected by future development projects.

Jacksonville Headquarters:
8711 Perimeter Park Blvd., Suite 1, Jacksonville, Florida 32216
T: (904)-285-1397, F: (904) 285-1929
Email: mail@ersenvironmental.com

SW Florida Regional Office:
19607 Lake Osceola Lane, Odessa, Florida 33556
T: (813) 404-3963
Email: sbrammell@ersenvironmental.com

Wood Stork

The wood stork (*Mycteria americana*) is listed as Endangered by FWS and FWC. The FWS considers wetlands that are suitable foraging habitat for storks within 13 miles of a wood stork colony in northern Florida to be part of that colony's Core Foraging Area (CFA). While wood storks may or may not be observed during field visits, all on-site wetlands will likely be considered suitable foraging habitat. If impact to a CFA is proposed, FWS requires that mitigation takes place within the CFA and consists of suitable foraging habitat.

The project area lies within the CFA of a wood stork nesting colony located at the St. Augustine Alligator Farm, approximately 5.4 miles southeast of the project area (Exhibit 4).

Given the distance between the assessment area and the documented wood stork nesting colony, and the high level of development in the intervening area, it is not expected that future development will have a negative effect on wood storks.

PROTECTED REPTILE SPECIES

Eastern Indigo Snake

The eastern indigo snake (*Drymarchon corais couperi*) occurs throughout Florida. It is listed as Threatened by FWC and FWS. This snake can be found in mangrove swamps, wet prairies, xeric pinelands, and scrubs. In the winter, the indigo snake will use gopher tortoise burrows for shelter. During warmer months, the indigo snake is commonly found closer to aquatic environments. Its range is usually less than 25 acres in the winter and can range from 150-250 acres during the spring and summer. The indigo snake is often found hunting in wetlands because of the large amount of available prey. The closest FNAI-documented occurrence of this species is 1.6 miles north of the assessment area, observed prior to 1982. The likelihood of occurrence of this species within any areas proposed for development will be assessed following completion of a gopher tortoise burrow survey.

Florida Pine Snake

The Florida pine snake (*Pituophis melanoleucus mugitus*), listed as Threatened by FWC, is a large, stocky, tan or rusty colored snake with an indistinct pattern of large blotches on a lighter background. It inhabits areas with relatively open canopies and dry sandy soils, including oldfields and pastures, but also sand pine scrub and scrubby flatwoods. It often coexists with gopher tortoises. The closest FNAI-documented occurrence of this species is 2.8 miles southeast of the assessment area, with no observation date given. The likelihood of occurrence of this species within any areas proposed for development will be assessed following completion of a gopher tortoise burrow survey.

Gopher Tortoise

The gopher tortoise (*Gopherus polyphemus*) is listed as Threatened by FWC and as a candidate species for federal listing by FWS. Permitting and relocation are required for any gopher tortoises or burrows that are impacted. The closest FNAI-documented gopher tortoise occurrence is approximately 3.9 miles southeast of the project area. If any work is proposed in on-site uplands, a complete survey for tortoises should be completed in accordance with FWC regulations. A permit would have to be obtained from FWC to relocate any tortoises that would be impacted by the proposed work.

PROTECTED MAMMAL SPECIES

West Indian Manatee

The West Indian manatee (*Trichechus manatus*) is a large gray, nearly hairless, aquatic mammal. Its habitat includes coastal waters, bays, and rivers, and it requires water-water refugia such as springs or cooling effluent during cold weather.

The closest FWC-documented manatee mortality location is approximately 0.1 mile from the assessment area boundary, documented in 1977. In addition, an FNAI-documented manatee occurrence from 1994 lies 3.5 miles± southeast of the site. Any in-water work proposed along the eastern assessment boundary would require assessment of the proposed development's impact on this species, through coordination with FWC.

GIS data published by SJRWMD was reviewed to determine if the project area contains any conservation easements granted to St. Johns River Water Management District (SJRWMD) for regulatory mitigation purposes. While no regulatory conservation easements were identified within the project area, a full title search will be required in order to identify all existing encumbrances.

The results of this assessment are estimated based on referenced information and are subject to change. ERS did not perform field work or seek agency verification of any of our findings. Please contact me if you have any questions or require additional information.

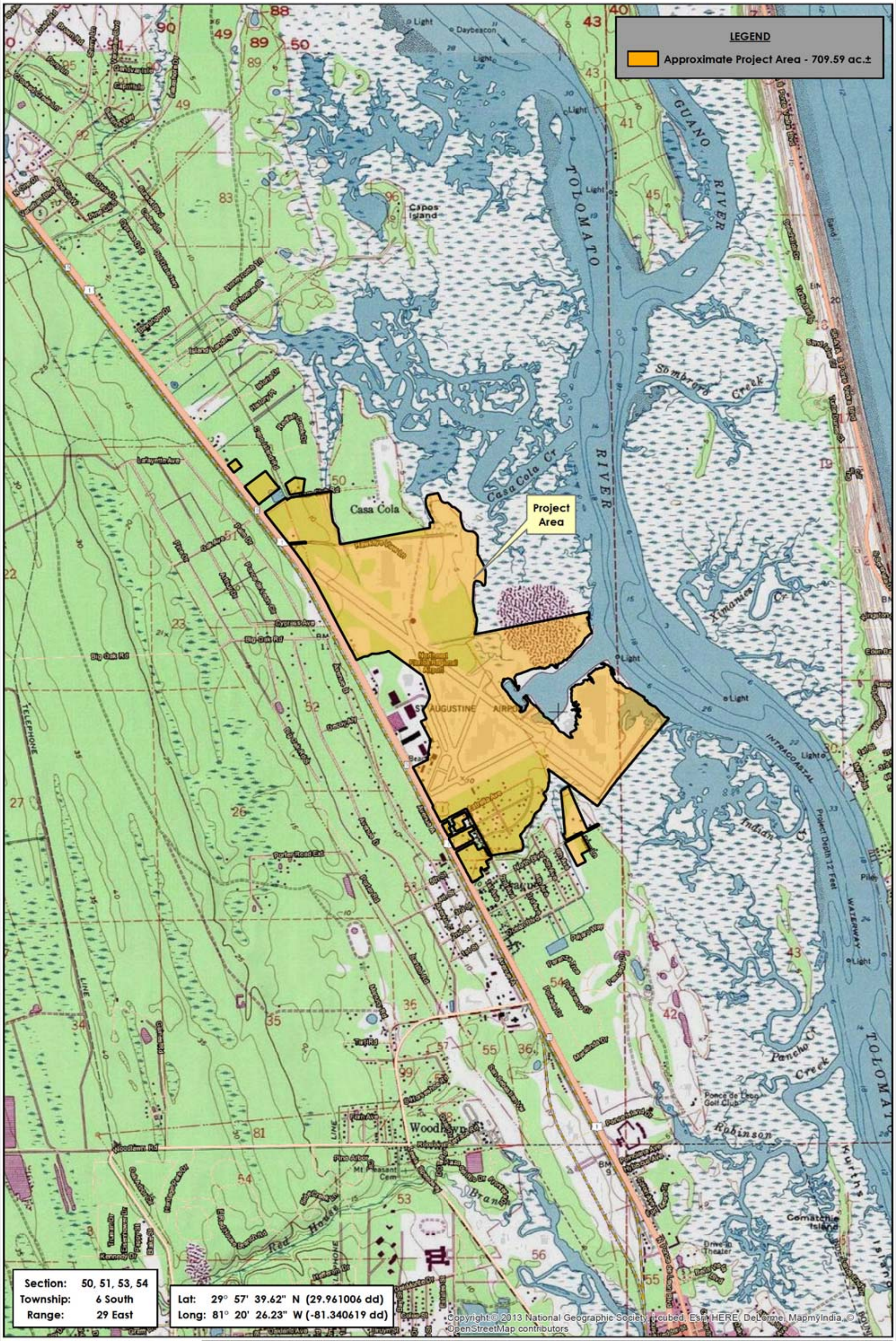
Sincerely,

ENVIRONMENTAL RESOURCE SOLUTIONS, INC.

Jaime Northrup

Jaime Northrup
Project Manager/Senior Environmental Scientist

JKN/16136_PrelimReport_EastOfUS1_9-13-17



0 2,000 '

Environmental Resource Solutions
Our Science. Your Success.

8711 Perimeter Park Blvd.
Suite 1
Jacksonville, FL 32216

(904) 285-1397
mail@ersenvironmental.com

Northeast FL Regional Airport
USGS Topographic Quadrangle Map

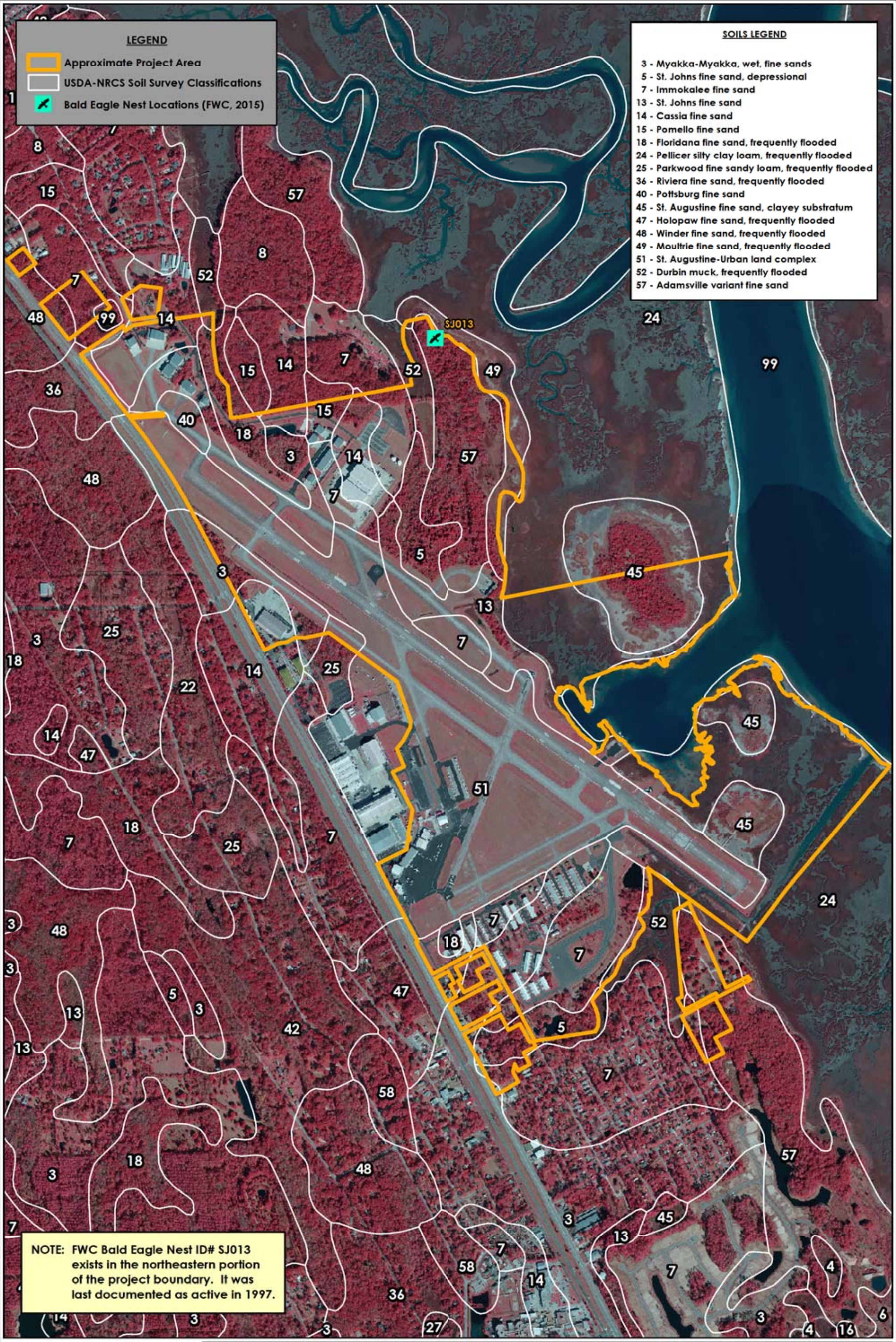
St. Johns County, Florida | By: DF

Project No.:	16136
Exhibit No.:	1
Date:	8-18-17
Rev. Date:	

N E S W

Source: 7.5' USGS St. Augustine, FL Topographic Quadrangle; ArcGIS Online (USA Topo Maps)

X:\GIS Projects\2016\16136\mxd\East_of_US1\16136_location_8-18-17.mxd



0 1,000 '

Environmental Resource Solutions
Our Science. Your Success.

8711 Perimeter Park Blvd.
Suite 1
Jacksonville, FL 32216

(904) 285-1397
mail@ersenvironmental.com

Northeast FL Regional Airport Soils Map & On-Site Bald Eagle Nest Location

Project No.:	16136
Exhibit No.:	2
Date:	8-18-17
Rev. Date:	

St. Johns County, Florida | By: DF

Source: ArcGIS Online Imagery, USDA-NRCS soil survey classifications (data obtained from NRCS)

X:\GIS Projects\2016\16136\mxd\East_of_US1\16136_soils_8-18-17.mxd

Note: Depicted wetland/upland boundaries are approximate, based only on aerial interpretation using listed sources, and are subject to change upon formal wetland delineation and agency verification. No field work was conducted as part of this assessment.

Depicted FLUCFCS classifications and boundaries are approximate. This map is intended to be used for preliminary purposes only.

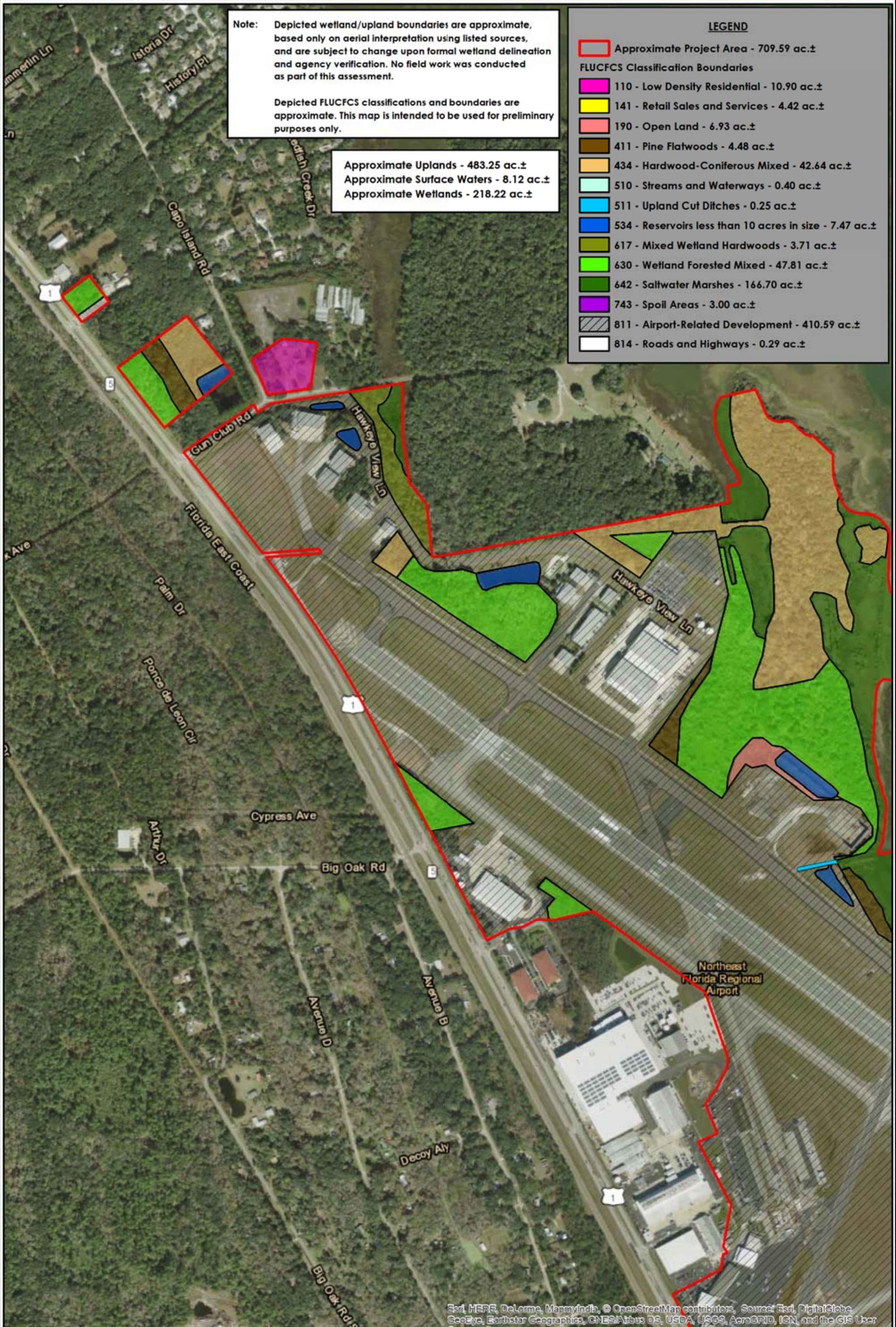
Approximate Uplands - 483.25 ac.±
Approximate Surface Waters - 8.12 ac.±
Approximate Wetlands - 218.22 ac.±

LEGEND

- Approximate Project Area - 709.59 ac.±

FLUCFCS Classification Boundaries

- 110 - Low Density Residential - 10.90 ac.±
- 141 - Retail Sales and Services - 4.42 ac.±
- 190 - Open Land - 6.93 ac.±
- 411 - Pine Flatwoods - 4.48 ac.±
- 434 - Hardwood-Coniferous Mixed - 42.64 ac.±
- 510 - Streams and Waterways - 0.40 ac.±
- 511 - Upland Cut Ditches - 0.25 ac.±
- 534 - Reservoirs less than 10 acres in size - 7.47 ac.±
- 617 - Mixed Wetland Hardwoods - 3.71 ac.±
- 630 - Wetland Forested Mixed - 47.81 ac.±
- 642 - Saltwater Marshes - 166.70 ac.±
- 743 - Spoil Areas - 3.00 ac.±
- 811 - Airport-Related Development - 410.59 ac.±
- 814 - Roads and Highways - 0.29 ac.±



Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

0 600'

Environmental Resource Solutions
Our Science. Your Success.

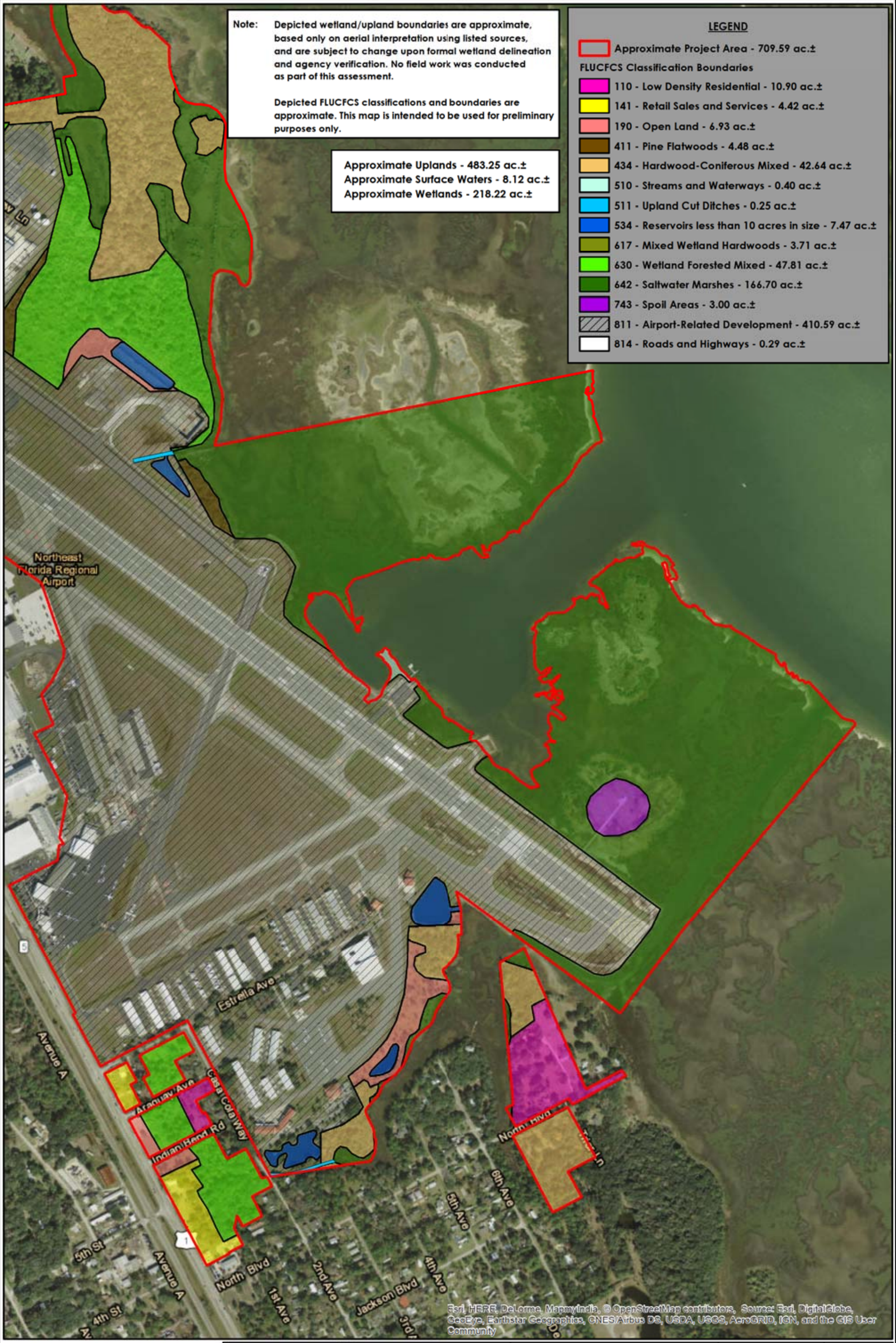
8711 Perimeter Park Blvd., Suite 1
Jacksonville, FL 32216
(904) 285-1397
mail@ersenvironmental.com

Northeast FL Regional Airport
FLUCFCS Map A

Project No.:	16136
Exhibit No.:	3-A
Date:	8-18-17
By: DF	Rev. Date:

Source: ArcGIS Online Imagery

X:\GIS Projects\2016\16136\mxd\East_of_US1\16136_flucfcs_8-18-17.mxd



Note: Depicted wetland/upland boundaries are approximate, based only on aerial interpretation using listed sources, and are subject to change upon formal wetland delineation and agency verification. No field work was conducted as part of this assessment.

