



ALBERT WHITTED

Airport Master Plan

MAY 2023



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Prepared for:
City of St. Petersburg
107 8th Avenue SE
St. Petersburg, FL 33701

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POSTSCRIPT

Impact of COVID-19

The 2020 outbreak of COVID-19 in the U.S. caused significant disruptions to the aviation industry through travel restrictions, stay-at-home orders, quarantine requirements, and an increased reliance on teleconferencing. Even though the activity forecasts included in Chapter 3 of this master plan were prepared and approved prior to the COVID-19 pandemic; they are still considered valid for the purposes of this study. While the number of annual aircraft operations at Albert Whitted decreased 9.5 percent between 2019 and 2020, they completely recovered the following year. At the end of 2022, just over 91,900 annual operations were recorded; nearly reaching the 92,300 operations forecasted for 2024.

Regardless, the airport development program in Chapter 8 was prioritized in part based on the level of aircraft operations and number of based aircraft projected over the 20-year planning horizon. If the actual aviation activity varies temporarily from the projected levels, the impact on the capital program may not be significant. However, if future traffic levels fluctuate significantly, the implementation of some of the proposed projects may not be financially feasible and any such capital improvements may be canceled or deferred as necessary.

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CHAPTER 1

Background and Airport Setting

CHAPTER 1

Background and Airport Setting

In 2018, the City of St. Petersburg began the process to develop a new master plan for the Albert Whitted Airport (SPG). The overall goal was to prepare a comprehensive planning document meeting the needs of airport management as well as the requirements of the Federal Aviation Administration (FAA) and Florida Department of Transportation (FDOT). As such this study was conducted in accordance with FAA Advisory Circular (AC) 150/5070-6B, *Airport Master Plans* and FDOT's *2021-2022 Guidebook for Airport Master Planning*. It is also consistent with Chapter 14-60 of the Florida Administrative Code and other applicable FAA or FDOT guidance, including FAA AC 150/5300-13A, Change 1, *Airport Design*.

1.1 Need for a New Master Plan

The last airport master plan for SPG was adopted by the City of St. Petersburg in 2007. Since that time, a number of changes have occurred at SPG, the surrounding community, and in the aviation industry which require that a new airport master plan be prepared.

Over the past two decades, operational activity has varied at the airport, resulting in a number of peaks and declines in total operations. These fluctuations demonstrate the continuously dynamic landscape of the general aviation industry. Such changes and trends need to be understood to enable the airport to support its tenants and customers and to provide an even greater role in the economic and business growth of the surrounding community. A new airport master plan will also enable the airport to ensure it remains proactive in its efforts to address newer airport design standards and airport land use guidance that have also occurred since 2007.

A key focus of this study is to identify alternatives for additional aircraft storage over the course of the 20-year planning period. SPG's existing aircraft storage facilities area very constrained and cannot provide capacity to accommodate the current demand. At this point in time, the airport is in its second generational growth phase, where developable land is limited and the redevelopment or reconfiguration of existing facilities should be considered. When the 2007 Airport Master Plan Update was completed, all of the Albert Whitted Waste Water Treatment Plant (WWTP) facilities, located on airport property, were being used. In April of 2015, some of the WWTP facilities were taken offline and future plans indicate that a portion of the site may become available for aviation related uses. Therefore, this study identifies opportunities for aviation related development in this area. The master plan will also address and re-evaluate the potential to improve Runway 7-25, building upon the results of the *Runway 7-25 Feasibility Study* completed in 2017 (see **Appendix C**).

1.2 Study Goals and Objectives

Airports face many challenges in their day to day operation. At a minimum they must maintain a safe facility, comply with a myriad of regulations, manage numerous leaseholds, preserve compatibility with the community, be good stewards of the environment, encourage economic growth, and compete for limited funds, all while providing essential community services with a positive public image. The master plan process serves as a tool for an airport to address these issues in an organized approach. The overall objective of a new master plan is to accurately assess existing airport conditions, project aviation activity, define future needs, develop cost effective options, and provide a realistic development program. In doing so, the 20-year plan also needs to be flexible by including appropriate activity triggers or benchmarks, as well as potential scenarios to respond to the ever changing aviation industry. Such flexibility provides options for airport management to react to fluctuating market conditions, shifts in development priorities, and/or take advantage of unforeseen opportunities.

In short, the master plan will serve as a guide to achieve realistic airport development in line with both airport and community objectives. Since the previous 2007 study is out of date and no longer reflects the current conditions at the airport or of the community, this master plan will be a “from scratch” effort as defined by FDOT in their guidance. The primary goal will be to create a 20-year development program to maintain a safe, efficient, economical, and environmentally acceptable airport facility for the City of St. Petersburg and surrounding Pinellas County communities. By achieving this goal, the document will provide the guidance to satisfy the aviation demand in a financially feasible and responsible manner, while at the same time addressing the aviation, environmental, and socioeconomic issues of the community. In support of this goal, the following objectives were achieved:

- Ensure orderly development: consider short-term needs and long-term plans;
- Ensure compliance with latest FAA/FDOT design criteria, grant assurances, and policies;
- Provide flexibility to allow the airport to respond to changes in the aviation industry;
- Meet FAA Airport Geographic Information System (AGIS) mandate;
- Create a new Airport Layout Plan (ALP) drawing set;
- Integrate sustainability and resiliency concepts to ensure long-term viability;
- Enhance role as a gateway to the community;
- Integrate the City’s Downtown Waterfront Master Plan elements; and
- Secure broad community buy-in for the future development program.

While some of these objectives fulfill the broader goals of a comprehensive planning document, others are much more unique to the airfield’s setting and surrounding environment. For example, it was critical to include a resiliency planning component as a subset of the sustainability elements

given the relatively low elevation of airfield facilities coupled with airport’s proximity to the Tampa Bay. In fact, this became a significant concern in 2017 when eight to ten foot storm surge was expected for the Tampa Bay area during Hurricane Irma. While the airport did not experience any significant flooding as a result of Hurricane Irma, the effects of this storm on the local area, as well as the entire Florida peninsula, also highlighted the need to incorporate resiliency elements into future plans.

1.3 Planning Process

This master plan provides a systematic outline of the development actions required to maintain and further develop airfield and landside facilities. This process provides those officials responsible for the scheduling, budgeting, and ultimate funding of airport improvement projects with an advance notice of the airport’s needs. By phasing airport improvements, this development can be conducted in an orderly and timely fashion.

Throughout this process, reviews were conducted to insure input was received from key stakeholders, including the Airport Advisory Committee, City of St. Petersburg staff, airport traffic control management, FAA, FDOT, airport tenants, airport customers, and the public. The individual steps in the master plan process are built upon information and decisions made during previous steps. Taken as a whole they address the objectives previously identified.



Airport Master Planning Process

1.4 Airport Setting

The Airport is located in Pinellas County on Florida’s Gulf Coast. Approximately 15 miles south of Tampa International Airport, 10 miles southeast of St. Pete-Clearwater International Airport, and 7 miles from the Gulf of Mexico. The airport is located south of downtown St. Petersburg and surrounded on three sides by Tampa Bay. St. Petersburg is easily accessible via I-275, the north-south interstate that connects to I-4 in Tampa and I-75 north of Bradenton.



Pinellas County, Florida (highlighted)

1.4.1 History

Albert Whitted Airport opened at its present site in September 1917 and was named in honor of Lieutenant Albert Whitted on October 12, 1928. A

native of St. Petersburg, Lieutenant Whitted was an aviation pioneer and naval aviator who introduced numerous Tampa Bay residents to flying.

SPG is the birthplace of National Airlines, which conducted their first scheduled airline flight from the airport to Daytona Beach in 1934. Decades later National merged with Pan-Am to create one of the world's largest air carriers. Then in the late thirties, Goodyear chose SPG as one of the first airports to base its famous blimps. During World War II, the airport helped support the war effort when it was converted from a public airfield to a military air base. At that time hundreds of Naval cadets received their training at Albert Whitted.



Albert Whitted Airport – 1968

The original airfield consisted of a narrow 1,800 foot runway oriented in the east-west direction. Early development of the airfield included lengthening of the east-west runway and construction of two new runways with north-south and northeast-southwest orientations. In 1944, the north-south runway was replaced with a new runway with a protective seawall. In the 1950s airport activity was promoted by local pilots and others in the community. This resulted in the City deciding to maintain and improve SPG.

Since that time, there have been numerous improvements to the airfield including extending the northeast-southwest runway into Tampa Bay. Other projects included hangar renovations, additional hangars, navigational aids, and airfield lighting. In

2003 the citizens of St. Petersburg voted to preserve the airport and a Blue Ribbon Task Force was created to guide development of the airport, to include the 2007 Airport Master Plan Update. Since, the General Aviation Terminal, a new airport control tower, rehabilitated runway, taxiways, hangars, aircraft parking aprons, and automobile parking have been constructed.

1.4.2 System Planning Roles

Airport planning occurs at the local, state, and national levels, each with its own particular emphasis. Airport master plans provide the local level, while statewide matters are addressed by FDOT, and issues at the national level are handled by the FAA.

Florida Aviation System Plan

The Florida Aviation System Plan (FASP) facilitates FDOT's strategic planning for the state's aviation system. This plan is updated on a regular basis through the Continuing Florida Aviation Systems Planning Process (CFASPP) and divides the state's public-use airports into nine regions. SPG is one of 11 public airports in the West Central Florida Region. As the most densely-populated CFASPP region, this area is home to some of the state's most popular attractions including world renowned beaches, four professional sports teams, museums, cruise ships, theme parks, three major league baseball spring training facilities, and other major area attractions. The region is also home

to a number of universities, research centers, medical facilities, and military installations, not to mention every facet of business attracting an expanding global reach. The FASP identifies SPG as one of Florida's general aviation airports.

National Plan of Integrated Airport Systems

A National Plan of Integrated Airport Systems (NPIAS) is presented every two years to Congress by the Secretary of Transportation for the development of public-use airports which are significant to the national air transportation system. Specifically, this plan documents the federal aid required for infrastructure development at the nation's commercial service, reliever (high capacity general aviation airports), and other select general aviation airports. The categorization of these needs guides FAA management in their administration of the Airport Improvement Program.

The most recent NPIAS (2021-2025) groups airports into two major categories: primary (commercial service) and non-primary (general aviation). General aviation airports are then subdivided into either national, regional, local, basic, or unclassified facilities depending on activity measures (number/type of based aircraft and operations). These categories do not change any eligibility for federal funding; rather they are designed to further assist the FAA in determining the appropriate types of development. In the 2021-2025 NPIAS, SPG is designated as a regional general aviation facility with \$5.2 million in projects eligible for federal funding over the system's five-year planning period. SPG is also categorized as a reliever airport to the Tampa International and St. Pete - Clearwater International Airports.

1.4.3 Climate and Weather Data

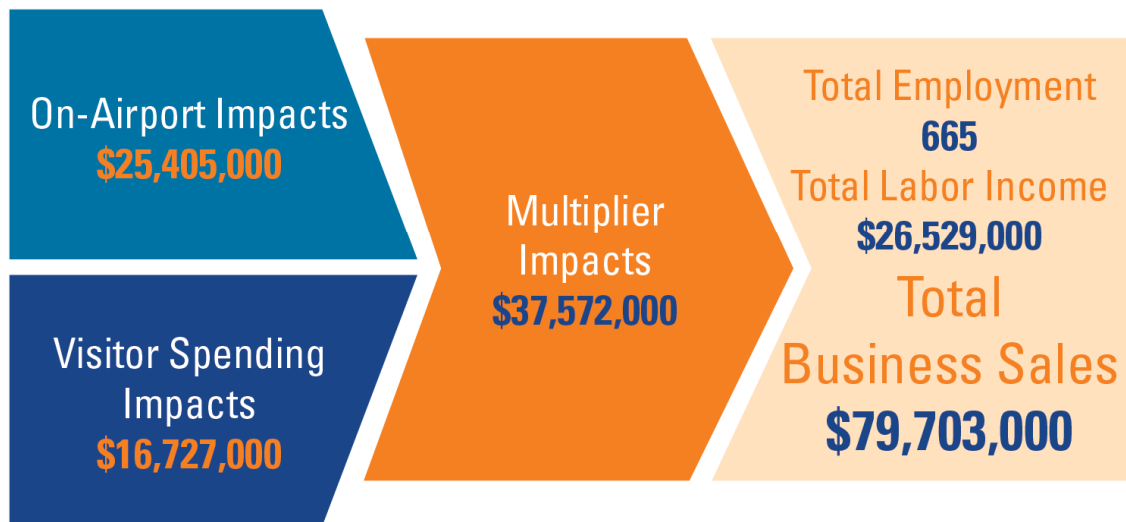
Pinellas County is located along the Gulf Coast of central Florida. As with much of coastal Florida, the surrounding land is relatively flat and the airfield is located on Tampa Bay. These characteristics, coupled with prevailing sea breezes and the maritime location significantly influence climate and prevailing winds for the area. Although the airport is located in the warmer southeastern portion of the nation, annual temperatures are considered moderate due to the influence of regular sea breezes.

Rainfall in this area occurs during all seasons; however, it is more abundant during the summer when daily showers are common. Pinellas County has averaged approximately 51 inches of rainfall on an annual basis over the last five years. Temperatures during the summer months rarely reach 100 degrees Fahrenheit; with an average maximum temperature of 89 degrees Fahrenheit in July. The average minimum winter temperature is 56 degrees Fahrenheit in January.

Historic wind and weather conditions are key considerations for an airport's runway system since aircraft takeoff and land into the wind. As recommended by FAA AC 150/5300-13A, Change 1, ten consecutive years of wind data was collected for SPG. This information will be analyzed and used to develop a number of airfield facility requirements in this study.

1.5 Local Economic Impact

In 2019, FDOT completed the Florida Statewide Aviation Economic Impact Study. The report provides the estimated annual impact created by the 116 public-use airports that participated in the study. For each airport the economic benefits are expressed as direct (on-airport), indirect (off-airport), and induced (multiplier) impacts. These measures are then expressed in terms of total annual employment, payroll (labor income), and activity (business sales). The 2019 study diagram below documents the annual contribution that SPG creates for the City of St. Petersburg and surrounding Pinellas County economy.



SPG's Impact on the City of St. Petersburg and Surrounding Pinellas County Economy

SOURCE: Florida Statewide Aviation Economic Impact Study, FDOT 2019.

All of the funds utilized for the operation, maintenance, and improvement of SPG are generated by the airport's activities, which includes leveraging both state and federal grants for various improvement projects. There are also a number of community services supported by the airport that cannot be easily quantified. Examples include supporting the flight operations associated with the Johns Hopkins All Children's Hospital, Bayflite Medevac, and other air ambulance services. In addition, the airport is home to a Civil Air Patrol squadron and a traffic/news reporting company, and supports transient flight activity by the Pinellas County Sheriff's Office and Pinellas County Mosquito Control.

CHAPTER 2

Existing Conditions

CHAPTER 2

Existing Conditions

Information about the existing conditions of the Albert Whitted Airport (SPG) at the beginning of the study provides a foundation for subsequent analyses throughout the study. This includes an examination of the existing airfield, general aviation, landside, and other airport support facilities.

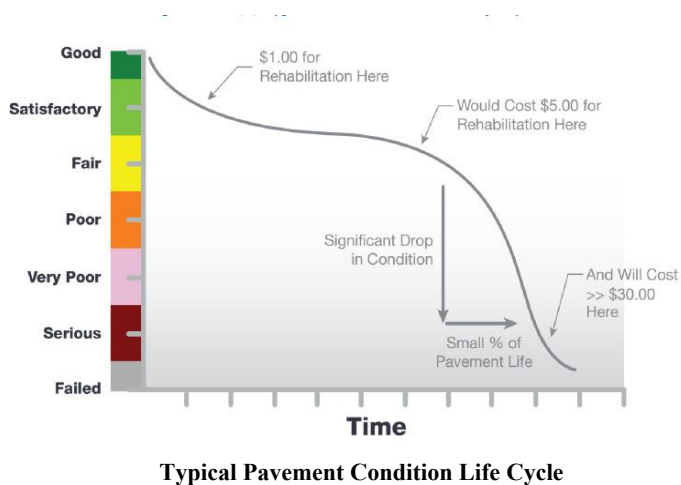
2.1 Airfield Environment

Surrounded by water on three sides, the airfield has two runways that cross at the northeast end. **Figure 2-1** illustrates the airfield facilities that are described in the following sections. While this includes the airport’s runway and taxiway system, it also includes the available instrument approaches; airfield lighting and signage; pavement markings; and takeoff and landing aids.

2.1.1 Aircraft Operation Areas

The aircraft operation areas include the runways as well as any other paved or unpaved surfaces that enable aircraft to move between the runways and the different airport facilities. All of the airport features, as well as some for the surrounding area, were mapped in November 2018 as part of the Airport Geographic Information System (AGIS) element of this study. In addition to the physical characteristics of the runway and taxiway environment, there are other safety-related criteria. The specific criteria for each of these protective surfaces will be discussed in subsequent chapters.

In November of 2019, the Florida Department of Transportation (FDOT) published their most recent pavement report for SPG as part of the ongoing Statewide Airfield Pavement Management Program. This report provides an objective basis for determining maintenance and repair needs, as well as priorities, by assigning a Pavement Condition Index (PCI) value to each section of paved surface. The results of the 2019 report indicated that the airport’s airfield pavement facilities had an overall area weighted average PCI of



SOURCE: FDOT Statewide Airfield Pavement Management Program, 2019.

69, fair rating. This included an area-weighted average PCI of 73 for the runways, 68 for the taxiways, and 66 for the apron surfaces.

Runway 7-25

The primary runway, Runway 7-25, has a length of 3,676 feet and width of 75 feet. Constructed of asphalt, Runway 7-25 was last rehabilitated in 2016 and is considered to be in good condition with a PCI of 100 documented in the 2019 pavement condition report. The Runway 7 threshold is displaced 557 feet and the Runway 25 threshold is displaced 263 feet. The runway also has ten foot paved shoulders along most of its length, the exceptions being the portion east of Runway 18-36 and a small portion between Taxiways D1 and D2.

At the southwest end of the runway, there is a lighted blast fence at the physical end of the runway and just west of the airport perimeter road that parallels the western property line. This blast fence prevents any prop wash or jet blast from impacting pedestrians or vehicles just on the other side of the airport property line along 1st Street SE. **Table 2-1** provides technical data for both runways, including the current published weight bearing capacity.

Runway 18-36

The crosswind runway, Runway 18-36, is 2,864 feet in length and 150 feet in width. Also constructed of asphalt, a PCI of 56 to 58 (fair) was assigned to Runway 18-36 in 2019. The runway currently has no displaced thresholds.

TABLE 2-1
RUNWAY CHARACTERISTICS

	Runway 7-25	Runway 18-36
Runway Length	3,676'	2,864'
Runway Width	75'	150'
Runway Markings	Non-Precision	Non-Precision
Pavement Strength (pounds)		
Single (S)	60,000	60,000
Dual (D)	105,000	105,000
Two Dual in Tandem (2D)	190,000	190,000
Pavement Classification Number (PCN) ^a	9 F/B/X/T	14 F/A/X/T
Pavement Surface	Asphalt	Asphalt
Runway Lighting	Medium-Intensity	Medium-Intensity
Displaced Threshold	Runway 7 – 557'	None
	Runway 25 – 263'	

NOTES: a. PCN codes F= Flexible; A = High Subgrade Strength, B = Medium Subgrade Strength, X = High Tire Pressure (limited to 254 psi), and T = Technical Method of Determination.

SOURCE: 2018 AGIS survey, April 2017 FDOT PCN Evaluation Report for SPG, and 2019 FAA publications.

Taxiways and Taxilanes

Aircraft ground movements between runways, aprons, hangars, and other facilities are conducted via an airfield's taxiway and taxilane system. For SPG this consists of a network of major taxiways, connector taxiways, apron edge taxilanes, and hangar taxilanes. Taxilanes typically provide the final link to aircraft hangars and parking positions, and in most cases are outside of the aircraft movement area managed by the airport traffic control tower (ATCT). The various taxiways and taxilanes are shown on **Figure 2-1**.

Taxiway A

Taxiway A is the partial parallel taxiway along the southeast side of Runway 7-25. At the southwest end, Taxiway A connects to the end of the runway pavement, before the displaced threshold. And at its northeast end, Taxiway A ends at Runway 18-36. There are four connector taxiways which also provide access onto Runway 7-25 along its alignment. The majority of this taxiway provides a pavement width of 40 feet. Taxiway A maintains a centerline to centerline offset with Runway 7-25 of 150 feet and has an overall area weighted average PCI of 55 (poor). However, as part of the project to rehabilitate Runway 7-25, the connector Taxiways A1, A2, A3, and A4 were also rehabilitated in 2016 and therefore are in good condition with a PCI of 100 documented in the 2019 pavement condition report.

Taxiway B

Taxiway B is the full length parallel taxiway along the west side of Runway 18-36. In between the ends of Taxiway B, which connect directly into the Runway 18 and Runway 36 thresholds, there is only one connector, Taxiway B1 (in addition to Taxiways A, C, and D) which also provides access onto Runway 18-36. Taxiway B and its end connectors provide a minimum width of 40 feet; however, Taxiway B1 provides 50 feet. The taxiway has a 150 foot offset from the Runway 18-36 centerline and the pavement was assigned an overall area weighted average PCI of 61 (fair). The exception is the portion between Runway 7-25 and Taxiway A with a PCI of 100 (good) which was repaved during the 2016 Runway 7-25 rehabilitation project. Taxiway B1 was rated very poor with a PCI of 33.

Taxiway C

Taxiway C is 40 feet wide and serves as the east to west midfield connector between the runways and facilities in the south half of the airport. In the 2019 pavement evaluation the west half of Taxiway C had an average PCI of 58 (fair) while the east half has a PCI of 100 (good) as it was repaved in early 2018. As part of this project, a run-up area was added to the east end of Taxiway C where it ties into Taxiway B.

Taxiway D

Taxiway D is the partial parallel taxiway along the north side of Runway 7-25. It runs between Taxiway D2 at the General Aviation Terminal aircraft parking apron to Taxiway D5 at the Runway 25 end. Taxiway D1 connects the General Aviation Terminal aircraft apron with the Runway 7 end. While Taxiway D has a pavement width of 25 feet most of its connector taxiways are wider.

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ABBREVIATIONS	
AEV	AIRFIELD ELECTRICAL VAULT
ASOS	AUTOMATED SURFACE OBSERVING SYSTEM
ATCT	AIRPORT TRAFFIC CONTROL TOWER
AWAPS	ALBERT WHITTED AIRPORT PRESERVATION SOCIETY
FBO	FIXED BASE OPERATOR
GA	GENERAL AVIATION
PWC&SC	PRIMARY WIND CONE AND SEGMENTED CIRCLE
SWC	SUPPLEMENTAL WIND CONE
TWY	TAXIWAY



Source: ESA, 2020.

Albert Whitted Airport Master Plan

FIGURE 2-1
EXISTING AIRFIELD FACILITIES

Taxiway D maintains a centerline to centerline offset with Runway 7-25 of 175 feet for the majority of its length with the exception of the section to the east of Taxiway B, which is offset 200 feet from the Runway 7-25 centerline. Taxiway D was assigned an overall area weighted average PCI of 71 (satisfactory); however, sections of the taxiway and connector pavements ranged from 61 (fair) to 100 (good) in the 2019 report.

2.1.2 Airspace and Airport Traffic Control Tower

Controlled airspace is referred to as Class A, B, C, D, or E and uncontrolled airspace as Class G. Generally speaking, Class A airspace begins at 18,000 feet above mean sea level (AMSL), continues upward, and is used to manage en route aircraft traffic. Class B airspace surrounds the nation's busiest airports including Tampa International (TPA). Class C surrounds airports with high traffic levels, but not as high as Class B airports. A local example is Sarasota Bradenton International Airport (SRQ). Class D surrounds those airports with an ATCT not located in or designated as having Class B or C airspace. St. Pete-Clearwater International (PIE) has Class D airspace, below the overlapping Class B airspace for TPA. Class E airspace is any other controlled airspace where pilots are in radio contact with some portion of the Federal Aviation Administration (FAA) Air Traffic Control (ATC) network. This network primarily consists of ATCTs, Terminal Approach Control (TRACON) facilities, and Air Route Traffic Control Centers (ARTCC).

Much like PIE, SPG has Class D airspace below the overlapping Class B airspace for TPA. Over land this Class D airspace is from the surface up to 1,500 feet AMSL. The overlapping Class B airspace begins at 3,000 feet AMSL over land, with the airspace in-between designated as Class E from 700 feet above ground level (AGL) up to 2,999 feet AMSL. From the surface up to 700 feet AGL the airspace is Class G. The portion of SPG's Class D airspace over Tampa Bay is from the surface up to 1,200 feet AMSL where it meets the overlapping Class B airspace. To the northeast, SPG's Class D overlaps with the Class D airspace associated with MacDill Air Force Base (MCF). The ATCT facility at SPG is operated from 7:00 a.m. to 9:00 p.m. local time. When the tower is closed, the airspace surrounding SPG is designated as Class G.

TRACON facilities have controllers whose primary function is to guide aircraft approaching and departing airports within a 30 to 50 mile radius and up to 10,000 feet AMSL. When an aircraft is within five miles of SPG (or below 1,500 feet AMSL), TRACON controllers hand off the aircraft to the SPG ATCT. Alternatively, when departing aircraft leave the TRACON's range of control, TRACON controllers hand responsibility off to FAA ARTCC.

For SPG, the approach and departure flow is managed by the Tampa TRACON facility. Depending upon direction of travel, TRACON controllers will hand off or receive aircraft from ARTCCs in either Jacksonville or Miami.

Arrival Procedures

A Standard Terminal Arrival (STAR) is an ATC procedure published for arriving aircraft in order to transition from the en route phase of flight to the approach phase. STARs provide guidance to either a published instrument approach procedure or to a point from which ATC might provide the aircraft with radar vectors to their destination. There are three STARs (BRDGE eight, DARBS

three, and LZARD six) published for aircraft en route for SPG. These vary based on from where the arriving aircraft is coming, as well as the flow and active runway at the airport.

Instrument Approach Procedures

During times of inclement weather, and/or reduced visibility, instrument approaches enable pilots to safely descend into the airport environment for landing. There are a number of different instrument approaches that can be established, each with specific limitations. 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 ATC 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.

There are three categories for instrument approaches: precision approaches, approach procedures with vertical guidance, and non-precision approaches. All provide course guidance to the runway centerline they serve. The degree of horizontal guidance increases with the sophistication of the instrument approach established, which is reflected through the specific minimum operating parameters for each. The primary difference between the three is that non-precision approaches do not provide any vertical guidance to the runway end. For both precision and approach procedures with vertical guidance, the vertical course 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 most precision approaches this is called the decision height which is indicated in feet above the ground level or the decision altitude (DA) in feet AMSL. DA is also used in approach procedures with vertical guidance. For non-precision approaches, it is referred to as the minimum descent altitude (MDA) with heights published in the number of feet AMSL. In addition, every instrument approach has minimum visibility requirements, measured in feet or miles. If visual identification of the runway environment cannot be made before the published minimums, then the aircraft must execute a missed approach and either try again or go to an alternate airport.

Precision Approaches

Precision approaches are further defined as any approach that has visibility minimums lower than $\frac{3}{4}$ of a mile and the capability of safely guiding aircraft down to heights less than 250 feet above the threshold. There are no precision approaches established to the runways at SPG.

Approach Procedures with Vertical Guidance

Approach procedures with vertical guidance are defined as any approach that has visibility minimums not lower than $\frac{3}{4}$ of a mile and the capability of safely guiding aircraft down to heights greater than or equal to 250 feet above the threshold. Precision area navigation (RNAV) procedures

are based on Global Positioning System (GPS) and the Wide Area Augmentation System (WAAS). These are referred to as LPV approaches (localizer performance with vertical guidance) or LNAV/VNAV (lateral navigation/vertical navigation) approaches, both of which have the minimums published as a DA. There are no approach procedures with vertical guidance established to the runways at SPG.

Non-Precision Approaches

Different non-precision approaches have been established to three of the four runway ends. There are no approaches established to Runway 25 due to proximity and overlap of airspace with MacDill Air Force Base to the northeast. Non-precision RNAV/GPS LNAV approaches have been established to Runways 7, 18, and 36 with minimums published as a MDA. For Runway 7 the LNAV provides a straight-in approach with visibility minimums of one mile and a MDA of 660 feet. For Runway 18-36 the LNAV straight-in approaches provide visibility minimums of one mile to both ends while the Runway 18 MDA is 800 feet and the Runway 36 MDA is 540 feet. There is also a straight-in non-precision approaches established to Runway 18 based on the PIE VHF omnidirectional range (VOR). For aircraft with distance measuring equipment (DME), the Runway 18 VOR approach provides visibility minimums of one mile and a MDA of 800 feet. Without DME, the visibility minimums increase to one and a quarter mile and the MDA to 940 feet.

For Runways 7, 18, and 36, the RNAV/GPS and VOR approaches also provide non-precision circling approach minimums. Circling approaches allow an aircraft to approach and establish visual contact with the airport environment in less than VFR conditions. Once in the vicinity, the pilot can then maneuver the aircraft to set up a final approach to the runway and land with visibility minimums of one mile and a MDA of 720 feet when using the published approach for Runway 7. For the other published procedures, the circling approach visibility minimums are one and a quarter mile and the MDA is 860 feet. It should be noted that the FAA classifies runways with only circling approach minimums as visual runways.

Departure Procedures

Departure procedures provide obstacle clearance as aircraft transition from takeoff to the en route phase of flight. Procedures designed for obstacle avoidance are referred to as obstacle departure procedures (ODP) and are described using text only. Other standard instrument departure procedures (SID) are named and published graphically to regulate traffic flows, ensure aircraft separation, enhance capacity, and reduce both pilot/controller workload. There are no SIDs established for SPG; however, there are specific ODPs published for each of the four runway ends at SPG. These simply establish the preferred departure heading and minimum altitude before a turn can be made.