Depicted FLUCFCS classifications and boundaries are approximate. This map is intended to be used for preliminary purposes only.

Approximate Uplands - 483.25 ac.±
Approximate Surface Waters - 8.12 ac.±
Approximate Wetlands - 218.22 ac.±

LEGEND

Approximate Project Area - 709.59 ac.±

FLUCFCS Classification Boundaries

- 110 - Low Density Residential - 10.90 ac.±
- 141 - Retail Sales and Services - 4.42 ac.±
- 190 - Open Land - 6.93 ac.±
- 411 - Pine Flatwoods - 4.48 ac.±
- 434 - Hardwood-Coniferous Mixed - 42.64 ac.±
- 510 - Streams and Waterways - 0.40 ac.±
- 511 - Upland Cut Ditches - 0.25 ac.±
- 534 - Reservoirs less than 10 acres in size - 7.47 ac.±
- 617 - Mixed Wetland Hardwoods - 3.71 ac.±
- 630 - Wetland Forested Mixed - 47.81 ac.±
- 642 - Saltwater Marshes - 166.70 ac.±
- 743 - Spoil Areas - 3.00 ac.±
- 811 - Airport-Related Development - 410.59 ac.±
- 814 - Roads and Highways - 0.29 ac.±

0 600'

Environmental Resource Solutions
Our Science. Your Success.
8711 Perimeter Park Blvd., Suite 1
Jacksonville, FL 32216
(904) 285-1397
mail@ersenvironmental.com

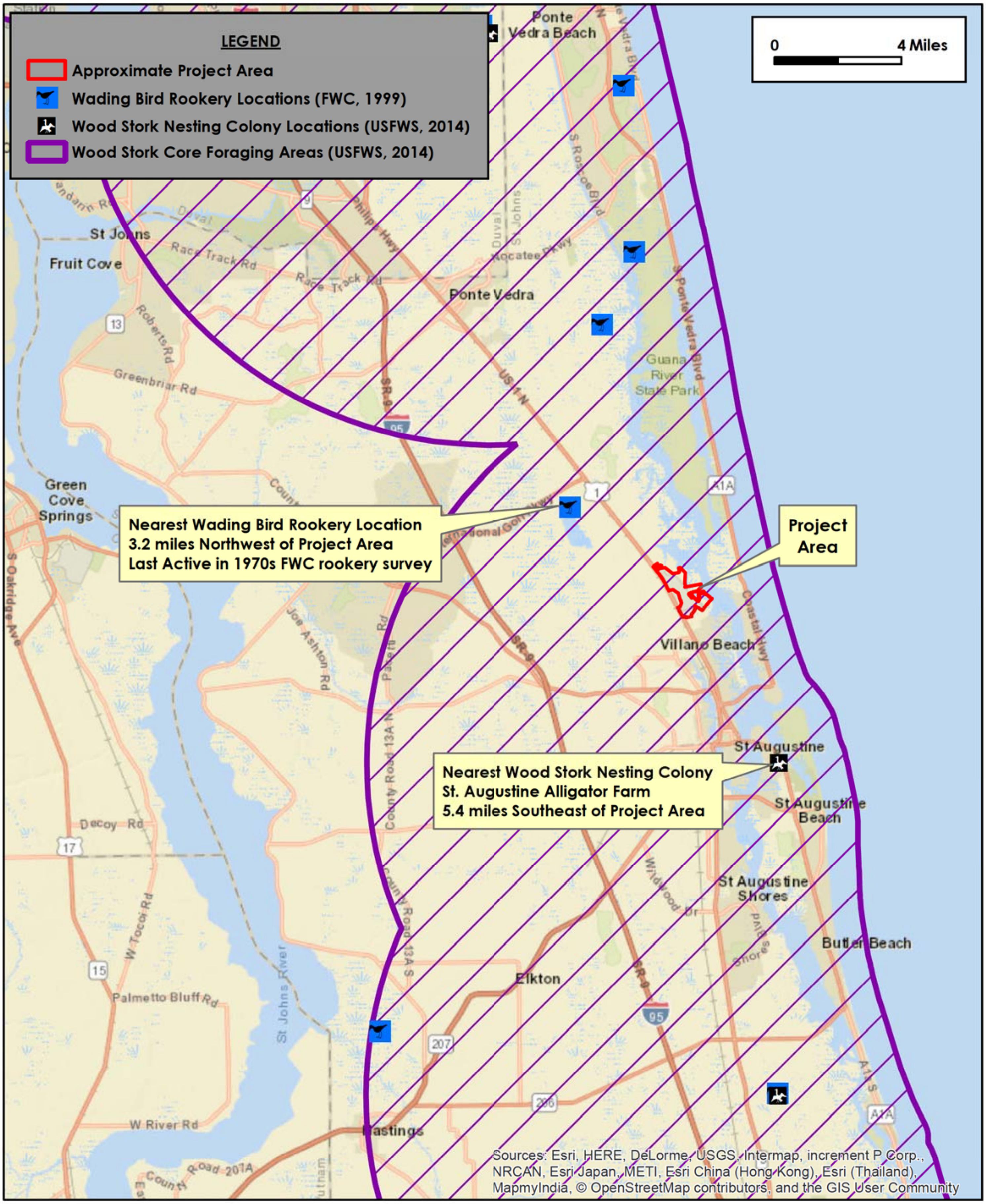
Northeast FL Regional Airport FLUCFCS Map B

By: DF

Project No.:	16136
Exhibit No.:	3-B
Date:	8-18-17
Rev. Date:	

Source: ArcGIS Online Imagery

X:\GIS Projects\2016\16136\mxd\East_of_US1\16136_flucfcs_8-18-17.mxd



Environmental Resource Solutions
Our Science. Your Success.

8711 Perimeter Park Blvd.,
Suite 1
Jacksonville, FL 32216

(904) 285-1397
mail@ersenvironmental.com

Northeast FL Regional Airport
Documented Occurrences of Wading Bird Rookeries and Wood Stork Occurrences/CFA's

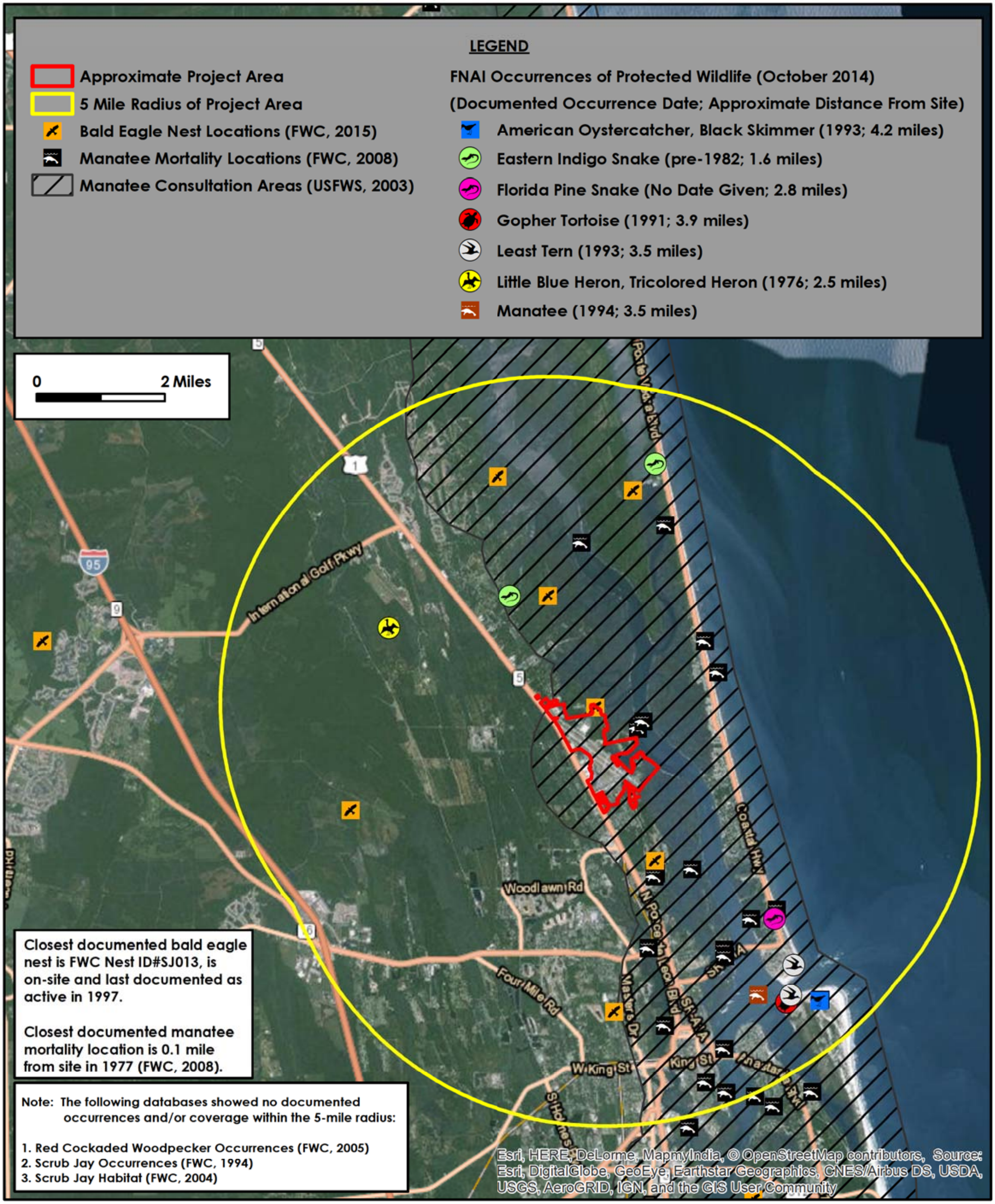
By: NEE

Project No.:	16136
Exhibit No.:	4
Date:	8-18-17
Rev. Date:	

N
W
E
S

Source: USFWS, FDEP, FWC, FNAI, ArcGIS Online (World Street Map)

X:\GIS Projects\2016\16136\mxd\East_of_US1\16136_13mile_wildlife_8-18-17.mxd



Environmental Resource Solutions
Our Science. Your Success.

8711 Perimeter Park Blvd., Suite 1
Jacksonville, FL 32216
(904) 285-1397
mail@ersenvironmental.com

Northeast FL Regional Airport Documented Occurrences of Protected Wildlife Within 5 Miles

Project No.:	16136
Exhibit No.:	5
Date:	8-18-17
Rev. Date:	
By: NEE	

Source: ArcGIS Online Imagery, USFWS, FDEP, FWC, FNAI, USGS, FNAI (October 2014)

X:\GIS Projects\2016\16136\mxd\East_of_US1\16136_5mile_wildlife_8-18-17.mxd

22 November 2017

Environmental Resource Solutions
Our Science. Your Success.

Ms. Lisa M. Cheung, Sr. Airport Planner
Passero Associates
242 West Main Street, Suite 100
Rochester, NY 14614

RE: Northeast Florida Regional Airport
REVISED Preliminary Assessment – Airport-Owned Parcels West of U.S. Highway 1
ERS Job No. 16136

Dear Ms. Cheung:

Environmental Resource Solutions Inc. (ERS) has completed a preliminary remote wetland and wildlife assessment and general ecological constraints analysis on several parcels owned by the St. Augustine-St. Johns County Airport Authority, totaling 968.88 acres±, on the western side of U.S. Highway 1. This report details our findings.

The purpose of the assessment and constraints analysis is to approximate the extent of jurisdictional wetlands [as regulated by St. Johns River Water Management District (SJRWMD) and the U.S. Army Corps of Engineers (USACE)], identify any documented occurrences of federally-listed or state-listed protected species, and identify any other potential ecological constraints that should be taken into consideration during master planning efforts.

Various resources were consulted for this assessment, including, but not limited to, the following:

- *Soil Survey of St. Johns County, Florida* [U.S. Department of Agriculture – Natural Resource Conservation Service (USDA-NRCS)]
- U.S. Fish and Wildlife Service (FWS) National Wetlands Inventory (NWI) mapping
- SJRWMD land use/land cover Geographic Information System (GIS) mapping data (2009, 2004, 2000)
- SJRWMD infrared aerial photography (2009, 2004, 2000, 1984)
- ArcGIS Online true color aerial photography
- SJRWMD regulatory conservation easement locations (SJRWMD, June 2016)

The project assessment area is located west of the Northeast Florida Regional Airport in St. Johns County, Florida, in Sections 15, 22, 23, 26, 27, 50, 51, and 52, Township 6 South, Range 29 East (Exhibit 1).

According to the *Soil Survey of St. Johns County, Florida* (USDA-NRCS), fifteen soil types are present in the assessment area. Soil survey mapping is depicted on Exhibit 2. Soil types and their numeric Soil Identification Number are listed below:

- Myakka-Myakka, wet, fine sands (3)
- Immokalee fine sand (7)
- St. Johns fine sand (13)
- Cassia fine sand (14)
- Pomello fine sand (15)
- Floridana fine sand, frequently flooded (18)
- Manatee fine sandy loam, frequently flooded (22)
- Parkwood fine sandy loam, frequently flooded (25)
- Wesconnett fine sand, frequently flooded (30)
- Jonathan fine sand (33)
- Riviera fine sand, frequently flooded (36)
- Pottsburg fine sand (40)
- Holopaw fine sand, frequently flooded (47)
- Winder fine sand, frequently flooded (48)
- EauGallie fine sand (58)

The approximate boundaries of wetlands jurisdictional to SJRWMD and USACE were estimated for this report using various sources, including information from previously issued SJRWMD Formal Wetland Determinations, published soil survey mapping, SJRWMD land use/land cover habitat mapping, and aerial interpretation. No field work was conducted for this assessment. All wetland boundaries and acreages given in this report are estimates and are subject to change upon wetland delineation, agency verification, and final survey.

On-site communities were then classified using the Florida Department of Transportation (FDOT) *Florida Land Use, Cover and Forms Classification System* (FLUCFCS, 1999), as depicted on Exhibit 3. The table below summarizes the approximate acreages for the project area, by community type.

Table 1. Estimated upland, wetland, and surface water acreages.

FLUCFCS Code	Community Description	Uplands (acres)	Wetlands (acres)	Surface Waters (acres)
110	Low Density Residential	15.41		
172	Religious	0.89		
190	Open Land	5.31		
211	Improved Pasture	209.27		
434	Hardwood-Coniferous Mixed	193.04		
441	Coniferous Plantations	148.05		
524	Lakes Less Than 10 Acres in Size			2.27
617	Mixed Wetland Hardwoods		236.93	
625	Hydric Pine Flatwoods		21.62	
630	Wetland Forested Mixed		136.09	
TOTALS		**571.97**	**394.64**	**2.27**

Significant non-natural land uses within the assessment area include Low Density Residential (FLUCFCS Code 110), Religious (172), Open Land (190), Improved Pasture (211), and Coniferous Plantations (441).

The only natural upland habitat type that occurs on the site is Hardwood-Coniferous Mixed (434). This community, which is generally characterized by a mixture of hardwood and coniferous canopy species, is dominated by slash pine (*Pinus elliottii*), loblolly pine (*Pinus taeda*), live oak (*Quercus virginiana*), laurel oak (*Quercus laurifolia*), saw palmetto (*Serenoa repens*), gallberry (*Ilex glabra*), broom sedge (*Andropogon virginicus*), and bracken fern (*Pteridium aquilinum*).

On-site forested wetland habitats include Mixed Wetland Hardwoods (617), Hydric Pine Flatwoods (625), and Wetland Forested Mixed (630). Mixed Wetland Hardwoods (617) are generally dominated by cypress (*Taxodium* spp.), red maple (*Acer rubrum*), tupelo (*Nyssa sylvatica* var. *biflora*), sweetgum (*Liquidambar styraciflua*), laurel oak, wax myrtle (*Myrica cerifera*), fetterbush (*Lyonia lucida*), Virginia chain fern (*Woodwardia virginica*), and royal fern (*Osmunda regalis*).

Hydric Pine Flatwoods (625) are pine-dominated wetlands, comprised mainly of slash pine, loblolly pine, red maple, sweetgum, gallberry, fetterbush, Virginia chain fern, and yellow-eyed grass (*Xyris* spp.).

Wetland Forested Mixed (630) communities are often dominated by slash pine, loblolly pine, red maple, sweetgum, wax myrtle, fetterbush, Virginia chain fern, netted chain fern (*Woodwardia areolata*), and cinnamon fern (*Osmunda cinnamomea*).

One area classified as a Lake (524) occurs near the center of the site; this area will likely be considered a Surface Water rather than a wetland.

On-site wetlands appear to vary in quality and composition based on habitat type, degree of disturbance due to silviculture activities, and adjacent land uses. In general, the natural forested wetland types are likely moderate in quality. All on-site wetlands were given preliminary scores using the Uniform Mitigation Assessment Method (UMAM). Scores (out of 1.0) are as follows: 617 – 0.80, 625 – 0.70, and 630 – 0.70. These scores are provisional and are subject to change. The functional loss for wetland impact is calculated by multiplying the estimated score by the estimated wetland acreage. The functional loss equals the amount of mitigation credits that would need to be purchased to offset the wetland impact. Surface waters (such as lakes) do not generally require mitigation for their impact, so they are not taken into account in the calculation of functional loss.

The project is located in SJRWMD Basin 9 (Pellicer Creek & Matanzas River). Several mitigation banks serve this basin. Due to competition, price per credit varies widely based how many credits are needed and when they are required. However, based on recent projects in the area, we estimate that mitigation will cost approximately $80,000.00 per credit.

A GIS database search and map review were conducted for the assessment area to identify documented occurrences of protected species or their habitat. Data compiled by the Florida Natural Areas Inventory (FNAI), which contains documented occurrences of species listed by the FWS and/or the Florida Fish and Wildlife Conservation Commission (FWC), were reviewed. Attention was focused on those species listed by FWC (Chapter 68A-27 F.A.C.) and FWS (50 CFR 17.11-12). The data used to search for documented occurrences listed by FWC and FWS is updated regularly to ensure accuracy.

No occurrences of listed species or their habitat are documented in or near the assessment area.

The wood stork (*Mycteria americana*) is listed as Endangered by the FWS and FWC. The FWS considers wetlands that are suitable foraging habitat for storks within 13 miles of a wood stork colony in northern Florida to be part of that colony's Core Foraging Area (CFA). While wood storks may or may not be observed during field visits, all on-site wetlands will likely be considered suitable foraging habitat. If impact to a CFA is proposed, FWS requires that mitigation takes place within the CFA and consists of suitable foraging habitat.

The project area lies within the CFA of a wood stork nesting colony located at the St. Augustine Alligator Farm, approximately 5.6 miles southeast of the project area (Exhibit 4). The closest documented wading bird rookery is located approximately 2.1 miles northwest of the site, and was last documented as active in the 1970s FWC rookery survey.

Given the distance between the proposed project area and the documented wood stork nesting colony and wading bird rookery locations, and the high level of development in the intermediate area, it is not expected that future development will have a negative effect on wood storks or other protected birds.

Exhibit 5 shows documented occurrences of other protected wildlife within five miles of the assessment area. The closest documented occurrence of protected wildlife is the eastern indigo snake, approximately 1.0 mile northeast of the project area, prior to 1982.

The bald eagle (*Haliaeetus leucocephalus*) is no longer a protected species under the Endangered Species Act, but restrictions remain in place for work near nests. The bald eagle remains protected under the Bald and Golden Eagle Protection Act, the Migratory Bird Treaty Act, and state regulations. Adherence to the FWS 2007 Bald Eagle Monitoring Guidelines is still recommended. FWC data shows several documented eagle nests within a 5-mile radius of the project area; however, the closest documented nest is FWC Nest ID #SJ013, approximately 0.7-mile east of the project area, last documented as active in 1997. Since the management guidelines only apply when activity is proposed within 660 feet of a nest, eagle nests are not likely to restrict future development in the assessment area. If an eagle nest is found within 660 feet of any proposed work areas, coordination with FWS will be required.

The gopher tortoise (*Gopherus polyphemus*) is listed as Threatened by FWC, and permitting and relocation are required for any tortoises or burrows that are impacted. The closest FNAI-documented gopher tortoise occurrence is approximately 4.4 miles southeast of the project corridor. If any work is proposed in on-site uplands, a complete survey for tortoises should be completed in accordance with FWC regulations. A permit would have to be obtained from FWC to relocate any tortoises that would be impacted by the proposed work.

The eastern indigo snake (*Drymarchon corais couperi*), a commensal species of the gopher tortoise, is listed as Endangered by both the state and federal wildlife agencies; it requires large areas of suitable habitat. The likelihood of occurrence of this species within the project area will be assessed following completion of a gopher tortoise burrow survey.

The red-cockaded woodpecker (*Picoides borealis*, "RCW") is listed as Endangered by FWS and FWC. No FWC- or FNAI-documented occurrences of the red-cockaded woodpecker exist within a five mile radius of the project area. The RCW requires high quality pine forests with mature pines containing heart rot for nesting. It is unlikely that the habitat requisites for the RCW are present within the assessment area. Therefore, this species is highly unlikely to occur.

The site contains a considerable amount of forested wetlands which may comprise suitable habitat for listed avian species. Some habitats within the project area could potentially provide habitat for wood stork (*Mycteria americana*), little blue heron (*Egretta caerulea*), snowy egret (*Egretta thula*), and/or white ibis (*Eudocimus albus*). All of these are highly mobile species. These species may occur, but are unlikely to be adversely affected by future development projects.

Additional research and/or surveys may be necessary to determine if any other listed species may be impacted by proposed work.

Depicted on Exhibit 6 are the locations of conservation easements granted to St. Johns River Water Management District (SJRWMD) for regulatory mitigation purposes. Please note that the locations and extents of these easements are approximate, based on Geographic Information System (GIS) data published by SJRWMD. A full title search of the project area will be required in order to identify all existing encumbrances. Each easement depicted on Exhibit 6 is listed below along with its book/page location in the Official Records (OR) of St. Johns County, as well as the SJRWMD Permit with which it is associated.

- C1: OR Book 2434, Page 48 – SJRWMD Permit No. 40-109-93973-1
- C2: OR Book 1838, Page 1630 – SJRWMD Permit No. 40-109-28307-17
- C3: OR Book 2034, Page 34 – SJRWMD Permit No. 40-031-80614-1

Subsequent investigation of C1 has revealed that its location is incorrect in the SJRWMD-published GIS data source. Based on the legal description and sketch included in the recorded easement, this encumbrance is located on the eastern side of U.S. Highway 1. Therefore, C1 is not located within the project area.

The results of this assessment are estimated based on existing information and are subject to change. ERS did not perform field work or seek agency verification of any of our findings. Please contact Kim Allerton or me if you have any questions or require any additional information.

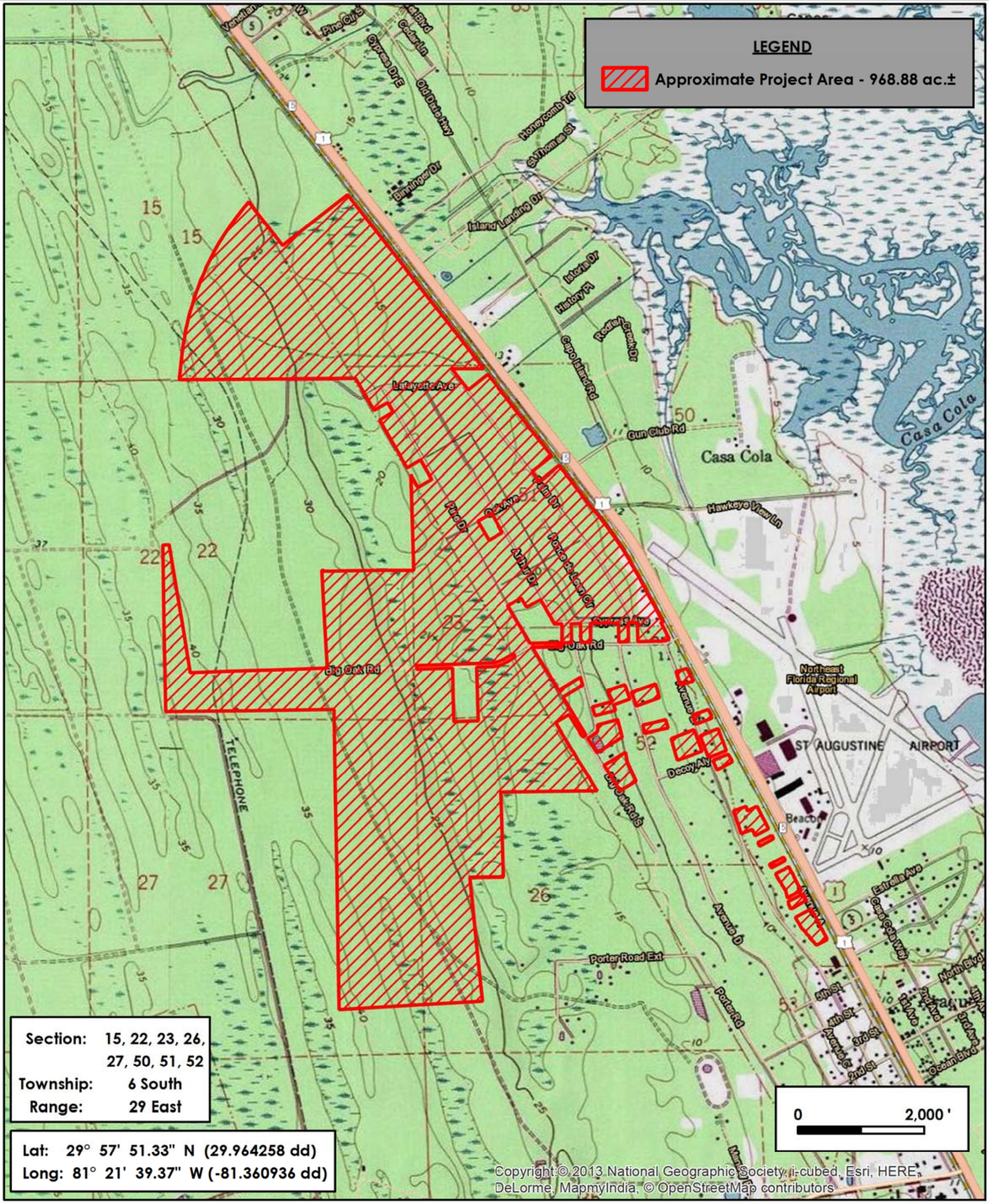
Sincerely,

ENVIRONMENTAL RESOURCE SOLUTIONS, INC.

Jaime Northrup

Jaime Northrup
Project Manager/Senior Environmental Scientist

JKN/16136_PrelimReportWestofUS1Revised_11-22-17



Environmental Resource Solutions
Our Science. Your Success.
8711 Perimeter Park Blvd., Suite 1
Jacksonville, FL 32216
(904) 285-1397
mail@ersenvironmental.com

Northeast FL Regional Airport USGS Topographic Quadrangle Map

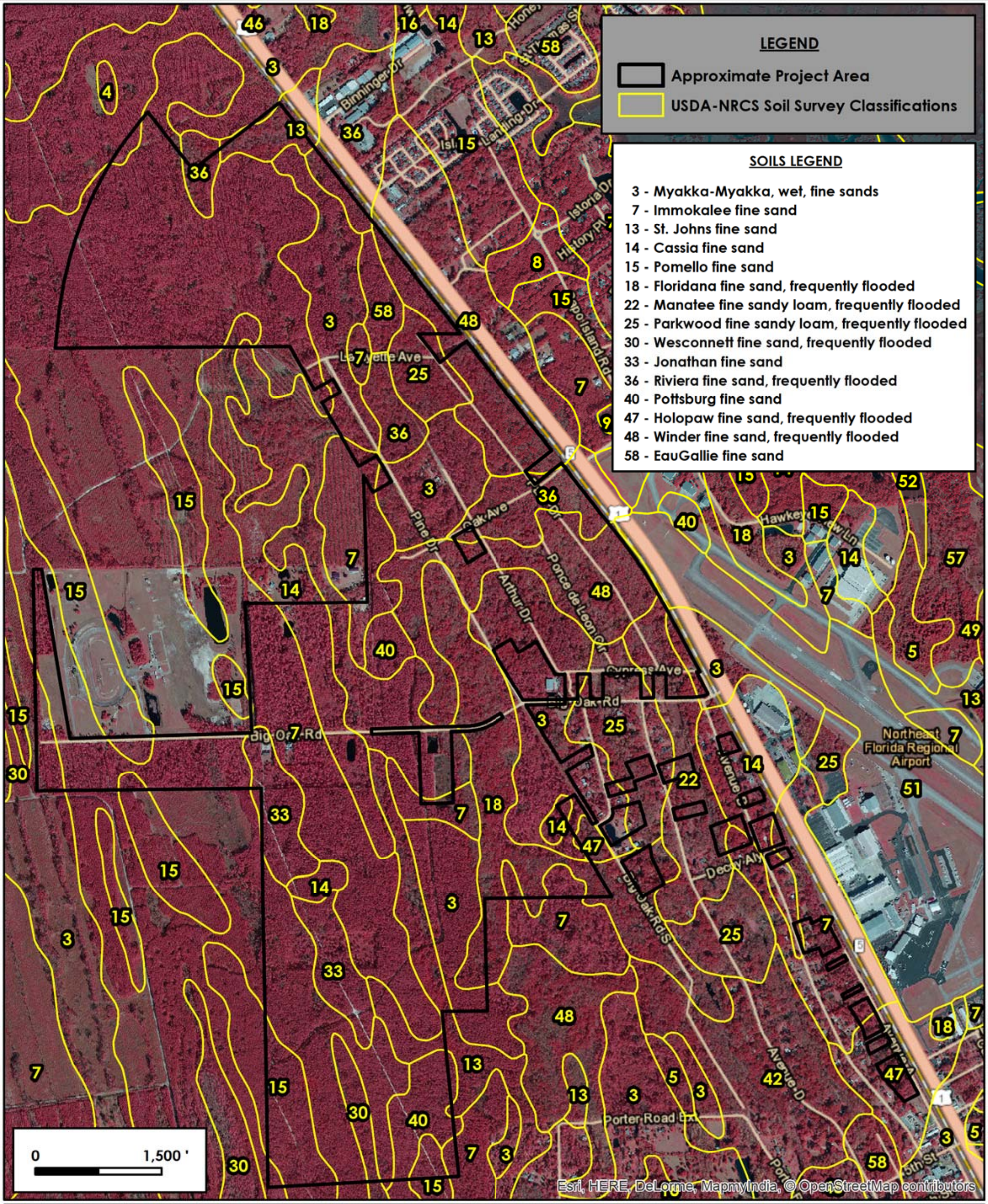
St. Johns County, Florida

By: DF

Project No.:	16136
Exhibit No.:	1
Date:	6-20-17
Rev. Date:	

Source: 7.5' USGS Bakersville and St. Augustine, FL Topographic Quadrangles; ArcGIS Online (USA Topo Maps)

X:\GIS Projects\2016\16136\mxd\16136_location_6-20-17.mxd



LEGEND

- Approximate Project Area
- USDA-NRCS Soil Survey Classifications

SOILS LEGEND

3 - Myakka-Myakka, wet, fine sands
7 - Immokalee fine sand
13 - St. Johns fine sand
14 - Cassia fine sand
15 - Pomello fine sand
18 - Floridana fine sand, frequently flooded
22 - Manatee fine sandy loam, frequently flooded
25 - Parkwood fine sandy loam, frequently flooded
30 - Wesconnett fine sand, frequently flooded
33 - Jonathan fine sand
36 - Riviera fine sand, frequently flooded
40 - Pottsburg fine sand
47 - Holopaw fine sand, frequently flooded
48 - Winder fine sand, frequently flooded
58 - EauGallie fine sand

Environmental Resource Solutions
Our Science. Your Success.
8711 Perimeter Park Blvd., Suite 1
Jacksonville, FL 32216
(904) 285-1397
mail@ersenvironmental.com

Northeast FL Regional Airport Soils Map

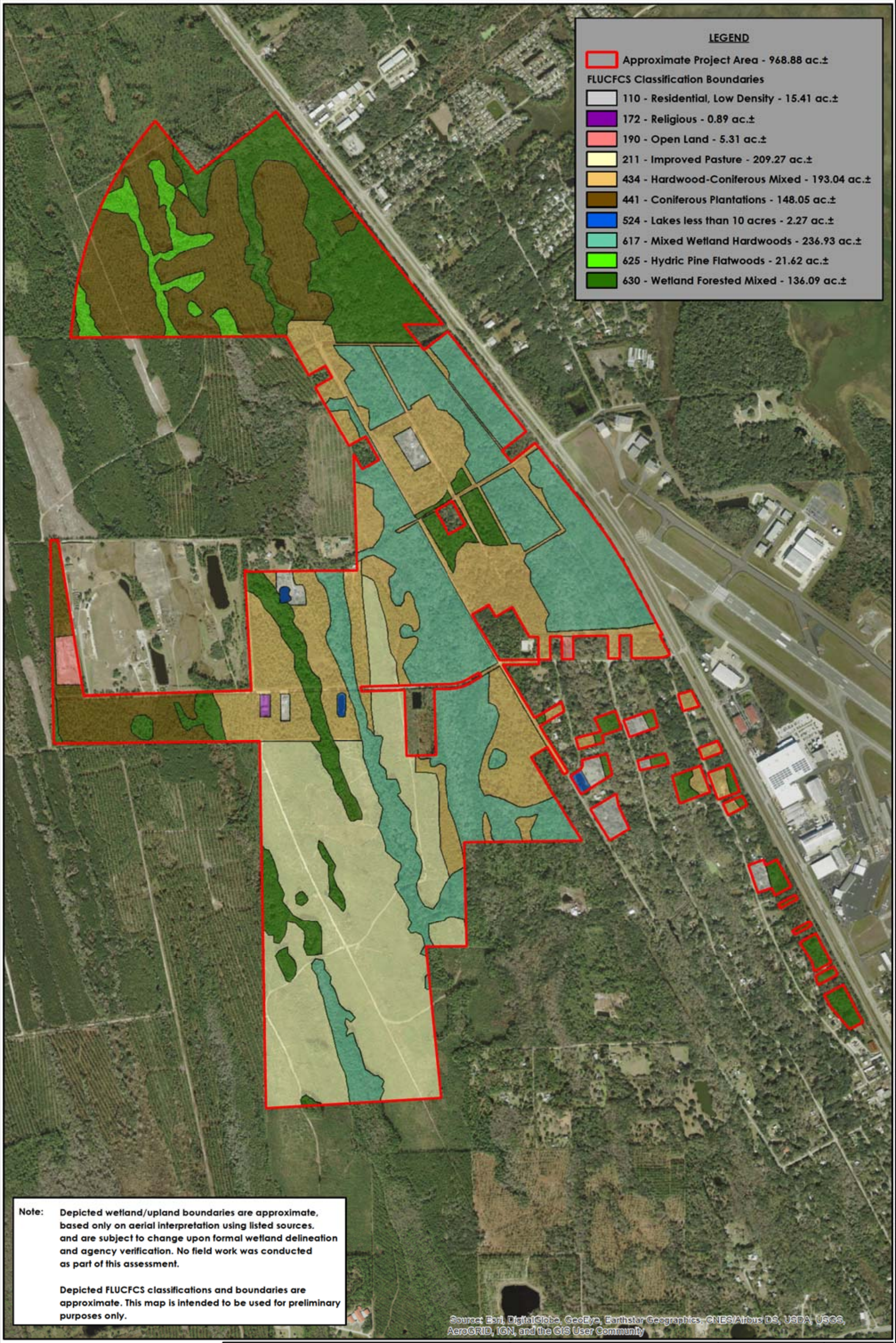
St. Johns County, Florida

By: DF

Project No.:	16136
Exhibit No.:	2
Date:	6-9-17
Rev. Date:	

Source: 2009 Infrared Aerials (SJRWMD), USDA-NRCS soil survey classifications (data obtained from NRCS)

X:\GIS Projects\2016\16136\mxd\16136_soils_6-9-17.mxd



0 1,100 '

Environmental Resource Solutions
Our Science. Your Success.

8711 Perimeter Park Blvd., Suite 1
Jacksonville, FL 32216

(904) 285-1397
mail@ersenvironmental.com

Northeast FL Regional Airport FLUCFCS Map

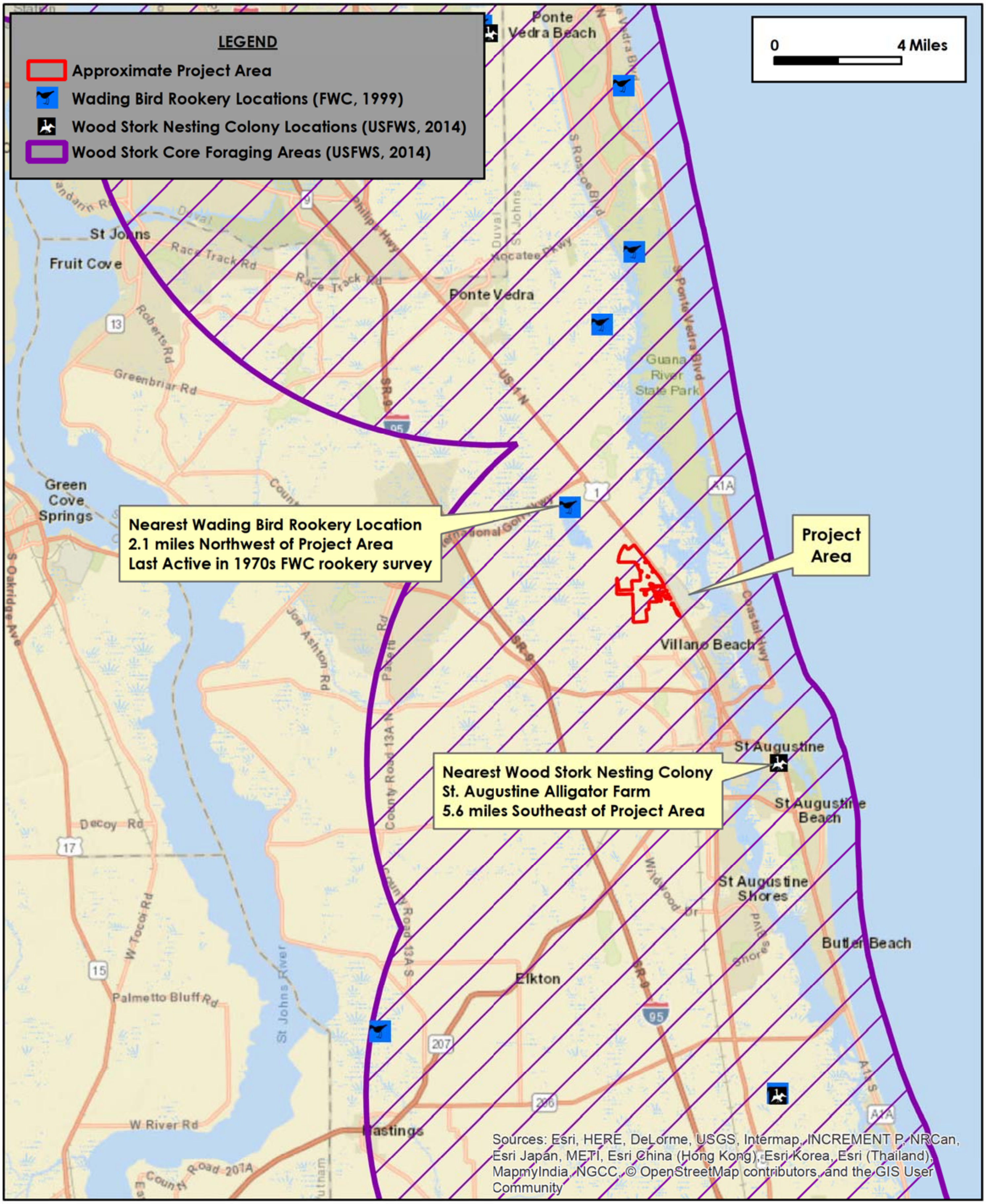
By: DF

Project No.:	16136
Exhibit No.:	3
Date:	6-9-17
Rev. Date:	

N S E W

Source: ArcGIS Online Imagery

X:\GIS Projects\2016\16136\mxd\16136_flucfcs_6-9-17.mxd



Environmental Resource Solutions
Our Science. Your Success.

8711 Perimeter Park Blvd., Suite 1
Jacksonville, FL 32216

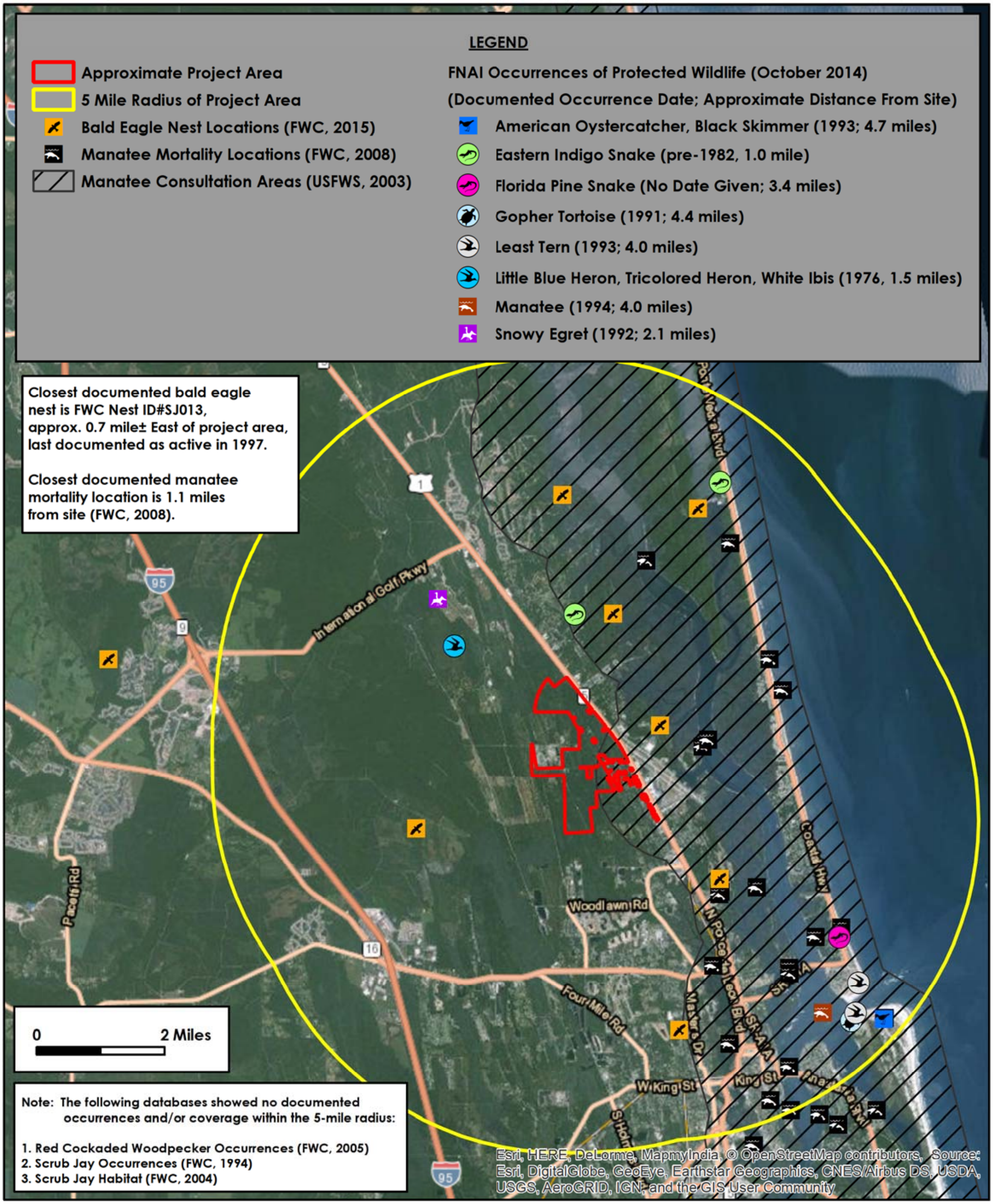
(904) 285-1397
mail@ersenvironmental.com

Northeast FL Regional Airport
Documented Occurrences of Wading Bird Rookeries and Wood Stork Occurrences/CFA's

Project No.:	16136
Exhibit No.:	4
Date:	6-9-17
Rev. Date:	
By: DF	

Source: USFWS, FDEP, FWC, FNAI, ArcGIS Online (World Street Map)

X:\GIS Projects\2016\16136\mxd\16136_13mile_wildlife_6-9-17.mxd



Environmental Resource Solutions
Our Science. Your Success.