2.1.3 Airfield Lighting

Proper airfield lighting is required at all airports that are utilized for nighttime or IFR operations. With the exception of the airport rotating beacon, the lighting systems at the airport are supported by equipment in the airfield electrical vault, with primary control routed to the ATCT.

Identification Lighting

Rotating beacons universally indicate the location and presence of an airport at night or in adverse weather conditions. The rotating beacon is located on top of the ATCT. It is equipped with an optical rotating system that projects two beams of light, one green and one white, 180 degrees apart. The beacon is continuously operated during nighttime hours or when the airfield is under instrument meteorological conditions.

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 restricted visibility. These lighting systems are classified according to their intensity or brightness. Both runways are equipped with medium intensity runway lights (MIRL). The runway edge lights emit white light except when a caution zone has been established. At SPG, caution zone lights are in the last 1,800 feet of Runway 7 and the last 1,400 feet of Runway 18. In the caution zone, yellow lights are substituted for white lights (split lens) to emit yellow light in the last portion of the respective runway ends and white light for the opposite direction. The MIRLs for Runways 7-25 and 18-36 both consist of base mounted light fixtures on cans with the cables in electrical conduit between each fixture. The Runway 7-25 MIRLs are light-emitting diode (LED) while those on Runway 18-36 are incandescent fixtures.

As part of the runway lighting systems, the identification of the runway ends and thresholds are critical to a pilot during landing and takeoff. This is especially important when the runway ends have displaced thresholds, as there are at both ends of Runway 7-25. Therefore, the runway ends are equipped with special lighting configurations to aid in their identification.

At the physical end of all four runways, sets of four inboard threshold lights are installed. For Runway 18-36 these fixtures have a split lens with the half facing the approaching aircraft are green, indicating the beginning of usable runway, while from the opposite direction they are red, indicating the end of usable runway. For Runway 7-25, these fixtures display red from both directions indicating to approaching aircraft that there is a displaced threshold as well as the end of useable pavement. For the displaced thresholds at each end of Runway 7-25, there are four outboard threshold lights which have a split lens. The half of the lens which faces the approaching aircraft are green, indicating the beginning of usable runway. From the opposite direction, only the fixture that is in line with the runway edge lighting emits light. For landings on Runway 7 these two lights are yellow, since they are part of the runway edge lighting's caution zone. For landings on Runway 25, these two lights are white. The outside three on each side and for both landing directions are shielded from emitting any light from that side to the landing aircraft.

The MIRL system for Runway 7-25 is considered to be in good condition as it was installed in 2016. The system for Runway 18-36 is in fair condition. Additionally, the runway lighting, as well as the taxiway lighting described in the following section, can be activated by pilots through the common traffic advisory frequency (CTAF) when the ATCT is closed. When activated, the lighting systems for both runways and all taxiways come on and then turn off automatically after a set period of time.

Taxiway Lighting

All of the taxiways have blue medium intensity taxiway lights (MITL) along the edge of their alignment. The circuits for Taxiways B, B1, D (east of Taxiway B), and D5 have incandescent light fixtures while Taxiways A, C, and D (west of Taxiway B) have LED fixtures. The MITLs have been installed using base mounted light fixtures on cans with conduit. All of the LED taxiway lighting circuits are considered to be in good condition while the incandescent ones are fair.

Airfield Signage

As part of the airfield lighting system, the airport has a number of internally illuminated airfield signs. These include mandatory instruction, location, direction, and destination signs. The mandatory signs include the holding position signs which delineate to a pilot the limits of the runway environment. These critical signs are typically located on the left side of each connector taxiway, adjacent to the runway holding position markers. The current airfield signage is considered to be in good condition for those on the newer LED taxiway circuits while those on the older incandescent MITL circuits are considered to be fair and have panels that are significantly faded.

2.1.4 Pavement Markings

Pavement markings delineate the various movement areas of the airfield. The following sections describe those markings used at SPG which establish the various boundaries and paths along the paved surfaces.

Runway Markings

Both Runways 7-25 and 18-36 are marked with landing designators, centerline striping, threshold, and edge markings. The Runway 7-25 markings are interrupted at the intersection with Runway 18-36, since the crosswind has the lowest published approach minimums. Threshold bars and the appropriate arrowheads and arrowhead tails have been included to denote the displaced thresholds at each end of Runway 7-25. All of these markings are white. The markings on Runway 7-25 are in good condition, especially those along the portion of the runway that is used as part of the annual Grand Prix of St. Petersburg race course, as this section is remarked after each race. The markings for Runway 18-36 are occasionally repainted, though most appeared quite faded during the visual inspection conducted in the early part of 2019.

Taxiway Markings

All of the primary taxiways have centerline stripes along their alignments and holding position markings at each intersection with a runway. These markings provide supplemental visual cues to alert pilots of an upcoming runway holding position marking to minimize the potential for runway incursions.

A number of the hangar taxilanes also have yellow centerline stripes and all of the hangar taxilanes (as well as aircraft parking aprons) have the appropriate non-movement area boundary marking. All of the taxiway, holding position, taxilane, and non-movement area markings are painted yellow

and most have a black background, the exceptions being the centerline stripes of Taxiway B and the west half of Taxiway C which also appeared faded during the visual inspection conducted in the early part of 2019. The majority of the other taxiway markings were in good conditions.

2.1.5 Takeoff and Landing Aids

A number of different systems on the airfield facilitate the arrival and departure of aircraft. The primary ones are described in the following sections.

Runway End Identifier Lights (REIL)

Runway end identification lights (REIL) consist of a pair of synchronized white flashing lights which are situated on each side of and abeam the runway threshold lights. They provide pilots with a rapid and positive visual identification of the approach end of the runway during night, instrument, and marginal weather conditions. REILs also aid in identification of the runway end in areas having a high concentration of lighting or areas that lack contrast with the surrounding terrain. All four runway ends are equipped with unidirectional REILs. For both ends of Runway 7-25, the REILs are located next to the outboard displaced threshold lights. While the REILs for Runway 7-25 are in good condition (as they were installed as part of the 2016 runway rehabilitation project) they do show signs of corrosion due to the saltwater environment surrounding the airfield. The REILs for Runway 18-36 are much older, heavily corroded, and considered to be in fair condition. All of the REILs are owned and maintained by the airport.

Visual Glide Slope Indicators

Visual glide slope indicators are systems installed to provide an indication of the aircraft's relation to the proper glideslope. Precision Approach Path Indicator (PAPI) systems have been installed on all four runway ends. These consist of a 2-light unit system for each end, and are typically located on the left side of the runway (PAPI-2L), but can also be located on the right side (PAPI-2R). Runways 7, 25, and 18 are equipped with PAPI-2L systems, while Runway 36 is equipped with a PAPI-2R system. The Runway 36 PAPIs are located on the right side due to the proximity of Taxiway B to the runway pavement edge.

The lights of a PAPI system provide pilots with visual descent information during an approach to a runway. These lights are typically visible from five miles during the day and up to 20 miles or more at night. PAPIs use a light bar unit that is installed in a single row perpendicular to the runway edge. The lights project a beam of white light in the upper segment and red light in the lower segment. Depending on the aircraft's angle in relation to these lights, the pilot will receive a combination that indicates his position relative to the desired glideslope. The PAPI systems for Runway 7-25 are in excellent condition as they were just installed in 2016 while the ones for Runway 18-36 are much older and considered to be in fair condition. All of the PAPIs are owned and maintained by the airport.

Automated Surface Observing System

The airport has an Automated Surface Observing System (ASOS) located just west of the Runway 18 end, near the seawall (see **Figure 2-1**). The ASOS is a combination of instruments which observe, report, and record the airfield altimeter setting, wind data, temperature, precipitation, dew point, visibility, and cloud/ceiling data. Pilots can receive this information from the ASOS's discrete radio frequency or through a dedicated telephone number. The ASOS equipment is owned by the FAA and maintained by the National Weather Service.

Wind and Traffic Indicators

Perhaps the most basic takeoff and landing aid is the wind cone, which indicates relative wind direction and speed. The primary wind cone is collocated with the segmented circle in the center of the airfield between the runways (see **Figure 2-1**). Together, these provide pilots with a visual indication of the current surface wind conditions, established traffic patterns for the airfield, and if the ATCT is closed, the preferred landing direction. There are also two supplemental wind cones. One is located to the north of Taxiway D, approximately 260 feet down from the Runway 7 landing threshold. The other is to the right of Runway 36, approximately 600 feet from the landing threshold. All of the wind cones at SPG are illuminated and considered to be good condition.

2.2 Airport Facilities

A majority of the facilities at the airport directly support the general aviation tenants and customers. While not every building or hangar is described in the following sections, the primary facilities providing services to support the activity at SPG are included.

2.2.1 General Aviation Terminal Facilities

The General Aviation Terminal is located on the west side of the airport just northwest of the Runway 7 threshold. The building is a two-story structure and provides a total of 10,600 square feet (SF) of space. Constructed in 2007, the General Aviation Terminal currently houses the Sheltair fixed base operator (FBO), the Hangar Restaurant and Lounge, one rental car company (Hertz), and various aviation related businesses. As the only full service FBO, the terminal facilities support general aviation passengers and pilots; aircraft parking, fueling, and storage; and other support services such as aircraft ground handling, catering and ground transportation. The FBO, rental car, and aviation related businesses are all located on the first floor of the terminal, while the Hangar Restaurant and Lounge occupy the second floor.



General Aviation Terminal / FBO

2.2.2 Aircraft Storage Hangars

The City of St. Petersburg owns and maintains all of the T-hangar buildings and parking aprons while the FBO manages the leases of the aircraft storage facilities. The airport currently has 88 T-hangar units, 9 shade hangars, and 8 port-a-port hangars. T-hangars are located on the south side of the airport and are accessible from the airfield via Taxiways A and C. Surface access and vehicular parking is available off 8th Avenue SE. The port-a-port hangars are privately owned, neither the FBO nor the City of St. Petersburg manages or maintains these facilities.

In addition to T-hangars, there are several clearspan hangars that are owned and occupied by airport tenants. These hangars, which typically accommodate more than one aircraft, are used for aircraft maintenance, storage, and office/shop space. **Table 2-2** summarizes the existing clearspan hangars at SPG; however, it should be noted that future development plans



SPG Shade Hangars

underway at the time of the master plan inventory, specifically the Hangar Redevelopment Project, will change the number of hangar spaces. Additionally, shade hangars will soon be constructed for the 11 aircraft parking positions that are currently located south of the existing shade hangars.



Hangar 1

**TABLE 2-2
CLEARSPAN HANGARS**

Hangar	Tenants	Aircraft Storage Space
Terminal	Sheltair	7,000 SF
Hangar 1	Sheltair	10,000 SF
Hangar 2	Sheltair (sublease to St. Pete Air, Med-Trans, and Total Traffic Networks)	12,500 SF
Hangar 3	Advertising Air Force, Tampa Bay Air Charter, and St. Pete Avionics	11,400 SF
Hangar 4	Romac Air and Executive Helicopters	7,500 SF
Blue Hangar	Sky Addict Aviation	2,900 SF
VM Hangar	Private-owned (with direct land lease with the City)	4,200 SF

SOURCE: ESA, 2019.

There are two dedicated aircraft wash racks among the hangars on the south side of the airfield. One is off the west end of a T-hangar building in the middle of the T-hangar area. The other is located on the east side of Hangar 3.

2.2.3 Aircraft Parking Aprons

The FBO manages approximately 11,000 square yards (SY) of aircraft parking apron directly adjacent to the General Aviation Terminal. This apron is predominately utilized by itinerant operations and aviation tenants that occupy the terminal building. There are 10 dedicated tie-down parking positions for small aircraft within this apron area. The FBO apron was documented in the 2019 Pavement report as having an area weighted average PCI of 83 (satisfactory).

The mid-field apron is located between Taxiways A and C. This area provides 8,000 SY and 28 tie-down parking positions and was assessed a PCI of 94 (good). A run-up area has been incorporated into the northeast corner of the apron area where it ties into Taxiway A.

Aircraft parking in the southwest corner of the airport includes a 3,200 SY apron with seven dedicated small aircraft tie-down positions. Additionally, a 14,400 SY apron is located on the south side of the airfield and serves the activities of Hangars 2, 3, and 4. These apron areas were assigned with PCI ratings between 43 and 49 (poor) with the exception of the portion which provides the three helicopter parking spots. This area was given a PCI of 65 (fair) in 2019.

2.2.4 Aeronautical Businesses and Services

A number of aeronautical businesses at the airport provide aircraft storage, maintenance, sales, flight training, charter, rental, medevac, and fractional aircraft ownership services. These include, but are not limited to:

Advertising Air Force

Advertising Air Force provides banner towing and aerial advertising services through two single-engine aircraft based at SPG. They utilize an area immediately east of Runway 18-36 for their banner pick-up and drop-off locations.

Biplane Rides

Biplane Rides offers tours in a two passenger open cockpit biplane based at SPG. Tours available include flights over downtown St. Petersburg, Treasure Island/St. Pete Beach, Tampa Bay, Madeira Beach, Egmont Key, and Anna Maria Island. Biplane Rides operates out of the General Aviation Terminal.

Executive Helicopters

Executive Helicopters provides local helicopter rides and sightseeing tours. Tour sites include downtown St. Petersburg, area beaches, area islands, Fort De Soto, and the Sunshine Skyway Bridge. Executive Helicopters has a counter in Hangar 1 and bases a Robinson R44 in Hangar 4.

Flying Adventure

Flying Adventure is a company based at the airport that conducts biplane sightseeing tours of the local area, to include the various beaches, barrier islands, and even areas where dolphins and other marine wildlife are often spotted. Flying Adventure operates out of the General Aviation Terminal.

Romac Air

Romac Air provides maintenance services for both fixed wing aircraft and rotorcraft. Maintenance services include major airframe and major power plant repairs.

Sheltair

As the approved full service FBO, Sheltair is the only entity authorized to commercially sell aviation fuel at SPG. They currently offer 100LL and Jet A fuels via truck service. In addition, they manage and operate the airport's self-serve fuel facility (100LL). Sheltair also manages the leases on the majority of the City's aircraft storage facilities, including the Terminal Hangar, Hangar 1, Hangar 2, T-hangars, shade hangars, and a majority of the tie-down parking positions. Additional FBO services and amenities include a pilots' lounge, planning/weather room, ground support, shuttle services, interior aircraft cleaning, and catering.

Sky Addict Aviation

Sky Addict Aviation provides aircraft maintenance services out of the Blue Hangar located on the south side of the airfield.

St. Pete Air

St. Pete Air occupies portions of Hangars 1, 2, and 3 in the southwest portion of the airport. Services provided by St. Pete Air include flight training; aircraft rental and sales; aircraft storage; aircraft maintenance and avionics; and aircraft charters. Charter services are provided by a subsidiary company, Tampa Bay Air Charter, using a Pilatus PC-12 which accommodates up to nine passengers. St. Pete Air's training fleet consists of 14 single-engine aircraft and one multi-engine.

Tampa Bay Aviation

Tampa Bay Aviation provides helicopter rides and aerial sightseeing tours of the beaches of Clearwater and St. Petersburg beaches, as well as other area landmarks. Tampa Bay Aviation has a counter located on the first floor of the General Aviation Terminal and operates a single Robinson R44.

Total Traffic Networks

Total Traffic Networks provides aerial traffic and news reporting for the area using two Robinson R44 helicopters based at the airport.

2.2.5 Medevac Operators

In addition to the FBO and private businesses, SPG also supports two medevac companies that provide aviation services to the surrounding community.

Med-Trans

Med-Trans provides emergency medical flight services. At SPG they primarily support the flight operations for Johns Hopkins All Children's hospital. Med-Trans bases one Eurocopter EC-135 at the airport. Fixed winged aircraft medical transfer services are also available.

Suncoast Air Medical

Suncoast Air Medical provides a variety of long-distance air and ground medical transport services. At SPG, medical transport primarily conducted using their Pilatus PC-12.

2.2.6 Support and Service Facilities

There are a number of facilities around the airfield which provide support services to the airfield and its operation, as well as the tenants and customers. The primary support and service facilities are described in the following sections.

Airport Administration

On the east side of Hangar 1, there is approximately 900 SF of office space on the second floor utilized by the City to manage the airport's facilities and operations.

Airport Traffic Control Tower

In 2011, the City completed construction of a new ATCT to the northwest of the runway intersection, just east of the old tower site. The tower building is four stories and provides 2,500 SF of space beneath the observation cab which is utilized for office space, a break room, a training room, and equipment rooms. Two controllers (one ground control/controller in charge and one local control) through the FAA's Federal Contract Tower program are needed each shift to operate the tower from 7:00 a.m. to 9:00 p.m. daily. Airport information and advisory services can be obtained through the airport's Common Traffic Advisory Frequency and universal communications (UNICOM) services when the ATCT is closed. The ATCT also has a backup generator located just west of the building.



Airport Traffic Control Tower

Airfield Electrical Vault

The airfield electrical vault is located to the southwest of the ATCT. The approximate 520 SF structure houses all of the airfield lighting regulators, meters, main disconnect, breaker panels, airfield lighting control panel, and radio equipment to facilitate pilot control of the airfield lighting. Currently there is no backup generator for the airfield electrical vault.

Airport Maintenance Equipment and Facilities

Three full-time maintenance personnel staff the airport's maintenance department. The maintenance department currently occupies three separate T-hangar end units and one full T-hangar stall to provide the office, shop, and storage space needed to maintain the airport's equipment.

Fuel Farm

Constructed in 1999, the airport fuel farm is located to the southeast of the T-hangar buildings. The fuel farm consists of three 10,000 gallon above ground fuel storage tanks, plus associated equipment and other site improvements. The fuel farm is owned and maintained by the City of St. Petersburg; however, the FBO manages and operates it under lease agreement to support their fuel operations.

In addition to the fuel farm, there is one above ground self-serve tank located on the north side of Taxiway C. The self-serve fuel facility is equipped with a credit card reader and dedicated apron space for aircraft fueling. Both are in good condition as they were constructed in 2016. Capacities of the various fuel tanks are included in **Table 2-3**. The fuel farm can be serviced by tanker trucks or mobile fueling trucks via 8th Avenue SE.



Airport Fuel Farm



Self-Serve Fuel Facility

Sheltair also utilizes fuel trucks to conduct the aircraft fueling operations around the airport. Sheltair owns and maintains one 750 gallon 100LL truck and one 3,000 gallon Jet A truck, both of which are typically stored on the apron adjacent to the General Aviation Terminal.

**TABLE 2-3
AVIATION FUEL TANKS AND TRUCKS**

	Fuel Type	Capacity (gallons)
Fuel Farm Tank 1	100LL	10,000
Fuel Farm Tank 2	Jet A	10,000
Fuel Farm Tank 3	100LL	10,000
Self-Serve Tank	100LL	1,000
Sheltair Truck	100LL	750
Sheltair Truck	Jet A	3,000

SOURCE: ESA, 2019.

2.2.7 Aviation Organizations

SPG is home to a local preservation society, and two local chapters of national aviation organizations.

Albert Whitted Airport Preservation Society

The Albert Whitted Airport Preservation Society (AWAPS) is a non-profit organization that is dedicated to preserving and enhancing SPG. The Society offers airport tours while promoting aviation education, encouraging airport business, and showcasing the airports history through the aviation museum. AWAPS offices are located on the south side of the airport off 8th Avenue SE.

Civil Air Patrol

The Civil Air Patrol (CAP) is the official United States Air Force Auxiliary. Nationwide, the CAP operates approximately 560 single-engine piston aircraft, flying about 100,000 hours annually in support of search and rescue, disaster relief, air defense, cadet orientation flights, and Air Force assigned missions. There are two CAP squadrons that share a building just south of Taxiway C. The Pinellas Senior Squadron is an adult unit that manages flight operations, while the Cadet Squadron focuses on aerospace education, youth programs, and emergency services. The CAP bases one single-engine aircraft at the airport.

Experimental Aircraft Association

Headquartered in Oshkosh, Wisconsin, the Experimental Aircraft Association (EAA) fulfills a mission of supporting and encouraging recreational aviation throughout the nation. The local EAA Chapter 1602 at SPG meets every third Tuesday of the month.

2.3 Access and Landside Facilities

Due to the airfield configuration and surrounding environment, landside access to the airport is predominantly limited to the north and south sides of the property. Only the General Aviation Terminal and FBO facilities have access from the west side via 1st Street SE. Access to this area as well as the long-term/overflow automobile parking just north of Taxiway D is also provided off 5th Avenue SE. The primary automobile parking lot for the General Aviation Terminal has a total of 69 spaces. There is also a long-term/overflow lot to the east which provides 90 spaces; however, 50 of those spaces are currently leased year to year to The Dali Museum for their employees. An access card gate north of the General Aviation Terminal provides authorized deliveries and vehicle access onto the aircraft parking apron.

Landside access to the ATCT is via Dan Wheldon Way through a manual gate at the back of Albert Whitted Park. There is also a partial interior service road on the north side of the airport which parallels Taxiway D. Access to this interior service road by authorized vehicles is via an access card gate off of a driveway at the curve where 5th Avenue SE and Bayshore Drive SE converge.

All of the facilities on the south side of the airport are only accessible off of 8th Avenue SE, which runs just outside of the airport's south property line and ends at the United States Coast Guard (USCG) Sector St. Petersburg base. Automobile parking to the various facilities on the south side is provided by a number of small parking lots. To the west of Hangar 1 there is a small lot with 19 spaces; between Hangars 1 and 2 there is a 30 space lot; and the lot next to Hangar 3 provides 23 spaces. Additionally, a 40 space lot is located at the end of 8th Avenue SE (by the USCG gate) which is utilized by tenants of the adjacent T-hangar, shade hangar, and aircraft parking areas.

Automobile access through the east end of the 40 space lot also provides public automobile access up to the CAP building just south of Taxiway C. Four access card gates on the south side of the airport provide access to the hangars and facilities on this side of the airfield. Access into the fuel farm is via manual gates.

In addition to the access card and manual gates, the airfield property is secured by a six foot chain-link fence around the landside portions of the airport. There is no fencing along the airfield areas that directly border Tampa Bay and in some areas the fencing is only four feet high. The fencing, as well as the various gates, card readers, and gate operating equipment are in fair condition. The airport continuously works to maintain the functionality and security of the current perimeter control systems.

2.4 Non-Aviation Facilities

There are a number of non-aviation facilities located on airport property which provide different amenities to the community. The primary ones are described in the following sections.

2.4.1 Albert Whitted Park

The Albert Whitted Park is part of the City of St. Petersburg waterfront park system and is located just north of the airport off Bayshore Drive SE. The park, which occupies nearly five acres of land between the City's South Yacht Basin and the airport, includes an aviation themed playground, restrooms, picnic area, and an observation area overlooking both the airport and marina facilities.

2.4.2 Rental Cars

Currently on-airport rental car services are provided by the Hertz Rental Car with a rental car desk located on the first floor of the General Aviation Terminal. The predominant renters are aviation users, but the general public can rent cars at this location. The vehicles leased are not stored at the airport, rather they are brought in from other local area Hertz branches.

2.4.3 The Hangar Restaurant and Flight Lounge

The Hangar Restaurant and Flight Lounge is located on the second floor of the General Aviation Terminal. This aviation themed restaurant is open daily to the public and serves breakfast, lunch, and dinner. It features outdoor deck seating overlooking the airfield, live entertainment on the weekends, and has a large banquet room for special events.

CHAPTER 3

Aviation Activity Forecasts

CHAPTER 3

Aviation Activity Forecasts

3.1 Introduction

This chapter presents projections of aviation activity that form the basis of future development needs for Albert Whitted Airport (SPG). Previous activity forecasts, industry trends, local socioeconomic conditions, and historic data were analyzed and applied to methodologies accepted by both the Federal Aviation Administration (FAA) and Florida Department of Transportation (FDOT) to develop these forecasts.

The standard planning period for an airport master plan is 20 years and the key planning periods include the five, ten, and 20-year horizons. Since this study was largely conducted in 2019, the forecasts are presented for 2024, 2029, and 2039, using data obtained through calendar year 2018. For a complete picture of operational activities and emerging opportunities at SPG, interviews were also conducted with the airport tenants, customers of the airfield's facilities, airport businesses, and industry groups, as well as airport and air traffic control management.

3.2 Recent Projections of Aircraft Activity

The most recent local, state, and national forecasts for SPG include those prepared for the 2007 Airport Master Plan Update, FDOT's Florida Aviation System Plan (FASP), and the FAA's 2018 Terminal Area Forecast (TAF). Each forecast projects different levels of based aircraft and annual operations for the airport as summarized in the following sections. As required by the FAA, a direct comparison of the recommended forecasts must be made relative to the FAA TAF. This comparison is included at the end of this chapter.

3.2.1 2007 Airport Master Plan Update

The 2007 Airport Master Plan Update included forecasts which were projected over a 20-year planning period using 2004 as the base year. The expected number of based aircraft and annual operations for the key planning horizons of that study, as well as for 2018, are included in **Table 3-1**. Given that in 2018 there were 176 based aircraft documented and 83,918 annual operations recorded, the 2007 master plan figures were never realized.

3.2.2 Florida Aviation System Plan

The Florida Aviation System Plan (FASP) is a comprehensive planning and development guide for the state's public airports. The FASP ensures that Florida has an effective statewide aviation transportation system which provides a link to the global air transportation network and effectively interfaces with regional surface transportation systems. In support of these goals, FDOT's Aviation Office provides regular updates of the historic aviation data and prepares forecasts of the based

aircraft, annual operations, and passenger enplanements (as applicable) for each public airport in the state. The FASP information is included as part of the Florida Aviation Database (FAD) with the most recent update for SPG providing historic data through 2017 and projections out to 2037 for based aircraft, but only historic data through 2015 and projections to 2035 for annual operations. FASP data for the key forecast horizons of this study, including an extrapolation to 2039, are shown in **Table 3-2**.

TABLE 3-1
2007 AIRPORT MASTER PLAN UPDATE

	Based Aircraft	Annual Operations
Base Year		
2004	200	106,283
Forecast		
2009	213	112,618
2014	227	119,259
2018	238	124,895
2024	257	133,941
Average Annual Change (2004 – 2024)	1.3%	1.2%

SOURCE: 2007 Airport Master Plan Update.

TABLE 3-2
FLORIDA AVIATION SYSTEM PLAN

	Based Aircraft	Annual Operations
Base Year		
2015	-	84,074
2017	115	-
Forecast		
2018	116	86,905
2024	125	92,856
2029	133	98,125
Average Annual Change (2017 – 2037)	1.2%	(2015 – 2035) 1.1%
Extrapolated		
2039	151	109,577

SOURCE: Florida Aviation Database and ESA analysis, 2019.

3.2.3 FAA Terminal Area Forecast

The Terminal Area Forecast (TAF) is prepared annually by the FAA to meet the budget and planning needs of the agency, as well as to provide information for use by state agencies, local authorities, the aviation industry, and the public. Projections in the FAA TAF are prepared for each airport in the National Plan of Integrated Airport Systems (NPIAS). The TAF projections detailed in **Table 3-3** are based on the federal fiscal year, which ends on September 30th. The 2018 TAF (issued in February 2019) utilizes a 2017 base year for based aircraft and a 2018 base year for annual operations.

TABLE 3-3
FAA 2018 TERMINAL AREA FORECAST

	Based Aircraft	Annual Operations
Base Year		
2017	122	-
2018	-	82,904
Forecast		
2024	142	83,787
2029	157	85,372
2039	187	88,634
Average Annual Change	(2017 – 2039) 2.0%	(2018 – 2039) 0.4%
NOTE: Annual operations based on FAA fiscal year ending September 30th.		
SOURCE: 2018 FAA Terminal Area Forecast, issued February 2019.		

3.3 Factors Influencing Forecast Approach

To guide the forecasting effort, an understanding of the relationship between industry trends and the airport operating environment is essential. Using historic information and data, it is possible to compare how changes in the general aviation industry and local area economics may have influenced activity at SPG. The analysis of recent trends also allows educated assumptions to be made as to how the airport’s service area and activity will be affected in the future.

National, regional, and local trends with the potential to impact existing, expanded, or even create new general aviation activity were identified from several sources. In addition to the historic data and recent activity forecasts, information was collected from a number of reports, studies, and industry articles including, but not limited to:

- FAA Aerospace Forecast (2019 – 2039)
- FAA Annual Business Jet Reports (2009 – 2018)
- General Aviation Manufacturers Association (GAMA) Annual Aircraft Shipment Reports (2001 – 2018)

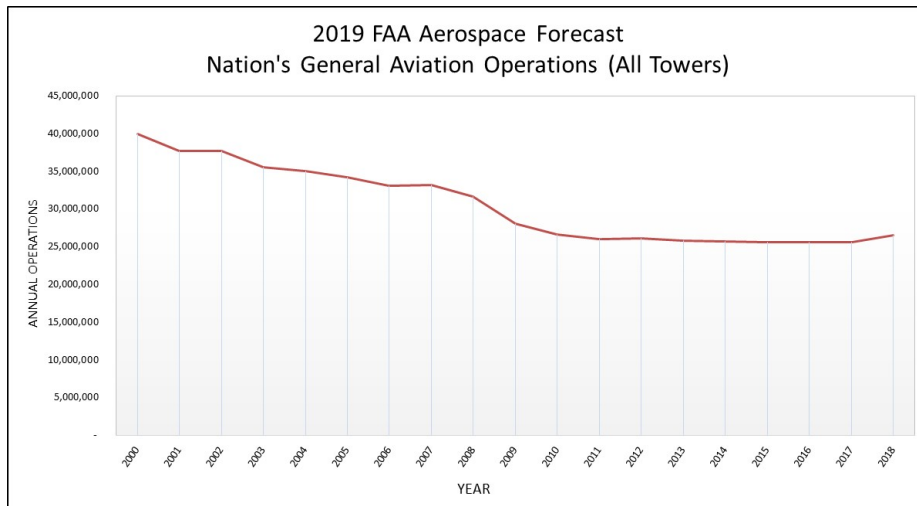
➔ Florida Statewide Aviation Economic Impact Study (2019)

The information gathered frames SPG’s role in the national air transportation network and provides insight into how activity at the airport may change over time.