8711 Perimeter Park Blvd., Suite 1
Jacksonville, FL 32216

(904) 285-1397
mail@ersenvironmental.com

**Northeast FL Regional Airport
Documented Occurrences of
Protected Wildlife Within 5 Miles**

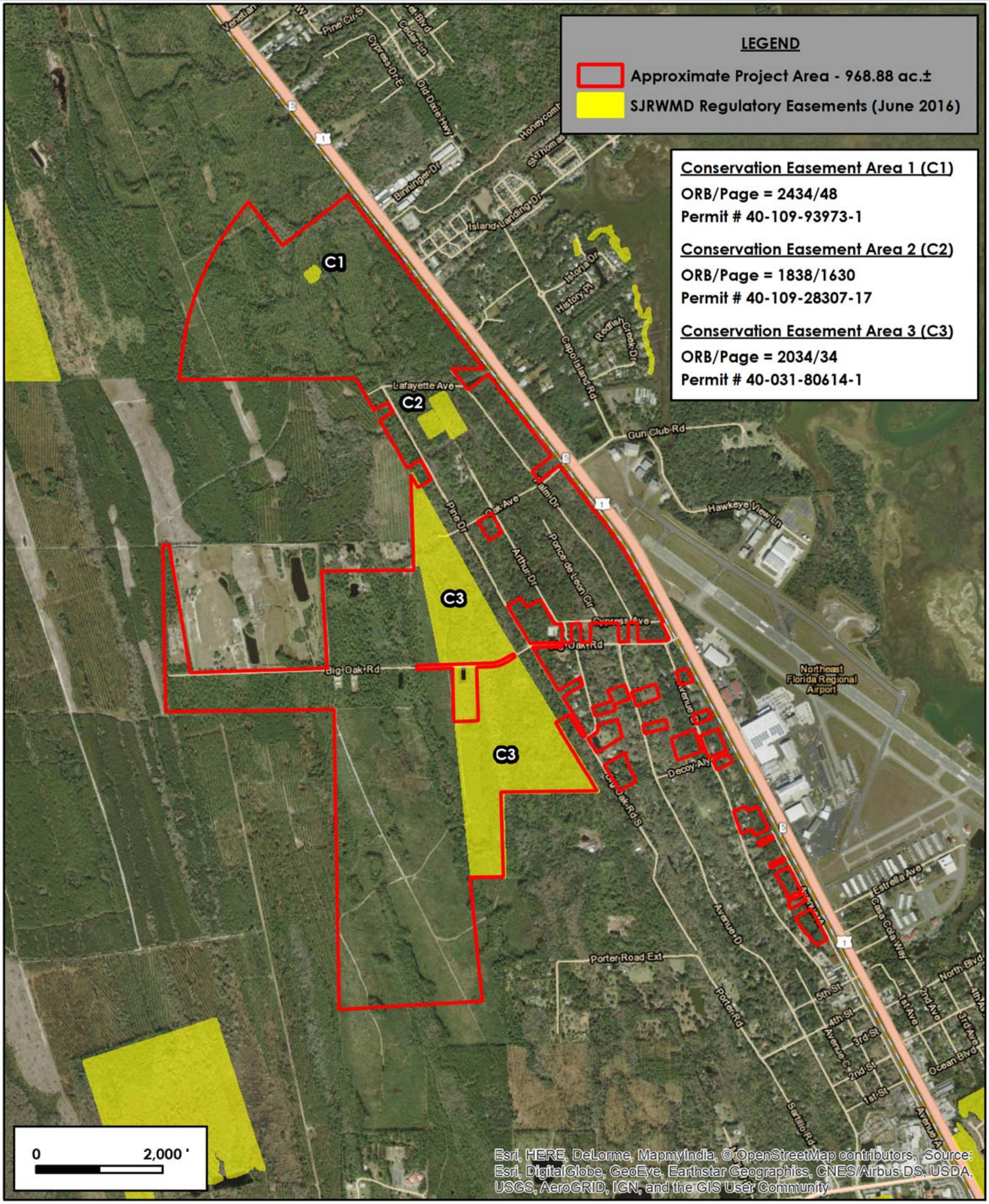
By: DF

Project No.:	16136
Exhibit No.:	5
Date:	6-9-17
Rev. Date:	

N E S W

Source: ArcGIS Online Imagery, USFWS, FDEP, FWC, FNAI, USGS, FNAI (October 2014)

X:\GIS Projects\2016\16136\mxd\16136_5mile_wildlife_6-9-17.mxd



Environmental Resource Solutions
Our Science. Your Success.

8711 Perimeter Park Blvd., Suite 1
Jacksonville, FL 32216
(904) 285-1397
mail@ersenvironmental.com

Northeast FL Regional Airport Regulatory Conservation Easements

St. Johns County, Florida

By: DF

Project No.:	16136
Exhibit No.:	6
Date:	6-20-17
Rev. Date:	

Source: ArcGIS Online Imagery

X:\GIS Projects\2016\16136\mxd\16136_reg_conease_6-20-17.mxd

St. Augustine Airport Master Plan Update
Water Management
September 27, 2017

Regulatory Information

Drainage and water management systems on airport property are subject to regulatory reviews and/or approvals from several state and federal agencies. They may also be subject to review by local agencies depending on the specific site. The specific concerns of these agencies vary, and airport water management must simultaneously satisfy several criteria summarized following. Briefly, environmental concerns require that the water management system protect water quality, limit or prevent flood damage and preserve or maintain healthy ecosystems. Transportation concerns require that the water management system be consistent with safe and efficient air transportation. Solutions that simultaneously satisfy both sets of requirements are available and discussed in the Florida Department of Transportation *Statewide Airport Stormwater Best Management Practices Manual*. That document, available from the Florida Department of Transportation (FDOT) – Central Aviation and Spaceports office, should be used for water management system design on airport property.

Water management regulation for the St. Augustine Airport (SGJ) for environmental protection is principally the jurisdiction of the St. Johns River Water Management District (SJRWMD). Projects that modify the drainage system or that add impervious surface require an Environmental Resource Permit (ERP) issued under Chapter 62–330 Florida Administrative Code (FAC). The conditions of issuance for the permit are summarized in chapter 62–330.301 and 62–330.302 FAC. Restating, projects must provide reasonable assurance that they will not have adverse impacts on water quality; quantity and/or flood protection; or wetlands and ecosystems to obtain a permit. This can be demonstrated using "presumptive design" contained in the Permit Information Manual (PIM) published by the SJRWMD, or using alternate criteria subject to SJRWMD review and approval. Presumptive designs are rebuttably presumed to meet water quality requirements and conform to specific criteria published by the Florida Department of Environmental Protection (FDEP) and Water Management Districts.

On the airport airside, which includes the runways taxiways and aprons, ERP can be issued under Chapter 62–330.449 *General Permit for Construction, Operation, Maintenance, Alteration, Abandonment or Removal of Airport Airside Stormwater Management Systems*. This is typically the fastest permitting option for those projects that qualify, and it simultaneously satisfies environmental and transportation agency criteria.

The Federal Aviation Administration (FAA) exercises primary regulatory jurisdiction over SGJ with respect to air traffic safety, airport design and operations. Also, both the FAA and the FDOT provide funding for airport development, and the conditions associated with that funding may act as constraints to the allowable water management systems. The FAA has specific airport requirements that SGJ must meet as a Part 139 air carrier airport. Through grant conditions, FAA requires the airport comply with

Advisory Circulars (AC) covering airport design and construction. The primary circulars affecting airport drainage are AC 150/5320–5C *Surface Drainage Design* and 150/5200–33B *Hazardous Wildlife Attractants On or Near Airports*. The latter document affects airfield drainage since it discourages open water, particularly ponds with combinations of open water and vegetated littoral shelves. Vegetated littoral shelves are zones of shallow water that very gradually slope deeper and that have wetland plants on them. The plants on the shelves are intended to provide a water quality function, but they also provide habitat and food that attracts wildlife and birds that can be hazardous to aircraft operations. Ponds designed with these shelves presumptively meet water quality requirements in the SJRWMD PIM and are commonly used for water management, but are obviously not consistent with AC 150/5200-33B or FAA Grant Assurance No. 20. Where ponds are unavoidable AC 150/5200-33B recommends deep, steep sided, rip-rap lined, narrow, linear systems without vegetated littoral zones. Options for this design are available both from SJRWMD and from FDOT Central Aviation Office. The FDOT design option has an enhanced treatment and wildlife minimization function and is described in their documents *Technical Report on the Water Management Performance of the FAA Pond at Naples Municipal Airport* and *Technical Report on the Wildlife/Bird Monitoring of the FAA Pond at Naples Municipal Airport.*

The *Surface Drainage Design* Advisory Circular describes the specific design events for airport airside drainage. Essentially, most airside drainage can be designed for a 5-year recurrence interval rainfall event. This is an intense rainfall that is likely to occur once every five years. Structures such as hangars and terminal buildings may, and generally do, have drainage design requirements to remain dry during larger, less frequent storms ranging from 10-year to 100-year recurrence interval events.

St. Augustine Airport is also subject to the requirements of The National Pollutant Discharge Elimination System (NPDES) of the federal Clean Water Act. The authority for NPDES regulation under the act has been delegated to the FDEP which exercises this authority under Section 403.0855 Florida Statutes (FS). St. Augustine Airport has Permit FLR05A849, specific to SGJ, in compliance with this regulation. Individual construction projects are also subject to the NPDES regulation and permits for these are generally the responsibility of the project contractor.

An option for Airports, that regulatory agencies accept and funding agencies, including FAA and FDOT, can support is an Airport Master Drainage Plan with a Conceptual Environmental Resource Permit. This may be a future consideration for the St. Augustine Airport.

Existing Conditions

Storm water from the St. Augustine Airport (SGJ) is discharged to the Tolomato River east of the airport. The river is part of the Intercoastal Waterway (ICW) with its closest connection to the Atlantic Ocean, south of the airport, at the St. Augustine Inlet. The Tolomato is a Class II water which is defined by designated use in 62-302.400 Florida Administrative Code (FAC) as shellfish propagation or harvesting. This classification establishes the standards for water quality discharging into it. It also establishes the standards for water quality treatment volumes when using "presumptive" designs contained in the

Permit Information Manual of the SJRWMD. Table 1 lists select constituents that may be in runoff water discharging from airport property and their Class II concentration limits. Nutrients Total Nitrogen (TN) and Total Phosphorus (TP) are generally sufficient to determine water management treatment requirements for airside (apron, taxiway and runway) land uses at airports. That is the basis for the General Permit authorized by 62-330.449 FAC. However, the other water quality constituents may require evaluation for various landside or mixed uses. Note that loads and load reduction may be used in lieu of the concentrations in Table 1 when evaluating and designing water quality treatment systems.

TABLE 1 – Class II Shellfish Water Quality Limits for Select Water Quality Constituents (62-302.400 FAC)

	Total Nitrogen, TN (mg/L)	Total Phosphorus, TP (mg/L)	Copper, Cu (µg/L)	Lead (Pb) (µg/L)	Zinc, Zn (µg/L)
Class II Shellfish Water	0.65	0.105	3.7	8.5	86

The water surface elevations in the Tolomato River affect the pipe, ditch and swale sizing for the airport drainage system. Higher water levels at the discharges either raise upstream water levels in swales and pipes for a given discharge, lower the amount that can be discharged, or require larger pipes and swales to discharge the runoff water. Tidal fluctuations of 4 ½ to 5 feet are reported by the National Oceanic and Atmospheric Administration (NOAA) at the St. Augustine Inlet station. These fluctuations may be expected at the discharge points for the Airport's storm water runoff. The Mean High Water (MHW) reported for the St. Augustine Inlet station is 1.7 feet NAVD '88 and the Mean Higher High Water (MHHW) for the station is 2.1 feet NAVD '88. These values do not reflect storm surge but are appropriate for the airport drainage system planning. Important to flood protection and water quantity management, the discharges to the Tolomato River at the airport location do not require special structures or ponds to limit the flow rates. That is, water may be discharged as fast as necessary to avoid on-airport flooding, subject only to limitations needed to avoid water quality degradation. A special condition does apply to discharge structures for manatee protection however. Structures must be designed so openings are limited to 8-inches by use of grates or bars to prevent manatees entering the system and becoming trapped.

The average annual rainfall reported for St. Augustine is 48 inches. This value is useful for normalizing rainfall data for water quality estimates, but more detailed information is needed for the estimates. Rainfall records on 15-minute intervals for ten years (2004 – 2014) were obtained from the NOAA Cooperative Observer Network (COOP) from the MarineLand Florida weather station (COOP 085391) for water quality planning. The record contains 2,915 rainfall entries ranging from a trace to 5.9 inches. Using the data for a first estimate of water quality runoff loads requires defining an "event", a time interval where the rainfall is considered to be additive. This is needed to provide an initial estimate of runoff, using an accepted rainfall-runoff relation. Continuous simulation modeling removes this approximation requirement, but is the most complex modelling method referenced by FAA or FDEP documents and beyond this planning study. The modal rainfall, the most common value, is 0.1 inches for any assigned event time. The selected event time for this plan is 6-hours, consistent with the latest Florida Statewide Airport Stormwater Study monitoring and testing done for pond systems on airports. For the selected event time, the following rainfall parameters are derived from the dataset:

Modal Rainfall	0.10 inches
Mean Rainfall	0.30 inches
Maximum Rainfall	6.32 inches
Annual Rainfall Events	111
Events > 0.1 inches	47
Events ≤ 0.1 inches	64

Potential pollutant loads are based in part on land use and the Event Mean Concentration (EMC) of a potential pollutant associated with that use. The load is calculated as the runoff volume of water times the EMC, with appropriate conversion factors to express the load in pounds per year, kilograms per year or similar. When using load based water management, any of several criteria may be applied. The four most common are:

1) 80% average annual load removal of pollutants that cause or contribute to violations of water quality standards
2) 95% average annual load removal of pollutants that cause or contribute to violations of water quality standards for discharges to Outstanding Florida Waters
3) "net environmental improvement" requiring post-project loads be less than pre-project loads for discharges to impaired waters
4) Loads after development shall not exceed loads from a "natural vegetative community"

Note that only those constituents that are reasonably expected to be present at levels that would cause or contribute to violations require analysis. A typical list for airports, based on the Statewide Airport Stormwater Study, is Total Nitrogen (TN), Total Phosphorus (TP), Copper (Cu), Lead (Pb) and Zinc (Zn). This is applicable to SGJ. Presumptive designs are generally used for compliance with 1) and 2) above. Alternative designs and analyses are generally required to use 3) and 4) above. Airport airside pavement using the General Permit of 62-330.449 follow 4), which meets both environmental protection and transportation safety and efficiency objectives. The approach can be extended to landside development, but the calculation method and parameters require advance regulatory approval. This is the recommended planning approach for St. Augustine Airport.

Natural vegetative community EMC data were furnished by FDEP and, for nutrients, are incorporated by Rule in 62-330.449. The term "natural vegetative community" is technically used to define the standard that an airport airside water management system permitted under Rule 62-330.449 must meet. It, and the term "natural area(s)" describes an area where native plants, soils and hydrology dominate and are essentially uninfluenced by human activity. The data are available for a variety of different natural areas, but the summary data has been historically used for regulatory purposes. Two versions have generally been used, one including Xeric Hammock (XH) and Upland Mixed Forest (UMH), and one excluding that data. The summary EMC data for natural areas or natural vegetative communities are listed in the Table 2, along with the Class II Water Standards for comparison.

Table 2- Comparison of Natural Area Runoff Characteristic with Class II Shellfish Water Quality Limits for Select Water Quality Constituents

Land use	TN (mg/l)	TP (mg/L)	Cu (mg/L)	Pb (mg/L)	Zn (mg/L)
Natural Area	0.93	0.10	0.0033	0.001	0.007
Natural Area less XMH & UMH	0.93	0.056	0.0033	0.001	0.007
Class II Water	0.65	0.105	0.0037	0.0085	0.086

Runoff from marsh lands is generally taken to be equal to rainfall. Table 3 lists the base loads for SGJ for an area equal to the developed land on the airport. These are loads that would be generated by the developed area of SGJ if it were a natural area instead.

Table 3 – Natural Area (Natural Vegetative Community) Loads for SGJ

Land use	TN (lbs/year)	TP (lbs/year)	Cu (lbs/year)	Pb (lbs/year)	Zn (lbs/year)
Natural Area	4,815	518	15.5	5.18	36.2
Natural Area less XMH & UMH	4,815	290	15.5	5.18	36.2

Developed land use EMC data is presented in Table 4. Airside data are taken from either the 2013 revision of the *Statewide Airport Stormwater Best Management Practices Manual* or from the 2008 revision of the *Technical Report for the Florida Statewide Airport Stormwater Study*. St. Augustine Airport was a participant in the original 5-year study that concluded in 2005 and that the *Technical Report* summarizes. The *Technical Report* data was specifically referenced for hangar areas, since the T-hangars at SGJ include grassed dividers between the access pavement into each individual hangar. This design feature dramatically reduces concentrations and loads from the general T-hangar condition summarized in the *Best Management Practices Manual*.

Table 4- Event Mean Concentration Data for Select Water Quality Constituents for Developed Land Uses

Land Use	TN (mg/l)	TP (mg/L)	Cu (mg/L)	Pb (mg/L)	Zn (mg/L)
Runway	0.401	0.049	0.024	0.003	0.065
Taxiway	0.569	0.11	0.014	0.005	0.022
Apron	0.398	0.057	0.02	0.004	0.055
Hangar*	0.617	0.178	0.006	0.003	0.058
Commercial	2.20	0.248	0.015	0.005	0.086
Road	1.371	0.167	0.014	0.004	0.087
Agricultural	2.07	0.152	0.003	0.001	0.012
Residential	1.87	0.301	0.014	0.003	0.052

*Hangar data from Technical Report uses T-Hangars with grassed dividers

Existing land use at the airport interpreted from aerial photography is listed in Table 5. Note that there is a judgement element in the interpretation that must ultimately be accepted by the SJRWMD in the permitting process.

Table 5 – Existing Land Use at SGJ

Land Use	Estimated Acreage
Runway	46
Taxiway	77
Apron	31
Hangar	18
Commercial	65
Road	10
Agricultural	237
Residential	267

The expected direct loads from the developed land uses are presented in Table 6. The runoff is variable by land use, but ranges from 11 inches to less than 1 inch. This is consistent with measured results from the Statewide Airport Stormwater Study and reflects the rainfall distribution that actually occurs. The values are substantially less than would be estimated by taking either a Curve Number or Rational Coefficient times the annual rainfall, since that approach does not consider the rainfall distribution.

Table 6 – Existing Developed Area Loads for SGJ

Land use	TN (lbs/year)	TP (lbs/year)	Cu (lbs/year)	Pb (lbs/year)	Zn (lbs/year)
Runway	47.7	5.8	2.85	0.36	7.73
Taxiway	113.4	21.9	2.79	1.00	4.39
Apron	32.0	4.6	1.61	0.32	4.43
Hangar*	28.7	8.3	0.28	0.14	2.70
Commercial	370.4	41.8	2.53	0.84	14.48
Road	34.9	4.3	0.36	0.10	2.21
Agricultural	77.7	5.7	0.11	0.04	0.45
Residential	90.7	14.6	0.68	0.19	2.52
TOTALS	**796**	**107**	**11.2**	**2.94**	**38.9**

Conclusion

From review of the data summarized in Table 7, the constituent of concern for the airport property in the existing condition is Zinc (Zn), which has loads about 7½ % higher than the natural vegetative community prior to any water quality treatment. Water quality treatment is effective at zinc removal, and currently exists at the airport. All other constituents are below the natural vegetative community requirement prior to treatment.

Table 7 – Comparison of Existing Developed Area Loads Prior to Treatment and Natural Area Loads for SGJ

Land use	TN (lbs/year)	TP (lbs/year)	Cu (lbs/year)	Pb (lbs/year)	Zn (lbs/year)
Natural Area	4,815	518	15.5	5.18	36.2
Natural Area less XMH and UMH	4,815	518	15.5	5.18	36.2
SGJ Total Developed Area	796	107	11.2	2.94	38.9

Review of the airport permits on file with SJRWMD indicates that presumptive treatment in the form of wet detention ponds and dry retention with filtration are in place for a portion of the developed airport land. Swales and overland flow are also in place for the airport. The implication of this is that some excess water quality treatment capacity is already available at the airport for future development. This may be minimal when actual, as opposed to presumptive efficiency of the treatment system is evaluated, but excess capacity does exist.

Appendix I

Water and Wastewater Evaluation

MEMORANDUM

TO: Andrew M. Holesko, CM, MBA, Vice President, Director, Passero Associates, LLC

FROM: Angela Bryan, PE, Principal Engineer

Laura Constantino, MSE, Engineering/GIS Manager

DATE: November 9, 2018

RE: Water and Wastewater Evaluation Services for the Northeast Florida Regional Airport (SGJ) Master Plan Update Project

1.0 INTRODUCTION AND PURPOSE

Four Waters Engineering (4Waters) has been authorized by Passero Associates, LLC (Passero) to conduct a Water and Wastewater Evaluation in support of the Northeast Florida Regional Airport (NFRA) Master Plan Update project which Passero is completing for their client, the St. Augustine-St. Johns County Airport Authority (Airport Authority) in St. Johns County, Florida. The purpose of the Water and Wastewater Evaluation is to develop feasible solutions for suitable, environmentally responsible water and wastewater service for the proposed developments included in the NFRA Master Plan Update.

Based on information provided by Passero, it is our understanding that Airport Authority currently owns or is in process of acquiring lands of up to 1,500 acres bounded by US-1 to the east, the future State Road 313 to the north and west, and generally State Road 16 to the south, hereinafter referred to as NFR-B. Additional developments are proposed on the east side of US-1 in the existing NFRA complex, hereinafter referred to as NFRA.

The following sections of this technical memorandum will present the estimated water demands and wastewater generation rates for the proposed developments and the potential options for water and wastewater service.

2.0 PROJECTED WATER AND WASTEWATER RATES

2.1 DEVELOPMENT AREAS

Projected water and wastewater rates were estimated for the proposed developments utilizing the figures and general programming information provided by Passero. The figures provided are included in Appendix A.

Based on the programming information, the proposed development in NFR-B includes aeronautical uses for airplane maintenance, repair and overhaul (MRO), and non-aeronautical uses for commercial, manufacturing, and warehouse facilities with rail access, a multi-modal transportation facility, and public multi-use facilities such as parks and recreational areas, parking and transit uses, and potentially utility staging areas for emergency/disaster preparation. There are also approximately 800 acres of lands within the proposed development area which are listed as St. Johns River Water Management District (SJRWMD) surplus lands that do not have any noted programming and were not included with the water and wastewater estimates. It is noted that there are significant wetland areas within the surplus lands south of Big Oak Road which may limit development and, accordingly, water and wastewater needs within these areas. Figure 1 provides an overlay of the National Wetland Inventory on the proposed Airport Authority development area west of US-1.

Proposed development within the existing NRFA complex on the east side of US-1 includes MRO facilities, relocated FBO facility, and corporate hangars on the north side of Runway 13-31, and two-phase terminal expansion, FBO, corporate hangars, aviation development, non-aviation development, T-hangar buildings, maintenance, and multi-purpose buildings for aviation/professional use on the south side of Runway 13-31.

Water and wastewater rates were projected for the proposed NFRA and NFR-B development areas based on industry standards for water and wastewater for specific uses as established by the State of Florida (64E-6, FAC), typical peaking factors for commercial and industrial uses, National Fire Protection Association (NFPA) guidelines and St. Johns County fire protection codes.

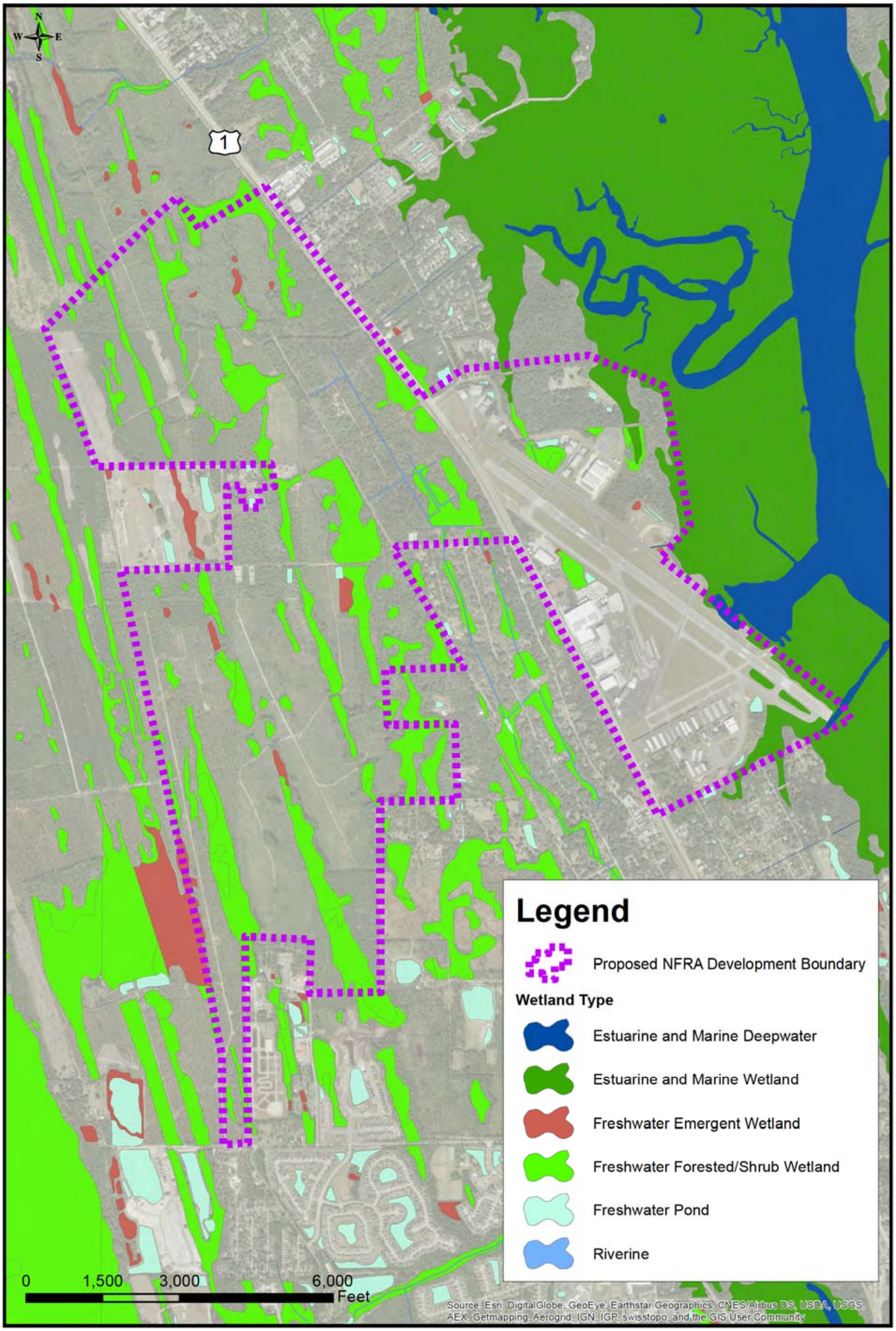


Figure 1:
Proposed Development and
National Wetland Inventory Map
Northeast Florida Regional Airport

DISCLAIMER: This map is for reference and discussion purposes only. Data provided are derived from multiple sources with varying levels of accuracy. The information shown hereon is not intended for site specific use or design.

FOUR WATERS ENGINEERING

File Name: Figure1-Wetland Path: P:\18-1016 NFRA St Augustine Aiport Aviation\16. GIS\Map Document\Figure1-Wetland.mxd Date Saved: 10/11/2018 5:36:23 PM

2.2 PROJECTED WATER DEMANDS

Tables 1 and 2 provide the projected water demands for the NFR-B and NFRA developments, respectively, including the average daily flow in gallons per day (gpd), the maximum day flow (gpd), the total peak hourly flow in gallons per minute (gpm), and the estimated fire flow requirements (gpm). Additional information regarding the water demand projections including assumptions and loading rates are provided in Appendix B.

Table 1: Projected Water Demands for NFR-B (West-Side US-1) Airport Authority Development

Facility Type	Total Water ADF Per Facility (GPD)	Total Water Max Day Per Facility (GPD)	Total Water Peak Hour Flow Per Facility (GPM)	Fire Flow Est. (GPM)
Non-Aeronautical: Comm/Mfctg/Warehouse with Rail Access	57,500	86,250	80	2,000
Aeronautical Use: Maintenance/Repair Overhaul	14,925	22,388	21	1,375
Non-Aeronautical: Public/Multi-Use	-	-		
Park/Recreational Area	1,000	1,500	4	
Restroom Facilities	2,500	3,750	10	-
Non-Aeronautical: Multi-Modal Transportation Center	23,500	35,250	33	2,000
Non-Aeronatical: Parking for Transit/Mobility	2,500	3,750	10	-
Non-Aeronautical: Emergency-Disaster Prep/Staging Area (Utility)	2,500	3,750	3	-
TOTAL NFR-B (Near/Intermediate Range)	**104,425**	**156,638**	**162**	**2,000**
Long Range Uses	60,000	90,000	83	2,500
TOTAL NFR-B (Build-Out)	**164,425**	**246,638**	**245**	**2,500**

Table 2: Projected Water Demands for NFRA (East-Side US-1)
Airport Authority Development

Facility Type	Total Water ADF Per Facility (GPD)	Total Water Max Day Per Facility (GPD)	Total Water Peak Hour Flow Per Facility (GPM)	Fire Flow Est. (GPM)
Maintenance, Repair, Overhaul Development (North end)	2,620	3,930	4	688
FBO (Relocated) (North end)	4,000	6,000	6	1,750
Corporate Hangar (North end)	4,200	6,300	6	2,500
Sub-Total North End of Runway 13-31	**10,820**	**16,230**	**15**	**2,500**
Terminal Expansion Phase 1 (South end)	1,300	1,950	3	1,500
Terminal Expansion Phase 2 (South end)	1,300	1,950	3	1,500
FBO/Corporate Hangar (South end)	3,980	5,970	6	563
Aviation Development (South end)	960	1,440	1	1,500
Non-Aviation Development (South end)	2,640	3,960	4	1,500
Non-Aviation Development (South end)	2,880	4,320	4	1,500
New T-Hangar Buildings North of Estrella Avenue (12 units each) (South end)	1,600	2,400	2	2,250
New T-Hangar Units North of Araquay Avenue (8 units each) (South end)	1,400	2,100	2	2,250
New T-Hangar Units North of Indian Bend Road (12 units each) (South end)	2,400	3,600	3	2,250
New T-Hangar Units North of Indian Bend Road (10 units each) (South end)	750	1,125	1	2,250
Multi-Purpose Bldgs (Aviation/Professional) South of Estrella Avenue (South end)	2,520	3,780	4	1,500
Multi-Purpose Bldgs (Aviation/Professional) North of Araquay Avenue (South end)	360	540	1	1,500
Multi-Purpose Bldgs (Aviation/Professional) North of Indian Bend Road (South end)	3,960	5,940	6	1,500
Maintenance (South end)	2,800	4,200	4	688
Hangar (South end)[1]	700	1,050	1	375
Multi-Purpose Bldg (Aviation/Professional) (South end)	2,700	4,050	4	1,500
Multi-Purpose Bldg (Aviation/Professional) (South end)	1,200	1,800	2	1,500
Aviation Development (South end)	3,000	4,500	4	1,500
Sub-Total South End of Runway 13-31	**36,450**	**54,675**	**52**	**2,250**
TOTAL PROPOSED NFRA	**47,270**	**70,905**	**67**	**2,500**

2.3 PROJECTED WASTEWATER DEMANDS

Tables 3 and 4 provide the projected wastewater generation rates for the NFR-B and NFRA developments, respectively, including the average daily flow (gpd) and the total peak hourly flow (gpm). All facilities except for the park/recreation area and utility staging area uses in the NFR-B and the NFRA terminal expansion were assumed to discharge 100% of the water use to the wastewater system. Additional information regarding the wastewater generation rate projections including assumptions and loading rates are provided in Appendix C.

Table 3: Projected Wastewater Generation Rates for NFR-B (West-Side US-1) Airport Authority Development

Facility Type	Total Wastewater ADF Per Facility (GPD)	Total Wastewater Peak Hour Flow Per Facility (GPM)
Non-Aeronautical: Comm/Mfctg/Warehouse with Rail Access	57,500	80
Aeronautical Use: Maintenance/Repair Overhaul	14,925	21
Non-Aeronautical: Public/Multi-Use		
Park/Recreational Area	0	0
Restroom Facilities	2,500	10
Non-Aeronautical: Multi-Modal Transportation Center	23,500	33
Non-Aeronatical: Parking for Transit/Mobility	2,500	10
Non-Aeronautical: Hurricane Prep/Staging Area (Utility)	0	0
TOTAL NFR-B (Near/Intermediate Range)	**100,925**	**154**
Long Range Uses	60,000	83
TOTAL NFR-B (Build-Out)	**160,925**	**237**

Table 4: Projected Wastewater Generation Rates for NFRA (East-Side US-1) Airport Authority Development

Facility Type	Total Wastewater ADF Per Facility (GPD)	Total Wastewater Peak Hour Flow Per Facility (GPM)
Maintenance, Repair, Overhaul Development (North end)	2,620	4
FBO (Relocated) (North end)	4,000	6
Corporate Hangar (North end)	4,200	6
Sub-Total North End of Runway 13-31	**10,820**	**15**
Terminal Expansion Phase 1 (South end)	1,300	2
Terminal Expansion Phase 2 (South end)	1,300	2
FBO/Corporate Hangar (South end)	3,980	6
Aviation Development (South end)	960	1
Non-Aviation Development (South end)	2,640	4
Non-Aviation Development (South end)	2,880	4
New T-Hangar Buildings North of Estrella Avenue (12 units each) (South end)	1,600	2
New T-Hangar Units North of Araquay Avenue (8 units each) (South end)	1,400	2
New T-Hangar Units North of Indian Bend Road (12 units each) (South end)	2,400	3
New T-Hangar Units North of Indian Bend Road (10 units each) (South end)	750	1
Multi-Purpose Bldgs (Aviation/Professional) South of Estrella Avenue (South end)	2,520	4
Multi-Purpose Bldgs (Aviation/Professional) North of Araquay Avenue (South end)	360	1
Multi-Purpose Bldgs (Aviation/Professional) North of Indian Bend Road (South end)	3,960	6
Maintenance (South end)	2,800	4
Hangar (South end)	700	1
Multi-Purpose Bldg (Aviation/Professional) (South end)	2,700	4
Multi-Purpose Bldg (Aviation/Professional) (South end)	1,200	2
Aviation Development (South end)	3,000	4
Sub-Total South End of Runway 13-31	**36,450**	**51**
TOTAL PROPOSED NFRA	**47,270**	**66**

3.0 MUNICIPAL WATER AND WASTEWATER SERVICE

The existing NFRA complex on the east side of US-1 is currently provided water and wastewater service by the City of St. Augustine. Based on an evaluation of the St. Johns County, St. Augustine, and JEA (formerly referred to as Jacksonville Electric Authority) service areas, the proposed Airport Authority developments on the west and east sides of US-1 are within the St. Augustine water and wastewater service area. Figure 2 provides an overlay of the proposed Airport Authority development areas on the City of St. Augustine's utility service area.

3.1 CITY OF ST. AUGUSTINE WATER AND WASTEWATER SYSTEMS

3.1.1 CITY OF ST. AUGUSTINE WATER FACILITIES

The City of St. Augustine (City) owns and operates a 6.5 million gallon per day (MGD) Water Treatment Plant (WTP) located on King Street and two water storage and booster pumping facilities, the South Tank Facility located off US-1 south of State Road 312 and the North Tank Facility located on US-1 approximately one mile south of the NFRA complex. The City's water demands over the last year averaged approximately 3.3 MGD. The North Tank Facility includes a 1.0 million-gallon (MGal) ground storage tank, high service pumps to boost system pressure, and disinfection facilities. The City's water distribution system extends along US-1 to Stokes Landing Road where it has an interconnection with St. Johns County's water main on the east side of US-1; the interconnection is for emergencies only.

Figure 3 provides a layout of the City's water distribution system in the vicinity of the NRFA complex which includes 12-, 8-, and 6-inch water mains on the east side of US-1, a 16-inch water main on the west side of US-1, a 6-inch interconnect crossing US-1 near the main airport and a 16-inch interconnect north of Gun Club Road.

3.1.2 CITY OF ST. AUGUSTINE WASTEWATER FACILITIES

The City owns and operates a 4.95 MGD Wastewater Treatment Plant (WWTP) located at the south end of Riberia Street. Over the last year, the average daily flow discharged to the WWTP was 3.78 MGD. The collection system is comprised of 82 pump stations and 63 miles of forcemain which transport the wastewater both by repumping and manifolding to discharge at the WWTP. The forcemain system starts as a 12-inch in the north along US-1 at Stokes Landing Road which crosses to the west side of US-1 north of the NRFA complex and Oak Lane, and increases to 24-inch and 36-inch as it routes south on the approach to the WWTP. There is an additional City-owned forcemain in the vicinity of the NFRA complex on the east side of US-1.

Currently, it appears that the NFRA complex discharges wastewater to two private pump stations which discharge into the City-owned forcemain on the east side of US-1. One private pump station is located on the north end of Runway 13-31 and discharges into the 6-inch forcemain along US-1 which transitions to an 8-inch forcemain as it moves south and collects from the other private pump

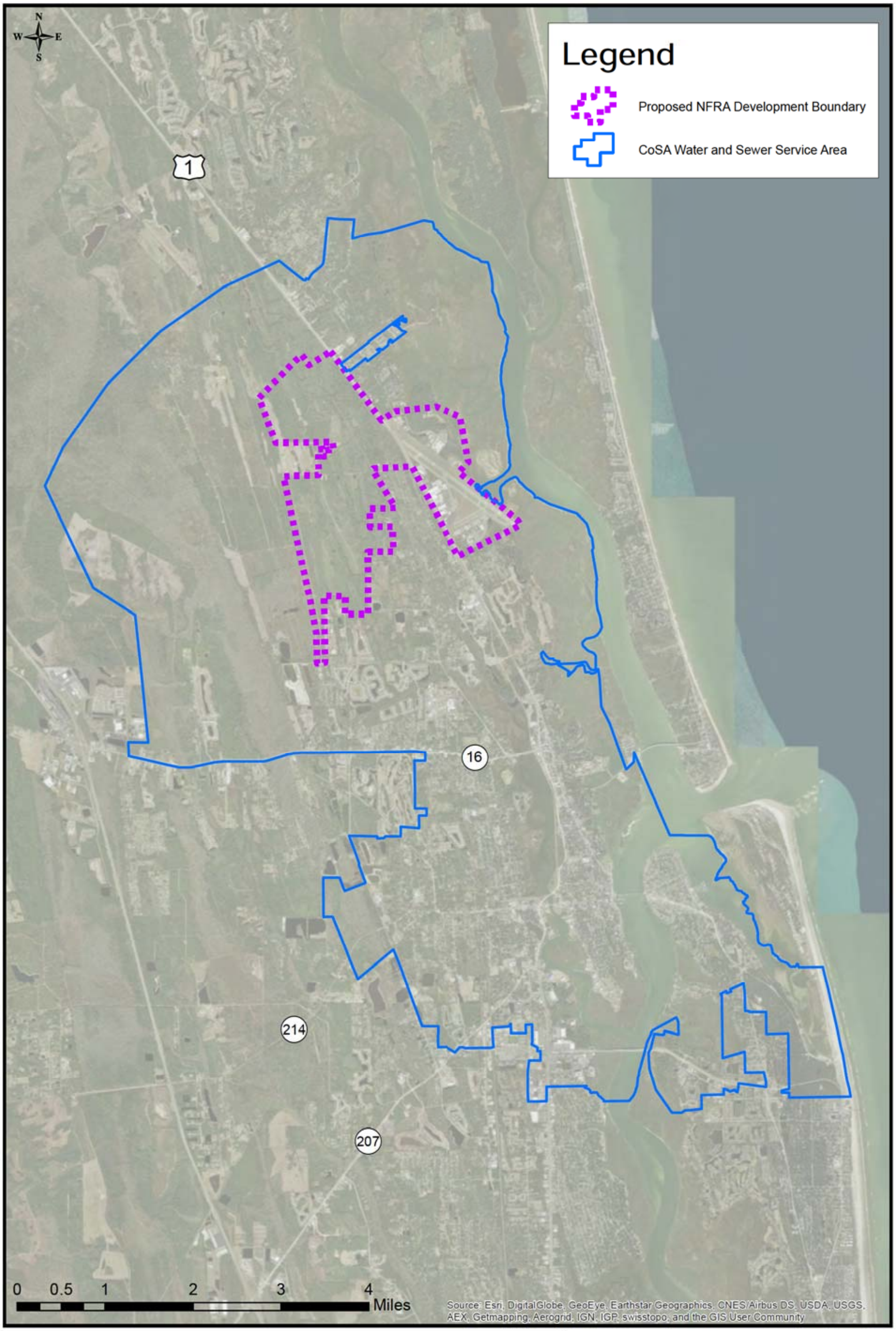


Figure 2:
Proposed Development and City of St. Augustine Water and Sewer Service Area
Northeast Florida Regional Airport

DISCLAIMER: This map is for reference and discussion purposes only. Data provided are derived from multiple sources with varying levels of accuracy. The information shown hereon is not intended for site specific use or design.