3.3.1 State of the General Aviation Industry

General aviation encompasses all segments of the aviation industry except for activity that is conducted by commercial airlines or the military. Examples include pilot training, law enforcement flights, medical transportation, aerial surveys, aerial photography, agricultural spraying, advertising, and various forms of recreation, not to mention business, corporate, and personal travel.

Historically, general aviation has been an industry marked by some very significant fluctuations, both positive and negative. For example, just as the 2007 Airport Master Plan Update for SPG was finalized, general aviation activity for the nation was on a decline through 2006. Between 2003 and 2007, the industry experienced major advances in aircraft and navigation technologies, which created new product offerings and services during a period with an overall good economy. These included widespread use of Global Positioning Satellite (GPS) technology, the emergence of very light jet aircraft, and the introduction of an entirely new category; the light sport aircraft. These new product offerings and services bolstered most every segment of the general aviation industry. In spite of this, there was only limited growth in 2007.



By the end of 2008, most segments of the industry experienced losses as the overall national economy declined during the Great Recession. The very light jet industry was hit hardest as many manufacturers delayed development plans and/or went bankrupt. Data from the General Aviation Manufacturer’s Association (GAMA) showed that general aviation aircraft manufactured in the U.S. fell from a high of 3,279 aircraft in 2007 to 1,334 in 2010. It was not until 2011 that GAMA reported the first increase in new general aviation shipments since 2007. While manufacturing has increased most every year since 2011, 2018 levels were still just half of those before the Great

Recession. Compounding this issue, the 2019 FAA Aerospace Forecast documents the decline in the number of aircraft in the nation's overall active general aviation fleet between 2007 and 2013. It is interesting to note that the greatest decline between 2011 and 2013 was attributed to the 2010 Rule for Re-Registration and Renewal of Aircraft Registration. According to the FAA, implementation of this rule removed cancelled, expired, or revoked records from the national database.

Overall, the 2019 FAA Aerospace Forecast projects growth in general aviation activity over the next 20 years, despite industry fluctuations that are likely to continue. While the number of active general aviation aircraft is expected to decline through 2039, this trend is not consistent across all segments of the industry. The most common single-engine piston aircraft are expected to decline 1.0 percent annually for the period while jet aircraft are forecast to grow 2.2 percent each year. The number of hours flown by all general aviation aircraft is projected to increase at a rate of 0.8 percent each year. Similar to the fleet projections, the hours flown by turbine aircraft are forecast to grow 2.8 percent annually while the single-engine piston aircraft show a decline in activity of 1.1 percent each year. These turbine aircraft projections are supported by figures in the FAA's monthly Business Jet Reports which shows that operations conducted by general aviation jet aircraft have consistently increased since a low in 2009. They are however, still just below the level recorded for 2007, prior to the negative press during the 2008 and 2009 corporate bailouts which resulted in a 20 percent decrease in total business jet activity by the end of 2009.

3.3.2 Local Socioeconomic Factors

A number of socioeconomic indicators were evaluated that typically have a direct relationship to the use of aviation and therefore to airport activity. Overall and average annual growth rates for Pinellas County, the Tampa-St. Petersburg-Clearwater Metropolitan Statistical Area (Bay Area MSA), the State of Florida, and the U.S. are presented based on data obtained from Woods & Poole Economics, Inc. These data sets also included projections out to 2050. Similar comprehensive data sets for the City of St. Petersburg's historic and projected socioeconomic factors could not be obtained; therefore, the Pinellas County datasets were considered the best representation of the local area trends.

The Woods & Poole projections are updated annually, utilizing models which take into account specific local conditions using historic data back to 1969. While the current historic data sets from Woods & Poole cover the period from 1969 to 2016, only data back to 2007 are shown in the tables that follow; reflecting the general trends over the past 10 years. Historic socioeconomic data prior to 2007 was utilized in the various analyses of aviation activity.

Population

Both Pinellas County and the MSA have had overall and average annual population growth rates less than Florida's (Table 3-4). For Pinellas County, this slower growth highlights the fact that it is already the most densely populated county in Florida. According to Pinellas County's website in 2019, there are 3,347 people per square mile, with the next most densely populated county being Broward which has 1,445 people per square mile. Nonetheless, the population in Pinellas County and certainly the Bay Area MSA have experienced growth since 2007 and are expected to continue to grow through 2039.

TABLE 3-4
TOTAL POPULATION

	Pinellas County	Bay Area MSA	State of Florida	United States
Historic Data				
2007	918,624	2,726,780	18,367,842	301,231,167
2008	916,458	2,746,981	18,527,305	304,093,927
2009	915,330	2,763,937	18,652,644	306,771,494
2010	916,508	2,788,839	18,849,098	309,348,139
2011	917,879	2,828,665	19,096,952	311,663,290
2012	922,075	2,847,624	19,344,156	313,998,313
2013	929,085	2,871,972	19,582,022	316,204,844
2014	937,457	2,915,715	19,888,741	318,563,137
2015	948,391	2,971,086	20,244,914	320,898,756
2016	960,730	3,032,171	20,612,439	323,132,304
Overall Growth (2007 – 2016)	4.6%	11.2%	12.2%	7.3%
Average Annual Change (2007 – 2016)	0.5%	1.2%	1.3%	0.8%
Forecast				
2024	1,001,845	3,378,837	23,190,626	347,711,883
2029	1,026,531	3,612,203	24,943,522	363,960,155
2039	1,063,413	4,082,374	28,540,237	394,981,475
Average Annual Change (2016 – 2039)	0.4%	1.3%	1.4%	0.9%

SOURCE: Woods & Poole Economics, Inc., 2019.

Employment

Employment data can provide one indication of the economic stability of a geographic area. As shown in **Table 3-5**, Pinellas County employment has fluctuated since 2007, resulting in almost the exact same level in 2016, even though population has increased steadily over the same period. The MSA has had positive growth, but slower when compared to both the state and nation. It is assumed that this is attributed to the overall development being experienced in this part of the state. As Pinellas County continues to expand its population base, so too will the employment base to support the area's growth initially (such as real estate, banking, and construction) as well as afterwards (to include retail, health care, education, etc.). Woods & Poole's projections not only show employment levels continuing to increase, but at a higher rate for each over the course of the planning period.

**TABLE 3-5
TOTAL EMPLOYMENT**

	Pinellas County	Bay Area MSA	State of Florida	United States
Historic Data				
2007	576,871	1,612,951	10,557,497	179,885,716
2008	552,197	1,558,277	10,296,808	179,639,880
2009	529,173	1,490,452	9,879,407	174,233,711
2010	516,322	1,465,819	9,813,707	173,034,709
2011	515,202	1,486,964	10,048,431	176,278,642
2012	523,407	1,517,838	10,255,572	179,081,703
2013	534,019	1,559,528	10,544,029	182,408,067
2014	546,126	1,606,244	10,944,827	186,354,771
2015	563,333	1,665,078	11,371,094	190,422,800
2016	576,629	1,713,423	11,708,331	193,668,384
Overall Growth (2007 – 2016)	0.0%	6.2%	10.9%	7.7%
Average Annual Change (2007 – 2016)	0.0%	0.7%	1.2%	0.8%
Forecast				
2024	642,751	1,986,634	13,841,895	220,327,271
2029	674,843	2,134,428	15,047,136	234,964,857
2039	732,298	2,415,756	17,312,022	261,826,433
Average Annual Change (2016 – 2039)	1.0%	1.5%	1.7%	1.3%

SOURCE: Woods & Poole Economics, Inc., 2019.

Income

Personal income per capita represents the ratio of total personal income, before income taxes, to the total resident population. Adjustments are also made if the income was earned in a different area than where the person resides. While Pinellas County has slightly outpaced the MSA and state (**Table 3-6**), the nation as a whole has had the most growth in personal per capita income over the last ten years. However, Pinellas County is expected to outpace the MSA, state, and national growth, as well as overall income level, during the 20-year planning horizon.

TABLE 3-6
TOTAL PERSONAL INCOME PER CAPITA (IN 2018 DOLLARS)

	Pinellas County	Bay Area MSA	State of Florida	United States
Historic Data				
2007	\$ 41,741	\$ 37,696	\$ 39,788	\$ 39,821
2008	\$ 41,388	\$ 37,882	\$ 39,655	\$ 41,082
2009	\$ 39,893	\$ 36,719	\$ 37,065	\$ 39,376
2010	\$ 42,133	\$ 38,595	\$ 38,626	\$ 40,277
2011	\$ 44,071	\$ 40,936	\$ 40,494	\$ 42,461
2012	\$ 43,333	\$ 40,004	\$ 41,000	\$ 44,282
2013	\$ 43,514	\$ 39,708	\$ 40,797	\$ 44,493
2014	\$ 46,127	\$ 41,457	\$ 43,064	\$ 46,494
2015	\$ 48,441	\$ 43,352	\$ 45,441	\$ 48,450
2016	\$ 49,186	\$ 43,807	\$ 45,953	\$ 49,245
Overall Growth (2007 – 2016)	17.8%	16.2%	15.5%	23.7%
Average Annual Change (2007 – 2016)	1.8%	1.7%	1.6%	2.4%
Forecast				
2024	\$ 67,928	\$ 59,469	\$ 63,394	\$ 67,083
2029	\$ 87,007	\$ 75,222	\$ 81,060	\$ 85,316
2039	\$ 144,747	\$ 121,517	\$ 133,745	\$ 140,045
Average Annual Change (2016 – 2039)	4.8%	4.5%	4.8%	4.6%

SOURCE: Woods & Poole Economics, Inc., 2019.

Households

Households represent the number of occupied housing units, which include homes, apartments, a group of rooms, or single rooms occupied as separate living quarters. The number of households does not include facilities such as retirement homes, college dormitories, military barracks, or prisons. The overall growth in the number of households for Pinellas County has been much less than that for the local Bay Area, state, and nation (**Table 3-7**). Similarly, the projection over the next 20 years is that Pinellas County will continue to have limited growth in the number of households. This is not surprising given the current level of buildout in Pinellas County.

TABLE 3-7
TOTAL NUMBER OF HOUSEHOLDS

	Pinellas County	Bay Area MSA	State of Florida	United States
Historic Data				
2007	424,172	1,153,424	7,389,493	115,939,528
2008	421,309	1,154,317	7,408,025	116,538,673
2009	417,946	1,150,974	7,393,209	116,761,870
2010	415,761	1,153,245	7,435,801	116,938,345
2011	421,888	1,182,961	7,617,373	119,315,163
2012	424,777	1,199,847	7,724,395	120,466,242
2013	428,251	1,218,795	7,845,644	121,834,231
2014	429,634	1,230,241	7,926,134	122,600,297
2015	433,004	1,247,325	8,047,925	123,951,412
2016	436,197	1,265,202	8,168,607	125,177,126
Overall Growth (2007 – 2016)	2.8%	9.7%	10.5%	8.0%
Average Annual Change (2007 – 2016)	0.3%	1.0%	1.1%	0.9%
Forecast				
2024	460,735	1,412,045	9,253,593	136,189,313
2029	467,217	1,483,290	9,811,220	140,874,551
2039	471,205	1,607,939	10,837,605	148,322,939
Average Annual Change (2016 – 2039)	0.3%	1.0%	1.2%	0.7%

SOURCE: Woods & Poole Economics, Inc., 2019.

Gross Regional Product

Gross Regional Product (GRP) is based on the U.S. Bureau of Economic Analysis gross domestic product data for each state. The nation's figures represent a total for all states while the individual county data has been estimated by Woods & Poole. For the county data, this is calculated by allocating the state GRP to the counties based on the proportion of total state earnings by employees originating from a particular county. As shown by the figures in **Table 3-8**, all were impacted by the Great Recession and all have recovered since. The GRP for Pinellas County has not historically performed at the same levels as the region, state, or nation. However, over the course of the planning period, the county's GRP is expected to grow at a much greater rate.

TABLE 3-8
GROSS REGIONAL PRODUCT (IN MILLIONS OF 2009 DOLLARS)

	Pinellas County	Bay Area MSA	State of Florida	United States
Historic Data				
2007	\$ 40,933,883	\$ 118,086,546	\$ 792,792,116	\$ 14,820,650,470
2008	\$ 38,686,874	\$ 112,348,606	\$ 747,833,906	\$ 14,617,094,860
2009	\$ 38,066,522	\$ 110,976,100	\$ 721,755,002	\$ 14,320,114,985
2010	\$ 37,618,354	\$ 109,939,931	\$ 723,144,418	\$ 14,618,132,263
2011	\$ 36,776,885	\$ 108,838,059	\$ 711,917,539	\$ 14,792,271,677
2012	\$ 37,516,950	\$ 110,791,360	\$ 720,061,061	\$ 15,115,991,196
2013	\$ 38,944,502	\$ 116,767,703	\$ 738,983,744	\$ 15,415,631,630
2014	\$ 38,968,492	\$ 117,313,389	\$ 764,007,807	\$ 15,860,077,704
2015	\$ 40,793,277	\$ 123,446,531	\$ 811,855,942	\$ 16,447,678,589
2016	\$ 41,975,606	\$ 128,446,531	\$ 835,867,283	\$ 16,708,789,654
Overall Growth (2007 – 2016)	2.5%	8.8%	5.4%	12.7%
Average Annual Change (2007 – 2016)	0.3%	0.9%	0.6%	1.3%
Forecast				
2024	\$ 47,525,422	\$ 154,472,077	\$ 1,024,846,337	\$ 19,626,971,911
2029	\$ 50,260,363	\$ 169,929,457	\$ 1,140,432,011	\$ 21,378,635,247
2039	\$ 55,164,620	\$ 201,768,580	\$ 1,374,073,902	\$ 24,910,993,606
Average Annual Change (2016 – 2039)	1.2%	2.0%	2.2%	1.8%

SOURCE: Woods & Poole Economics, Inc., 2019.

Woods & Poole Wealth Index

Woods & Poole calculates a wealth index which provides a measure of relative total personal income per capita weighted by the source of income. In calculating the index, relative income per capita is weighted positively for income with a higher proportion from dividends, interest, and rent and negatively for income with a higher proportion from transfer payments (income where no goods or services are provided). The index is also based on weighted averages of the regional income per capita; regional income from dividends, interest, and rent; and regional income from transfer payments. Since Woods & Poole consider dividends, interest, and rent income good indicators of assets, their resulting index provides a measure of relative wealth to that of the nation as a whole (**Table 3-9**). Even though the county's index is lower than its pre-recession peak, Pinellas County is above the national average and still continues to rank among the wealthiest of Florida's 67 counties.

TABLE 3-9
WOODS & POOLE WEALTH INDEX (COMPARED TO UNITED STATES)

	Pinellas County	Bay Area MSA	State of Florida	United States
Historic Data				
2007	105	95	104	100
2008	102	93	101	100
2009	102	94	98	100
2010	107	98	101	100
2011	106	99	100	100
2012	99	91	97	100
2013	99	90	96	100
2014	100	90	97	100
2015	101	90	98	100
2016	101	90	97	100
Overall Growth (2007 – 2016)	-4.5%	-6.1%	-6.1%	n/a
Average Annual Change (2007 – 2016)	-0.5%	-0.7%	-0.7%	n/a
Forecast				
2024	102	89	99	100
2029	102	89	99	100
2039	103	88	100	100
Average Annual Change (2016 – 2039)	0.1%	-0.1%	0.1%	n/a

SOURCE: Woods & Poole Economics, Inc., 2019.

3.3.3 Aviation Fuel Prices

The general aviation industry was significantly impacted by both September 11th, 2001 and the Great Recession. This general period was also marked by dramatic increases in both Jet A and 100LL (AvGas) fuel prices, especially between 2003 and 2008. During this five-year period, Jet A prices increased an average of nearly 30 percent each year while 100LL increased nearly 17 percent each year. Since that time aviation fuel prices have fluctuated and overall, the general aviation industry has enjoyed lower Jet A fuel costs since 2012. For 100LL the lowest prices were prior to 2012, but have increased at much lower rates than in the past. From a production standpoint, little change is expected in refining costs during the short-term due to a growth in supply. However, IHS Markit projects oil prices to increase in the long-term as a result of growing demand and the higher costs of extraction through the long term. Using data from IHS Markit, the 2019 FAA Aerospace Forecast documents that the acquisition costs (dollars per barrel) for the crude oil required for aviation fuels will increase at an average annual rate of 2.1 percent through 2039.

In addition, the eventual phasing out of 100LL fuel will have an undetermined impact on every aircraft engine built from the 1920s until today that uses this leaded gasoline. Excluding experimental and light sport aircraft, many of which can use every day unleaded automobile gas (MoGas), the FAA's figures for 2018 show that approximately 70 percent of the nearly 213,000 active general aviation aircraft are piston and use 100LL. While the costs to retrofit piston aircraft could be substantial, the ultimate cost of an unleaded aviation fuel has the potential to be much less than the current 100LL used.

3.4 Forecast of Based Aircraft

Based aircraft are those aircraft that are operational, airworthy, and kept at the airport for a majority of the year (more than six months). Therefore, the number of aircraft owners projected to base their aircraft at SPG is an important consideration for airfield planning since it is a key indicator of the demand for facilities. Projections of based aircraft also provide an indication of the anticipated growth in general aviation activity.

Information on the aircraft based at general aviation airports is documented in the FAA's National Based Aircraft Inventory Program. Through this program the FAA determines whether the aircraft reported have a current registration. Then, a check is made to see if any of the aircraft have been reported by another airport. This creates a validated number of based aircraft for a given airport. This count includes a break out of the single-engine, multi-engine, jet, and rotorcraft models. It is worth noting that the National Based Aircraft Inventory Program does not count glider, military, or ultralight aircraft since these may not always have a tail number for registration. These categories of aircraft are included as part of the FAA Airport Master Record (Form 5010); regardless, no glider, military, or ultralight aircraft have been included on recent 5010 forms for SPG.

As part of this master planning effort, SPG has submitted information to update the FAA's National Based Aircraft Inventory Program. At the end of 2018, only 53 were included in the FAA's database. An extensive inventory of the records from the City, Sheltair Aviation (Sheltair), St. Pete

Air, and the other tenants/operators at the airport documented that 176 active aircraft were based at SPG in 2018. These included the following:

Single-Engine	159
Multi-Engine	11
Jet	0
Rotorcraft	<u>6</u>
Total	176

Through the first half of 2019, the FAA had validated 163 based aircraft for SPG; however, airport management is still working to get the remaining 13 based aircraft validated.

3.4.1 Historic Growth

Given the cyclical nature of the general aviation industry, historic changes in the number of based aircraft at the airport are important to consider when analyzing potential growth. Unfortunately for SPG, there is no reliable source of information for historic based aircraft counts. The first three tables of this chapter illustrated that the 2007 Airport Master Plan Update cited 200 based aircraft in 2004, the FASP called for 128 in 2015, and the 2018 FAA TAF showed 122 in 2017. As noted, there were 176 based aircraft at the end of 2018 and despite the challenges the general aviation industry has faced over the last decade, both airport and the Sheltair fixed based operator (FBO) management do not believe there has been the steady decline in based aircraft as indicated by the base years of these previous studies. In fact, the current hangar wait list maintained by Sheltair has just over 100 aircraft that are not currently based at SPG. In December of 2018, each person on the list was contacted, of which 31 have replied and reconfirmed their desire to have a hangar at SPG. Since the figures from previous studies would suggest a downward trend in the overall number of based aircraft, historic growth was not a forecast option.

3.4.2 Previous Growth Projections

The 2007 Airport Master Plan Update projected 238 based aircraft by 2018, which far exceeds the 2018 count of 176. Even though the number of based aircraft have been significantly less than what was projected in the previous master plan, that study's expected average annual growth rate of 1.3 percent was applied to the current based aircraft figure for comparison purposes. This results in an estimate of 229 based aircraft at SPG by the end of the 20-year planning period (**Table 3-10**).

As mentioned, the FASP is updated regularly and therefore incorporates changes in the industry that can ultimately affect the level of based aircraft. The most recent data for the system plan projects an average annual growth of 1.2 percent for the based aircraft at SPG. Applied to the 2018 count, this would result in 228 based aircraft by 2039 (**Table 3-10**).

The FAA's TAF is also updated annually, but as shown in **Table 3-3**, the most recent version only showed 122 based aircraft in 2017. For 2018, there were 125 based aircraft projected, which is 51 less than the current number documented. Regardless, when the 2.0 percent average annual growth

rate is applied to the current based aircraft figure of 176, this yields a forecast of 265 based aircraft by 2039 (**Table 3-10**).

3.4.3 National Active Fleet Forecasts

Each year the FAA provides a long-term projection for the active general aviation fleet as part of their Aerospace Forecast. Decreases in the nation's total active fleet occurred between 2007 and 2013. Since that period, there has been an overall increase which is currently projected to continue through 2020. Afterwards, the 2019 FAA Aerospace Forecast projects a slow decline in the active general aviation fleet through 2039. Given that SPG maintains a validated hangar wait list, the FAA's projection for an overall decline in the national general aviation active fleet was not utilized to create a based aircraft forecast.

3.4.4 Regression Analysis

Regression analysis can be an effective tool to forecast the expected number of based aircraft since population, income, employment, industry data, and other variables typically generate reliable projection models. Unfortunately, due to the lack of accurate historic data, regression models could not be generated.

3.4.5 Selected Based Aircraft Forecast

For the recommended based aircraft projection, a forecast based on the average growth expected by FDOT and FAA was adopted. Even though the most recent forecasts by FDOT and FAA for SPG both suffer from not having an accurate base year for the number of aircraft at the airport, they are both based on methodologies which are updated annually. This balances the growth expected by the FAA in their overall evaluation of the nation's general aviation fleet; while also incorporating elements from FDOT's regional perspective and the local level.

As reflected in **Table 3-10**, this results in a 1.6 percent average annual growth for a total of 246 based aircraft at the end of the 20-year planning period. Within the 10-year horizon, the recommended forecast shows demand for an additional 34 aircraft to be based at SPG by 2029. Since the airport has a 100 percent hangar occupancy rate and over 30 aircraft (none of which are existing tenants) confirmed on the official hangar wait list, this is considered to be a relatively conservative projection, given that the activity forecasts should be based on an unconstrained scenario

TABLE 3-10
COMPARISON OF BASED AIRCRAFT PROJECTIONS

	Previous Master Plan ^a	State System Plan ^a	2018 FAA TAF ^a	Average Growth and Demand (recommended)
Base Year				
2018	176	176	176	176
Forecast				
2024	190	189	198	194
2029	202	201	218	210
2039	229	228	265	246
Average Annual Change (2018 – 2039)	1.3%	1.2%	2.0%	1.6%

^a Applies growth projection to current based aircraft count.

SOURCE: ESA, 2019.

3.5 Forecast of Based Aircraft Fleet Mix

Projecting the types of based aircraft is necessary since different aircraft require different facilities. For the short-term, the future based aircraft fleet mix was primarily determined by the specific aircraft types on the current airport hangar wait list. For the balance of the 20-year planning horizon, the FAA’s projections for the general aviation fleet was evaluated and compared to the aircraft types at SPG. While the overall growth in the nation’s active fleet was not utilized to forecast based aircraft, the individual projections of aircraft types are useful in predicting the future based aircraft fleet mix. In addition, information obtained from interviews with the various airport tenants and production data from the aircraft manufacturers was also used to estimate the future mix of based aircraft.

3.5.1 The Nation’s Active General Aviation Fleet

Every year, the nation’s active general aviation fleet is published as part of the FAA Aerospace Forecast. In 2018 there were nearly 213,000 active general aviation aircraft. Even though the 2019 FAA Aerospace Forecast projects the nation’s number of active general aviation aircraft to decline through 2039, their forecast provides detail on how the individual aircraft categories are expected to evolve over the next 20 years.

While the FAA provides counts for a number of aircraft categories, they have been simplified into the five major categories shown in **Table 3-11**. Within the single-engine grouping are the single-engine piston, experimental, and light sport aircraft categories. The multi-engine group contains both piston and turboprop models, as the rotorcraft group contains both piston and turbine models. It is assumed that single-engine turboprops are included within the multi-engine group as there is no separate category for this small segment of the fleet. The jet category covers all ranges of turbojet general aviation aircraft, from the very light jets to the heaviest business jets.

The FAA projects considerable growth in the jet category. While the use of business aircraft fell after 2007, jet aircraft usage by smaller companies continues to increase as various charter, lease, time-share, partnership, and fractional ownership agreements provide more cost effective options for these aircraft users resulting in higher utilization rates. More businesses also rely on general aviation because it provides safe, efficient, flexible, and reliable transportation. Fractional ownership offers consumers a more efficient use of time by providing faster point-to-point travel, the ability to conduct business while flying, and more convenient enplaning and deplaning of flights (when compared to commercial airlines).

TABLE 3-11
FAA FORECAST OF NATIONAL ACTIVE GENERAL AVIATION FLEET

	2018 Fleet Mix	2039 Fleet Mix	Average Annual Growth Rate
Single-Engine	75.1%	67.9%	-0.5%
Multi-Engine (piston & turboprop)	10.8%	11.8%	0.4%
Jet	6.9%	10.9%	2.2%
Rotorcraft	5.0%	7.2%	1.7%
Other (gliders, balloons, etc.)	2.2%	2.2%	0.2%

SOURCE: FAA 2019 Aerospace Forecast.

The continuing popularity of travel by general aviation aircraft is also due to the ability to use smaller, less-congested airports which are more convenient to the final destination. A large part of this is the result of the expanded application of GPS technologies in navigation, but more specifically, the myriad of new runway specific instrument approach procedures that have been established at even the smallest airports. In the FAA's projections, jet aircraft models (including the very light jets) are expected to replace a number of the piston aircraft in the future. This is just one of the reasons the single-engine (piston) category is on a decline and the multi-engine group shows virtually no growth. In all, jets are expected to represent nearly 11 percent of the active general aviation fleet by 2039, up from the current 7 percent of the fleet.

3.5.2 Current and Future Based Aircraft Fleet Mix

The 2018 based aircraft fleet mix at SPG is comprised of 90.3 percent single-engine, 6.3 percent multi-engine, and 3.4 percent rotorcraft. Throughout the planning period, the mix of aircraft is expected to remain predominately single-engine, but they will account for a slightly lower overall percentage of the total based aircraft. A return of a few based jets and growth in the number of turboprop aircraft at the airport are expected over the course of the 20-year planning period. This is reasonable considering that the FAA has predicted that turbojet technology has developed to the point that it is truly feasible as a replacement to the more traditional piston-powered fleet. The expected future based aircraft fleet mix in **Table 3-12** initially reflects the aircraft types that new tenants to SPG would bring once hangar space is provided. Afterwards, the future based aircraft mix is representative of the general aviation industry trends expected over the course of the 20-year planning period.

As with most airports, the single-engine category is predominantly comprised of Beech, Cessna, Mooney, and Piper models. There are also a number of single-engine turboprop aircraft such as the Pilatus PC-12 and Socata TBM 700. Multi-engine aircraft tend to include Cessna models in the 300 and 400 series as well as a number of the Piper twin-engine aircraft. As indicated previously, the national fleet of single-engine aircraft is expected to decline slightly while the multi-engine group is anticipated to increase slightly. While many of the additional single-engine aircraft are expected to be similar to those currently at SPG, the additional aircraft in the multi-engine category are expected to be turboprops.

TABLE 3-12
FORECAST OF BASED AIRCRAFT FLEET MIX

	Base Year	Forecast		
	2018	2024	2029	2039
Single-Engine (piston & turboprop)	159	173	185	211
Multi-Engine (piston & turboprop)	11	13	16	20
Jet	0	2	3	6
Rotorcraft	6	6	6	9
Total	176	194	210	246

SOURCE: SPG's Hangar Wait List, December 2018; FAA 2019 Aerospace Forecasts; and ESA analysis, 2019.

In the future, based jets will likely include a mix of the light to small business jet aircraft that have the ability to operate in and out of SPG. These include popular models from the Cessna Citation series, the smaller jets developed by Embraer, and the new Cirrus Vision Jet, two of which were confirmed in December 2018 on the hangar wait list.

Rotorcraft will continue to include both piston and turbine powered models, such as the popular Bell, Eurocopter, and Robinson models. Of the six helicopters currently based at the airport, four include the Robinson R44 and one the Robinson R66, which are used for both sightseeing aerial tours and traffic reporting. The current turbine powered helicopter based at SPG is the Eurocopter EC-135 operated by Med-Trans Corporation for the flight operations associated with the Johns Hopkins All Children's Hospital.

While approximately 2.2 percent of the nation's active fleet fall within the "Other" category (gliders, balloons, and ultralights), there are none currently based at SPG. Likewise, no aircraft in this category are expected to be based at the airport over the course of the planning period. Therefore, this category was not included in **Table 3-12**.

3.6 Forecast of Annual Operations

The FAA defines an aircraft operation as either a single aircraft landing or takeoff. Further, a touch and go operation is counted as two operations, since the aircraft technically lands and immediately takes off. The FAA's Operations Network (OPSNET) data provides the official activity counts based on the actual SPG airport traffic control tower (ATCT) activity logs. The FAA classifies aircraft operations into four different categories for OPSNET as well as for their other datasets, airport traffic control tower logs, and Aerospace Forecast. These categories, which include air carrier, air taxi, general aviation, and military, are defined by the FAA as:

- ➔ Air Carrier - an aircraft with seating capacity of more than 60 seats or a maximum payload capacity of more than 18,000 pounds carrying passengers or cargo for hire or compensation.
- ➔ Air Taxi - an aircraft designed to have a maximum seating capacity of 60 seats or less or a maximum payload capacity of 18,000 pounds or less carrying passengers or cargo for hire or compensation.
- ➔ General Aviation - all civil aircraft, except those classified as air carriers or air taxis.
- ➔ Military - all classes of military aircraft.