FOUR WATERS ENGINEERING

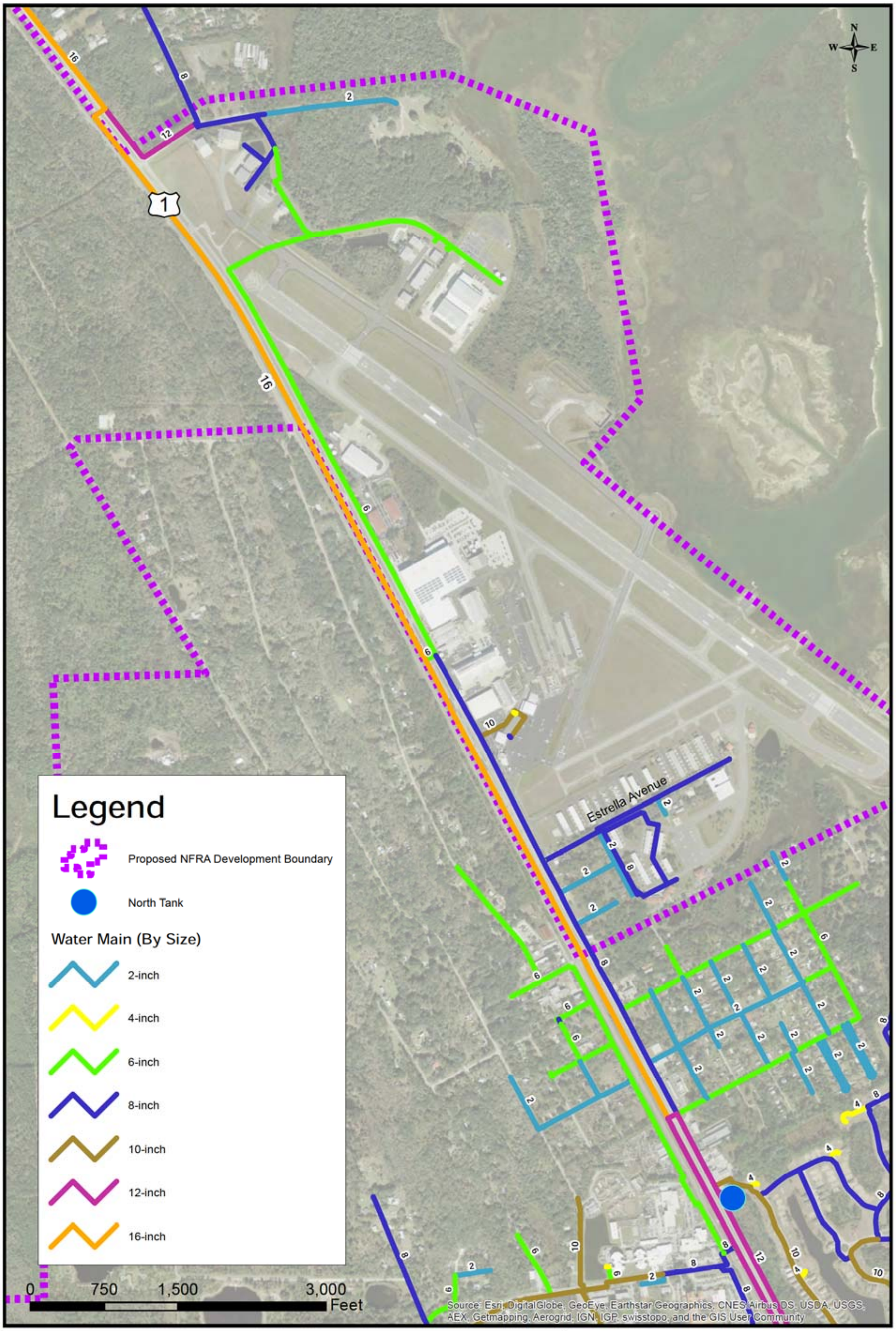


Figure 3:
Proposed Development and
CoSA Water Distribution System Vicinity Map

Northeast Florida Regional Airport

DISCLAIMER: This map is for reference and discussion purposes only. Data provided are derived from multiple sources with varying levels of accuracy. The information shown hereon is not intended for site specific use or design.

FOUR WATERS ENGINEERING

File Name: Figure3-Water Path: P:\18-1016 NFRA St Augustine Aiport Aviation\16. GIS\Map Document\Figure3-Water.mxd Date Saved: 10/12/2018 9:34:16 AM station on Estrella Avenue. The 8-inch forcemain then manifolds with City pump station PS78 and then crosses US-1 to manifold with the 12-inch forcemain on the west side which continues to the WWTP as noted previously. Figure 4 depicts the City's wastewater system as relevant to the NFRA complex and Airport Authority proposed developments.

3.2 CITY OF ST. AUGUSTINE WATER AND WASTEWATER AVAILABILITY

4Waters gathered available information from the City and other sources regarding planned and projected developments within the City's water and wastewater service areas. This information was reviewed to begin assessing planned and/or secured water and wastewater allocations, particularly around the NFRA complex and the proposed Airport Authority developments in NFR-B, and along possible wastewater discharge routes to the City's WWTP.

4Waters then developed limited scope water (WaterGEMs) and wastewater (SewerGEMs) hydraulic models to generally evaluate the availability of:

Water System

- System capacity for estimated average daily and peak hourly water flows for the proposed NFR-B and NFRA developments;
- System storage capacity and availability of estimated fire flow requirements for the proposed NFR-B and NFRA developments;
- Required conceptual improvements or interconnections in the water system to meet estimated Airport Authority water and fire flow demands.

Wastewater System

- Forcemain and pump station capacity for estimated average daily and peak hourly wastewater flows for the proposed NFR-B and NFRA developments;
- Potential impacts to existing pump stations and forcemain capacities within the route of the wastewater system to the WWTP caused by the addition of estimated wastewater flows from the proposed NFR-B and NFRA developments.

Following this evaluation, 4Waters coordinated with the City's Public Works Department and made a general request for water and wastewater availability. 4Waters provided the projected water and wastewater demands for the proposed Airport Authority developments and the information resulting from the hydraulic modeling. Based on a discussion with representatives of the Public Works Department (October 3, 2018), the City does have available water and wastewater capacity to serve the proposed Airport Authority developments. However, additional detailed evaluations of the City's water and wastewater systems will need to be conducted as the Airport Authority solidifies development plans and land uses to better determine impacts to the City's infrastructure and necessary improvements or utility extensions, and to quantify associated connection costs and/or special assessments to the Airport Authority.

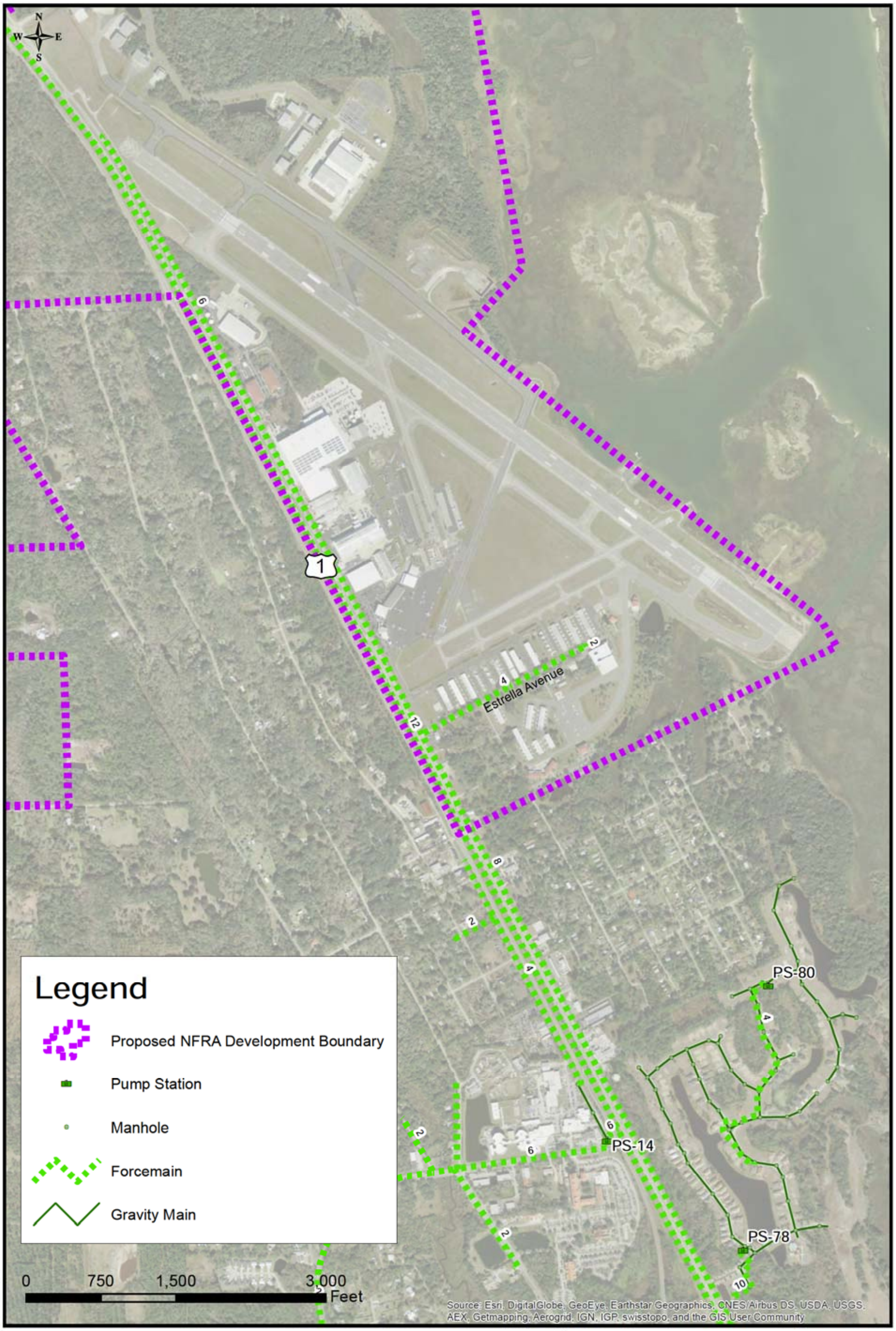


Figure 4:
Proposed Development and
CoSA Sewer Collection System Vicinity Map
Northeast Florida Regional Airport

DISCLAIMER: This map is for reference and discussion purposes only. Data provided are derived from multiple sources with varying levels of accuracy. The information shown hereon is not intended for site specific use or design.

FOUR WATERS ENGINEERING

File Name: Figure4-Sewer Path: P:\18-1016 NFRA St Augustine Aiport Aviation\16. GIS\Map Document\Figure4-Sewer.mxd Date Saved: 10/12/2018 9:44:47 AM

3.2.1 WATER SYSTEM CONNECTIONS AND IMPROVEMENTS

The water system model developed to evaluate the NFRA complex and proposed Airport Authority developments water and fire flow demands was limited in scope, generally only evaluating the water system characteristics from the City's North Tank Facility to the north side of the proposed Airport Authority development in NFR-B. The findings and general recommendations from the water system modeling are provided below.

3.2.1.1 NFR-B AIRPORT AUTHORITY DEVELOPMENT WATER SYSTEM

The NFR-B development area was modeled with a connection to the 16-inch water main on the west side of US-1. The model indicates the Average Daily Flow (ADF), Maximum Daily Flow (MDF), and Peak Hourly Flow (PHF) flows can individually be achieved with satisfactory system pressure. Additionally, the model indicates sufficient fire flow demand with MDF and system storage for the four-hour fire with satisfactory residual system pressure well above 20 psi. Table 5 below presents the requirements and results of the water modeling for the proposed NFR-B developments.

Table 5: NFR-B Water System Demands and Model Results

Requirements	Flow Demand	Minimum Pressure Results (psi)
Average Daily Flow	164,425 gpd (114 gpm)	67
Maximum Daily Flow	246,638 gpd (171 gpm)	66
Peak Hourly Flow	245 gpm	65
Maximum Fire Flow Requirements	2,500 gpm for 4 hours	45

General recommendations for a water system expansion to serve the NFR-B development area are provided below:

- Connect to the 16-inch water main on the west side of US-1 in a minimum of two locations and provide a looped water system to provide water system reliability to the development and reduce the potential for water quality issues due to stagnant water;
- Master plan the water system route and pipe sizes to serve the NFR-B proposed developments to ensure suitable fire flow. The minimum recommended connection size to the 16-inch water main on US-1, based on available development information, is 12-inch.

3.2.1.2 NFRA AIRPORT AUTHORITY DEVELOPMENT WATER SYSTEM

The projected NFRA Airport Authority water system needs were modeled and evaluated by separating the demands located north and south of Runway 13-31.

North Side of Runway 13-31

The north end, NFRA development area was modeled with service from the 8- and 6-inch existing water mains along Hawkeye View Lane. While the model indicates the ADF, MDF, and PHF flows can individually be achieved with satisfactory system pressure, there was not sufficient fire flow available through the 8- and 6-inch water mains to meet the high (2,500 gpm) potential demands of the proposed corporate box hangars.

Table 6 presents the requirements and results of the existing system water modeling for the proposed north end developments on NFRA.

Table 6: North End NFRA Water System Demands and Model Results – Existing System

North Side of Runway 13-31 with Existing Water System		
Requirements	**Flow Demand**	**Minimum Pressure Results (psi)**
Average Daily Flow	10,820 gpd (8 gpm)	67
Maximum Daily Flow	16,230 gpd (11 gpm)	66
Peak Hourly Flow	15 gpm	65
Maximum Fire Flow Requirements	2,500 gpm for 2 hours	8

As there is already a 16-inch interconnect between the water mains on the west (16-inch) and east (12-inch) side of US-1 near the proposed north end developments on NFRA, modifications to the water mains along Gun Club Road and Hawkeye View Lane were evaluated to achieve the proposed potential fire flows. Upgrades of the 8- and 6-inch water mains along Gun Club Road and Hawkeye View Lane from the 12-inch water main on Gun Club Road to the end of the north-south segment on Hawkeye View Lane to both 10- and 12-inch water mains were evaluated. Both upgrade scenarios indicated acceptable fire flow capacity with satisfactory residual system pressure above 20 psi.

Table 7 presents the requirements and results of the upgraded system water modeling for the proposed north end developments on NFRA for both the 10-inch and 12-inch water main upgrade scenarios.

Table 7: North End NFRA Water System Demands and Model Results – Upgraded System

North Side of Runway 13-31 with Upgraded Water System			
Requirements	**Flow Demand**	**Minimum Pressure Results (psi) with 10-Inch Water Main**	**Minimum Pressure Results (psi) with 12-Inch Water Main**
Average Daily Flow	10,820 gpd (8 gpm)	67	67
Maximum Daily Flow	16,230 gpd (11 gpm)	66	67
Peak Hourly Flow	15 gpm	66	66
Maximum Fire Flow Requirements	2,500 gpm for 2 hours	33	42

Upgrades to the existing water mains from the 12-inch water main along Gun Club Road to the end of the north-south segment of Hawkeye View Lane, are recommended. While both 10- or 12-inch water main improvements provide sufficient water service and fire flow capability for the identified proposed north end improvements (corporate hangars, MRO, and relocated FBO), the needs of the 19-acre Future Aviation Development Area to the northeast are unknown. Prior to making water main improvements along Gun Club Road and Hawkeye View Lane, an evaluation of the water and fire flow demands of this future development area should be completed to determine whether 10- or 12-inch water main would better serve the development. Opportunities to loop the water system should also be evaluated as development proceeds to provide water system reliability.

<u>South Side of Runway 13-31</u>

The south end development area of NFRA was modeled with service from the 8-inch existing water mains along US-1 and Estrella Avenue. While the model indicates the ADF, MDF, and PHF flows can individually be achieved with satisfactory system pressure, there was not sufficient fire flow available through the 8-inch water mains to meet the estimated 2,250 gpm potential demands of the proposed T-Hangar buildings in the south end development. This has also been documented by St. Augustine fire hydrant testing in the area.

Table 8 presents the requirements and results of the existing system water modeling for the proposed south end developments on NFRA.

Table 8: South End of NFRA Water System Demands and Model Results – Existing System

South Side of Runway 13-31 with Existing Water System		
Requirements	**Flow Demand**	**Minimum Pressure Results (psi)**
Average Daily Flow	36,450 gpd (25 gpm)	68
Maximum Daily Flow	54,675 gpd (38 gpm)	66
Peak Hourly Flow	52 gpm	65
Maximum Fire Flow Requirements	2,250 gpm for 2 hours	14 for 8-inch on US-1 (-) 40 for 8-inch at end Estrella

Various water main improvements were evaluated with the model to achieve the proposed potential fire flows for the south end. Based on the evaluation, construction of a 16-inch interconnect between the existing US-1 west side (16-inch) and east side (8-inch) water mains near Estrella Avenue provided the most improvement for the south end water system near US-1, however additional 8-inch water main looping was needed along Indian Bend Road from the east end of the 8-inch water main on Estrella Avenue to tie-in to the 8-inch water main on US-1. The model results with these improvements indicated acceptable fire flow capacity with satisfactory residual system pressure above 20 psi.

Table 9 presents the requirements and results of the upgraded system water modeling for the proposed south end developments on NFRA.

Table 9: South End of NFRA Water System Demands and Model Results – Upgraded System

South Side of Runway 13-31 with Upgraded Water System		
Requirements	**Flow Demand**	**Minimum Pressure Results (psi) with 16-Inch Interconnect**
Average Daily Flow	36,450 gpd (25 gpm)	68
Maximum Daily Flow	54,675 gpd (38 gpm)	67
Peak Hourly Flow	52 gpm	65
Maximum Fire Flow Requirements	2,250 gpm for 2 hours	43 for 8-inch on US-1 24 for 8-inch at end Estrella

Construction of a 16-inch interconnect between the US-1 west and east side water mains and an 8-inch water main loop along Indian Bend Road are recommended to serve the water system needs of the proposed south end developments of NFRA. It is noted that this evaluation strictly focused on the backbone water system in the south end area; it did not include the internal water system along the roads south of Estrella Avenue. Other improvements to the water main system in the area south of Estrella Avenue may be necessary including additional water main upgrades and looping of the system. Many of these water mains are 2-inch which cannot be used for fire hydrant service. Such evaluation is beyond the scope of this project. Figure 5 depicts the general water system improvements recommended to serve the development areas.

3.2.2 WASTEWATER SYSTEM CONNECTIONS AND IMPROVEMENTS

The wastewater system model created to evaluate the NFRA complex and proposed Airport Authority developments wastewater generation rates included all of the pump stations on the forcemain from the north end of the City's system to the wastewater treatment plant (WWTP). This included 20 pump stations. The findings and general recommendations from the wastewater system modeling are provided below.

3.2.2.1 NFR-B AIRPORT AUTHORITY DEVELOPMENT WASTEWATER SYSTEM

The hydraulic capacity of a wastewater system is based on the capacity to transport the peak hourly flow from an area. The projected peak hourly wastewater flow generated from the NFR-B development area is 237 gpm. Based on discussions with City Public Works Department representatives, the recommended connection point to the City's forcemain system would be along the 12-inch forcemain on the west side of US-1 south of Oak Avenue. The wastewater model was setup and run accordingly. The model results indicate sufficient capacity in the 12-inch and downstream forcemains and resulted in an increased discharge at the WWTP of 237 gpm. The model did indicate high flow levels and potential overflows (surcharges) at the following pump stations: PS2, PS4, PS62, and PS78, however, this was also indicated at these stations without the additional NFR-B development flows, although not as significant.

Given the acreage of the proposed NFR-B development, it is anticipated that multiple pump stations would be required to provide wastewater collection. These various pump stations could then discharge to a master pump station located central to the site which connects and discharges to the City's 12-inch forcemain along west US-1 to the south of Oak Avenue. As the proposed development plans progress, the City would need to conduct additional hydraulic evaluation of the other pump stations on the City system to ensure surcharging of the noted pump stations, or others, are not a concern or to develop necessary improvements.

3.2.2.2 NFRA AIRPORT AUTHORITY DEVELOPMENT WASTEWATER SYSTEM

As with the water system evaluation, the projected NFRA wastewater system needs were modeled and evaluated by separating the demands located north and south of Runway 13-31.

<u>North Side of Runway 13-31</u>

The projected peak hourly wastewater flow generated from the NFRA north end development area is 15 gpm. As noted previously, it appears that the NFRA complex on the north end discharges to a private pump station located on the north end of Runway 13-31 which discharges into the City's 6-inch forcemain along US-1. It was assumed that the proposed north end development wastewater

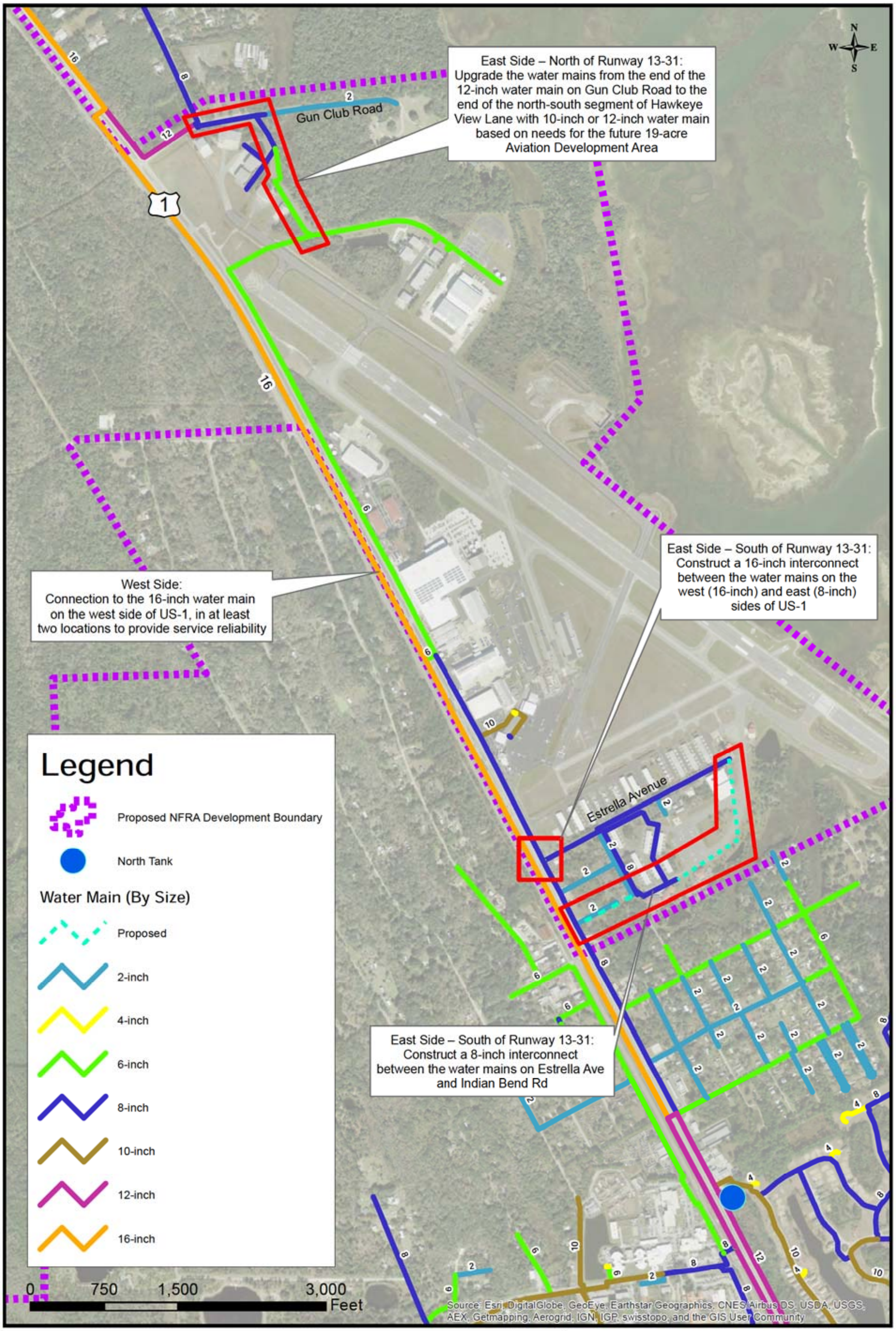


Figure 5:
Proposed Water Distribution Upgrades

Northeast Florida Regional Airport

DISCLAIMER: This map is for reference and discussion purposes only. Data provided are derived from multiple sources with varying levels of accuracy. The information shown hereon is not intended for site specific use or design.