It was stated previously that general aviation encompasses all segments of the aviation industry except for the activity that is conducted by commercial airlines or the military. Given there are no commercial airlines and very limited military operations at SPG, the historic and future annual operations for SPG have been analyzed as a whole, since the activity that is not truly general aviation is relatively insignificant.

3.6.1 Historic Activity

As with the based aircraft, the historic activity at an airport is important to evaluate given the cyclical nature of the general aviation industry. The total annual operations officially recorded for SPG over the past 15 years are included in **Table 3-13**. Since the 2004 base year of the 2007 Airport Master Plan Update, the annual activity has fluctuated quite a bit, sometimes increasing or decreasing significantly in a short period of time. While general aviation activity is certainly linked to the local area economy, the major impacts to the industry described previously have also had a significant influence on these figures.

What is interesting to note is that the 2007 Airport Master Plan Update documented 106,283 annual operations for 2004 (that study's base year), while the FAA's OPSNET data recorded the activity for 2004 at 93,783 operations. Similarly, the FASP recorded 97,540 for 2004 (which was the total in OPSNET for 2003) and the FAA TAF (under a fiscal year) documented the activity for FY2004 at 97,204. Regardless, the official OPSNET counts shows that approximately 10,000 less annual operations occurred in 2018 than did in 2004.

TABLE 3-13
PAST 15 YEARS OF AIRCRAFT OPERATIONS

	Air Carrier	Air Taxi	General Aviation	Military	Annual Operations	Change over Prior Year
2004	0	3,876	86,482	3,425	93,783	-3.9%
2005	0	3,347	74,384	2,038	79,769	-14.9%
2006	0	2,994	73,550	2,675	79,219	-0.7%
2007	0	2,625	68,794	3,268	74,687	-5.7%
2008	7	2,031	79,022	3,203	84,263	12.8%
2009	0	3,132	74,657	2,766	80,555	-4.4%
2010	0	933	77,308	2,942	81,183	0.8%
2011	0	253	84,550	2,596	87,399	7.7%
2012	1	186	82,049	4,211	86,447	-1.1%
2013	23	3,565	87,835	5,404	96,827	12.0%
2014	2	4,541	88,867	3,546	96,956	0.1%
2015	14	3,199	77,498	3,363	84,074	-13.3%
2016	0	2,516	83,132	2,164	87,812	4.4%
2017	0	3,126	87,471	2,419	93,016	5.9%
2018	0	2,231	80,307	1,380	83,918	-9.8%

SOURCE: FAA OPSNET database, 2019.

Since 2004 the significant fluctuations include two years where the annual percentage of operations decreased by double digits and two years where it increased by double digits. With the exception of one year, activity at the airport declined five years in a row after 2001, presumably the results that September 11th had on the general aviation industry. This resulted in the airport's lowest recorded operations (in 2007) since the ATCT was commissioned. While activity has continued to fluctuate, there has been an overall increase in the annual operations since. Therefore, the average annual growth of 1.1 percent between 2007 and 2018 has been applied to develop one of the projections shown in **Table 3-14** for the annual operations expected through 2039.

It should be noted that over the past 15 years a few operations have been recorded in the air carrier category even though SPG is a general aviation facility. Discussions with ATCT management revealed that the occasional air carrier figures reflect operations that are being conducted by aircraft with an approved air taxi call sign or related to low approaches conducted by commercial aircraft during special events. The military activity has primarily consisted of rotorcraft operations by the United States Coast Guard Sikorsky HH-60 Jayhawks based out of St. Pete-Clearwater International Airport and U.S. Army UH-60 Blackhawks. There have also been a few other military rotorcraft operations conducted by Boeing V-22 Osprey and Boeing CH-47 Chinooks.

3.6.2 Previous Growth Projections

Overall annual operations in the 2007 Airport Master Plan Update were projected to have an average growth rate of 1.2 percent through 2024 (**Table 3-1**). When this was applied to the significantly higher count for 2004, the result was a projection of approximately 125,000 annual operations for 2018 and nearly 134,000 by 2024. Although the average annual growth rate seems reasonable, it was based on a subjective analysis of the activity and general aviation industry at that time. Therefore, the previous master plan growth rate was not utilized to develop a new forecast.

As with based aircraft, projections of aircraft operations in the FASP benefit from being updated on a regular basis. Not only does this help temper industry fluctuations, it also allows adjustments to be made to accommodate any local or regional system changes. Using 2015 as the base year, the most recent system plan forecast from FDOT projects SPG's activity to grow at an average rate 1.1 percent each year through 2035. This rate is equal to that of the historic projection and therefore results in the same projection when applied to the number of operations recorded for 2018.

The general aviation operations in the 2018 TAF utilize data from the FAA's 2018 fiscal year as the base level of activity. While the 2018 TAF also documents overall growth since the lowest activity level recorded in 2007, it only projects an average annual growth rate of 0.4 percent through 2039. This rate has been applied to the 2018 calendar year operations in order to provide a more comparable projection using the TAF's relatively flat forecast for SPG (**Table 3-14**).

3.6.3 Utilization of the General Aviation Fleet

Each year as part of their Aerospace Forecast, the FAA provides historic data and projections on the number of hours flown by general aviation aircraft. In the 2019 Aerospace Forecast, the FAA anticipates the utilization of the fleet to increase at an average annual rate of 0.8 percent between 2018 and 2039. This fairly limited growth is partly related to the long-term costs associated with aviation fuels, which the FAA documents as increasing 2.1 percent each year through 2039. As noted before, the most active aircraft types (and therefore higher utilization rates) will be those in the turbine fleet (both aircraft and rotorcraft) versus a number of piston aircraft which are not expected to be utilized as much.

The FAA's overall expectation on the general aviation hours to be flown have been applied to the base year operations for SPG to create another forecast scenario. As shown in **Table 3-14**, this results in just over 99,000 annual operations by the end of the planning period.

3.6.4 Market Share

A common methodology for forecasting aviation activity is the use of market share analysis. This approach allows a comparison to be made of the annual operations SPG has supported against a defined data set. In the Aerospace Forecast, the FAA documents and projects the operations conducted at all of the towered airports in the nation. A separate count and forecast is also included for only the general aviation operations at these towered facilities. It should be noted that while SPG's historic data depicts that operations were impacted by the Great Recession, the nation's level of general aviation operations for the same period recorded an overall decrease for all but one year between 2007 and 2016.

The aircraft operations for SPG over the past 15 years (**Table 3-13**) were evaluated against the same general aviation activity for the nation. Given the overall decline in the nation's numbers during this period, it comes as no surprise that SPG's share of the nation's general aviation operations has increased. For the nation, the FAA expects the aircraft activity to increase every year through 2039. When the expected local market share is combined with the FAA's projected

increase, approximately 117,000 of those operations (**Table 3-14**) are expected to be accommodated at SPG.

3.6.5 Operations per Based Aircraft

Another forecast was generated by assigning a representative level of annual operations for each based aircraft. This methodology is not considered the most accurate if a set ratio is assigned to a group of similarly categorized airports (since no two airports operate the same). Additionally, based jets and multi engine aircraft tend to generate less operations than single engine aircraft, particularly when the single-engine are used for flight training. However, to develop an alternate estimate for the level of annual operations at SPG, this methodology can be useful if local data is utilized. In doing so, there were nearly 500 operations per based aircraft in 2018. When applied to the selected forecast of based aircraft, this methodology projects that 123,000 annual operations would occur by 2039 (see **Table 3-14**).

3.6.6 Regression Analysis

The regression models developed and tested incorporated three types of independent variables to identify correlations with historic aircraft operations. The first included a number of the socioeconomic datasets previously summarized. These were applied based on initial assumptions made for each as to their potential correlation. For example, it was assumed that the activity levels at the airport have a direct relationship to the number of people in the surrounding area. The FAA's data on fuel costs was also included as an independent variable, since this is such an important element of owning and operating any general aviation aircraft. In addition, an indicator variable was introduced to take into consideration the impacts associated with the Great Recession on the level of activity at SPG. Indicator variables are used in regression models for events such as the recession that cannot be easily quantified.

A variety of models were evaluated using the different independent variables against the historic activity data. However, no significant correlations could be derived using different combinations of the independent variables. Essentially, none of the local socioeconomic or industry data available would generate a model that could reliably explain the past activity. This is attributed to the fact that the historic number of operations at SPG has fluctuated greatly while most of the independent variables utilized had positive, linear growth during the same period. Therefore, this method to project future annual operations was not included in the final analysis.

TABLE 3-14
COMPARISON OF PROJECTIONS FOR ANNUAL OPERATIONS

	Historic and State System Plan Growth ^a	2018 FAA TAF Growth ^a	Utilization of National Fleet	Market Share Analysis (recommended)	Operations per Based Aircraft
Base Year					
2018	83,918	83,918	83,918	83,918	83,918
Forecast					
2024	89,611	85,952	88,027	92,303	97,000
2029	94,649	87,685	91,605	99,928	105,000
2039	105,592	91,256	99,203	117,118	123,000
Average Annual Change (2018 – 2039)	1.1%	0.4%	0.8%	1.6%	1.8%

^a Applies growth projection to current annual operations count.

SOURCE: ESA, 2019.

3.6.7 Selected Forecast of Annual Operations

Each of the projections shown in **Table 3-14** were generated using commonly accepted methods. Therefore, selection of a preferred forecast largely depends on the potential of the airport's general aviation users and the associated assumptions on future airport activity. In addition, the selection of a preferred forecast also needs to take into account the airport improvements that have been made and that more will be made in the future (unconstrained scenario). Finally, no future projection should be selected if it does not account for past and future changes in the aviation industry.

Between 2000 and 2018, general aviation operations at the nation's towered airports decreased an average of 2.2 percent each year. Activity for Florida's towered airports over the same period only had an average annual decrease of 0.2 percent. Even more significant is that since 2010 (after the Great Recession) the nation's total general aviation activity at towered airports has just recently re-established the same level (i.e. no overall growth between 2010 and 2018). General aviation operations in Florida have had an average annual growth of 2.4 percent over the same period. This demonstrates that Florida's general aviation industry has been recovering each year since 2010. Given that SPG has had an overall growth rate of 1.1 percent between the historic low in 2007 and 2018, this creates an optimistic outlook, especially when the local socioeconomic factors are considered. Although a reliable correlation could not be created using regression analysis, there is certainly a very positive economic outlook for St. Petersburg, Pinellas County, and the surrounding Bay Area throughout the course of this study's 20-year planning horizon.

Given the state's recovery in general aviation activity, the forecasts generated utilizing the 2018 TAF growth rate and the overall utilization of the nation's general aviation fleet are considered constrained for the Florida market. Operations per based aircraft does utilize local conditions to predict future activity; however, the results appear overly optimistic. This is especially true given that a majority of the based aircraft include the types of aircraft the FAA expects to have some of

the lowest utilization rates in the future. Therefore, these three projections were excluded from further consideration.

While the regularly updated FASP projection is a regionally focused forecast that addresses growth factors specific to Florida, this projection, as well as the corresponding historic growth projection appear somewhat limited to the airport's potential in the current general aviation market. The market share projection is considered a more reasonable projection of the expected activity at SPG. Essentially, the market share analysis creates a performance index between SPG and all of the other airports in the nation with an ATCT. The index is then utilized with the FAA's projected level of general aviation operations for all towered airports through 2039. The resulting growth is indicative of the potential the airport has in an unconstrained environment.

The overall growth in activity experienced at SPG since 2007 reflects the airport's current era resulting from the 2003 Blue Ribbon Task Force which directly resulted in the development of the new General Aviation Terminal, enhanced FBO services, a new ATCT, and other airport improvements. This current era has also been marked by significant growth in the downtown St. Petersburg area. Finally, it is worth noting that the OPSNET monthly data for January through April 2019 shows that SPG's operations are 41 percent higher than the same period in 2018. The first four months of 2019 are also nearly identical to the first four months of 2017 when the airport went on to record over 93,000 annual operations.

3.7 Categories of Aircraft Operations

The following sections present different categories or types of activity that will make up the forecasted operations. This includes a break out of the local, itinerant, and instrument operations. Further analyses include estimating activity peaks and determining the operational aircraft fleet mix. For each section, the total recommended annual operations from **Table 3-14** have been rounded to the nearest hundred.

3.7.1 Local versus Itinerant Operations

The FAA also categorizes aircraft operations as either local or itinerant. Local operations are those arrivals or departures performed by aircraft that remain in the airport traffic pattern or are within sight of the ATCT. Local operations are most often associated with training activity and flight instruction, but at SPG also include a number of medevac helicopter flights, sightseeing helicopter tours, banner tower operations, biplane rides, and military operations. Itinerant operations are arrivals or departures other than local operations, performed by either based or transient aircraft. Itinerant operations are generated by a wide range of recreational, business/corporate, and air charter/taxi flights.

The historic split between operations has averaged 52 percent local and 48 percent itinerant over the last 15 years. However, prior to the Great Recession the percentages were reversed. Similarly, in 2018 itinerant activity represented 53 percent of the operations and for the first four months of 2019, the split has been equal. Given the current operational profile of the airport, it is expected that the percentage of itinerant operations will be greater than the local and increase somewhat over the planning period; however, this shift is estimated to peak at 55 percent as shown in **Table 3-15**.

TABLE 3-15
FORECAST OF LOCAL VERSUS ITINERANT OPERATIONS

	Local		Itinerant		Total
Base Year					
2018	39,623	47%	44,295	53%	83,918
Forecast					
2024	43,400	47%	48,900	53%	92,300
2029	46,000	46%	53,900	54%	99,900
2039	52,700	45%	64,400	55%	117,100

SOURCE: FAA OPSNET database and ESA analysis, 2019.

3.7.2 Instrument Operations

A separate estimate of instrument operations conducted at SPG is important when evaluating future facility requirements. Using FAA OPSNET data, the number of instrument flight rule (IFR) operations was calculated. Over the past 15 years, instrument operations have averaged 4.4 percent of the total operations conducted. Similar to the itinerant traffic described previously, the highest percent of instrument operations were conducted just before the Great Recession; with the three years prior averaging 5.0 percent. In 2018, 5.1 percent of the annual operations were conducted as instrument flights. For planning purposes, it assumed that 5.0 percent of the operations will be conducted as instrument operations, especially given the fact that even the smallest of general aviation aircraft now have fairly sophisticated instrument capability and conduct more IFR operations than they have in the past. The resulting estimate of future instrument operations are shown in **Table 3-16**.

TABLE 3-16
ESTIMATE OF INSTRUMENT OPERATIONS

Instrument Operations	
Base Year	
2018	4,252
Forecast	
2024	4,600
2029	5,000
2039	5,900

SOURCE: FAA OPSNET database and ESA analysis, 2019.

It should be noted that the percent of instrument operations is different from the actual percentage of the year that the airport experiences IFR conditions. Unlike the weather observations addressed later in this chapter, the count and subsequent estimate of instrument operations include those conducted during actual instrument meteorological conditions as well as the ones simply under an IFR flight plan.

3.7.3 Peak Activity Projections

Annual projections provide a good overview of the activity at an airport, but may not reflect certain 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 peak times. Therefore, estimates of the peak month, the average day in the peak month, and the peak hour demand for aircraft operations are needed.

Review of the monthly FAA OPSNET data since 2009 reveals that operations have peaked in five different months over the last ten years. One year it was January, another April, and two times in March. The fall had the most with four instances in October and two for November. Regardless, the peak months all reflected similar percentages with respect to the overall annual operations. On

average the peak months represent 9.7 percent of the annual operations; therefore, 10 percent was applied to each of the future planning years. For the average number of days in the peak month, 31 was applied since seven of the ten occurred in months with 31 days. No historical data was available to determine the peak hour operations. Therefore, a typical industry average of 15 percent of the peak month average day was identified to represent the number of peak hour operations. With the exception of the peak hour, the resulting estimates in **Table 3-17** have been rounded to the nearest ten for the forecast years.

TABLE 3-17
PEAKS IN TOTAL AIRCRAFT OPERATIONS

	Total Annual Operations	Peak Month	Average Day of Peak Month	Peak Hour of Average Day
Base Year				
2018	83,918	9,026	291	44
Forecast				
2024	92,300	9,230	300	45
2029	99,900	9,990	320	48
2039	117,100	11,710	380	57

SOURCE: FAA OPSNET database and ESA analysis, 2019.

3.7.4 Operational Fleet Mix

Operational fleet mix is an important factor in determining the needs for airfield improvements. However, even at airports with an ATCT, it is difficult to estimate the type of aircraft conducting operations since this information is not recorded by tower staff. Instead, the current operational fleet mix percentages were based on the 2018 calendar year operational data recorded by FlightAware. Information from the 2019 FAA Aerospace Forecast as well as that obtained during the various interviews with airport tenants and customers was then utilized to predict how the operational fleet mix would change over the next 20 years.

TABLE 3-18
PROJECTED OPERATIONAL FLEET MIX

	Base Year		Forecast	
	2018	2024	2029	2039
Single-Engine (piston & turboprop)	67,134	73,300	78,700	91,300
Multi-Engine (piston & turboprop)	6,714	7,400	8,000	9,400
Jet	84	300	700	1,800
Rotorcraft	9,986	11,300	12,500	14,600
Total	83,918	92,300	99,900	117,100

SOURCE: 2018 FlightAware data, FAA OPSNET database, FAA 2019 Aerospace Forecast, and ESA analysis, 2019.

While the projections reflected in **Table 3-18** take the expected national trends into consideration, the activity at the airport will still continue to predominantly be the smaller aircraft in the general aviation fleet as well as a significant share of rotorcraft operations. The FAA anticipates growth and increased utilization for every aircraft category with the exception of the single-engine piston and multi-engine piston types. As described previously, the most significant growth and utilization is expected to occur in the jet and rotorcraft categories. Regardless, activity by single- and multi-engine aircraft at SPG is expected to increase given the large number of these aircraft at the airport and in Florida overall. The expected increase in jet operations will continue to include a mix of the smaller business jet aircraft to include models from the Cessna Citation, Embraer, Cirrus and other manufacturers.

3.8 Critical Aircraft

The airport planning criteria and design standards for various airfield elements are based on the critical aircraft that make regular use of the airport. Regular use is defined as 500 annual operations, including both itinerant and local operations, but excluding touch and go operations. These aircraft classify airport facilities based on Approach Reference Codes (APRC), Departure Reference Codes (DPRC), Runway Design Codes (RDC), and Taxiway Design Groups defined in FAA Advisory Circular (AC) 150/5300-13A, Change 1, *Airport Design*.

3.8.1 Runway Reference and Design Codes

Approach and departure codes identify the current operational capabilities for each runway with a parallel taxiway, where no special procedures are required for landing or takeoff operations. As such, runways can have more than one APRC or DPRC code for different aircraft groups and these codes may change as airfield improvements are made. Conversely, while the APRC and DPRC designations identify existing operational limitations for each runway, the RDC is utilized to plan future runway requirements.

For all three codes, the first component is the Aircraft Approach Category (AAC) which is depicted by a letter and relates to the aircraft's landing approach speed (operational characteristic). The second component is the Airplane Design Group (ADG) which uses Roman numerals to identify the critical aircraft wingspan or tail height (physical characteristics). For APRC and RDC, a third component relates to the visibility minimums associated with the runway, or group of runways, expressed in the Runway Visual Range (RVR) values. For runways with only existing and future visual approaches, the third component should be "VIS" in lieu of the visibility minimums. The ranges for these three components are included in **Table 3-19**. An Airport Reference Code (ARC) is the overall airport designation, signifying the highest RDC for the facility, minus the third (visibility) code.

**TABLE 3-19
RUNWAY REFERENCE AND DESIGN CODE COMPONENTS**

Aircraft Approach Categories

<u>Category</u>	<u>Approach Speeds</u>
A	Less the 91 Knots
B	91 knots or more but less than 121 knots
C	121 knots or more but less than 141 knots
D	141 knots or more but less than 166 knots
E	166 knots or more

Airplane Design Groups

<u>Group</u>	<u>Tail Height (feet)</u>	<u>Wingspan (feet)</u>
I	<20	<49
II	20 – 30	49 < 79
III	30 – 45	79 < 118
IV	45 – 60	118 < 171
V	60 – 66	171 < 214
VI	66 - <80	214 - <262

Visibility Minimums

<u>Runway Visual Range (feet)</u>	<u>Instrument Flight Visibility Category (statute mile)</u>
5000	Not lower than 1 mile
4000	Lower than 1 mile but not lower than ¾ mile
2400	Lower than ¾ mile but not lower than 1/2 mile
1600	Lower than 1/2 mile but not lower than 1/4 mile
1200	Lower than 1/4 mile
VIS	Visual

SOURCE: FAA Advisory Circular 150/5300-13A, Change 1, *Airport Design*

Runway 7-25 Critical Aircraft

Based on the 2018 operational data from FlightAware, the most demanding aircraft operating at SPG on a regular basis include the runway design components of A-II and B-II. These have included the Cessna 208 Caravan (A-II); Pilatus PC-12 (A-II); Beechcraft King Air 90s, 300s, and 350s (B-II); and a few Cessna Citation IIs, Vs, and 525 series aircraft (B-II). As shown in **Table 3-20**, this grouping of aircraft made regular use of the airport, conducting 990 operations in 2018. These 990 operations by A-II and B-II aircraft represented 1.2 percent of the total operations recorded in 2018. Applying this percentage to the forecast of annual operations, a conservative projection of the A-II and B-II aircraft that can be expected over the planning period was made.

**TABLE 3-20
OPERATIONS BY A-II AND B-II AIRCRAFT**

A-II and B-II Operations	
Base Year	
2018	990
Forecast	
2024	1,100
2029	1,200
2039	1,400

SOURCE: 2018 FlightAware data and ESA analysis, 2019.

For the master planning effort, the Pilatus PC-12 (A-II) has been selected as the representative existing critical aircraft for Runway 7-25 (**Table 3-22**). There are currently five Pilatus PC-12s based at the airport, which conducted over 500 annual operations on Runway 7-25 in 2018. In the future, the slightly faster Cessna Citation IIs, Vs, and 525 series aircraft (B-II) are expected to eclipse 500 annual operations on Runway 7-25. The Cessna Citation CJ4 (B-II) was selected as the representative future critical aircraft for Runway 7-25 (**Table 3-22**). While only a few aircraft of this size and weight operate at SPG on an annual basis, it is expected the activity of similar aircraft will increase over the 20-year planning period.

It is important to note that the Citation CJ4 and similar B-II jet aircraft have a maximum certificated takeoff weight (MTOW) greater than 12,500 pounds. This places them in a different category for runway design standards than the airfield's current small aircraft category (MTOW of 12,500 pounds or less). Finally, unless the current instrument minimums established to Runway 7 change (addressed in the facility requirements chapter and evaluated in the alternatives chapter), the future RDC for the runway is B-II-5000.

Runway 18-36 Critical Aircraft

A crosswind runway is recommended by the FAA when the primary runway orientation cannot provide 95 percent wind coverage. Therefore, historic wind conditions were evaluated to determine the wind coverage of the airport's current runway system. Wind coverage is based on a crosswind not exceeding 10.5 knots for aircraft with reference codes of A-I and B-I; 13 knots for reference codes A-II and B-II; and 16 knots for reference codes A-III, B-III, and C-I through D-III.

FAA AC 150/5300-13A, Change 1 recommends that ten consecutive years of wind data be examined when carrying out the evaluation. Wind coverage calculations also need to take into account the different ceiling and visibility minimums associated with aircraft operations. The most recent data (January 1, 2009 through December 31, 2018) for all weather, visual flight rules (VFR), and IFR conditions were obtained for SPG from the FAA's online Windrose File Generator website. The data was used to calculate the 10.5, 13, and 16 knot crosswind components shown in **Table 3-21** using the FAA's online Standard Wind Analysis tool.

**TABLE 3-21
WIND COVERAGE ANALYSIS**

Runway	Crosswind Component (knots)		
	10.5	13	16
All-Weather			
7-25	91.04%	95.26%	98.70%
18-36	86.76%	92.62%	97.82%
Combined	97.24%	99.24%	99.81%
VFR			
7-25	91.31%	95.52%	98.95%
18-36	86.88%	92.74%	97.97%
Combined	97.33%	99.33%	99.87%
IFR			
7-25	88.55%	92.80%	96.45%
18-36	85.10%	91.26%	96.38%
Combined	96.43%	98.37%	99.35%

SOURCE: FAA Windrose File Generator and Standard Wind Analysis Tool, 2019.

The wind rose analysis documented that during all weather and VFR conditions a crosswind runway is needed for the 10.5 knot category. During IFR conditions a crosswind runway is needed for both the 10.5 and 13 knot categories.

With an overall length of 2,864 feet, Runway 18-36 is capable of supporting nearly every A-I and B-I aircraft with a MTOW of 12,500 pounds or less (small aircraft). However, since each end of the runway is bounded by water, an extension of this runway is highly unlikely. In fact, due to the proximity of the surrounding water, neither end of Runway 18-36 currently provides the full Runway Safety Areas (RSA) for B-I small aircraft. While this is addressed in detail as part of the facility requirements chapter and evaluated as part of the alternatives, it is mentioned here with respect to the future critical aircraft for Runway 18-36.

Even though Runway 7-25 does not quite provide 95 percent coverage during IFR crosswind conditions for the 13 knot category, designating Runway 18-36 as a B-II small aircraft runway (in order to provide the additional 2.2 percent IFR crosswind coverage needed for B-II aircraft) is not considered reasonable. This is because the corresponding B-II small aircraft RSA would extend even further off each end of Runway 18-36 over the water. As such, the Piper PA-31 Navajo (B-I) has been selected as the representative current and future critical aircraft for Runway 18-36 (**Table 3-22**). In fact, there are two Piper Navajos currently based at SPG. Finally, unless the current instrument minimums established to either end of Runway 18-36 change (also addressed in the facility requirements chapter and evaluated in the alternatives chapter), the RDC for the runway is B-I-5000.

3.8.2 Taxiway Design Groups

When the previous 2007 Airport Master Plan Update was prepared, taxiways were designed solely based on the ADG (wingspan) of the critical aircraft they served. Now some of the taxiway design standards utilize a Taxiway Design Group (TDG) which is based on the overall width of the aircraft's main gear as well as the distance between the main gear and the cockpit. Each aircraft's TDG is determined through the use of a chart in FAA AC 150/5300-13A, Change 1.

This newer approach combines identification of proper taxiway width and separation dimensions with a better method for determining the required turning radii and edge fillets. The intent is to provide the appropriate taxiway geometry while minimizing excess pavement and limiting the potential for confusing layouts. The current and future TDGs for both runways are shown in **Table 3-23**.

TABLE 3-22
CURRENT AND FUTURE RUNWAY CODES

Runway	Critical Aircraft	Approach Reference Code (APRC)	Departure Reference Code (DPRC)	Runway Design Code (RDC)
7-25 Current	A-II Small Aircraft (Pilatus PC-12)	B-I-5000 Small Aircraft	B-I Small Aircraft	A-II-5000 (Pilatus PC-12)
7-25 Future	B-II (Cessna Citation CJ4)	B-I-5000 Small Aircraft	B-I Small Aircraft	B-II-5000 (Cessna Citation CJ4)
18-36	B-I Small Aircraft (Piper PA-31 Navajo)	B-I-5000 Small Aircraft	B-I Small Aircraft	B-I-5000 (Piper PA-31 Navajo)

SOURCE: FAA AC 150/5300-13A, Change 1, *Airport Design*.

TABLE 3-23
TAXIWAY DESIGN GROUPS

Runway	Current	Future
7-25	1A	1B
18-36	1A	1A

SOURCE: FAA AC 150/5300-13A, Change 1, *Airport Design*.

3.9 FAA Terminal Area Forecast Comparison

If an airport is included in the FAA TAF, any new forecasts need to be reviewed and approved by the agency before they can be applied to further analyses. During this review for general aviation airports, the FAA looks to see if the annual operations or based aircraft forecasts differ from the TAF by any more than ten percent in the five year and/or 15 percent in the ten year planning periods.

Regarding the review, the FAA Airport Planning and Programming division published a guidance paper entitled, *Review and Approval of Aviation Forecasts*. This guidance states: “If the forecast is not consistent with the TAF, differences must be resolved if the forecast is to be used in FAA decision-making. This may involve revisions to the airport sponsor’s submitted forecasts, adjustments to the TAF, or both. FAA decision-making includes key environmental issues (e.g. purpose and need, air quality, noise, land use), noise compatibility planning (14 CFR Part 150), approval of development on an airport layout plan, and initial financial decisions including issuance of LOI’s and calculation of BCA’s.”

As shown in **Table 3-24**, the recommended forecasts for based aircraft and annual operations exceed the FAA’s review criteria for consistency with the TAF. For based aircraft, the projections are considered acceptable when the base year number is adjusted. The 2019 TAF only includes 125 based aircraft at SPG for 2018, which is nearly 41 percent less than the 176 based aircraft documented. If this difference is taken into consideration (adjustment shown in **Table 3-24**), then both the five and ten year recommended based aircraft figures of this master plan are within the FAA’s review criteria for consistency with the TAF.

TABLE 3-24
COMPARISON OF FORECAST TO 2018 FAA TAF

	Recommended Baseline Forecast	2018 FAA TAF ^a	Difference	Adjusted TAF ^{bc}	Adjusted Difference
Based Aircraft					
Base Year (2018)	176	125	40.8% ^b	176	0%
5 Year (2024)	194	142	36.3%	200	-3.2%
10 Year (2029)	210	157	33.5%	221	-5.2%
Annual Operations					
Base Year (2018)	92,300	82,094	2.2% ^c	83,918	0%
5 Year (2024)	99,900	83,787	10.2%	85,649	7.8%
10 Year (2029)	117,100	85,372	17.0%	87,269	14.5%

^a Issued February 2019 with data based on FAA fiscal year which ends September 30th.

^b TAF based aircraft data for 2018 is 40.8 percent or 51 aircraft less than the number documented at the airport in 2018.