FOUR WATERS ENGINEERING

File Name: Figure5-WaterUpgrades Path: P:\18-1016 NFRA St Augustine Aiport Aviation\16. GIS\Map Document\Figure5-WaterUpgrades.mxd Date Saved: 11/9/2018 3:06:16 PM flows would similarly be discharged to this private pump station and into the City's 6-inch forcemain. The wastewater model for the north end development was set up and run accordingly. The model results indicate sufficient capacity in the 6-inch and downstream forcemains and resulted in an increased discharge at the WWTP of 15 gpm. No surcharges at other pump stations were indicated by the model. As development plans progress, the City would need to conduct additional hydraulic evaluation of the other pump stations on the City system to ensure there are no concerns with the additional flow, if it is over that already allocated to the north end NFRA complex pump station.

South Side of Runway 13-31

The projected peak hourly wastewater flow generated from the NFRA south end development area is 51 gpm. As previously noted, it appears that the NFRA complex on the south end discharges to a private pump station located near the end of Estrella Avenue which discharges to a City-owned 4-inch forcemain on Estrella Avenue and manifolds into the 8-inch forcemain on US-1. It was assumed that the proposed south end development wastewater flows would similarly be discharged to this private pump station and into the City's 4- and 8-inch forcemains. The wastewater model for the south end development was set up and run accordingly. The model results indicate sufficient capacity in the 4-, 8-inch and downstream forcemains and resulted in an increased discharge at the WWTP of 51 gpm. No surcharges at other pump stations were indicated by the model. As development plans progress, the City would need to conduct additional hydraulic evaluation of the other pump stations on the City system to ensure there are no concerns with the additional flow, if it is over that already allocated to the south end NFRA complex pump station.

Figure 6 indicates the recommended discharge and connection locations to the City's wastewater system for all of the Airport Authority proposed development areas.

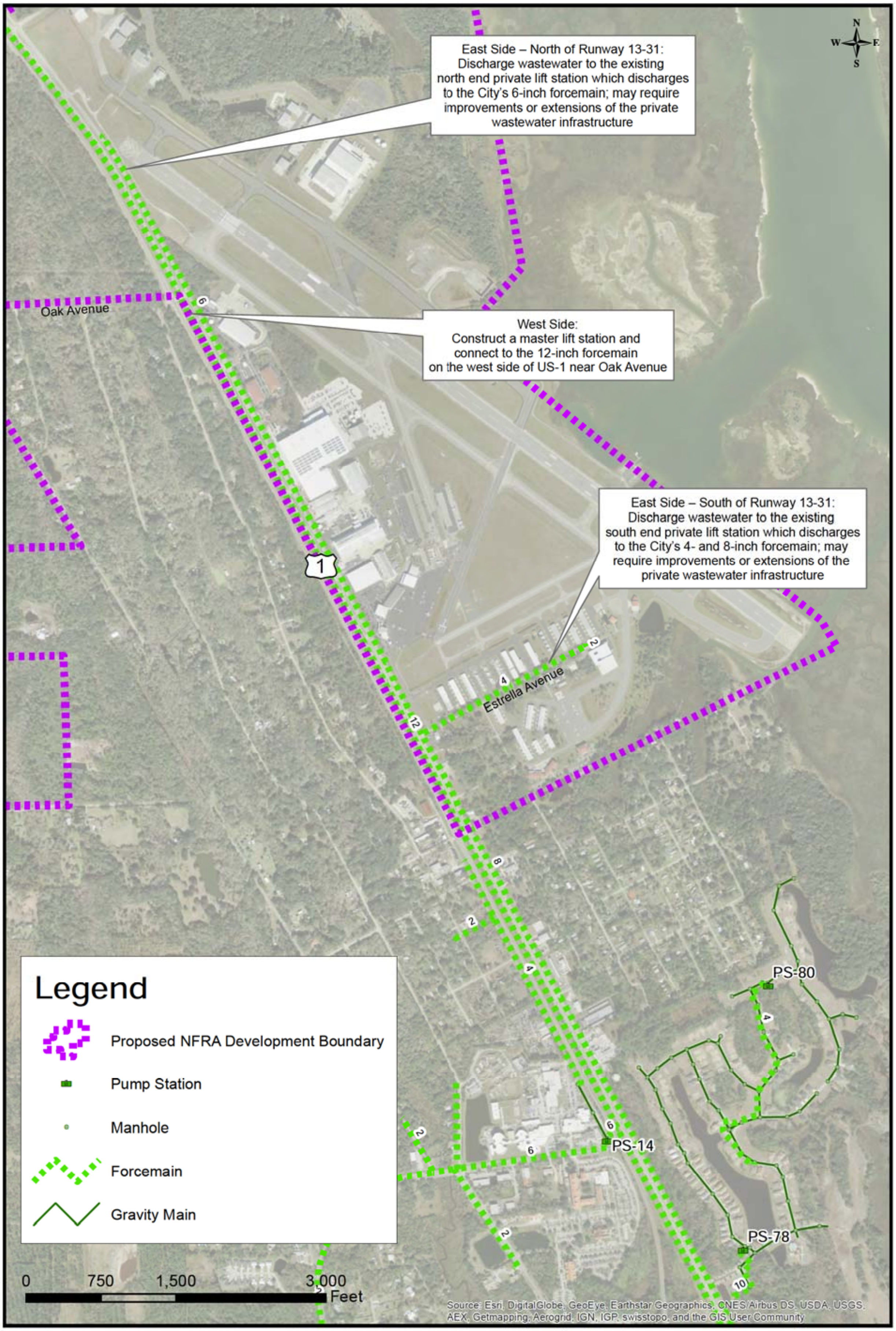


Figure 6:
Proposed Sewer Collection Upgrades

Northeast Florida Regional Airport

DISCLAIMER: This map is for reference and discussion purposes only. Data provided are derived from multiple sources with varying levels of accuracy. The information shown hereon is not intended for site specific use or design.

FOUR WATERS ENGINEERING

File Name: Figure6-Sewer Upgrades Path: P:\18-1016 NFRA St Augustine Aiport Aviation\16. GIS\Map Document\Figure6-Sewer Upgrades.mxd Date Saved: 10/12/2018 10:22:41 AM

4.0 ON-SITE WATER AND WASTEWATER FACILITIES

Based on the evaluation of the projected water and wastewater needs for the proposed Airport Authority developments, discussions with the City of St. Augustine, and the results of the hydraulic models, water and wastewater service is available from the City although some system improvements and/or extensions may be necessary. Since water and wastewater service can be provided by the City, the use of on-site water and wastewater treatment facilities becomes a much less attractive option from a scheduling, financial, and permitting standpoint. Planning, design and permitting – particularly domestic wastewater treatment and consumptive use permitting for water supply - can take years and is exponentially more expensive than for water system extensions and wastewater collection and transmission systems. Also, given that the Airport Authority proposed developments are located within the City's water and wastewater service areas, there are likely legal constraints to constructing on-site water and wastewater treatment facilities. For these reasons and because water and wastewater service is available from the City, the option of on-site water and wastewater treatment facilities was eliminated as a suitable solution and was not explored further.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Passero authorized 4Waters to provide engineering assistance to evaluate feasible solutions for water and wastewater service for proposed Airport Authority developments on both the east and west sides of US-1 in the vicinity of the Northeast Florida Regional Airpor in support of their Master Plan Update. Feasible solutions were generally considered to be water and/or wastewater service from a municipal utility or on-site facilities for water and/or wastewater treatment with reclaimed water discharge or a discharge to surface water/wetlands. Evaluation of the municipal utilities in the area, St. Johns County, St. Augustine, and JEA, indicated that the proposed Airport Authority developments are within the City of St. Augustine's water and wastewater service areas.

4Waters developed a detailed assessment of the programming for the Airport Authority's proposed developments on both the NFR-B and NFRA areas and the estimated associated water and wastewater service needs. The projected water system demands included an evaluation of average daily flow, maximum daily flow, peak hourly flow, and fire flow demands for each development area – NFR-B, north end of NFRA and south end of NFRA. The projected wastewater system demands included an evaluation of the average daily flow and peak hourly flow for each area. An analysis of the City's water and wastewater treatment facilities available capacity and planned developments and secured allocations was conducted. 4Waters then utilized available information for the City's water and wastewater systems to develop hydraulic models and identify potential service and impacts to the systems by serving the proposed Airport Authority developments.

Following these evaluations, 4Waters contacted the City Public Works Department to review the water and wastewater needs of the Airport Authority developments, the model results, and to discuss the availability of City water and wastewater service. The City representatives indicated that there is available capacity to provide both water and wastewater service to the proposed Airport Authority developments. However, additional detailed evaluations of the City's water and wastewater systems will need to be conducted as the Airport Authority solidifies development plans to better determine impacts to the City's infrastructure and necessary improvements or utility extensions, and to quantify associated connection costs and/or special assessments to the Airport Authority.

In summary, the following general infrastructure connections or improvements are recommended to provide water and wastewater service to the proposed NFR-B and NFRA Airport Authority developments from the City of St. Augustine.

NFR-B (West Side)

- Water Service: Connection to the 16-inch water main on the west side of US-1, in at least two locations to provide service reliability;
- Wastewater Service: Construct a master pump station for the development and connect to the 12-inch forcemain on the west side of US-1 near Oak Avenue.

NFRA (East Side) – North of Runway 13-31

- Water Service: Upgrade the water mains from the end of the 12-inch water main on Gun Club Road to the end of the north-south segment of Hawkeye View Lane with 10-inch or 12-inch water main based on needs for the future 19-acre Aviation Development Area;
- Wastewater Service: Discharge wastewater to the existing north end private pump station which discharges to the City's 6-inch forcemain; may require improvements or extensions of the private wastewater infrastructure.

NFRA (East Side) – South of Runway 13-31

- Water Service:
  - Construct a 16-inch interconnect between the water mains on the west (16-inch) and east (8-inch) sides of US-1;
  - Construct an 8-inch water main loop along Indian Bend Road from the east end of Estrella Avenue to tie-in to the 8-inch water main on US-1;
  - Additional internal water main upgrades and looping may be required within the NFRA complex south of Estrella Avenue;
- Wastewater Service: Discharge wastewater to the existing south end private pump station which discharges to the City's 4- and 8-inch forcemains; may require improvements or extensions of the private wastewater infrastructure.

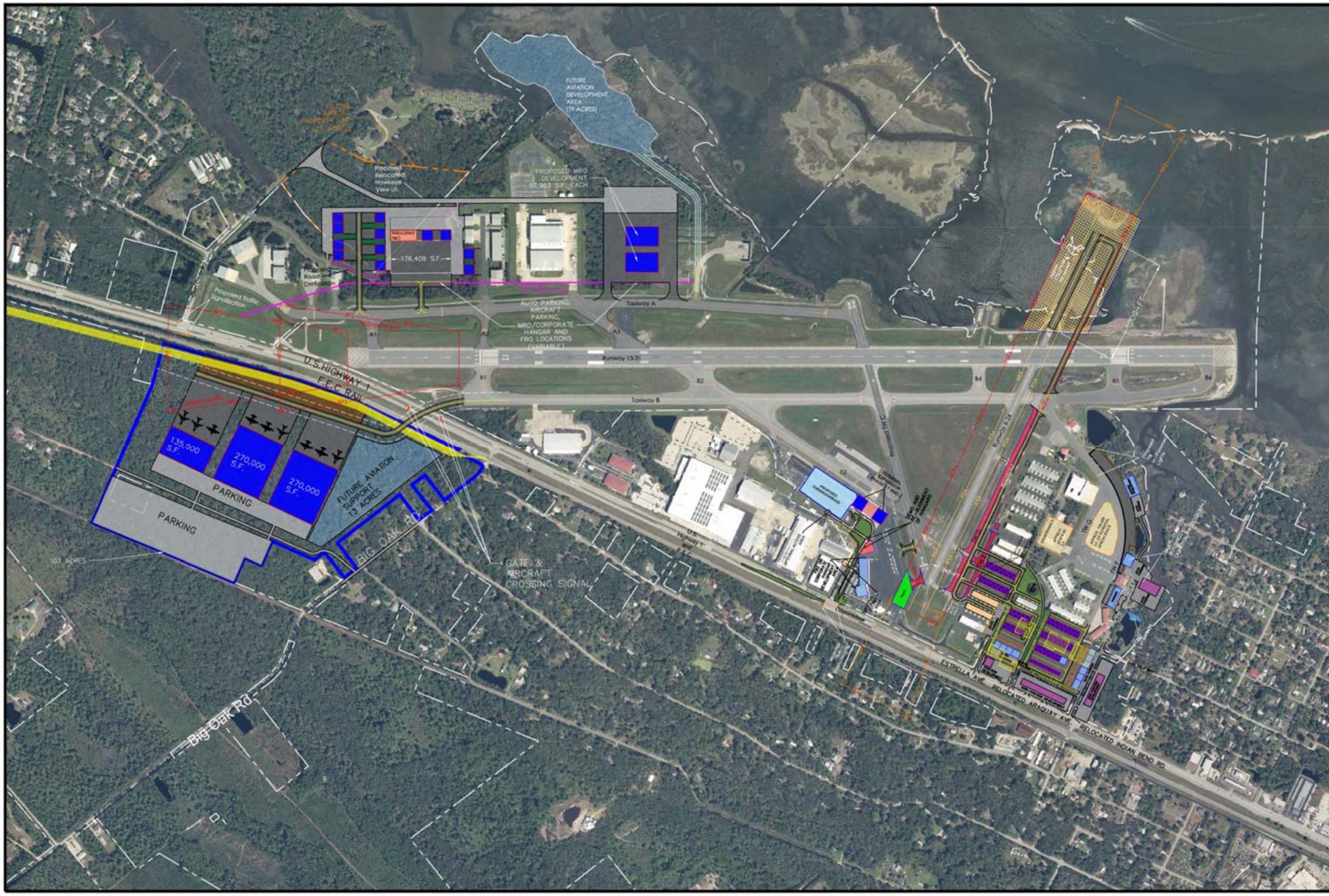
Since water and wastewater service can be provided by the City, the use of on-site water and wastewater treatment facilities is a much less attractive option from a scheduling, financial, permitting, and potentially legal standpoint. Planning, design and permitting for treatment facilities and groundwater supply can take years and is exponentially more expensive than for water system extensions and wastewater collection and transmission systems. There are also likely legal constraints to constructing on-site water and wastewater treatment facilities given that the proposed development areas are located within the City's water and wastewater service areas.

In conclusion, 4Waters recommends the Airport Authority begin coordination and negotiations with the City of St. Augustine to secure the necessary water and wastewater capacity and develop an understanding of connection costs and any special assessment or improvement fees.

APPENDIX A

JUNE 2018 FIGURES PROVIDED BY PASSERO ASSOCIATES FOR

NORTHEAST FLORIDA REGIONAL AIRPORT



PASSERO ASSOCIATES

Engineering • Architecture

www.passero.com

NFRA

Northeast Florida Regional Airport

Fly smart!

Client:

St. Augustine-St. Johns County Airport Authority

4900 U.S. Highway 1, North

St. Augustine, FL 32095

Passero Associates

Principal-in-Charge: Andrew M. Holesko

Project Manager: Lisa Cheung

Designed by: Chris Johnson

Revisions

No.	Date	By	Description
1			

NFRA Preferred Alternative

Northeast Florida Regional Airport

Town/City: City of St. Augustine

County: St. Johns

State: Florida

Project No.

23081.70

Drawing No.

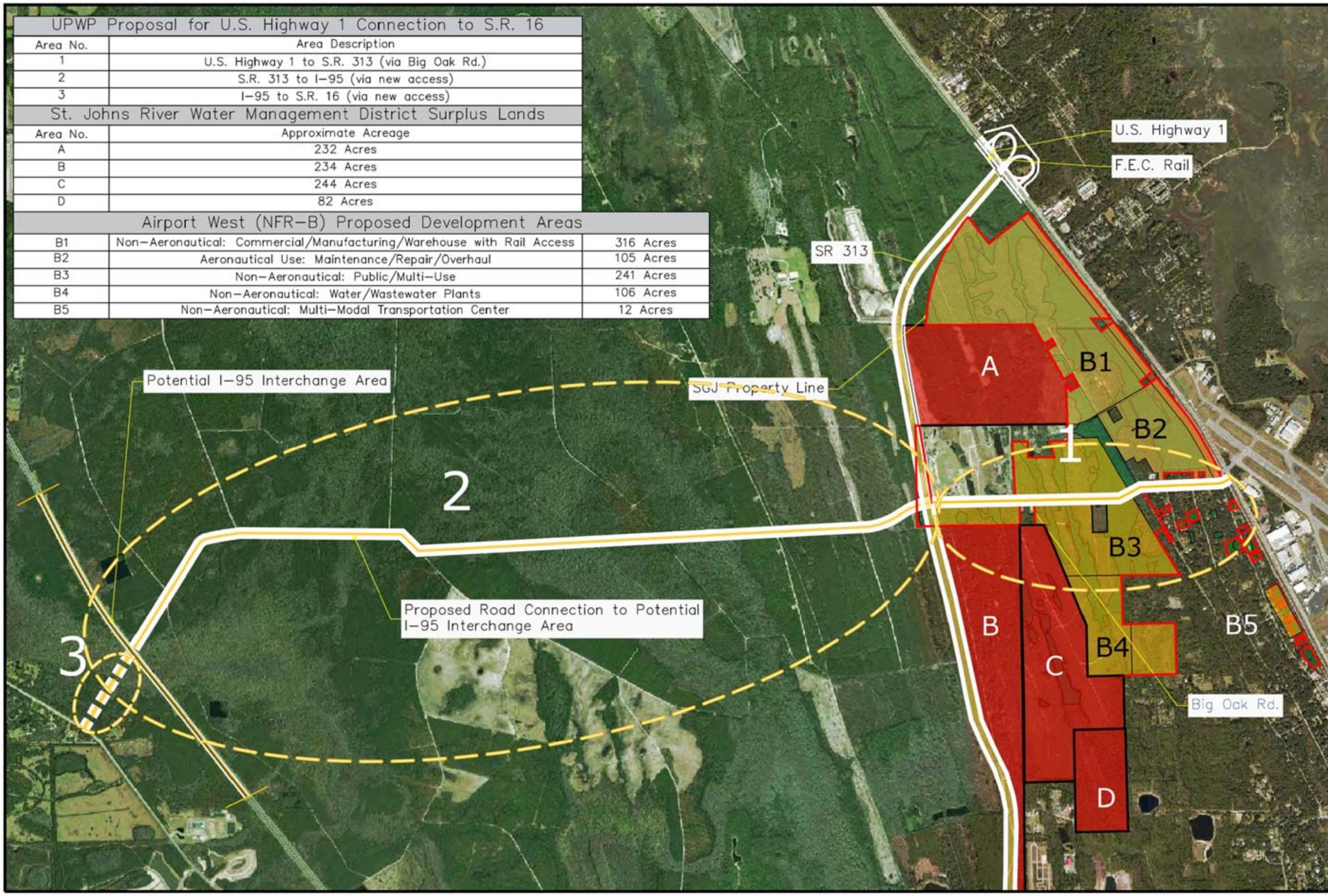
Date

June 2018

UPWP Proposal for U.S. Highway 1 Connection to S.R. 16	
Area No.	Area Description
1	U.S. Highway 1 to S.R. 313 (via Big Oak Rd.)
2	S.R. 313 to I–95 (via new access)
3	I–95 to S.R. 16 (via new access)

St. Johns River Water Management District Surplus Lands	
Area No.	Approximate Acreage
A	232 Acres
B	234 Acres
C	244 Acres
D	82 Acres

Airport West (NFR–B) Proposed Development Areas		
B1	Non–Aeronautical: Commercial/Manufacturing/Warehouse with Rail Access	316 Acres
B2	Aeronautical Use: Maintenance/Repair/Overhaul	105 Acres
B3	Non–Aeronautical: Public/Multi–Use	241 Acres
B4	Non–Aeronautical: Water/Wastewater Plants	106 Acres
B5	Non–Aeronautical: Multi–Modal Transportation Center	12 Acres



PASSERO ASSOCIATES
Engineering • Architecture
www.passero.com

NFRA
Northeast Florida Regional Airport
Fly Smart!