^c TAF annual operations data for fiscal year FY2018 is 2.2 percent less than actual calendar year CY2018 data used for forecasting.

SOURCE: 2018 FAA TAF and ESA Analysis, 2019.

As noted previously, there are currently 163 based aircraft validated in the FAA’s National Based Aircraft Inventory Program. Airport management at SPG is working to get the remaining 13 based aircraft validated. Regardless, even if the 2019 TAF were only adjusted to the 163 based aircraft,

the recommended five and ten year forecasts for based aircraft would still be within the FAA's review criteria for consistency with the TAF.

The annual operations are considered acceptable given that the base year level of annual operations recorded for calendar year 2018 were already 2.2 percent greater than the fiscal year 2018 count used in the TAF. If this difference is taken into consideration (adjustment shown in **Table 3-24**), then both the five and ten year recommended annual operations of this master plan are within the FAA's review criteria for consistency with the TAF.

3.10 Aviation Activity Forecast Summary

Table 3-25 presents an overview of the recommended forecasts. The data and methods used to forecast aviation demand for the airport are consistent with those used by the FAA, FDOT, and other airports around the nation. These forecasts are considered to reasonably reflect the activity anticipated at SPG through 2039 given the information available during this study.

TABLE 3-25
SUMMARY OF AVIATION ACTIVITY FORECASTS

	Base Year	Forecast		
	2018	2024	2029	2039
Based Aircraft				
Single-Engine (piston & turboprop)	159	173	185	211
Multi-Engine (piston & turboprop)	11	13	16	20
Jet	0	2	3	6
Rotorcraft	6	6	6	9
Total	176	194	210	246
Categories of Operations				
Local Operations	39,623	43,400	46,000	52,700
Itinerant Operations	44,295	48,900	53,900	64,400
Total	83,918	92,300	99,900	117,100
Instrument Operations	4,252	4,600	5,000	5,900
Operational Fleet Mix				
Single-Engine (piston & turboprop)	67,134	73,300	78,700	91,300
Multi-Engine (piston & turboprop)	6,714	7,400	8,000	9,400
Jet	84	300	700	1,800
Rotorcraft	9,986	11,300	12,500	14,600
Peaks in Total Aircraft Operations				
Peak Month	9,026	9,230	9,990	11,710
Average Day of Peak Month	291	300	320	380
Peak Hour of Average Day	44	45	48	57

SOURCE: Airport records, FAA OPSNET database, and ESA analyses, 2019.

CHAPTER 4

Facility Assessment and Requirements

CHAPTER 4

Facility Assessment and Requirements

4.1 Introduction

This chapter evaluates and establishes the improvements necessary at Albert Whitted Airport (SPG) to maintain a safe and efficient facility while also accommodating the expected demand. The following sections use the appropriate design criteria to identify and define necessary facility requirements over the 20-year planning horizon.

4.2 Airport Capacity

Airport capacity is defined by the Federal Aviation Administration (FAA) as a measure of the maximum number of aircraft operations that an airfield can support with reasonable levels of delay. Estimates of airfield capacity at SPG were developed in accordance with FAA Advisory Circular (AC) 150/5060-5, Change 2, *Airport Capacity and Delay*. Methodologies from this AC were used to calculate the hourly capacity of the runway system and annual service volume (ASV) of the airfield. These calculations were based upon the specific airfield, operational, and meteorological characteristics at SPG on a typical day.

4.2.1 Airfield Geometry

The airfield configuration is the primary factor in determining the overall airport capacity due to its direct influence on how aircraft can operate. In theory, as the number of runways and taxiways increase, so should the capacity at a given airfield. However, the physical orientation and proximity of the various runway and taxiway surfaces may or may not contribute to the overall airfield capacity.

Runway Configuration

Runway 7-25 has a northeast to southwest alignment and the crosswind runway (Runway 18-36) has a north to south orientation. Different runway configuration and use diagrams are provided in FAA AC 150/5060-5, Change 2. For SPG's two intersecting runways, the use diagrams are selected using the distances between the different runway ends relative to the runway intersection. These diagrams allow the capacity calculations to consider that some simultaneous operations on the two runway system is possible, in addition to when the airfield is limited to a single runway operation.

Exit Taxiways

The capacity of a runway system is greatly influenced by the ability of aircraft to exit the runway as quickly and safely as possible. Once an aircraft has cleared the runway environment, another is able to either land or takeoff. Therefore, the number and location of exit taxiways directly influence

runway occupancy time and overall capacity of the airfield system. Capacity is also enhanced if a full length parallel taxiway system is provided since these taxiways generally have several connector taxiways (increasing the number of runway exits) and eliminate the need to back-taxi on the runway. Both runways at SPG have parallel taxiway systems and while each have multiple connectors, only Taxiway B on the west side of Runway 18-36 provides a true full length parallel taxiway. For all intents and purposes, Taxiway D serves as a full length parallel taxiway to the north side of Runway 7-25, especially from a capacity standpoint given the relationship of the General Aviation Terminal aircraft parking apron with Taxiways D1 and D2.

The FAA methodology utilizes an exit factor based upon the number of connector taxiways within a certain range. The optimal range for exit taxiways varies for different runway configurations and is primarily based on the aircraft mix index (described in a following section). For the purposes of the capacity calculations, each exit taxiway must also be separated by at least 750 feet. Throughout the planning period, the optimal exit range for SPG is 2,000 to 4,000 feet from each landing threshold. Using these criteria, the number of taxiway exits eligible for inclusion in the capacity calculations are shown in **Table 4-1**.

**TABLE 4-1
ELIGIBLE TAXIWAY EXITS FOR CAPACITY CALCULATIONS**

2,000 to 4,000 Foot Range	
Runway 7	1
Runway 25	1
Runway 18	1
Runway 36	1
SOURCE: ESA analysis 2020.	

4.2.2 Operational Characteristics

Operational characteristics relative to airfield capacity include the aircraft mix index, the percent of aircraft arrivals, and the percent of aircraft touch and go operations. Each of these are described in the following sections as they are important variables when estimating capacity using the FAA methodology.

Aircraft Mix Index

The FAA has four aircraft categories (A through D) for capacity determinations which are based upon the maximum certificated takeoff weight, the number of engines, and the wake turbulence classifications. It should be noted that these capacity classes differ from the Aircraft Approach Categories utilized in other sections of this study. In the simplest terms, larger and heavier aircraft create more wake turbulence and require more entrail spacing to allow this turbulence to subside before another aircraft travels through the same area. Likewise, as an aircraft’s size and weight increases, so does the time typically needed for it to slow to a safe taxiing speed or to achieve the needed speed for takeoff. Therefore, larger aircraft occupy the runway longer than smaller ones.

For these reasons, aircraft classifications are used to determine the aircraft mix index which is a critical component for calculating airfield capacity.

The mix index is calculated by adding the percent of Class C aircraft plus three times the percent of Class D aircraft. Class A aircraft include single-engine aircraft less than 12,500 pounds. While Class B aircraft include multi-engine aircraft less than 12,500 pounds. The percent of Class A and B aircraft is not considered to significantly affect airfield capacity because the wake turbulence generated by these smaller aircraft dissipates fairly rapidly. Thus, the spacing can be reduced between Class A and B aircraft more than for Class C or D aircraft. Class C aircraft include multi-engine aircraft greater than 12,500 pounds, but less than 300,000 pounds with a large wake turbulence classification. Class D are multi-engine aircraft over 300,000 pounds with a heavy wake turbulence classification.

A majority of the aircraft currently operating at SPG are made up of Class A and B, with a few in Class C. As such, the current mix index is zero. In the future, operations conducted by Class C aircraft are expected to increase; however, while their level of activity may change the future critical aircraft, the mix index will only increase slightly above zero towards the end of the planning period.

Percent of Aircraft Arrivals

The percent of arrivals is simply the ratio of aircraft arrivals to total operations during a peak or average hour of operations. The FAA methodology considers a 40, 50, or 60 percent arrivals factor to compute airfield capacity. Since aircraft on final approach are given priority over departures, a higher percent of arrivals during peak periods can reduce the hourly capacity due to the longer runway occupancy times for arrivals over departures. However, this is typically only considered when estimating capacity during peaks at airports with predominately commercial airline operations. For SPG, the percent of arrivals is assumed to equal those of departures on a typical day, given there are no commercial airline operations at the airport. Therefore, the 50 percent arrivals factor was applied to all of the capacity calculations.

Percent of Touch and Go Operations

A touch and go operation refers to a training procedure in which the pilot performs a normal landing followed by an immediate takeoff, without stopping or taxiing clear of the runway. While each touch and go operation actually accounts for two runway operations (one landing and one takeoff), this procedure typically takes less time than two operations by separate aircraft. Therefore, airports with significant touch and go operations will have a greater airfield capacity than a similar airport with less of these training operations.

As noted in the forecast chapter, a portion of the local operations include touch and go operations conducted as part of the local flight training activity. During discussions with the airport traffic control tower (ATCT) management about the FAA's Operations Network (OPSNET) data, it was estimated that approximately half of the local operations or 25 percent of the overall activity at SPG in 2018 was from touch and go operations. In the future, touch and go activity will increase with the overall operational growth projected in the approved forecasts; however, the touch and go factor is not expected to exceed 30 percent over the 20-year planning period.

4.2.3 Meteorological Conditions

Different meteorological conditions influence the utilization of an airfield's runways. Variations in the weather resulting in limited cloud ceilings and reduced visibility typically lower airfield capacity, while changes in wind direction and velocity will dictate runway usage.

Ceiling and Visibility

As weather conditions deteriorate, pilots must rely on instruments to define their position both vertically and horizontally. Capacity is lowered during such conditions because aircraft are spaced further apart when they cannot see each other. For capacity calculations, FAA AC 150/5060-5, Change 2 defines three general weather categories, based upon the height of the clouds above ground level and visibility:

Visual Flight Rules (VFR) - Cloud ceiling is greater than 1,000 feet above ground level (AGL) and visibility is at least three statute miles.

Instrument Flight Rules (IFR) - Cloud ceiling is at least 500 AGL but less than 1,000 feet AGL and/or visibility is less than three statute miles but more than one statute mile.

Poor Visibility and Ceiling (PVC) - Cloud ceiling is less than 500 feet AGL and/or visibility is less than one statute mile.

Since SPG has non-precision instrument approach procedures established to Runways 7, 18, and 36, the airport is capable of accommodating aircraft during IFR conditions. The ten years of wind, cloud ceiling, and visibility data obtained for the wind rose analysis from the FAA's online Windrose File Generator site was also utilized for the capacity analysis. For SPG, the data showed that VFR conditions occurred 90.5 percent of the time, IFR conditions 9.5 percent of the time, and that PVC conditions occur less than 0.1 percent of the time.

Runway Utilization

The wind coverage analysis in the forecast chapter documents that on average, Runway 7-25 has slightly better coverage than Runway 18-36. However, wind coverage is not the only factor that determines operational flow, especially at an airport with an ATCT. In addition to wind conditions; the type of aircraft and type of operation are also important. Both Runways 7-25 and Runway 18-36 have the ability to accommodate most every type of aircraft operation currently occurring at SPG.

The individual runway end utilization applied to the airfield capacity calculations are shown in **Table 4-2**. These were derived utilizing the historic wind conditions, the 2018 FlightAware dataset, and discussions with ATCT management.

**TABLE 4-2
RUNWAY END UTILIZATION**

	Annual Average
Runway 7	60%
Runway 25	15%
Runway 18	15%
Runway 36	10%

SOURCE: ESA analysis, 2020.

4.2.4 Airfield Capacity Calculations

The preceding airfield geometry, operational characteristics, and meteorological conditions were first utilized to calculate hourly capacity. The results were then applied to determine the annual service volume in order to evaluate the ability of the airfield to accommodate the projected demand.

Hourly Capacity of the Runway System

The hourly capacity for SPG was calculated by analyzing the appropriate runway-use diagrams and figures for both VFR and IFR conditions. Using these, the aircraft mix index and percent of aircraft arrivals were applied to calculate the hourly capacity base. Next, a touch and go factor was determined using the percent of touch and go operations with the aircraft mix index. Finally, the taxiway exit factor was determined by the aircraft mix index, percent of aircraft arrivals, and number of eligible exit taxiways. A weighted hourly capacity was then calculated (**Table 4-3**) based on the percent that VFR and IFR conditions have historically been observed for each different operational flow. It should be noted that all of the calculations are based on the existing airfield configuration.

**TABLE 4-3
HOURLY CAPACITIES OF THE RUNWAY SYSTEM**

	Average VFR Hourly Capacity	Average IFR Hourly Capacity	Weighted Hourly Capacity
Base Year			
2018	104	64	100
Forecast			
2024	104	64	100
2029	104	64	100
2039	104	64	100

SOURCE: ESA analysis 2020.

Annual Service Volume

Annual service volume (ASV) is the overall measure of runway capacity at an airport. It represents the number of total operations that an airfield can support annually. In other words, ASV is the theoretical limit of operations that the airport can safely accommodate without unreasonable levels of delay occurring on a regular basis. To calculate ASV, first the ratio of annual demand to average daily demand, during the peak month, is calculated. Next, the ratio of average daily demand to average peak hour demand, during the same time is determined. These values are then multiplied together with the corresponding weighted hourly capacity to compute ASV. The calculated ASV is included in **Table 4-4** and compared to the annual operations from the approved forecasts.

**TABLE 4-4
AIRFIELD CAPACITY ANALYSIS**

	Annual Operations	Annual Service Volume (ASV)	Capacity Level
Base Year			
2018	83,918	206,800	41%
Forecast			
2024	92,300	206,800	45%
2029	99,900	206,800	48%
2039	117,100	206,800	57%

SOURCE: ESA analysis 2020.

A demand that exceeds ASV results in significant delays on the airfield. However, no matter how substantial an airport’s capacity may appear, it should be realized that delays can occur even before an airport reaches its stated capacity. In fact, according to FAA Order 5090.5, *Formulation of the NPIAS and ACIP*, capacity enhancing projects need sufficient lead times so that the improvements can be properly planned, environmentally reviewed, designed, and constructed before the resulting delays become critical. For most every type of airfield capacity enhancing project, the FAA recommends planning for such improvements when activity levels reach 60 percent of the annual capacity. For additional exit taxiways, the activity level trigger is 50 percent of the annual capacity.

Based on the calculations in **Table 4-4**, SPG is not expected to reach the 60 percent threshold within the 20-year planning period. The airfield will exceed the 50 percent threshold in the long-term planning period; therefore, taxiway projects with the potential to enhance the overall efficiency or bypass capability of the airfield system need to be considered. Changes or improvements to the published instrument approach procedures were not considered from a capacity standpoint given a majority of the airport’s operations are conducted during visual conditions.

4.2.5 Runway and Taxiway Flow Analysis

In addition to the FAA airfield capacity calculations, evaluations of the different airfield arrival and departure flows were made to help identify any inefficient areas on the airfield. While the ability exists to occasionally utilize the intersecting runways simultaneously, through a coordinated mix of arrivals and departures by the ATCT, this evaluation focused on the following conditions:

- ➔ Runway 7-25 Movements – Northeast and Southwest Flows
- ➔ Runway 18-36 Movements – North and South Flows

Assessing the different flows individually and then understanding how they can be combined for simultaneous operations, provides the simplest way to observe how aircraft movements typically occur on the current taxiway system. Through meetings and conversations with ATCT management, the most common taxi routes utilized to access or exit the runway environment were documented. Detailing how the airfield is operated enables the evaluation to identify where future improvements should be considered, especially given the taxiway design guidance in FAA AC 150/5300-13A, Change 1, *Airport Design*, that was established after the 2007 Airport Master Plan Update for SPG was conducted.

Runway 7 Movements – Northeast Flow

Typical aircraft arrival and departure movements for Runway 7-25 in a northeast flow are illustrated on **Figure 4-1**. Generally speaking, the primary runway can accommodate all aircraft activity at SPG. While not a true full length parallel taxiway, Taxiway D does provide access on the north side to both ends of the runway. Taxiway A provides access to the south side of the runway between the physical end of Runway 7 and Runway 18-36. **Figure 4-1** also depicts the FAA's optimal taxiway exit range described as part of the capacity calculations. The primary observations include:

Arrivals

- ➔ Taxiway D3 is used by aircraft exiting the runway early and taxiing to the fixed base operator (FBO).
- ➔ Taxiway B is used by the majority of aircraft exiting the runway and taxiing to the FBO.
- ➔ Taxiway D5 is used by aircraft requiring the full runway length for landing and exiting the runway and taxiing to the FBO.
- ➔ Taxiway A4 is used by aircraft exiting the runway early and taxiing to general aviation facilities south of the runway.
- ➔ Taxiway B is used by the majority of aircraft exiting the runway and taxiing to general aviation facilities south of the runway.

Departures

- ➔ Taxiway D1 is used by departing aircraft from the FBO requiring the full runway length or performing an engine run-up before departure.
- ➔ Taxiway D2 is used by departing aircraft from the FBO.
- ➔ Taxiway A1 is used by departing aircraft from general aviation facilities south of the runway requiring the full runway length or performing an engine run-up before departure.
- ➔ Taxiway A2 is used by departing aircraft from general aviation facilities south of the runway.

Runway 25 Movements – Southwest Flow

Typical aircraft arrival and departure movements for Runway 7-25 in a southwest flow are illustrated on **Figure 4-2**. The figure also depicts the FAA’s optimal taxiway exit range described previously. The primary observations include:

Arrivals

- ➔ Taxiway D3 is used by aircraft exiting the runway early, typically to perform a full stop, taxi back maneuver since touch and go operations are not permitted on Runway 25.
- ➔ Taxiway D2 is used by the majority of aircraft exiting the runway and taxiing to the FBO.
- ➔ Taxiway A4 is used by aircraft exiting the runway early and taxiing to general aviation facilities south of the runway.
- ➔ Taxiway A3 is used by aircraft exiting the runway and taxiing to general aviation facilities south of the runway.
- ➔ Taxiway A2 is used by aircraft exiting the runway and taxiing to general aviation facilities south of the runway.

Departures

- ➔ Taxiway D5 is used by a majority of aircraft using Runway 25 for departures.
- ➔ Departing aircraft can cross Runway 7-25 via Taxiway B for an intersection departure or to access Taxiway D5.
- ➔ Aircraft taxiing from south general aviation facilities can cross Runway 7-25 at Taxiway A4 and continue to Taxiway D5 for departure.

Runway 18 Movements – South Flow

Typical aircraft arrival and departure movements for Runway 18-36 in a south flow are illustrated on **Figure 4-3**. Generally speaking, this crosswind runway typically supports the smaller aircraft operating at SPG. Parallel Taxiway B provides full length access to both runway ends. **Figure 4-3**

also depicts the FAA's optimal taxiway exit range described previously as part of the capacity calculations. The primary observations include:

Arrivals

- ➔ Taxiway C is used by aircraft exiting the runway early.
- ➔ Taxiway B1 is used by the majority of aircraft exiting the runway.
- ➔ The south end connector of Taxiway B is used by aircraft requiring the full runway length for landing.
- ➔ Depending on aircraft ground traffic, arriving aircraft can utilize Taxiway A4 or Taxiway A2 to taxi to the FBO.

Departures

- ➔ Taxiway D is used by departing aircraft from the FBO to access Taxiway B and the departure end of Runway 18.
- ➔ Taxiway A is used by departing aircraft from general aviation facilities south of Runway 7-25 to access Taxiway B, cross Runway 7-25, and taxi to the departure end of Runway 18.

Runway 36 Movements – North Flow

Typical aircraft arrival and departure movements for Runway 18-36 in a north flow are illustrated on **Figure 4-4**. The figure also depicts the FAA's optimal taxiway exit range described previously. The primary observations include:

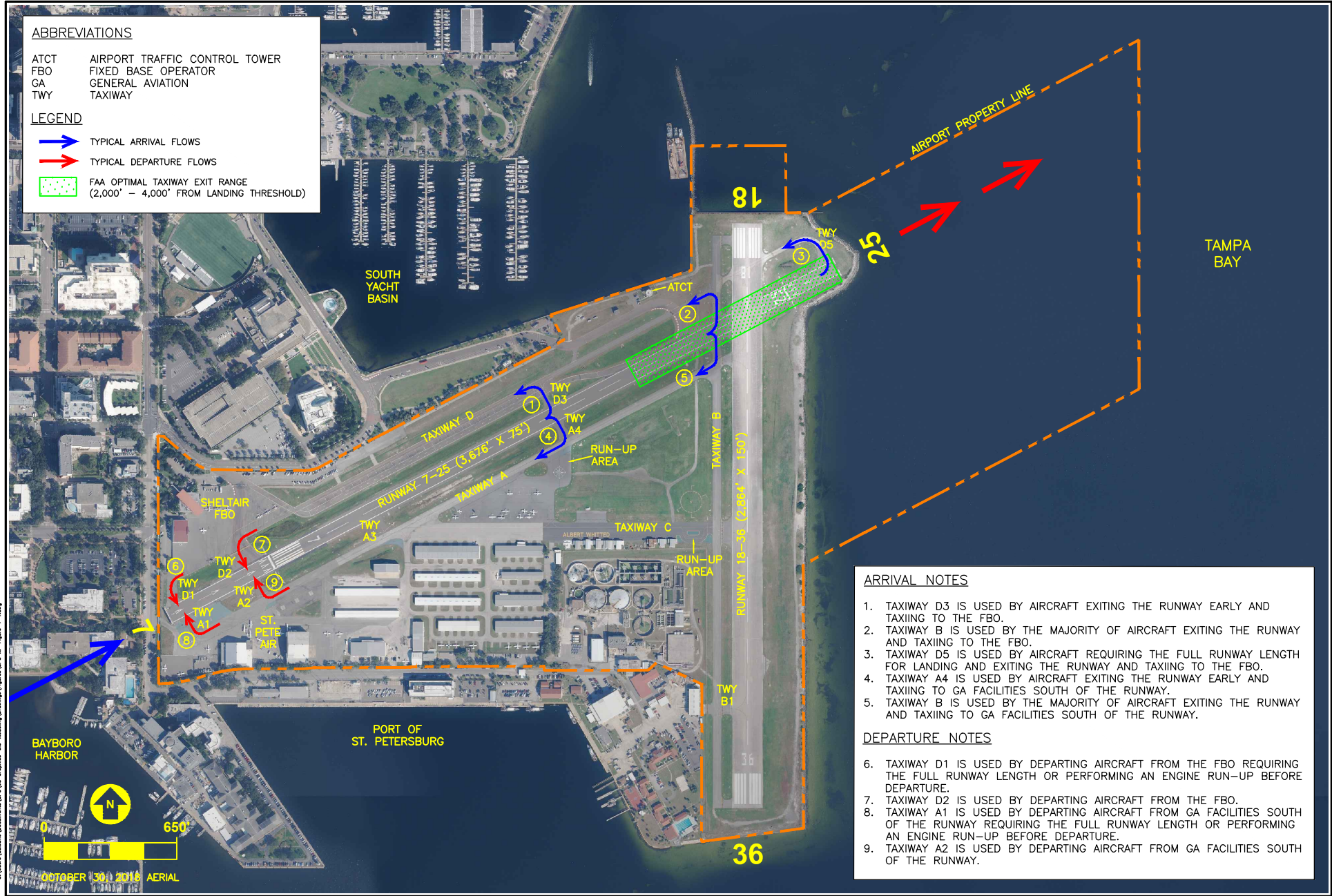
Arrivals

- ➔ Taxiway C is used by aircraft exiting the runway early.
- ➔ Taxiway A is used by the majority of aircraft exiting the runway.
- ➔ Taxiway D or even the north end connector of Taxiway B is used by aircraft requiring the full runway length for landing or by arriving aircraft taxiing to the FBO. Taxiway D is also used during busy periods to allow departing aircraft to utilize Taxiway A to access the runway.

Departures

- ➔ Taxiway B1 is used by departing aircraft not requiring the full runway length or to bypass aircraft performing an engine run-up at the south end of Taxiway B.
- ➔ The south end connector of Taxiway B is used by a majority of aircraft using Runway 36 for departures.

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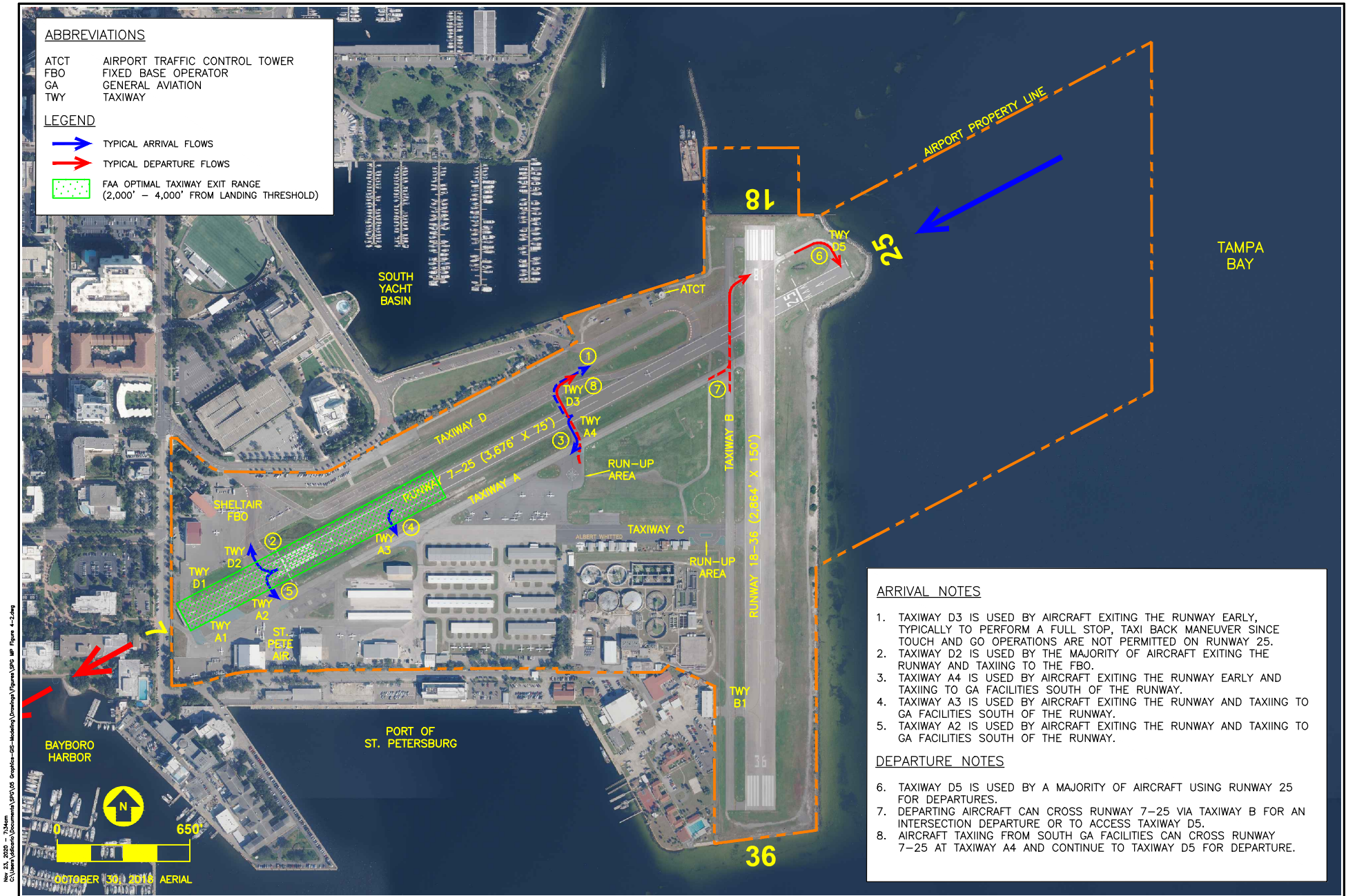
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Source: ESA, 2020.

Albert Whitted Airport Master Plan

FIGURE 4-1
 RUNWAY 7 MOVEMENTS - NORTHEAST FLOW

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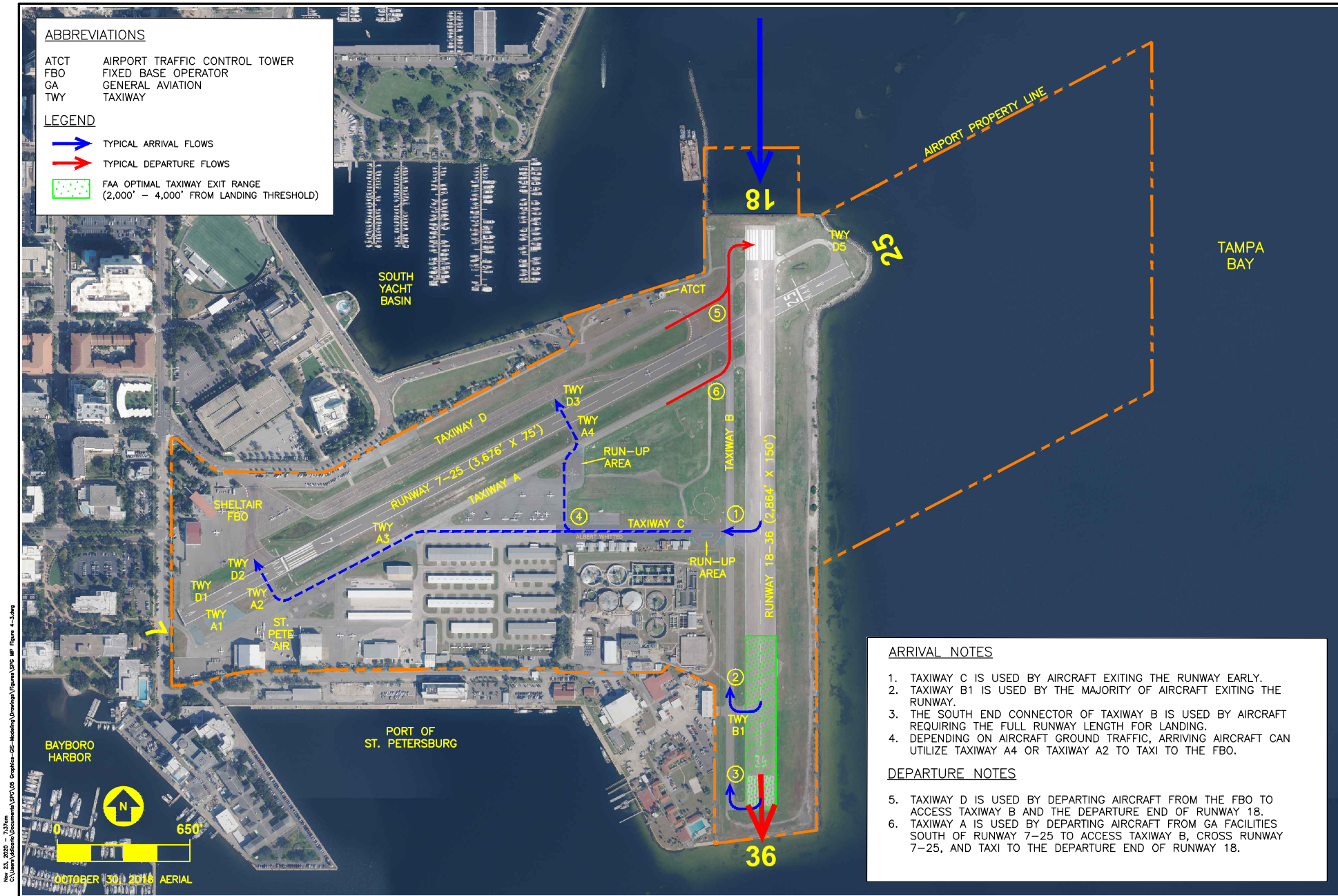
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Source: ESA, 2020.

Albert Whitted Airport Master Plan

FIGURE 4-2
 RUNWAY 25 MOVEMENTS - SOUTHWEST FLOW

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ABBREVIATIONS

ATCT AIRPORT TRAFFIC CONTROL TOWER
 FBO FIXED BASE OPERATOR
 GA GENERAL AVIATION
 TWY TAXIWAY

LEGEND

TYPICAL ARRIVAL FLOWS
 TYPICAL DEPARTURE FLOWS
 FAA OPTIMAL TAXIWAY EXIT RANGE (2,000' - 4,000' FROM LANDING THRESHOLD)

ARRIVAL NOTES

1. TAXIWAY C IS USED BY AIRCRAFT EXITING THE RUNWAY EARLY.
2. TAXIWAY B1 IS USED BY THE MAJORITY OF AIRCRAFT EXITING THE RUNWAY.
3. THE SOUTH END CONNECTOR OF TAXIWAY B IS USED BY AIRCRAFT REQUIRING THE FULL RUNWAY LENGTH FOR LANDING.
4. DEPENDING ON AIRCRAFT GROUND TRAFFIC, ARRIVING AIRCRAFT CAN UTILIZE TAXIWAY A4 OR TAXIWAY A2 TO TAXI TO THE FBO.

DEPARTURE NOTES

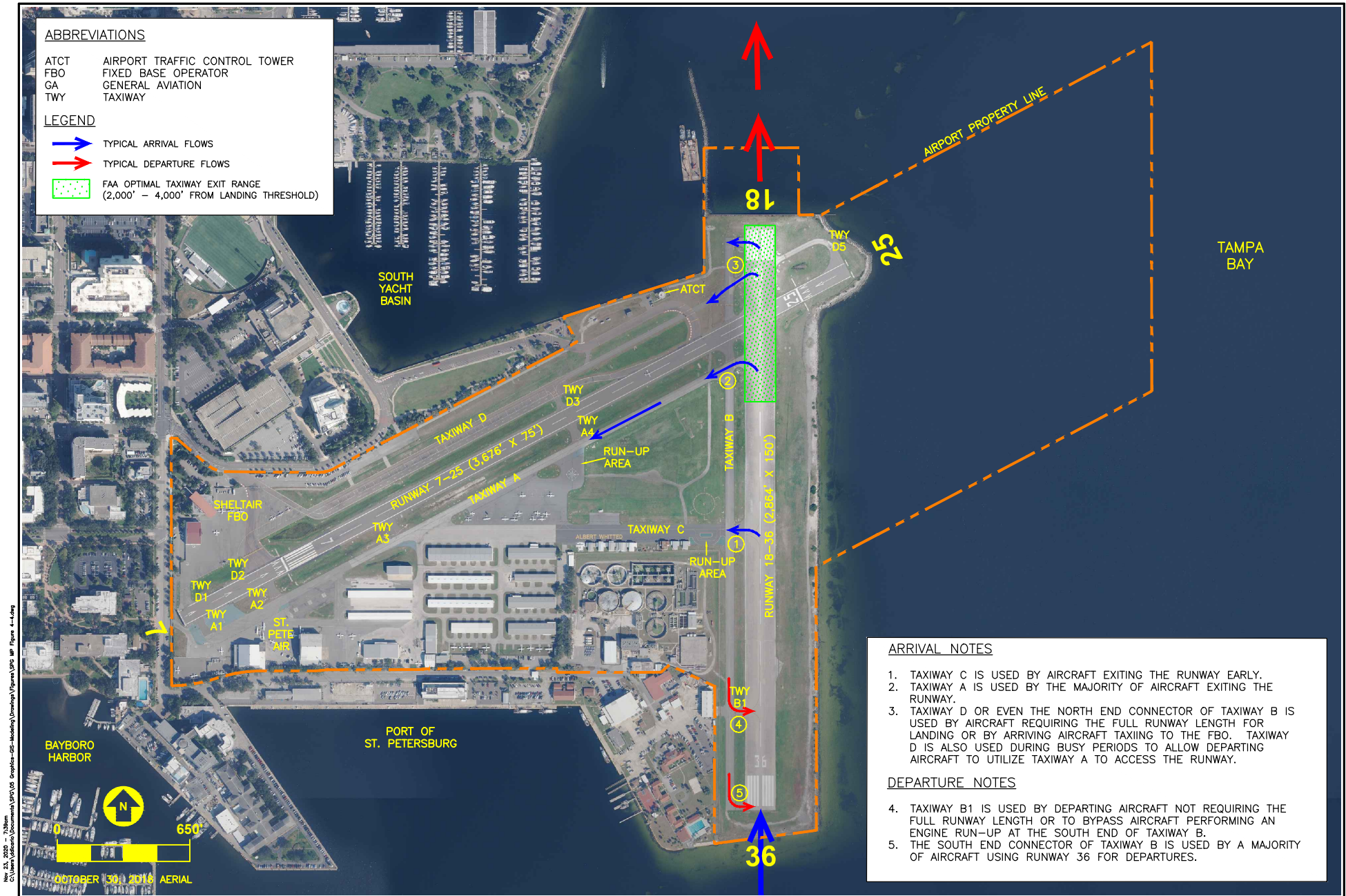
5. TAXIWAY D IS USED BY DEPARTING AIRCRAFT FROM THE FBO TO ACCESS TAXIWAY B AND THE DEPARTURE END OF RUNWAY 18.
6. TAXIWAY A IS USED BY DEPARTING AIRCRAFT FROM GA FACILITIES SOUTH OF RUNWAY 7-25 TO ACCESS TAXIWAY B, CROSS RUNWAY 7-25, AND TAXI TO THE DEPARTURE END OF RUNWAY 18.

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Source: ESA, 2020.

Albert Whitted Airport Master Plan
FIGURE 4-3
 RUNWAY 18 MOVEMENTS - SOUTH FLOW

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Source: ESA, 2020.

Albert Whitted Airport Master Plan

FIGURE 4-4
 RUNWAY 36 MOVEMENTS - NORTH FLOW

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4.3 Runway Requirements

As the primary airfield component, a runway must have the proper length, width, and strength to safely accommodate the existing and future critical aircraft. In addition to the physical characteristics of a runway, there are a number of other safety-related design standards that must be met, including the Runway Safety Area, Runway Object Free Area, Runway Protection Zones, and Obstacle Free Zones. Each of these, as well as other runway requirements for SPG, are described in the following sections.

4.3.1 Runway Length Analysis

FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*, provides the current standards and methods for computing recommended runway lengths. Use of this AC is required when a runway extension project is intended to request or receive federal funding. Depending on the critical aircraft's maximum certificated takeoff weight (MTOW), the AC provides different methods for calculating runway length. They are based on the MTOW ranges of 12,500 pounds or less (small aircraft); over 12,500 pounds, but less than 60,000 pounds; and 60,000 pounds or more. It should be noted that depending on the aircraft manufacturer, MTOW may also be referred to as the maximum takeoff weight, maximum allowable takeoff weight, or maximum design takeoff weight.

While the procedures and design rationale vary depending on the weight category, each still requires some basic airfield data. This data is used in adjusting how an aircraft's takeoff and landing performance might be influenced by the characteristics at a specific airport. For SPG these include the established airfield elevation of 7 feet above mean sea level (AMSL) and the mean daily maximum temperature of the hottest month, which is 89 degrees Fahrenheit.

Length Required for Small Aircraft

Small aircraft are defined as those that have a MTOW of 12,500 pounds or less. The small aircraft group includes almost all single-engine and multi-engine (piston and turboprop) aircraft. Both Runway 7-25 and Runway 18-36 have existing critical aircraft in the small aircraft group. The future critical aircraft for Runway 18-36 is also a small aircraft. Therefore, the charts in FAA AC 150/5325-4B for determining the length required for small aircraft have been evaluated using SPG's airfield elevation and mean daily maximum temperature.

The FAA runway length curves for small aircraft (with less than 10 passenger seats) were developed using representative aircraft performance data for the categories of 95 and 100 percent of the fleet. The 95 percent category applies to airports that are primarily intended to serve medium sized population communities while the 100 percent category is primarily intended for airports on the fringe of a metropolitan area. As shown in the forecasting chapter, Pinellas County has a million residents while the surrounding Tampa-St. Petersburg-Clearwater Metropolitan Statistical Area has over three million residents. Therefore, the 100 percent curve was utilized and resulted in a recommended length of 3,600 feet for the existing and future small aircraft (12,500 pounds or less) operating at SPG (see **Table 4-6**).

Requirements for Large Aircraft up to 60,000 Pounds

Using approved aircraft flight manuals, FAA AC 150/5325-4B provides performance curves to determine the runway length required for large aircraft weighing between 12,500 and 60,000 pounds. The future critical aircraft for Runway 7-25 fall within this weight range; therefore, this methodology was applied. In addition to SPG's airfield elevation and mean daily maximum temperature, information on the useful load factor, effective runway gradient, and typical weather conditions are also required to determine the runway length required for this group of aircraft.

Useful load refers to the difference between an aircraft's MTOW and the empty weight. As such, the useful load factor provides an indication of the amount of passengers, cargo, and fuel carried by an aircraft. In the FAA's charts there is an option to select either a 60 or 90 percent useful load factor. Essentially, the heavier the aircraft (higher useful load percentage) the more runway length required. Since the airport is only expected to accommodate aircraft in the lower half of the 12,500 to 60,000 pound range of this aircraft grouping, only the 60 percent useful loads were considered.

Similarly, the FAA performance curves for aircraft weighing 12,500 to 60,000 pounds are also split into the categories of 75 and 100 percent of the fleet. FAA AC 150/5325-4B provides lists of the general aviation aircraft that represent 75 percent of the fleet flying in the U.S. This list combined with a second list represents 100 percent of the general aviation fleet in this weight range. The FAA's 75 percent of the fleet table includes the smaller business jet aircraft from Beechcraft, Cessna, Bombardier (Learjet), Dassault, and other manufacturers. The aircraft listed are representative of the largest expected aircraft to operate at SPG through the 20-year planning period; therefore, only the 75 percent of the fleet performance curves were evaluated.

Applying local conditions to these performance curves yields an initial runway length requirement based on a no wind, dry runway surface, and zero effective runway gradient scenario. The resulting initial runway length requirement at SPG for 75 percent of the fleet is 4,650 feet (under a 60 percent useful load). Adjustments are then made to the initial runway length for takeoff or landing operations. Takeoff adjustments are based on the maximum difference in centerline elevation of the runway being considered while landing adjustments are only made for runways serving jet aircraft operations. For takeoffs, since the initial lengths are adjusted for a specific runway's effective gradient, the centerline elevation difference of 2 feet for Runway 7-25 was applied. For landings, the initial length is increased by 15 percent (up to a specified limit) to account for the decrease in landing performance under wet and slippery conditions. After the adjustments have been applied independently, the resulting lengths required are 4,670 feet for takeoffs and 5,350 feet for landings.

Even after utilizing the lower 60 percent useful load for only 75 percent of the fleet, the FAA runway length performance curves for aircraft weighing between 12,500 and 60,000 pounds do not accurately represent the future operational fleet mix expected at SPG. This is due to the fact that these curves are developed primarily from the operational specifications of jet aircraft. A number of the aircraft represented in the 75 percent of the fleet chart would not reasonably operate at SPG since their performance requirements exceed the existing and expected future design standards of the airfield. In short, this methodology overstates the runway length requirement for the future aircraft expected to operate on Runway 7-25.

Runway Length Analysis Using Balanced Field Length

Since the FAA’s methodology for the future 12,500 to 60,000 pound critical aircraft group is not considered applicable, an analysis using the balanced field length for the aircraft currently using, and expected to increase their use of the airfield, was applied. The 19 aircraft included in **Table 4-5** came directly from the 2018 FlightAware dataset obtained for SPG and confirmed as operating at the airport during discussions with both ATCT and fixed base operator (FBO) management. As shown these include both turboprop and small jet aircraft with an Aircraft Approach Category (AAC) designation of B and Airplane Design Group (ADG) of I or II. The aircraft in **Table 4-5** also reflect the fact that while not a critical aircraft yet, aircraft with a MTOW greater than 12,500 pounds do currently operate at SPG. The aircraft have been listed based on their runway design component and then MTOW.

**TABLE 4-5
SPECIFIC RUNWAY LENGTHS FOR AIRCRAFT CURRENTLY OPERATING AT SPG**

Aircraft Type	Runway Design Component	Maximum Takeoff Weight (pounds)	Balanced Field Takeoff Length (standard conditions)	Required Takeoff Length at SPG (local conditions with 89° F temp.)
Embraer Phenom 100	B-I	10,500	3,125'	3,616'
Cessna Citation CJ1	B-I	10,600	3,280'	3,794'
Beechcraft King Air 100	B-I	11,800	3,200'	3,702'
Hawker Beechjet 200	B-I	13,800	3,720'	4,301'
Hawker Beechjet 400	B-I	16,300	3,950'	4,565'
Beechcraft King Air 90	B-II	10,100	2,710'	3,138'
Cessna Citation CJ2	B-II	12,375	3,420'	3,955'
Beechcraft King Air 200	B-II	12,500	2,580'	2,989'
Cessna Citation II	B-II	13,300	3,450'	3,990'
Cessna Citation CJ3	B-II	13,870	3,180'	3,679'
Cessna Citation 550 Bravo	B-II	14,800	3,600'	4,162'
Beechcraft King Air 300/350	B-II	15,000	3,300'	3,817'
Cessna Citation V	B-II	15,900	3,160'	3,656'
Cessna Citation 560 Encore	B-II	16,630	3,490'	4,036'
Cessna Citation CJ4	B-II	17,110	3,410'	3,944'
Embraer Phenom 300	B-II	17,950	3,138'	3,631'
Cessna Citation Excel	B-II	20,000	3,590'	4,151'
Cessna Citation XLS	B-II	20,200	3,560'	4,116'
Hawker Beechjet 800XP	B-II	28,000	5,032'	5,810'
Average Takeoff Length for SPG				3,950'

SOURCE: 2018 FlightAware dataset for SPG, aircraft manufacturers, industry databases, aircraft performance manuals, and ESA analysis, 2020.

Two different runway lengths have been shown for each aircraft. The first is the Balanced Field Takeoff Length. This is published by the aircraft manufacturers as the length required for takeoffs

on a flat and dry runway, with the aircraft at MTOW and operating under standard atmospheric conditions (59 degrees Fahrenheit at sea level). Because the airfield elevation is 7 feet AMSL but the average temperature is well in excess of 59 degrees Fahrenheit, these calculations are considered a best case scenario for the aircraft at MTOW, since standard conditions only occur a few days and nights each year at SPG.

The second number is the Required Takeoff Length at SPG which is calculated using the Balanced Field Takeoff Length for each aircraft adjusted for local conditions (airfield elevation, mean daily maximum temperature of the hottest month, and maximum difference in runway centerline elevation) per the accepted FAA methodology. These lengths are longer due to the climate of the local area. This is an important consideration as these figures represent the upper range of runway lengths required for each aircraft to be able to depart SPG at MTOW (without weight restrictions).

Recommended Runway Lengths

The following sections summarize the existing and future length requirements for both runways at SPG.

Primary Runway

As the primary runway, Runway 7-25 needs to be able to accommodate the takeoff and landing lengths required for the most demanding aircraft conducting 500 or more annual operations. The current critical aircraft is the Pilatus PC-12, which is representative of the A-II small aircraft category. Using the FAA’s methodology, the recommended length for this group of aircraft is 3,600 feet. While the runway has a published length over 3,600 feet, declared distances have been applied to Runway 7-25 (addressed in a following section) which limits the overall length available for both takeoffs and landings. Operations on Runway 25 are the most restricted with only 3,437 feet being available for takeoff based on the current published declared distances (see **Table 4-9**). Also, as documented in **Table 4-2**, Runway 7 is utilized 60 percent of the time; therefore, at least 163 feet of additional runway length is required to support the current critical aircraft (see **Table 4-6**). Runway length in addition to the 163 feet will likely be needed given the published declared distances are based on B-I small aircraft which have smaller runway design surfaces than those required for the current critical aircraft (A-II small aircraft category).

While a majority of the current operations are conducted by small aircraft, the airfield is also utilized by aircraft greater than 12,500 pounds, including some jets, as documented in the 2018 FlightAware dataset. FAA AC 150/5325-4B states that expansion consideration for runways serving small aircraft must be given to accommodate airplanes of more than 12,500 pounds. Specifically, the FAA guidance states:

“Failure to consider this change during an initial development phase may lead to the additional expense of reconstructing or relocating facilities in the future.”

Under the FAA’s methodology for aircraft between 12,500 and 60,000 pounds, the longest length calculated, after the takeoff and landing adjustments have been independently applied, should be the recommended runway length. For SPG, the two lengths after adjustments were 4,670 feet for

takeoffs and 5,350 feet for landings. As noted previously, neither of which is considered applicable even given the operational fleet mix expected in the future. Additionally, landing length was not considered an issue by any of the airport tenants or aircraft operators interviewed. For these reasons, the runway lengths calculated for SPG using the Balanced Field Takeoff Lengths are considered more realistic given they are based on the actual aircraft currently operating at the airport. This includes the Cessna Citation CJ4, which is the representative future critical aircraft in the 12,500 to 60,000 pound range, expected to use Runway 7-25 on a regular basis in the near future.

As shown in **Table 4-5**, the runway length required at SPG for the aircraft analyzed averaged 3,950 feet. Combined, these 19 aircraft conducted 212 operations in 2018 based on the FlightAware data for that calendar year. For the small aircraft in **Table 4-5** the average runway length was 3,853 feet while those with a MTOW over 12,500 pounds averaged 3,995 feet. **Table 4-5** demonstrates that a number of aircraft currently operating at SPG require more runway length than what is available. This was confirmed during the interviews with FBO management, tenants, and users of the airfield; including the fact that weight restrictions must be applied in such cases. These weight restrictions are usually in the form of fuel loads, which while they lower the takeoff length required, also have a corresponding reduction in the distance the aircraft can fly. Therefore, a runway length of 4,000 feet (rounded up from 3,995 feet) will be required in the short- to intermediate-term planning horizon to support the future Runway 7-25 critical aircraft (see **Table 4-6**). Options to provide the Runway 7-25 length required will be evaluated in the alternatives chapter.

Runway 18-36

As the crosswind runway, the length of Runway 18-36 must support those aircraft requiring the runway based on the wind rose analysis. The critical aircraft section included as part of the forecast chapter documented that Runway 18-36 is required for the B-I small aircraft category. As such, under the FAA’s methodology, the recommended length for Runway 18-36 would be 3,600 feet. Therefore, the ability to provide the additional length shown in **Table 4-6** for Runway 18-36 will be addressed in the alternatives chapter.

**TABLE 4-6
CURRENT AND FUTURE RUNWAY LENGTH REQUIREMENTS**

Runway	Critical Aircraft	Required Runway Length	Available Runway Length for Takeoffs ^a	Minimum ^b Additional Length Required
7-25 Current	Pilatus PC-12 (small aircraft)	3,600'	3,437'	163'
7-25 Future	Cessna Citation CJ4	4,000'	3,437'	563'
18-36	Piper PA-31 Navajo (small aircraft)	3,600'	2,674'	926'

NOTES: a. Based on the most restrictive declared distance currently published for Runway 25 and the most restrictive declared distance calculated for Runway 36.
 b. Additional runway length will likely be needed given the published declared distances for Runway 7-25 do not accommodate the runway design surfaces for the current A-II critical aircraft.

SOURCE: FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design* and November 19, 2018 runway survey.

4.3.2 Runway Width Requirements

Runway width requirements are based on the runway design standards of the most critical aircraft defined in the forecast chapter. The minimum existing and future requirements for each runway are listed in **Table 4-7** along with the corresponding runway shoulder width and blast pad dimensions. For shoulders, the requirement versus recommendation for paving the shoulders is based on the ADG. Conversely, when required, blast pads are always paved.

**TABLE 4-7
MINIMUM RUNWAY WIDTH, SHOULDER, AND BLAST PAD REQUIREMENTS**

Runway	Runway Design Code	Pavement Width	Shoulder Width	Blast Pad Width	Blast Pad Length
7-25 Current	A-II Small Aircraft	75'	10'	95'	150'
7-25 Future	B-II	75'	10'	95'	150'
18-36	B-I Small Aircraft	60'	10'	80'	60'

SOURCE: FAA AC 150/5300-13A, Change 1, *Airport Design*.

At 75 feet wide, Runway 7-25 provides the pavement width required for both the existing and future critical aircraft. As noted in the inventory, most of the runway has ten foot paved shoulders, the exceptions being the portion east of Runway 18-36 and a small portion between Taxiways D1 and D2. The runway only requires stabilized shoulders (such as turf) to reduce the potential for soil erosion along the runway edge and foreign object debris. Due to the blast fence and proximity of Tampa Bay to the physical ends of Runway 7-25; the runway has no blast pads. Since the runway is expected to accommodate additional jet aircraft in the future, it is recommended to include paved blast pads on any future configuration. For both the current and future conditions, the blast pads would be 95 feet wide by 150 feet long.

At 150 feet wide, currently Runway 18-36 provides both the proper width and shoulders for the existing and future critical aircraft. Since the runway is not currently utilized by jet aircraft on a regular basis, nor is it expected to, paved blast pads are not necessary.

4.3.3 Runway Pavement Strength and Condition

Pavement strength requirements for each runway at an airport are predicated upon the critical aircraft’s weight and how that weight is distributed through the landing gear. In November of 2019, Florida Department of Transportation (FDOT) published the latest Airport Pavement Evaluation Report for SPG as part of the Statewide Airfield Pavement Management Program. As noted in the inventory chapter, the 2019 report reflected an overall Pavement Condition Index (PCI) of 100 for Runway 7-25 reflecting the good surface condition after the full rehabilitation in 2016. As such, the 2019 report did not identify any localized maintenance and repair or major rehabilitations required over the report’s 10-year forecast period. For Runway 18-36 a major rehabilitation was recommended for 2020 given that PCI for this runway ranged from 56 to 58 (fair).

In the 2019 Airport Improvement Program (AIP) Handbook, the FAA defines the minimum useful life of pavement rehabilitations as 10 years and 20 years for reconstructed or new pavement surfaces. However, since pavement condition depends on the use and environment, projects to rehabilitate airfield pavements are routinely conducted every 15 to 20 years after the previous major rehabilitation, strengthening, or new construction. These projects, which repair damage to the runway pavement resulting from normal wear, need to be conducted even at airports with regular pavement maintenance programs, including crack sealing and surface seal coats. Given the current condition of the Runway 7-25 pavement, the next rehabilitation of this runway should be planned for the second half of the 20-year master plan horizon. For Runway 18-36, a rehabilitation of the runway pavement has been programmed for 2020 and depending on the condition of the pavement structure during design testing, some areas may require actual reconstruction. In addition, a future rehabilitation for Runway 18-36 should be planned at the very end of the 20-year planning period.

Additionally, the FAA considers the grooving of any runway serving or expected to serve jet aircraft as a high safety priority. Therefore, grooving of Runway 7-25 during the next pavement rehabilitation should be considered, based on the jet aircraft activity at that time. Runway 18-36 does not need to be grooved.

4.3.4 Runway Safety Criteria

The safety surfaces required to protect aircraft operations and the public include the Runway Safety Area, Runway Object Free Area, Runway Protection Zones, and Obstacle Free Zones. The FAA definitions for these surfaces as well as their dimensions at SPG are included below.

Runway Safety Area (RSA) - A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overrun, or veer off the runway. The RSA needs to be: (1) cleared and graded with no potentially hazardous ruts, humps, depressions, or other surface variations; (2) drained by grading or storm sewers to prevent water accumulation; (3) capable, under dry conditions of supporting the occasional passage of aircraft without causing structural damage to the aircraft; and (4) free of objects, except for those that need to be located in the safety area because of their function. It should be noted that the FAA does not allow modifications to any RSA standards and that the area must be owned and controlled by the airport.

Runway Object Free Area (ROFA) - The ROFA is centered on the runway centerline. Standards for the ROFA require clearing the area of all ground objects protruding above the RSA edge elevation. Except where precluded by other clearing standards, it is acceptable to place 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. Objects non-essential for air navigation or aircraft ground maneuvering purposes are not to be placed in the ROFA. This includes parked airplanes and agricultural operations. As with the RSA, the ROFA must be owned and controlled by the airport.

Runway Protection Zone (RPZ) – The RPZ is trapezoidal shaped area typically beginning 200 feet from the usable pavement end of a runway. The primary function of this area is to

preserve and enhance the protection of people and property on the ground. Even though there is no vertical component, airports are required to maintain control of each runway’s RPZ. Such control includes keeping the area clear of incompatible objects and activities. While not required, this control is much easier to achieve and maintain through the acquisition of sufficient property interests in the RPZs.

Runway Obstacle Free Zone (ROFZ) - The ROFZ is a three-dimensional volume of airspace centered on the runway that supports the transition of ground to airborne operations (or vice versa). The ROFZ clearing standards prohibit taxiing, parked airplanes, and other objects, except frangible navigational aids or fixed-function objects (such as signage), from penetrating this zone. Precision instrument runways also require an Inner-transitional OFZ and Precision OFZ. If there is an approach lighting system, then an Inner-approach OFZ is also required.

Dimensions for the required RSA, ROFA, RPZ, and ROFZ shown in **Table 4-8** are directly related to runway design standards (AAC and ADG) and visibility minimums. If the current critical aircraft for Runway 7-25 changes as projected in the forecast chapter, so too will some of the runway safety criteria. For Runway 18-36, the critical aircraft is not expected to change; therefore, the current and future criteria is the same. For both runways this assumes there are no significant changes expected to the instrument approach minimums (addressed in a subsequent section).

**TABLE 4-8
CURRENT AND FUTURE RUNWAY SAFETY CRITERIA**

Runway	Runway Safety Area	Runway Object Free Area	Runway Protection Zone ^a	Runway Obstacle Free Zone
7-25 Current	300' beyond 300' prior 150' wide	300' beyond 300' prior 500' wide	250' x 450' x 1,000'	200' beyond 250' wide
7-25 Future	300' beyond 300' prior 150' wide	300' beyond 300' prior 500' wide	500' x 700' x 1,000'	200' beyond 400' wide
18-36	240' beyond 240' prior 120' wide	240' beyond 240' prior 250' wide	250' x 450' x 1,000'	200' beyond 250' wide

NOTES: a. Runway Protection Zone (RPZ) dimensions shown for both Approach and Departure RPZs as applicable.

SOURCE: FAA AC 150/5300-13A, Change 1, *Airport Design*.

Current Critical Surfaces

The current Airport Layout Plan (ALP) on file at the start of this master plan is based on an existing and future critical aircraft in the B-I small aircraft category for both Runway 7-25 and Runway 18-36. This is important to note since as documented in the forecast chapter, the current critical aircraft for Runway 7-25 is in the A-II small aircraft category with larger RSA and ROFA requirements. The current ALP and aeronautical publications reflect that declared distances have been applied to

Runway 7-25 in order to achieve the proper RSA and ROFA, while Runway 18-36 has a non-standard RSA. A Runway Safety Area Determination Study for Runway 18-36 was finalized in December 2006. The study resulted in the FAA recommending the application of declared distances to bring the Runway 18-36 RSA into compliance. To date no declared distances have been established; however, they will be included as part of the Runway 18-36 rehabilitation project beginning in 2020.

Declared Distances

The use of declared distances is typically limited to those airport facilities that cannot provide certain design standards without shifting the landing thresholds and/or departure points of a runway. The application of declared distances is runway specific and requires FAA approval. Under declared distances, four different lengths are calculated for operations to/from a specific runway end. These distances are used by pilots to determine whether or not their aircraft (in a given configuration) can takeoff or land based on the lengths available. Declared distances include:

TORA	Takeoff Run Available
TODA	Takeoff Distance Available
ASDA	Accelerate Stop Distance Available
LDA	Landing Distance Available

Runway 7-25

The current declared distances published for Runway 7-25 are shown in **Table 4-9** and illustrated in **Figure 4-5**. As noted on **Figure 4-5**, departures on Runway 7 have been reduced by 30 feet due to the proximity of the blast fence located 12 feet from the physical end of the runway.