Client:
St. Augustine-St. Johns County Airport Authority
4900 U.S. Highway 1, North
St. Augustine, FL 32095

Passero Associates

Principal-in-Charge: Andrew M. Holesko
Project Manager: Lisa Cheung
Designed by: Chris Johnson

Revisions

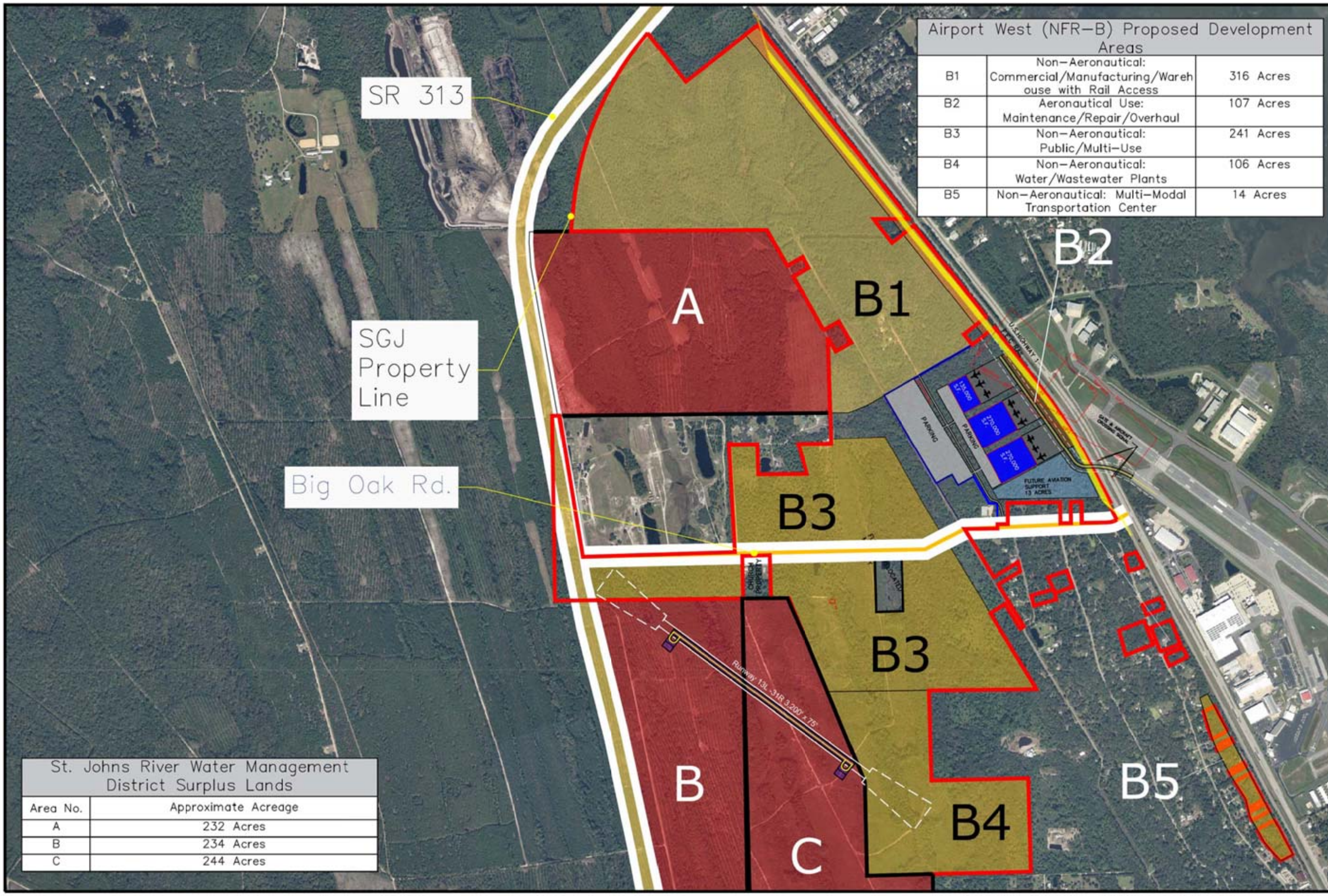
NFRB Proposed Development

Northeast Florida Regional Airport
Town/City: City of St. Augustine
County: St. Johns
State: Florida

Project No. 23081.70

Drawing No.

Date: June 2018



Airport West (NFR-B) Proposed Development Areas		
B1	Non-Aeronautical: Commercial/Manufacturing/Warehouse with Rail Access	316 Acres
B2	Aeronautical Use: Maintenance/Repair/Overhaul	107 Acres
B3	Non-Aeronautical: Public/Multi-Use	241 Acres
B4	Non-Aeronautical: Water/Wastewater Plants	106 Acres
B5	Non-Aeronautical: Multi-Modal Transportation Center	14 Acres

St. Johns River Water Management District Surplus Lands	
Area No.	Approximate Acreage
A	232 Acres
B	234 Acres
C	244 Acres

PASSERO ASSOCIATES
Engineering • Architecture
www.passero.com

NFRA
Northeast Florida Regional Airport
Fly Smart!

Client:
St. Augustine-St. Johns County Airport Authority
4900 U.S. Highway 1, North
St. Augustine, FL 32095

Passero Associates

Principal-in-Charge: Andrew M. Holesko
Project Manager: Lisa Cheung
Designed by: Chris Johnson

Revisions

NFRB Proposed Development

Northeast Florida Regional Airport

Project No. 23081.70

Drawing No.

Date: June 2018

APPENDIX B

PROJECTED WATER DEMANDS FOR NFR-B (WEST SIDE) AND NFRA (EAST SIDE)

US-1 AIRPORT AUTHORITY DEVELOPMENT

Water Demand Estimates for NFR-B (West Side of US-1)

Facility Type	Acreage	Characteristics				Potential Water Demand Average Daily Flow (GPD)				Total Water ADF Per Facility (GPD)	Total Water Max Day Per Facility (GPD)	Total Water PHF Per Facility (GPM)	Fire Flow Est. (GPM)
		Facility Est. Area (SF)	Employees	Bays (Loading or Work)	Water Closets	by Area	by Employee	by Bay (Loading/Work)	by Water Closet				
Non-Aeronautical: Comm/Mfctg/Warehouse with Rail Access[1]	316	750,000	1,500			37,500	20,000			57,500	86,250	80	2,000
Aeronautical Use: Maintenance/Repair Overhaul[2]	107	675,000	250	9		10,125	3,000	1,800		14,925	22,388	21	1,375
Non-Aeronautical: Public/Multi-Use[3]													
Park/Recreational Area	241					1,000				1,000	1,500	4	
Restroom Facilities					10				2,500	2,500	3,750	10	0
Non-Aeronatical: Multi-Modal Transportation Center[4]	14		1,500	10			22,500	1,000		23,500	35,250	33	2,000
Non-Aeronatical: Parking for Transit/Mobility[5]					10				2,500	2,500	3,750	10	0
Non-Aeronautical: Emergency-Disaster Prep/Staging Area (Utility)[6]						2,500				2,500	3,750	3	0
TOTAL NFR-B (Near/Intermediate Range)										**104,425**	**156,638**	**162**	**2,000**
Long Range Uses[7]			3,000				60,000			60,000	90,000	83	2500
TOTAL NFR-B (Build-Out)										**164,425**	**246,638**	**245**	**2,500**

Source: 64E-6, FAC

Factories, No showers		15	gpd	per employee/8hr shift
Factories, with Showers		25	gpd	per employee/8hr shift
Office Bldg		15	gpd	per employee/8hr shift
	or	15	gpd	per 100 sf of floor space (whichever greater)
Warehouse		15	gpd	per employee/8hr shift
	add	100	gpd	per loading bay
Repair Shop		200	gpd	per bay
Water Closet (Toilet/Sink)		250	gpd	each

Notes on Water Usage:

1) Assumed one-third for each use: Commercial (Office) by square foot of floor space, Manufacturing (Factory) with showers with one-third of employees and Warehouse (bays unknown) with one-third of employees; assume is 12-hour shifts for Manufacturing and Warehouse; 24 hour operation.

2) Assumed 10% used for Office by square foot of floor space, Manufacturing (Factory) without showers for 80% of employees, and 9 bays; 24 hour operation.

3) Assume primarily passive park/recreational area with limited water use and restroom facilities; peak factor 3.0; 12 hour operation.

4) Assume similar to Warehouse; 24 hour operation; peak factor 2.0.

5) Assume restrooms only use; 12 hour operation; peak factor 3.0.

6) General use; assume most not returned to wastewater system; 24 hour operation; peak factor 2.0.

7) Long Range Use: Assumed half of employees in factory area; other half in office or warehouse. Assume 12-hour shifts for Manufacturing/Warehous; 24 hour operation.

Notes on Fire Flow Requirements:

Fire Flows: For large industrial buildings and large aircraft maintenance hangars, assume are Type 1 construction and will require the building to have a sprinkler system. Use of a sprinkler system reduces the fire flow requirement by 75% (Table 18.4.5.1.2 NFPA Fire Code).

Water Demand Estimates for NFRA (East Side of US-1)

Facility Type	Quantity	Characteristics					Potential Water Demand Average Daily Flow (GPD)						Total Water ADF Per Facility (GPD)	Total Water Max Day Per Facility (GPD)	Total Water PHF Per Facility (GPM)	Fire Flow Est. (GPM)
		Facility Est. Area (SF) Each	Employees	Passengers	Bays (Loading or Work)	Water Closets	by Area	by Employee	by Passenger	by Bay (Loading/Work)	by Water Closet	by Other				
Maintenance, Repair, Overhaul Development (North end)[1]	2	58,000	40		2		1,740	480		400			2,620	3,930	4	688
FBO (Relocated) (North end)[2]	1	24,000				8	1,800				2,000	200	4,000	6,000	6	1,750
Corporate Hangar (North end)[3]	12	8,000				12					3,000	1,200	4,200	6,300	6	2,500
Sub-Total North End													**10,820**	**16,230**	**15**	**2,500**
Terminal Expansion Phase 1 (South end)[4]	1	14,400	20	250				300	1,000				1,300	1,950	3	1,500
Terminal Expansion Phase 2 (South end)[4]	1	14,400	20	250				300	1,000				1,300	1,950	3	1,500
FBO/Corporate Hangar (South end)[5]	1	43,200				10	1,080				2,500	400	3,980	5,970	6	563
Aviation Development (South end)[6]	1	6,400					960						960	1,440	1	1,500
Non-Aviation Development (South end)[6]	1	17,600					2,640						2,640	3,960	4	1,500
Non-Aviation Development (South end)[6]	1	19,200					2,880						2,880	4,320	4	1,500
New T-Hangar Buildings North of Estrella Avenue (12 units each) (South end)[7]	2					4					1,000	600	1,600	2,400	2	2,250
New T-Hangar Units North of Araquay Avenue (8 units each) (South end)[7]	2					4					1,000	400	1,400	2,100	2	2,250
New T-Hangar Units North of Indian Bend Road (12 units each) (South end)[7]	3					6					1,500	900	2,400	3,600	3	2,250
New T-Hangar Units North of Indian Bend Road (10 units each) (South end)[7]	1					2					500	250	750	1,125	1	2,250
Multi-Purpose Bldgs (Aviation/Professional) South of Estrella Avenue (South end)[8]	4	4,200					2,520						2,520	3,780	4	1,500
Multi-Purpose Bldgs (Aviation/Professional) North of Araquay Avenue (South end)[8]	1	2,400					360						360	540	1	1,500
Multi-Purpose Bldgs (Aviation/Professional) North of Indian Bend Road (South end)[8]	6	4,400					3,960						3,960	5,940	6	1,500
Maintenance (South end)[9]	1	70,000	25		2		2,100	300		400			2,800	4,200	4	688
Hangar (South end)[10]	1	16,000				2					500	200	700	1,050	1	375
Multi-Purpose Bldg (Aviation/Professional) (South end)[8]	1	18,000					2,700						2,700	4,050	4	1,500
Multi-Purpose Bldg (Aviation/Professional) (South end)[8]	1	8,000					1,200						1,200	1,800	2	1,500
Aviation Development (South end)[6]	1	20,000					3,000						3,000	4,500	4	1,500
Sub-Total South End													**36,450**	**54,675**	**52**	**2,250**
TOTAL PROPOSED IN NFRA AIRPORT COMPLEX													**47,270**	**70,905**	**67**	**2,500**

Source: 64E-6, FAC

Airports, per passenger		4	gpd	per passenger
Airports, per employee		15	gpd	per employee/8hr shift
Factories, No showers		15	gpd	per employee/8hr shift
Factories, with Showers		25	gpd	per employee/8hr shift
Office Bldg		15	gpd	per employee/8hr shift
	or	15	gpd	per 100 sf of floor space (whichever greater)
Warehouse		15	gpd	per employee/8hr shift
	add	100	gpd	per loading bay
Repair Shop		200	gpd	per bay
Water Closet (Toilet/Sink)		250	gpd	each
Showers, Per Person		10	gpd	per person

Notes provided on following page.

Notes provided on following page.

Notes on Water Usage:

1) Assumed 10% used for Office by square foot of floor space, Manufacturing (Factory) without showers for 80% of employees, and 2 bays; 24 hour operation.

2) Assumed FBO provides fueling services and other support services to aviation crews - bathrooms, showers, vending, etc. Assume up to 20 crew members shower daily. Treat 50% of facility area as office use.

3) Assumed Corporate Hangars have one water closet (no shower) each and utilize 100 gpd in other water uses. Primarily plane storage, some office space, some maintenance work.

4) Assumed terminals would require 20 additional employees and approximately 250 additional passengers each. Assume 16 hrs/day operations.

5) Assume half use as FBO and half use as Corporate Hangar. Assumed FBO provides fueling services and other support services to aviation crews - bathrooms, showers, vending, etc. Assume up to 20 crew members shower daily. Treat 50% of facility area as office use.
Assumed Corporate Hangars have two water closets (no shower) each and utilize 200 gpd in other water uses.

6) Aviation and Non-Aviation Development: assume is similar to office space use. Use area to determine water use.

7) Assume each T-Hangar Building has two water closets. Assume each unit could use up to 50 gallons per day; but only 50% concurrent use.

8) Multi-Purpose Buildings: assume is similar to office space use. Use area to determine water use.

9) Assumed 10% used for Office by square foot of floor space, Manufacturing (Factory) without showers for 80% of employees, and 2 bays; 24 hour operation.

10) Assumed Hangars has two water closets (no shower) and utilize 200 gpd in other water uses. Primarily plane storage, some office space, some maintenance work.

Notes on Fire Flow Requirements:

Fire Flows: For large industrial buildings and large aircraft maintenance hangars, assume are Type 1 construction and will require the building to have a sprinkler system. Use of a sprinkler system reduces the fire flow requirement by 75% (Table 18.4.5.1.2 NFPA Fire Code).

St. Johns County requires all commercial buildings without sprinkler systems to have an available fire flow of 1500 gpm.

APPENDIX C

PROJECTED WASTEWATER GENERATION RATES FOR NFR-B (WEST) AND NFRA (EAST SIDE) US-1 AIRPORT AUTHORITY DEVELOPMENT

Wastewater Generation Rate Estimates for NFR-B (West Side of US-1)

Facility Type	Acreage	Characteristics				Potential Wastewater Generation Average Daily Flow (GPD)				Total Wastewater ADF Per Facility	Total Wastewater PHF Per Facility
		Facility Est. Area (SF)	Employees	Bays (Loading or Work)	Water Closets	by Area	by Employee	by Bay (Loading/Work)	by Water Closet		
Non-Aeronautical: Comm/Mfctg/Warehouse with Rail Access[1]	316	750,000	1,500			37,500	20,000			57,500	80
Aeronautical Use: Maintenance/Repair Overhaul[2]	107	675,000	250	9		10,125	3,000	1,800		14,925	20.73
Non-Aeronautical: Public/Multi-Use[3]											
Park/Recreational Area	241					0				0	0
Restroom Facilities					10				2,500	2,500	10
Non-Aeronautical: Multi-Modal Transportation Center[4]	14		1,500	10			22,500	1,000		23,500	33
Non-Aeronatical: Parking for Transit/Mobility[5]					10				2,500	2,500	10
Non-Aeronautical: Hurricane Prep/Staging Area (Utility)[6]						0				0	0
TOTAL NFR-B (Near/Intermediate Range)										**100,925**	**154**
Long Range Uses[7]			3,000				60,000			60,000	83
TOTAL NFR-B (Build-Out)										**160,925**	**237**

Source: 64E-6, FAC

Factories, No showers		15	gpd	per employee/8hr shift
Factories, with Showers		25	gpd	per employee/8hr shift
Office Bldg		15	gpd	per employee/8hr shift
	or	15	gpd	per 100 sf of floor space (whichever greater)
Warehouse		15	gpd	per employee/8hr shift
	add	100	gpd	per loading bay
Repair Shop		200	gpd	per bay
Water Closet (Toilet/Sink)		250	gpd	each

Notes:

1) Assumed one-third for each use: Commercial (Office) by square foot of floor space, Manufacturing (Factory) with showers with one-third of employees and Warehouse (bays unknown) with one-third of employees; assume is 12-hour shifts for Manufacturing and Warehouse; 24 hour operation.
Assume 100% of water use discharged to wastewater system.

2) Assumed 10% used for Office by square foot of floor space, Manufacturing (Factory) without showers for 80% of employees, and 9 bays; 24 hour operation.
Assume 100% of water use discharged to wastewater system.

3) Assume primarily passive park/recreational area with limited water use and restroom facilities; peak factor 3.0; 12 hour operation.
Assume general water use not discharged to wastewater system.

4) Assume similar to Warehouse; 24 hour operation; peak factor 2.0.
Assume 100% of water use discharged to wastewater system.

5) Assume restrooms only use; 12 hour operation; peak factor 3.0.
Assume 100% of water use discharged to wastewater system.

6) General use; assume most not returned to wastewater system; 24 hour operation; peak factor 2.0.
Assume general water use not discharged to wastewater system.

7) Long Range Use: Assumed half of employees in factory area; other half in office or warehouse. Assume 12-hour shifts for Manufacturing/Warehous; 24 hour operation.
Assume 100% of water use discharged to wastewater system.

Wastewater Generation Rate Estimates for NFRA (East Side of US-1)

Facility Type	Quantity	Characteristics					Potential Wastewater Generation Average Daily Flow (GPD)						Total Wastewater ADF Per Facility (GPD)	Total Wastewater PHF Per Facility (GPM)
		Facility Est. Area (SF) Each	Employees	Passengers	Bays (Loading or Work)	Water Closets	by Area	by Employee	by Passenger	by Bay (Loading/Work)	by Water Closet	by Other		
Maintenance, Repair, Overhaul Development (North end)[1]	2	58,000	40		2		1,740	480		400			2,620	4
FBO (Relocated) (North end)[2]	1	24,000				8	1,800				2,000	200	4,000	6
Corporate Hangar (North end)[3]	12	8,000				12					3,000	1,200	4,200	6
Sub-Total North End													**10,820**	**15**
Terminal Expansion Phase 1 (South end)[4]	1	14,400	20	250				300	1,000				1,300	2
Terminal Expansion Phase 2 (South end)[4]	1	14,400	20	250				300	1,000				1,300	2
FBO/Corporate Hangar (South end)[5]	1	43,200				10	1,080				2,500	400	3,980	6
Aviation Development (South end)[6]	1	6,400					960						960	1
Non-Aviation Development (South end)[6]	1	17,600					2,640						2,640	4
Non-Aviation Development (South end)[6]	1	19,200					2,880						2,880	4
New T-Hangar Buildings North of Estrella Avenue (12 units each) (South end)[7]	2					4					1,000	600	1,600	2
New T-Hangar Units North of Araquay Avenue (8 units each) (South end)[7]	2					4					1,000	400	1,400	2
New T-Hangar Units North of Indian Bend Road (12 units each) (South end)[7]	3					6					1,500	900	2,400	3
New T-Hangar Units North of Indian Bend Road (10 units each) (South end)[7]	1					2					500	250	750	1
Multi-Purpose Bldgs (Aviation/Professional) South of Estrella Avenue (South end)[8]	4	4,200					2,520						2,520	4
Multi-Purpose Bldgs (Aviation/Professional) North of Araquay Avenue (South end)[8]	1	2,400					360						360	1
Multi-Purpose Bldgs (Aviation/Professional) North of Indian Bend Road (South end)[8]	6	4,400					3,960						3,960	6
Maintenance (South end)[9]	1	70,000	25		2		2,100	300		400			2,800	4
Hangar (South end)[10]	1	16,000				2					500	200	700	1
Multi-Purpose Bldg (Aviation/Professional) (South end)[8]	1	18,000					2,700						2,700	4
Multi-Purpose Bldg (Aviation/Professional) (South end)[8]	1	8,000					1,200						1,200	2
Aviation Development (South end)[6]	1	20,000					3,000						3,000	4
Sub-Total South End													**36,450**	**51**
TOTAL PROPOSED IN NFRA AIRPORT COMPLEX													**47,270**	**66**

Source: 64E-6, FAC

Airports, per passenger		4	gpd	per passenger
Airports, per employee		15	gpd	per employee/8hr shift
Factories, No showers		15	gpd	per employee/8hr shift
Factories, with Showers		25	gpd	per employee/8hr shift
Office Bldg		15	gpd	per employee/8hr shift
	or	15	gpd	per 100 sf of floor space (whichever greater)
Warehouse		15	gpd	per employee/8hr shift
	add	100	gpd	per loading bay
Repair Shop		200	gpd	per bay
Water Closet (Toilet/Sink)		250	gpd	each
Showers, Per Person		10	gpd	per person

Notes provided on following page.

Notes on Water Usage:

1) Assumed 10% used for Office by square foot of floor space, Manufacturing (Factory) without showers for 80% of employees, and 2 bays; 24 hour operatior
Assume 100% of water use discharged to wastewater system.

2) Assumed FBO provides fueling services and other support services to aviation crews - bathrooms, showers, vending, etc. Assume up to 20 crew members shower daily.
Treat 50% of facility area as office use.
Assume 100% of water use discharged to wastewater system.

3) Assumed Corporate Hangars have one water closet (no shower) each and utilize 100 gpd in other water uses. Primarily plane storage, some office space, some maintenance work.
Assume 100% of water use discharged to wastewater system.

4) Assumed terminals would require 20 additional employees and approximately 250 additional passengers each.
Assume 80% of water use discharged to wastewater system. Assume 16 hour/day operations

5) Assume half use as FBO and half use as Corporate Hangar. Assumed FBO provides fueling services and other support services to aviation crews - bathrooms, showers, vending, etc. Assume up to 20 crew members shower daily. Treat 50% of facility area as office use
Assumed Corporate Hangars have two water closets (no shower) each and utilize 200 gpd in other water uses
Assume 100% of water use discharged to wastewater system.

6) Aviation and Non-Aviation Development: assume is similar to office space use. Use area to determine water use.
Assume 100% of water use discharged to wastewater system.

7) Assume each T-Hangar Building has two water closets. Assume each unit could use up to 50 gallons per day; but only 50% concurrent use.
Assume 100% of water use discharged to wastewater system.

8) Multi-Purpose Buildings: assume is similar to office space use. Use area to determine water use.
Assume 100% of water use discharged to wastewater system.

9) Assumed 10% used for Office by square foot of floor space, Manufacturing (Factory) without showers for 80% of employees, and 2 bays; 24 hour operation.
Assume 100% of water use discharged to wastewater system.

10) Assumed Hangars has two water closets (no shower) and utilize 200 gpd in other water uses. Primarily plane storage, some office space, some maintenance work.
Assume 100% of water use discharged to wastewater system.

Notes on Fire Flow Requirements:

1) Fire Flows: For large industrial buildings and large aircraft maintenance hangars, assume are Type 1 construction and will require the building t
have a sprinkler system. Use of a sprinkler system reduces the fire flow requirement by 75% (Table 18.4.5.1.2 NFPA Fire Code)

2) St. Johns County requires all commercial buildings without sprinkler systems to have an available fire flow of 1500 gpm