**TABLE 4-9
CURRENT DECLARED DISTANCES PUBLISHED FOR RUNWAY 7-25**

	TORA	TODA	ASDA	LDA
Runway 7	3,647'	3,647'	3,447'	2,919'
Runway 25	3,677'	3,677'	3,437'	3,174'

NOTES: Based on B-I small aircraft design standards

SOURCE: FAA Chart Supplement for SPG, September 10, 2020.

As noted, the figures in **Table 4-9** are based on the design standards (B-I small aircraft) from the approved ALP on file at the start of this master plan study. However, the current critical aircraft for Runway 7-25 is in the A-II small aircraft category, requiring larger RSA and ROFA dimensions. In addition, the Airport Geographic Information System (AGIS) survey conducted in November 2018 as part of this master plan study reflected the displaced threshold to Runway 7, and therefore the overall length of Runway 7-25, as one foot shorter than previously published. This results in the need to update the declared distances for Runway 7-25. Revised declared distances are included in the Runway 7-25 alternatives in the following chapter as they have a direct impact on the options to provide the additional runway length required.

Runway 18-36

As noted above, a Runway Safety Area Determination Study was finalized in December 2006 to address the non-standard RSA for Runway 18-36. The study resulted in the FAA recommending the application of declared distances, which will be included as part of the Runway 18-36 rehabilitation project programmed to begin in 2020. The proposed declared distances from the 2006 study have been updated to reflect the November 2018 runway survey and AGIS information obtained for this study.

For takeoffs on either Runway 18 or Runway 36, the TORA and TODA will equal the overall physical runway length of 2,864 feet. However, the RSA for Runway 18-36 needs to extend 240 feet beyond the distance declared for both ASDA and LDA. In addition, there needs to be 240 feet of RSA prior to the landing threshold for the LDA calculations. For takeoffs and landings on Runway 18, there is only 128 feet of full width RSA available beyond the runway end; therefore, the ASDA and LDA must both be reduced by 112 feet. For takeoffs and landings on Runway 36, there is only 50 feet of full width RSA available beyond the runway end; therefore, the ASDA and LDA must both be reduced by 190 feet.

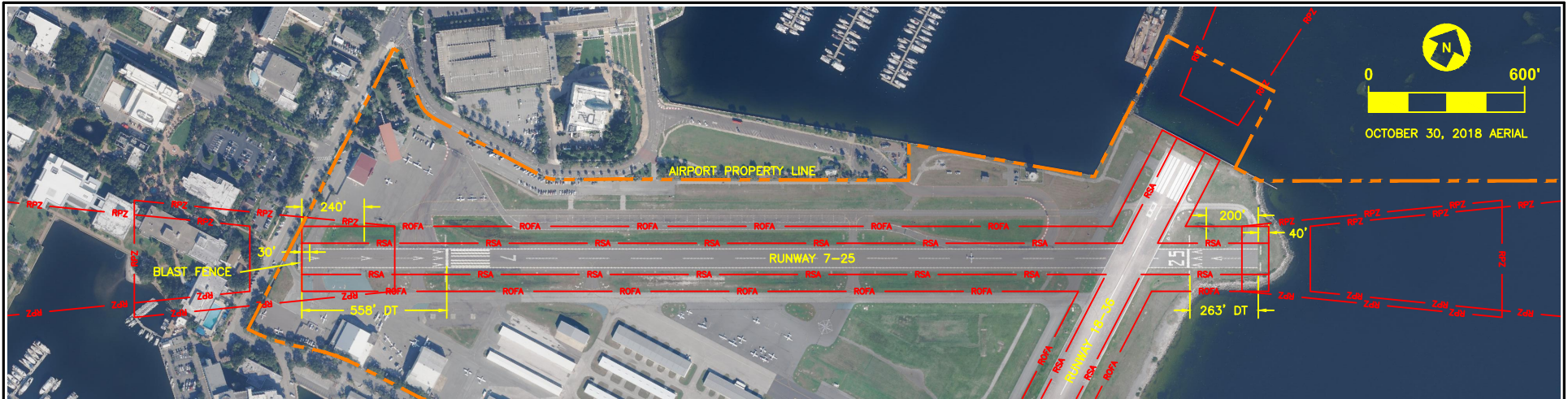
For landings on Runway 18, the threshold must be displaced 190 feet and therefore the LDA reduced the same amount to provide the 240 feet of required RSA prior to the landing threshold since only 50 feet is currently available. Similarly, for landings on Runway 36, the threshold must be displaced 112 feet and therefore the LDA reduced the same amount to provide the 240 feet of required RSA prior to the landing threshold since only 128 feet is currently available.

The resulting declared distances for Runway 18-36 are reflected in **Table 4-10**. These distances were calculated using data from the November 2018 runway survey and features of the environment surrounding the runway from the AGIS data.

**TABLE 4-10
REQUIRED DECLARED DISTANCES FOR CURRENT RUNWAY 18-36**

	TORA	TODA	ASDA	LDA
Runway 18	2,864'	2,864'	2,752'	2,562'
Runway 36	2,864'	2,864'	2,674'	2,562'

SOURCE: Calculations based on November 19, 2018 runway survey and AGIS data.



TORA TAKEOFF RUN AVAILABLE
RUNWAY LENGTH AVAILABLE FOR GROUND RUN OF AN AIRCRAFT TAKING OFF.

TODA TAKEOFF DISTANCE AVAILABLE
LENGTH OF TORA + LENGTH OF REMAINING RUNWAY AND/OR CLEARWAY BEYOND THE FAR END OF TORA.

ASDA ACCELERATE STOP DISTANCE AVAILABLE
RUNWAY AND STOPWAY LENGTH DECLARED AVAILABLE AND SUITABLE FOR THE ACCELERATION AND DECELERATION OF AN AIRCRAFT ABORTING A TAKEOFF. NEED FULL RSA/ROFA BEYOND ASDA.

LDA LANDING DISTANCE AVAILABLE
LENGTH OF RUNWAY WHICH IS DECLARED AVAILABLE AND SUITABLE FOR GROUND RUN OF AN AIRCRAFT LANDING. NEED FULL RSA/ROFA PRIOR TO THRESHOLD AND BEYOND LDA.

NOTES:

1. DISPLACED THRESHOLD IS AVAILABLE FOR START OF TAKEOFF AND LANDINGS FROM OPPOSITE DIRECTIONS IF 240' BEYOND IS AVAILABLE FOR BOTH THE RSA AND ROFA ON LANDING ROLL OUT.
2. FIRST 30' OF RUNWAY DETERMINED NOT AVAILABLE FOR DEPARTURES ON 7 DUE TO BLAST FENCE LOCATED 12' FROM THE PHYSICAL END OF RUNWAY.
3. FOR ALL CALCULATIONS NO ADDITIONAL CLEARWAY OR STOPWAY DISTANCES HAVE BEEN DECLARED BEYOND THE PAVED RUNWAY SURFACE.

RUNWAY 7

TORA: 3,647' (3,677' - 30')

TODA: 3,647' (3,677' - 30')

ASDA: 3,447' (3,677' - 30' - 200')

LDA: 2,919' (3,677' - 558' - 200')

RUNWAY 25

TORA: 3,677'

TODA: 3,677'

ASDA: 3,437' (3,677' - 240')

LDA: 3,174' (3,677' - 263' - 240')

RUNWAY DESIGN STANDARDS

B-I SMALL AIRCRAFT
VISIBILITY MINIMUMS NOT LOWER THAN 1 MILE

RUNWAY SAFETY AREA (RSA)

WIDTH = 120'
LENGTH PRIOR TO LANDING THRESHOLD = 240'
LENGTH BEYOND RUNWAY END = 240'

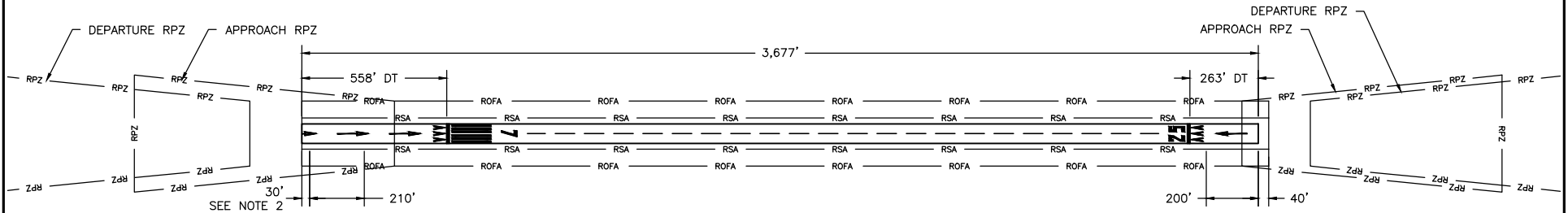
RUNWAY PROTECTION ZONES (RPZ)

APPROACH OR DEPARTURE

INNER WIDTH = 250'
OUTER WIDTH = 450'
LENGTH = 1,000'

RUNWAY OBJECT FREE AREA (ROFA)

WIDTH = 250'
LENGTH PRIOR TO LANDING THRESHOLD = 240'
LENGTH BEYOND RUNWAY END = 240'



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Source: ESA, 2020.

Albert Whitted Airport Master Plan

FIGURE 4-5
CURRENT DECLARED DISTANCES PUBLISHED FOR RUNWAY 7-25 (B-I SMALL AIRCRAFT)

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It should be noted that the Runway 18-36 declared distances in **Table 4-10** may change once the physical changes associated with the runway rehabilitation project are designed.

Approach and Departure Runway Protection Zones

When declared distances are applied, separate Approach and Departure RPZs are typically required. This is the case for both ends of Runway 7-25 and will be the case for Runway 18-36 once declared distances have been applied to that runway. The Approach RPZ begins 200 feet prior to the landing threshold (displaced or not), while the Departure RPZ begins 200 feet beyond the length declared for the TORA. With the exception of the RPZs off the approach end of Runway 25, portions of the other runway end RPZs currently extend beyond the airport property boundary.

To the southwest, the Runway 7 Approach RPZ and the Runway 25 Departure RPZ both extend off property, over 1st Street SE and the corner of the University of South Florida St. Petersburg Campus. Currently and after declared distances are applied to Runway 18-36, the required RPZs for this runway extend over the South Yacht Basin channel to the north. To the south, the required RPZs extend over the channel for the Port of St. Petersburg.

The RPZ areas extending off-airport property are evaluated as part of the airport development alternatives with respect to the FAA's current guidance on compatible land uses within an RPZ. For Runway 7-25 this will be included as part of the evaluation to determine the ultimate runway configuration required to provide the recommended length and safety criteria required.

4.3.5 Line-of-Sight Requirements

As part of the design and safety criteria, there are also two critical line-of-sight requirements that must be considered. The first is the Runway Visibility Zone (RVZ) which protects the proper line-of-sight between both existing and future runway configurations. A clear RVZ allows aircraft operating on the airfield to verify the location and movements of other aircraft and vehicles on the ground that could create a conflict. This zone must be kept clear of any fixed or movable objects, including parked aircraft, when the ATCT is closed. While the existing RVZ has no obstructions, any future changes in the runway configuration or new facilities proposed will be evaluated in the alternatives chapter to ensure no impacts are created.

The other line-of-sight requirement is directly related to the ATCT and the ability for the controllers to have an unobstructed view of all existing and future aircraft movement areas. In addition to other setbacks and imaginary surfaces, the ATCT line-of-sight is a critical element when considering the location and height of future airport facilities, as well as the location of future aircraft movement areas. Currently there are no obstructions to the ATCT line-of-sight. All future ATCT line-of-sight calculations need to utilize an eye height of 65.0 feet AMSL, which is based on the established cab floor height of 60.0 feet AMSL.

4.4 Taxiway System Requirements

Taxiway systems include parallel taxiways, entrance/exit taxiways, connector taxiways, apron taxilanes, hangar taxilanes, and run-up areas. The airport’s critical aircraft were utilized to establish the minimum taxiway system requirements for the two runways. Some of the taxiway standards reflected in **Table 4-11** are based on the newer Taxiway Design Groups (TDG) while others still remain a function of the critical aircraft’s ADG.

It should be noted that when the TDG designation was added to the FAA’s airport design criteria, it changed the size and configuration of pavement fillets. Because the taxiway turning radii and edge fillet are now based on the critical aircraft’s main gear width and distance from the cockpit, the FAA has established larger fillet areas and the associated lead-in tapers. As noted in the individual taxiway sections, there are a number of areas that do not provide the newer fillet and lead-in taper areas. However, based on discussion with ATCT and airport operations management, they have not experienced any problems with the current fillet geometry, even for the largest aircraft ground movements. Therefore, they are not considered a priority and should only be modified when the associated taxiways need rehabilitation.

**TABLE 4-11
MINIMUM TAXIWAY SYSTEM REQUIREMENTS**

Taxiways Serving	Airplane Design Group	Taxiway Design Group	Width	Taxiway Safety Area	Taxiway Object Free Area	Offset to Runway
7-25 Current	II	1A	25'	79'	131'	240'
7-25 Future	II	1B	25'	79'	131'	240'
18-36	I	1A	25'	49'	89'	150'

SOURCE: FAA AC 150/5300-13A, Change 1, *Airport Design*.

4.4.1 Taxiways

Since the last master plan was conducted, the FAA has issued new guidance on taxiways, primarily with respect to fillet design and layouts to enhance the safety of aircraft movements by minimizing the potential for runway incursions. An overview of the existing and future design standards for each taxiway is provided in **Table 4-12**. In some instances, the future design criteria noted may change based on the final airfield development and therefore type of aircraft served by a taxiway.

As with the runways, the FAA defines the minimum useful life of pavement rehabilitations as 10 years and 20 years for reconstructed or new pavement surfaces. However, since pavement condition depends on the use and environment, projects to rehabilitate airfield pavements are routinely conducted every 15 to 20 years after the previous major rehabilitation, strengthening, or new

construction. Specific information is provided after **Table 4-12** for the existing taxiways needing improvements to meet standards or repairs beyond the normal pavement rehabilitation cycle.

**TABLE 4-12
INDIVIDUAL TAXIWAY CHARACTERISTICS**

Taxiway	Current Width	Current TDG - ADG	Future TDG - ADG	Meets FAA Standards
A	40'	1A – II	1B – II	No – Substandard TOFA, substandard offset to Runway 7-25, and need to reconstruct some fillets.
B	40'	1A – I	1A – I	No – Need to reconstruct some fillets.
C	40'	1A – I	1A – I	No – Need to reconstruct some fillets.
D	25'	1A – II	1B – II	No – Substandard TOFA, substandard offset to Runway 7-25, and need to reconstruct some fillets.

NOTES: Taxiway Object Free Area (TOFA)

SOURCE: AGIS Data and ESA analysis 2020.

Taxiway A

Taxiway A provides the proper width and safety area for the current and future critical aircraft utilizing Runway 7-25; however, it does not provide the required object free area. The 131 foot wide ADG II Taxiway Object Free Area (TOFA) overlaps four of the tie-down positions on the mid-field apron as well as the edge of the apron area in front of St. Pete Air, up to the three helicopter parking spots. Taxiway A also does not provide the full runway centerline to taxiway centerline spacing required for simultaneous ADG II aircraft movements. The current parallel centerline offset of 150 feet versus the 240 foot standard limits the ability to accommodate ADG II aircraft on Runway 7-25 and Taxiway A at the same time. The ability to provide the required ADG II design criteria is addressed in the alternatives chapter.

The 2019 FDOT pavement study documented that Taxiway A had an overall area weighted PCI of 55 (poor). As such, a full rehabilitation of the pavement surface is required as soon as possible. During the rehabilitation, the fillets along the taxiway should be reconstructed to meet the current FAA design standards. As noted in the inventory, connector Taxiways A1 through A4 were rehabilitated in 2016.

Taxiway B

Taxiway B provides the proper width, safety area, object free area, and centerline offset for the current and future critical aircraft utilizing Runway 18-36. However, a full rehabilitation of the pavement will be required during the planning period as it was rated with an overall PCI of 61 (fair)

in the 2019 pavement condition report. During the rehabilitation, the fillets along the taxiway should be reconstructed to meet the current FAA design standards.

Taxiway C

Taxiway C serves as a connector between the two runways; however, due to the proximity of the mid-field aircraft parking apron with the ATCT, much of Taxiway C is considered a non-movement area. Additionally, the intermediate holding position and other markings along the sides of Taxiway C have only protected the object free area for an ADG I taxilane (79 feet). Given the current plans to develop additional facilities on both sides of Taxiway C, it is likely that the non-movement area and ADG I taxilane standards will remain unchanged.

While the east half of the taxiway was repaved in 2018, the west half is documented in the 2019 pavement condition report with a PCI of 58 (fair). A rehabilitation of the west half of the taxiway, to include modifying any fillets to meet current FAA design standards, is required during the first half of the 20-year planning period.

Taxiway D

Taxiway D provides the proper width and safety area for the current and future critical aircraft utilizing Runway 7-25; as well as a majority of the required object free area. The ADG II TOFA along the portion of Taxiway D that traverses the east side of the Sheltair FBO apron, overlaps portions of the apron, including some of the dedicated tie-down positions. Taxiway D also does not provide the full runway centerline to taxiway centerline spacing required for simultaneous ADG II aircraft movements. The current parallel centerline offset is 175 feet to the west and 200 feet to the east of Runway 18-36, both of which are less than the 240 foot offset required to accommodate simultaneous ADG II aircraft on the taxiway and Runway 7-25. The ability to provide the required ADG II design criteria is addressed in the alternatives chapter.

The 2019 pavement condition report rated Taxiway D with an average PCI of 71 (satisfactory). However, a section along the middle of the taxiway as well as most of the portion east of Runway 18-36 has PCIs ranging in the low 60s (fair). Therefore, a rehabilitation of the entire taxiway pavement will be required during the course of the 20-year planning horizon, to include modifying any fillets to meet current FAA design standards.

4.4.2 Apron and Hangar Taxilanes

For each of the different aircraft parking aprons, there are a number of different markings which delineate the areas dedicated for aircraft parking and the taxilane routes around or through these areas. For the aprons at SPG, these taxilane routes are non-movement areas, meaning pilots do not need to contact the ATCT when utilizing them. The established apron taxilanes will need to be adjusted for any future modifications to the aircraft apron areas, connector taxiways serving them, or aircraft parking space needs. While these are non-movement areas, they need to provide the proper taxilane design standards and setbacks for the aircraft they are intended to serve.

There are different taxilanes serving the various aircraft hangar facilities around the airfield that do not have any designations. On the south side of the airfield a number of taxilanes serve the various hangar and T-hangar buildings that were included as part of the 2019 FDOT pavement report. Their PCI ratings ranged from 43 (poor) to 65 (fair). The FBO apron area had PCI ratings in the low 80s (satisfactory), except around the newer Terminal Hangar, which had a PCI rating of 100 in the 2019 report. Future projects to expand or even redevelop these areas will likely include the rehabilitation and/or reconfiguration of the existing apron and taxilane pavements.

4.4.3 New Taxiways and Taxilanes

The following sections address the need for new taxiways and taxilanes in order to support the activity projected in the aviation forecasts.

Parallel Taxiways

Currently Taxiway A sufficiently serves the ground movements for the facilities located south of Runway 7-25. However, as the south half of the airfield continues to develop and/or redevelop, the ability to extend Taxiway A all the way to the end of Runway 25 needs to be evaluated. Especially given the expected increase in aircraft operations over the 20-year period. This would minimize the number of runway crossing for those operations taxiing between Runway 7-25 and the south side of the airfield. Similarly, Taxiway D provides the necessary access to/from the FBO facilities on the north side of the airfield. However, as noted in previously both taxiways do not currently provide the full TOFA or centerline offset from Runway 7-25 for the current critical aircraft. The development alternatives will evaluate options to accommodate this requirement.

Access Taxilanes

Various taxilanes will be required to access future airfield facilities as they are developed. The final configuration will depend on the ultimate hangar sites and aircraft parking apron areas while the taxilane widths will be contingent on the intended use by different aircraft. The layouts of any additional taxilanes will ultimately depend upon the facilities they are constructed to serve.

4.4.4 Run-up Areas

Run-up areas are intended to serve the small general aviation piston fleet that need to perform engine checks before each departure. The FAA recommends providing run-up areas or holding bays when a runway's operations reach a level of 30 operations per hour. The activity forecasts showed that SPG conducted 44 operations during the peak hour of the average day in 2018.

There are currently two dedicated run-up areas, though neither are located adjacent to a runway end. The central run-up area, co-located with the compass-rose on the east side of the mid-field apron primarily serves Runway 7-25. However, it is located 2,100 feet from the departure end of Runway 7 and 2,000 feet from the departure end of Runway 25. The second run-up area is located on the east end of Taxiway C and primarily serves Runway 18-36. This run-up area is 1,600 feet from the departure end of Runway 18 and 1,500 feet from the departure end of Runway 36.

Additional run-up areas need to be considered in locations closer to all four runway ends given peak hour operations are expected to increase to 57 by the end of planning period, which is nearly double the level the FAA recommends for run-up areas to be established. The potential to develop future run-up areas will depend on the ultimate airfield configuration, evaluated in the airfield development alternatives.

4.5 Instrument Procedures

Instrument approaches enable pilots to safely descend into the airport environment for landing during times of inclement weather and/or reduced visibility. As noted in the inventory, there are three categories for instrument approaches: precision approaches, approach procedures with vertical guidance, and non-precision approaches. There are only non-precision approaches established to Runways 7, 18, and 36.

The forecast chapter documented that 5.0 percent of the activity at SPG was conducted as an instrument operation under an instrument flight plan; however, only a small portion of these were conducted under actual instrument conditions. The airfield capacity section documented that over the last ten years, instrument meteorological conditions have occurred 9.5 percent of the time. It was revealed during discussions with ATCT management and aircraft operators at SPG that the current published instrument approach procedures have accommodated virtually every landing attempted during actual instrument conditions. Given this and the fact that precision approaches require significant setbacks from the runway environment, an approach lighting system, and for some, high intensity runway edge lighting; no precision approaches will be established at SPG.

Approach procedures with vertical guidance are defined as any approach that has visibility minimums not lower than $\frac{3}{4}$ of a mile and the capability of safely guiding aircraft down to heights greater than or equal to 250 feet above the threshold. When visibility minimums are less than one mile, but lower than $\frac{3}{4}$ of a mile, the required RPZ increases significantly in size. Similarly, the imaginary surfaces under Title 14 Code of Federal Regulations (CFR) Part 77, *Safe, Efficient Use, and Preservation of the Navigable Airspace* also change (addressed in the following section). Regardless, approach procedures with vertical guidance can be established where they are limited to not lower than one mile visibility minimums. Under this scenario the required RPZ(s) and 14 CFR Part 77 surfaces do not increase. Therefore, the ability to potentially establish approach procedures with vertical guidance at SPG are evaluated in the alternatives chapter.

Non-precision approach procedures are one of the easiest to establish at an airport given the smaller setbacks required and the fact that they can be based on Global Positioning System (GPS); eliminating the need for any on-airfield navigational equipment. The current non-precision approaches to Runways 7, 18, and 36 provide procedures with straight-in lateral guidance, as well as circling procedures to the airport environment, during instrument conditions where the visibility is not lower than one statute mile. Due to the proximity of MacDill Air Force Base's airspace, no approaches have been or will be established to Runway 25.

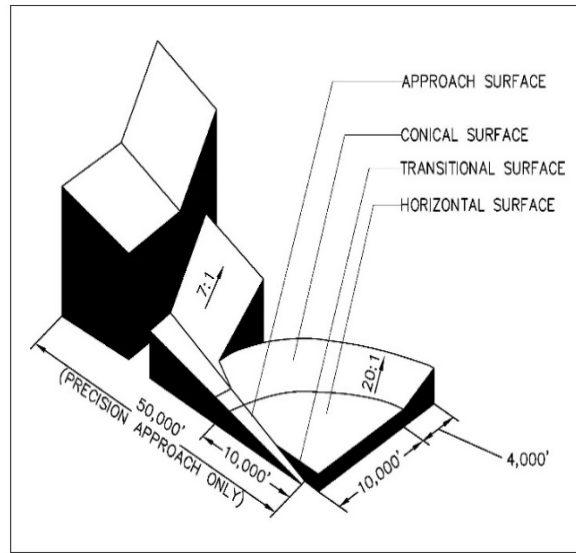
While instrument procedures are runway end specific, the authorization to establish any new approach begins with an Airport Airspace Analysis. The subsequent approval process of the ALP

drawings created as part of this study will include an Airport Airspace Analysis conducted by the FAA to determine the ability of the runways to accommodate any new instrument approach minimums proposed. When an actual instrument procedure is requested, all requirements, including the proper environmental review, desired approach minimums, whether circling approach procedures are desired, the obstruction survey needed to support the procedure, and the approved ALP must be provided to the FAA.

4.5.1 14 CFR Part 77 Imaginary Surfaces

The airspace around airports is protected by the imaginary surfaces defined in 14 CFR Part 77. When combined, the five different imaginary surfaces of this federal regulation protect airspace and the ability for aircraft to safely fly into and out of an airport. These surfaces are currently included as part of the City of St. Petersburg City Code Section 16.30.010 – Albert Whitted Airport Overlay (most recently updated on February 15, 2018) in order to control the height of objects in the vicinity of the airport. Any changes to the future 14 CFR Part 77 surfaces need to be adopted into the City Code in order to protect the ability of the airfield improvements identified in this study. **Figure 4-7** provides a general illustration of the five different imaginary surfaces, while the descriptions and specific dimensions as they apply to SPG are described in the following sections. As with the FAA advisory circulars, 14 CFR Part 77 has different criteria for some surfaces based on the MTOW of the critical aircraft. Under 14 CFR Part 77, runways serving small aircraft only are categorized as “utility” runways.

FIGURE 4-7: 14 CFR PART 77 IMAGINARY SURFACES



Primary Surface

The Primary Surface is a rectangular area symmetrically located about each runway centerline and extending a distance of 200 feet beyond each end of paved, useable runway. The width of the Primary Surface is based on the type of runway and lowest instrument approach minimums established to either runway end. The elevation of the surface follows and is the same as that of the runway centerline, along all points.

Both Runways 7-25 and 18-36 require a 500 foot wide surface for the existing instrument approach minimums of one mile. In the future, the Primary Surface would not change if an approach procedure with greater than ¾ mile visibility minimums were established. Approaches with visibility minimums as low as ¾ of a mile or lower would require a Primary Surface width of 1,000 feet. This is not possible at SPG given that such a surface along Runway 7-25 would encompass a majority of the airfield facilities. For the same reason it is not possible for Runway 18-36, especially

given that the current 500 foot wide Primary Surface already overlaps some adjacent facilities in the United States Coast Guard Sector St. Petersburg base. As a result, the centerline of Runway 18-36 will be shifted east as part of the project to rehabilitate the runway.

Horizontal Surface

The Horizontal Surface is a level oval-shaped area situated 150 feet above the established airport elevation, extending 5,000 or 10,000 feet outward from the Primary Surface, depending on the runway category and approach procedure available. For both Runways 7-25 and 18-36, the current Horizontal Surfaces have a radius of 5,000 feet. In the future, the Horizontal Surface will remain the same for Runway 18-36; however, it will change for Runway 7-25 to a 10,000 foot radius if the future critical aircraft has an MTOW greater than 12,500 pounds.

Conical Surface

The Conical Surface extends outward for a distance of 4,000 feet beginning at the outer edge of the Horizontal Surface, and sloping upward at a ratio of 20:1. This surface is the same for both runways, regardless of any potential changes that may occur due to lower approach minimums or the runway category.

Approach Surface

Approach Surfaces begin at the end of the Primary Surface and slope upward at a ratio determined by the runway category and type of instrument approach available to the specific runway end. The inner width and elevation of the Approach Surface conforms to that of the Primary Surface while the outer width and overall length is also governed by the runway category and instrument approach procedure available.

For Runway 7 and both ends of Runway 18-36, the current Approach Surfaces extend out 5,000 feet at a slope of 20:1 to an outer width of 2,000 feet. This is based on the existing non-precision approaches and the utility runway classification. These dimensions will remain the same, even if any of the three runway ends obtain slightly lower non-precision approach minimums. With only a visual approach, the current Approach Surface to Runway 25 extends 5,000 feet at a slope of 20:1 to an outer width of 1,250 feet.

In the future if the critical aircraft for Runway 7-25 changes to an aircraft with a MTOW greater than 12,500 pounds (other than utility runway by 14 CFR Part 77), then the Approach Surface to Runway 7 would extend out 10,000 feet at a slope of 34:1 to an outer width of 3,500 feet. This future Approach Surface for Runway 7 would remain the same even if slightly lower non-precision approach minimums were established to that runway end. For Runway 25 the visual Approach Surface would still extend out 5,000 feet at a slope of 20:1; however, the outer width would increase to 1,500 feet. As noted previously, no instrument approach procedures are planned to Runway 25 given the airspace associated with MacDill Air Force Base, immediately east of SPG.

As noted previously, the declared distances shown in **Table 4-10** for Runway 18-36 may change during the design of the rehabilitation project. Additionally, the project needs to evaluate the

Approach Surfaces to both ends of the runway given the proximity of the South Yacht Basin channel to the north and the Port of St. Petersburg channel to the south. Currently the airport has a permanent remark in the FAA publications that states:

“Ship channel in apch to Rwy 36. Ocean going vessels in ship channel south. Unlit ± 50’ to ocnl ±100’ boat masts in apch area of Rwy 18, Rwy 25 and Rwy 36.”

Depending on the final centerline shift and displaced thresholds associated with the Runway 18-36 rehabilitation project, the aircraft crossing heights over the two channels may actually be increased. As noted in the permanent remark, a similar issue exists due to the open bay waters beneath the Approach Surface to Runway 25. For Runway 25, the alternative analysis will evaluate options to protect the approaches from marine vessels as part of the Runway 7-25 extension options.

Transitional Surface

The Transitional Surface is a sloping area beginning at the edges of the Primary and Approach Surfaces and sloping upward and outward at a 7:1 slope.

4.5.2 Threshold Siting Surfaces

The criteria for establishing runway thresholds are defined in FAA AC 150/5300-13A, Change 1. These airport design surfaces, which are categorized by a Runway Type number, are utilized to ensure that the required approach surface is clear of obstacles. It should be noted that these approach surfaces are not the same as those defined in 14 CFR Part 77 and are therefore referred to as the Threshold Siting Surfaces (TSS). The TSS standards were updated in July 2020 with FAA Engineering Brief 99A.

Runways 7, 18, and 36 are designated as Type 4 runways for the current and future instrument approach visibility minimums greater than or equal to $\frac{3}{4}$ statute mile. The Type 4 TSS has a 20:1 sloped surface which begins 200 feet prior to the landing threshold, an inner width of 400 feet, an outer of 3,400 feet, and extends out 10,000 feet. Currently Runway 25 is a Type 2 (visual serving small airplanes) which has a 20:1 sloped surface at the landing threshold, an inner width of 250 feet, extends out initially 2,250 feet to a width of 700 feet, and then continues at that width an additional 2,750 feet. In the future Runway 25 will be a Type 3 (visual serving large airplanes) with a 20:1 sloped surface at the landing threshold, an inner width of 400 feet, extends out initially 1,500 feet to a width of 1,000 feet, and then continues at that width an additional 8,500 feet.

Runway thresholds should be located such that there are no penetrations to the required TSS for both the existing and future approach visibility minimums. The ability to provide the TSS criteria to each runway threshold is addressed in the alternatives chapter.

4.5.3 Departure Surfaces

If any of the runway ends at an airport have a published instrument approach procedure, the FAA applies an instrument Departure Surface off every active runway end. When there are no declared distances, the Departure Surface starts at the departure end of the runway. For a runway with

declared distances, the Departure Surface starts at the end of the TODA. In either case, Section 1 of the Departure Surface begins at the same elevation as the departure end of the runway, has an inner width equal to the runway width, splays out from the corners of the usable runway at 15 degree angles, and extends out to 12,152 feet (2 nautical miles) at a 40:1 slope to end 304 feet above the runway end elevation. From the edge of the usable runway, Section 2 rises upward to 150 feet above the runway end elevation at a point 500 feet on either side of the runway centerline. Section 2 also rises upward along the extended runway centerline at the same 40:1 slope until reaching 304 feet above the runway end elevation. Upon reaching 304 feet, the surface levels out until the end of Section 1. The Departure Surface criteria are found in FAA Engineering Brief 99A.

Both sections of the Departure Surface should be clear of all obstacles. If it is not possible, penetrations to the surface must be evaluated through the FAA's Obstruction Evaluation/Airport Airspace Analysis (OE/AAA) process. If obstacles cannot be removed, minimum takeoff climb rates are published (as part of the departure procedure) which are higher than the 200 feet per minute required for the 40:1 surface. An airport sponsor can also request that a specific runway end(s) be designated as Not Authorized (NA) for instrument departures, in which case the 40:1 Departure Surface would not apply. The ability to provide the current Departure Surface criteria off each runway end is addressed in the alternatives chapter.

4.6 Airfield Environment

A number of facilities are necessary to support the operations of the airfield environment. Airfield lighting is required for airports intended to be utilized for nighttime operations as well as for operations during less than visual meteorological conditions. These along with pavement markings, signage, and other navigational aids are addressed in the following sections.

4.6.1 Identification Lighting

The current rotating beacon, located atop the ATCT, is considered to be in good condition. Regardless, it was installed in 2011 when the ATCT was constructed. Therefore, it will likely need to be replaced with a more efficient light-emitting diode (LED) fixture before the end of the 20-year planning period.

4.6.2 Runway Lighting

Both Runway 7-25 and Runway 18-36 have medium intensity runway lights (MIRLs). The LED fixtures of the Runway 7-25 MIRL system are considered to be in good condition as they were installed in 2016. As noted in the inventory, there are four outboard threshold lights at the Runway 25 displaced threshold; however, only three outboard threshold lights are required given that Runway 25 currently has and will only have a visual approach. As noted previously, Runway 7-25 will require an adjustment to the Runway 25 displaced threshold based on the AGIS survey and resulting corrections needed to the currently published declared distances. The outboard threshold lights should be adjusted at that time. The entire MIRL system for Runway 7-25 will likely need replacement towards the end of the 20-year planning horizon, given the saltwater environment the fixtures are exposed to. The incandescent system on Runway 18-36 is in fair condition and will

need to be replaced within the short-term planning period. It is anticipated that a more efficient LED edge lighting system (MIRLs) will be included as part of the Runway 18-36 rehabilitation project beginning in 2020.

4.6.3 Taxiway Lighting

Each taxiway has medium intensity taxiway lights (MITLs) that utilize base mounted fixtures on cans with conduit. Taxiways A, C, and D (west of Taxiway B) have LED fixtures considered to be in good condition since most have been installed as part of recent taxiway lighting improvements. However, the incandescent MITLs installed on Taxiways B, B1, D (east of Taxiway B), and D5 should be replaced with more efficient LED taxiway lighting when the individual taxiways are rehabilitated. Similarly, any new or relocated taxiways should also utilize MITL systems with LED fixtures installed on cans with conduit.

4.6.4 Airfield Signage

Currently the airfield has a combination of LED and incandescent signage fixtures. The LED fixtures are in good condition since they were installed as part of the more recent taxiway lighting projects. The incandescent signs need to be replaced with LED fixtures as part of the replacement of the remaining MITL incandescent lighting circuits.

In the future, the inclusion of lighted airfield signage is required for any future taxiway in order to maintain the efficient and safe movement of aircraft to and from the runway environment. Typically, these are placed on the left side of the taxiway but can be located on the right when necessary to meet clearance requirements or if it is just impractical on the left side. Any new fixtures should also be LED units.

4.6.5 Pavement Markings

Runway pavement and displaced threshold markings are painted white, while taxiway pavement markings are painted yellow. FAA guidelines state that all taxiways should have centerline markings and holding position markings whenever they intersect with a runway. Many surface markings on light-colored pavements require glass reflector beads and need to be outlined in black paint without beads to enhance their conspicuity. This is true for all Portland Cement Concrete (PCC) surfaces and older asphalt pavements. In as little as two years, many asphalt surfaces (new or treated) can become 'light-colored pavements.' This is especially true in Florida; therefore, glass beads and black outlines need to be included as part of any future pavement markings.

Runways

Runway pavements are marked with painted lines and numbers in order to aid in the identification of the runways from the air and to provide information to the pilot during the approach phase of flight. The FAA classifies three marking schemes depending on the type of runway:

Visual – minimum requirement for landing designator markings and centerline stripe.

Non-precision – minimum requirement for landing designator markings, centerline stripe, and threshold markings.

Precision - minimum requirement for landing designator markings, centerline stripe, threshold markings, aiming point markings, touchdown zone markings, and edge markings.

The non-precision markings are also applied to runways having approaches with vertical guidance not lower than $\frac{3}{4}$ mile visibility minimums. Depending on the type of aircraft activity and physical characteristics of the pavement, additional markings beyond those listed may be required for visual and non-precision runways.

As noted in the existing conditions, both runways have the appropriate markings for the types of aircraft and instrument approaches they support. Also since neither runway is expected to have lower than $\frac{3}{4}$ mile visibility minimums, no additional markings will be required in the future. Runway 7-25 will require an adjustment to the markings to the east of Runway 18-36 due to the need to move the Runway 25 displaced threshold. Runway 18-36 will require the addition of displaced threshold markings at both ends to provide a standard RSA.

For both runways, the pavement markings typically last for ten years; however, there are a number of variables that could significantly shorten that period, especially given the rain, sun, and coastal conditions at SPG. As such, it may be necessary to remark the runways between pavement rehabilitations or as part of the airport's pavement management program required by grant assurances.

Taxiways and Taxilanes

With the current instrument approaches and critical aircraft, the taxiways serving both runways require holding position markings to be offset at a 125 foot perpendicular distance from the runway centerline to intersecting taxiway centerline. All of the taxiways have holding position markings at the proper locations. If in the future the critical aircraft for Runway 7-25 changes to an aircraft with a MTOW greater than 12,500 pounds, then the holding position offset will increase to 200 feet.

None of the taxiways currently have enhanced taxiway centerline markings, prior to the holding position markings. While these markings are not required, they should be considered as part of any future remarking of taxiway pavements. The enhanced markings are along the last portion of the taxiway centerline prior to the runway holding position marking in order to improve situational awareness and minimize the potential for runway incursions. Any new taxiways or taxilanes should also have the appropriate centerline and holding position markings required. And as with the runway pavements, periodic taxiway and taxilane remarking will likely be required between the different pavement rehabilitation projects due to normal weathering and wear from regular usage.

4.6.6 Takeoff and Landing Aids

Over the course of the planning period some of the takeoff and landing aids will require repair or replacement. The following sections describe these systems.

Runway End Identification Lights

Runway End Identification Lights (REIL) consist of a pair of synchronized white flashing lights which are situated on each side and abeam of the runway end threshold lights. While the current unidirectional REILs installed on both ends of Runway 7-25 are considered to be in good condition as they were installed in 2016, they already show signs of saltwater corrosion (especially the Runway 25 REILs). It is estimated that the Runway 7-25 REILs will need to be replaced around the middle of the 20-year planning period. The unidirectional REILs on Runway 18-36 are heavily corroded and considered to be in fair condition at best. As such, they are expected to be replaced as part of the Runway 18-36 rehabilitation project beginning in 2020. All of the REILs are owned and maintained by the airport.

Visual Glide Slope Indicators

Visual descent information is provided to pilots at SPG using Precision Approach Path Indicator (PAPI) systems on each of the four runway ends. The Runway 7-25 PAPI systems are in good condition as they were installed in 2016; however, due to the saltwater environment, it is likely they will need to be replaced before the end of the 20-year planning period. The PAPIs on Runway 18-36 are only considered to be in fair condition and are expected to be replaced as part of the Runway 18-36 rehabilitation project beginning in 2020. Regardless, as with Runway 7-25, the Runway 18-36 PAPIs will likely need to be replaced again during the 20-year planning horizon due to the saltwater environment. All of the PAPIs are owned and maintained by the airport.

Automated Surface Observing System

No changes are required for the Automated Surface Observing System (ASOS), which is owned by the FAA and maintained by the National Weather Service. The ASOS wind sensor does however have a critical area that needs to be considered for any future development near the station. Any structures or vegetation within 500 feet of the wind sensor must be at least 15 feet below the wind sensor elevation. If not, the structure or vegetation could create a sheltering obstruction and impact the measurements of the wind sensor. Between 500 and 1,000 feet from the tower, the federal standards state that if practical, any obstructions be at least 10 feet below the wind sensor. This will be taken into consideration during the development of alternatives; however, it is unlikely that any structures will be planned on the north side of the airfield within these critical areas.

4.7 General Aviation Facilities

The following sections address the facilities necessary to directly support the general aviation activity at SPG. This includes an evaluation of the space required for the General Aviation Terminal, aircraft hangar requirements, and the space needed for aircraft parking aprons. A number of one-on-one interviews were conducted with the primary tenants, airport management, ATCT management, and other key stakeholders at the onset of the study. Different survey forms for tenants, customers, and the general public were developed and made available at the airport and on the project website. Additionally, comment forms have been provided at the public workshops. This outreach generated input from the airport and surrounding community to facilitate the assessments of SPG's general aviation facilities.

4.7.1 General Aviation Terminal Requirements

The two-story General Aviation Terminal building provides a total of 10,600 square feet (SF); however, as described in the inventory, only the first floor is utilized for FBO services. This includes the customer service, passenger waiting, rental car, flight planning, office, restrooms, and storage areas, as well as space for locally based charter operators. The second floor is utilized entirely for the Hangar Restaurant and Lounge. As such, the FBO portion of the General Aviation Terminal is approximately 5,300 SF.

The number of passengers and pilots during the peak hour of the average day is necessary to estimate the amount of space required for the FBO. The following methodology and assumptions were developed based on industry trends, site visits, and meetings with both airport and FBO management. A summary of the key variables and resulting FBO space requirements are included in **Table 4-13**.

- The number of operations conducted during the peak hour of the average day during the peak month was calculated in the forecast chapter. This accounts for arriving, departing, local, and itinerant users.
- The number of peak hour operations were then adjusted to eliminate local operations using the local versus itinerant splits from the forecast chapter for each planning period. It is assumed that the FBO facilities are primarily used by itinerant operators, since most of the local operations originate and terminate from other facilities on the airfield.
- The adjusted peak hour operations (arriving or departing) were estimated to have an average of 2.5 pilots/passengers on board in 2018, increasing to an average of 4.0 pilots/passengers on board by the end of the planning period. These estimates were based on an evaluation of the size of the existing general aviation aircraft fleet currently utilizing SPG with that expected over the course of the 20-year planning period. The increase in average passengers per flight reflects the industry trends for an increase in the size and utilization of the larger general aviation aircraft.
- An area of 50 SF was applied to each peak hour pilot/passenger to determine the minimum FBO space required.

**TABLE 4-13
FIXED BASE OPERATOR SPACE REQUIREMENTS**

	PEAK HOUR OPERATIONS	ITINERANT PEAK HOUR OPERATIONS	AVERAGE PILOTS / PASSENGERS PER AIRCRAFT	MINIMUM FBO SPACE (SF)
Base Year				
2018	44	23	2.5	2,900
Forecast				
2024	45	24	2.5	3,000
2029	48	26	3.0	3,900
2039	57	31	3.5	5,400

NOTES: SF = Square Feet

SOURCE: ESA analysis 2020.

Based on the assumptions described above and the resulting calculations, the current General Aviation Terminal should provide adequate FBO space throughout most of the planning period. It should however be noted that this estimated FBO space is considered a minimum figure as larger areas per pilot/passenger may be applied depending on the comfort and level of service desired for the customers of the FBO facilities.

4.7.2 Aircraft Storage Hangar Requirements

Because hangars provide protection from weather and a level of security for the aircraft, they are one of the most desirable means for aircraft storage at any airport. Most of the hangar space at SPG is used for based aircraft, with occasional use by itinerant aircraft during maintenance or extended visits. At the end of 2018, approximately 69 percent of the based aircraft at SPG were stored in hangars, which included T-hangars, shade hangars, port-a-ports, and clearspan hangars.

T-hangars are fully enclosed buildings which have individual t-shaped stalls, each capable of storing one aircraft (typically a single-engine or a light multi-engine aircraft) in a nested, back to back configuration. Shade hangars, which due to the similar configuration are also referred to as T-shelter hangars, are essentially T-hangar buildings without walls. Port-a-ports are “T” shaped moveable single-hangar units used to store primarily single-engine piston aircraft. They are similar in shape to single T-hangar units though they typically take up more space due to not sharing walls with adjacent units. For the purposes of this analysis, the shade hangars and port-a-ports at SPG will be categorized as T-hangars. Approximately 61 percent of based aircraft at SPG at the end of 2018 were stored in T-hangars.

Depending on the size, clearspan hangars are capable of holding one to multiple different aircraft and commonly have an attached office, shop, and/or storage space. The smaller clearspan hangars are sometimes referred to as private hangars (such as the VM Hangar) while those which provide

individual units are referred to as box hangars (such as Hangars 3 and 4). Regardless, clearspan hangars can accommodate multiple aircraft types while also serving to provide maintenance or other aviation related services. Therefore, for the purposes of this analysis, they will all be referred to as clearspan hangars and the demand for them estimated by the number of based aircraft expected to utilize such hangars in the future.

Given the airport’s coastal environment, it is expected that the number of aircraft stored in hangars will increase in the future; presuming new hangars will be developed. This assumption is supported by the 100 percent hangar occupancy rate and the airport’s active hangar wait list (which consistently averages around 100 aircraft). When these assumptions and past trends are combined with the forecasted based aircraft demand, it is estimated that an additional 60 T-hangar units need to be considered during the planning period. As in the past, these would accommodate a majority of the single-engine and some multi-engine aircraft. A mix of both small and larger clearspan hangars should also be planned to support the demand for the 25 additional based aircraft expected to be stored in hangars by the end of the planning period. While this would include some single-engine aircraft, most of the clearspan hangar space would be utilized by the future based multi-engine and jet aircraft, as well as additional rotorcraft expected. The existing based aircraft storage facilities and expected future demands are summarized in **Table 4-14**.

**TABLE 4-14
EXISTING AND FUTURE BASED AIRCRAFT STORAGE FACILITIES**

	T-HANGARS	CLEARSPAN HANGARS	PARKING APRON	TOTAL BASED AIRCRAFT
2018	105	16	55	176
2039	165	41	40	246
Additional Spaces Needed	60	25	none	

SOURCE: ESA analysis 2020.

Additional clearspan hangar space or areas over what is shown in **Table 4-14** should be considered in order to provide the opportunity for additional aviation related businesses to be developed at SPG.

4.7.3 Aircraft Parking Aprons

For planning purposes, based and itinerant aircraft apron requirements are calculated separately since they can have slightly different characteristics; however, the two will be combined to identify the overall need. Aircraft parking aprons are also usually divided into areas for small versus large aircraft. Areas for small aircraft are typically designed for ADG I size aircraft with tie-down capability. For SPG, the large aircraft apron space includes the area necessary to park the larger turboprop multi-engine and small business jet aircraft, as well as rotorcraft. The methods used to estimate the minimum apron space required for based and itinerant aircraft parking are provided in the following sections.

Based Aircraft Parking Area

Following the hangar utilization rate, approximately 31 percent of the based aircraft were parked on aprons in 2018. Of these, nearly all were single-engine with only a few multi-engine aircraft. Minimum areas of 330 to 475 square yards (SY) for the small to larger aircraft were applied to the mix of based aircraft currently parked on an apron. Then, following accepted planning criteria, this value was increased ten percent. The result is that 20,100 SY of apron space is required for the based aircraft stored outside in 2018.

As stated in the previous section, it is assumed that an increasing percentage of the based aircraft demand will be met through the use of hangar facilities throughout the planning period; again presuming new hangars will be developed. It was also assumed that the remaining based aircraft stored outside will continue to predominantly be the single-engine aircraft. Therefore, using the same methodology described above, a minimum area of 14,800 SY was estimated for the based aircraft expected to be stored on aprons by 2039. Despite the overall growth in based aircraft, this lower figure reflects the fact that more aircraft (as evidenced by the hangar wait list alone) are expected to be stored in hangars in the future.

Itinerant Aircraft Parking Area

Itinerant apron space is intended for relatively short-term parking, usually less than 24 hours (possibly overnight), primarily associated with transient aircraft. For planning purposes, a preferred approach to determining space needs is to calculate the total number of peak day itinerant aircraft that can be expected on the apron during the average day. This was performed by using the peak activity projections, local versus itinerant splits, and operational fleet mix figures from the approved aviation activity forecasts.

Based on typical space and maneuvering requirements, a minimum area of 400 SY was applied per single-engine itinerant aircraft while 570 SY was used for the itinerant multi-engine, jet, and rotorcraft. Overall, this methodology is considered conservative, given that the space allocation per aircraft includes the area required for the associated apron area taxilanes. The methodology resulted in 19,900 SY of itinerant apron space required in 2018 and 38,400 SY by 2039.

Summary of Aircraft Parking Apron Requirements

Table 4-15 summarizes the aircraft parking apron requirements and then compares them to the overall apron space available in 2018. The apron space available in 2018 includes all of the paved areas utilized by both based and itinerant aircraft. For the aprons adjacent to Taxiways A, C, and D, the current pavement markings are based on the setbacks required for the ADG I TOFA. These areas did not include any of the small access aprons in front of the T-hangar or the areas immediately in front of the different clearspan hangars.

**TABLE 4-15
AIRCRAFT PARKING APRON REQUIREMENTS**

	2018	2039
Based Aircraft		
Approximate Number of Aircraft on Apron	55	40
Recommended Area for Based Aircraft (subtotal)	20,100 SY	14,800 SY
Itinerant Aircraft (on Average Day of Peak Month)		
Single-Engine	37	69
Area Required	14,800 SY	27,600 SY
Multi-Engine / Jet / Rotorcraft	9	19
Area Required	5,100 SY	10,800 SY
Minimum Area Required for Itinerant Aircraft (subtotal)	19,900 SY	38,400 SY
Combined Apron Space Requirements		
Total Area for Based and Itinerant Aircraft	40,000 SY	53,200 SY
Combined Aircraft Apron Areas Available in 2018	36,600 SY	36,600 SY
Surplus (+) / Deficit (-)	- 3,400 SY	- 16,600 SY
NOTES: SY = Square Yards		
SOURCE: ESA analysis 2020.		

It should be noted that while the methodology results in a current deficit; this is due to the fact that the estimate is based on peaking characteristics for the itinerant aircraft.

4.8 Support and Service Facilities

Key facilities to support the airport activity were described in the existing conditions chapter. Any improvements needed for these over the course of the 20-year planning horizon are identified in the following sections.

4.8.1 Airport Administration Space

The airport administration office is located on the second floor of the structure on the east side of Hangar 1. While the facility is dated, the 900 SF of office space is adequate and the location is ideal for airfield visibility and access. A project to completely renovate the airport administration space, as well as the space below on the first floor, needs to occur as soon as possible.

4.8.2 Airport Traffic Control Tower

Having been constructed in 2011, the ATCT structure and equipment is in good condition. Regardless, upgrades to the physical facility and certainly equipment replacements need to be

programmed in the future given the facility will be 28 years old at the end of the 20-year planning period.

4.8.3 Airfield Electrical Vault

While the existing airfield electrical vault is considered to be of adequate size, much of the equipment is only considered to be in fair condition. A project to rehabilitate the facility needs to occur as soon as possible. As part of that project, a backup generator is also required as there is currently no such system.

4.8.4 Airport Maintenance Equipment and Facilities

As noted in the inventory, the current airport maintenance department operates out of three different T-hangar end units and one full T-hangar unit. A single, dedicated airport maintenance facility is required. Options for a new maintenance building will be evaluated in the alternatives chapter.

4.8.5 Fuel Farm

All three of the 10,000 gallon tanks in the airport's fuel farm need to be replaced as soon as possible. Constructed in 1999, these tanks, as well as all of the piping, valves, and dispensing equipment, are considered to be in poor shape. Not only is this due to the age of the fuel farm, but also the saltwater environment of the airfield. It is also recommended that a canopy or roof system of some sort be considered for the new system to better protect it from the elements.

4.8.6 Runway 7 Blast Fence

At the physical end of Runway 7, there is a blast fence installed to prevent prop wash from taxiing and departing aircraft from impacting the area to immediate west. The blast fence currently has solar powered red obstruction lights and the paint is faded. A project to permanently light the red obstruction lights and repaint the blast fence should be programmed during the short-term planning period.

4.8.7 Perimeter Fencing and Security

The landside portion of the airfield is primarily secured by a six foot chain-link fence around the airport property perimeter, although in some areas the fencing is only four feet high. The fence which separates much of the northern property boundary along 5th Avenue SE and Albert Whitted Park is installed in such a way that allows for it to be easily removed and reinstalled around the time of the St. Pete Grand Prix when that area is reconfigured to support race operations. The vehicle gates which provide access to the ATCT and fuel farm facility are manually operated. There is no fencing along the portions of the airport that directly border Tampa Bay. The fencing, as well as the various gates, card readers, and gate operating equipment are in fair condition.

A perimeter security project is needed to repair portions of the existing fence, replace the older vehicle gate operators, and add new gate operators to the manual vehicle gates. Given that much of

the airfield cannot be secured using perimeter fencing, the project also needs to include the installation of security cameras around the perimeter and facilities of the airport.

4.8.8 Automobile Parking

While there are different parking lots around the airport, there are not enough spaces to accommodate all of the tenants and users of the various facilities. As is typical at many general aviation airports, a number of automobiles are parked on the airside next to the individual T-hangar units and clearspan hangars. Similarly, the small parking lots are limited and street parking is nearly non-existent around the airport. The ability to provide additional automobile parking needs to be included as part of any future T-hangar, clearspan hangar, or other improvement projects.

4.9 Summary of Facility Requirements

Table 4-16 provides a general summary of the facility requirements that were determined necessary to satisfy the approved aviation demand forecasts. Essentially, this table includes the minimum improvements required over the 20-year planning period. Some additional facilities will also be planned and included as part of the final ALP drawing set and Capital Improvement Program to maximize the flexibility of the airport and the ability to respond to future opportunities. The order in which these improvements are listed does not have any relation to the priority or phasing of such projects.

**TABLE 4-16
MINIMUM 20-YEAR FACILITY REQUIREMENTS**

Category	Proposed Improvements
Runways	<ul style="list-style-type: none"> Extend Runway 7-25 (overall length of 4,000 feet) Extend Runway 18-36 (overall length of 3,600 feet) Provide Blast Pads at both ends of Runway 7-25 Rehabilitate Runway 18-36 (to include shifting runway centerline east) Displace both ends of Runway 18-36 (to provide standard Runway Safety Areas) Future Rehabilitations of Runway 7-25 and Runway 18-36
Taxiways	<ul style="list-style-type: none"> Increase Centerline Separation of Parallel Taxiways to Runway 7-25 Rehabilitate Taxiways A, B, C, and D Potential to Extend Taxiway A to Runway 25 End Taxilane Access to New Facilities Run-up Areas to each runway end
Airfield	<ul style="list-style-type: none"> Replace Rotating Beacon with LED fixture Replace Medium Intensity Runway Lights (MIRL) on Runway 18-36 with LED fixtures Replace Medium Intensity Taxiway Lights (MITL) on Taxiways B and D with LED fixtures Replace Incandescent Airfield Signage with LED fixtures Replacement of REILs and PAPIs as needed
Airport Facilities	<ul style="list-style-type: none"> T-hangar Facilities (60 additional units) Clearspan Hangars (to accommodate 25 new aircraft) Additional Aircraft Parking Apron Space (minimum 16,600 SY) Rehabilitate Aircraft Parking Aprons Renovate Airport Administration Space Update ATCT Structure and Replace Equipment Rehabilitate Airfield Electrical Vault Equipment and Install Backup Generator Consolidated Airport Maintenance Facility Replace Airport Fuel Farm (minimum of three 10,000 gallon tanks) Rehabilitate Runway 7 Blast Fence Improve Airport Security (improvements to fencing, gate operators, and cameras) Increase Automobile Parking Areas

SOURCE: ESA, 2020.

CHAPTER 5

Environmental Overview

CHAPTER 5

Environmental Overview

5.1 Introduction

Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5070-6B, Change 2, *Airport Master Plans*, encourages the consideration of environmental factors in airport master planning to “help the sponsor thoroughly evaluate airport development alternatives and to provide information that will help expedite subsequent environmental processing.” Also, Florida Department of Transportation (FDOT) *2021-2022 Guidebook for Airport Master Planning* notes that there are different environmental processes for projects that are funded by the FAA or FDOT. However, both agencies clearly recognize that it is not the intent of a master plan to complete the federal and state environmental review processes. Instead, the information should identify and set the stage for understanding what future environmental evaluations and clearances may be needed.

This chapter provides an overview of known environmental resources that will be considered during the identification and evaluation of development alternatives in this master plan. The types of environmental reviews are addressed at the end of this chapter while potential environmental impacts associated with specific conceptual development alternatives are discussed as part of the evaluation of airfield alternatives. The environmental resources discussed in this chapter include many of those identified in FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*, and FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*. This overview does not constitute an Environmental Assessment (EA); instead, it is intended to help prepare for NEPA review that may be required by the FAA for future projects occurring at Albert Whitted Airport (SPG).

5.2 Air Quality

The federal *Clean Air Act*, as amended, required the U.S. Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards (NAAQS) for principle air pollutants considered harmful to public health and the environment. Those areas where the NAAQS are not met are designated as “nonattainment.” Pinellas County is currently classified as “attainment” for all criteria air pollutants listed in the NAAQS. Emission sources at SPG, which are typical of airports, include aircraft engines, ground support equipment, auxiliary power units, motor vehicles, temporary use of construction equipment, and various stationary sources. Stationary sources at SPG include back-up electric power generators and fuel storage tanks.

The existing and projected activity for SPG, in conjunction with the County’s attainment status, indicates that continued development at the airport is not likely to substantially affect air quality, exceed thresholds that require detailed air quality analyses, or require conformance with a State Implementation Plan (SIP). Future airport development projects that require NEPA review will

consider the project's effect on air quality. Certain projects and tenant activities, such as operating paint booths, will need to comply with applicable regulations and permit requirements.

5.3 Biological Resources

5.3.1 Biotic Communities and Vegetation

SPG covers a land area of approximately 187 acres. The existing land use and cover types have been mapped for SPG using the Southwest Florida Water Management District (SWFWMD) Florida Land Use, Cover and Forms Classifications Systems (FLUCCS) data for Pinellas County. The FLUCCS communities are listed in **Table 5-1** below and are depicted on **Figure 5-1**.

TABLE 5-1
FLORIDA LAND USE, COVER AND FORMS CLASSIFICATION
SYSTEMS (FLUCCS) COMMUNITIES AT SPG

Land Use Code	Description
540	Bays and Estuaries
811	Airports
830	Utilities

SOURCE: SWFWMD, 2017, and ESA, 2022.

Potential impacts to biotic communities are regulated by a variety of agencies at the federal, state and local level depending upon the project type and resource affected. In Pinellas County, local agencies support development review but it is the federal and state regulatory agencies that have jurisdiction over the resource categories discussed in this section.



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Source: ESRI, HERE, DELOME, USGS, INTERMAP, FDOT 1999, AND SWFWMD 2017, ADAPTED BY ESA, 2021.

Albert Whitted Airport Master Plan

FIGURE 5-1
 FLORIDA LAND USE, COVER AND FORMS CLASSIFICATION SYSTEMS (FLUCCS)

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5.3.2 Wildlife, Listed Species, and Essential Fish Habitat

Wildlife Hazard Management

A FAA compliant Wildlife Hazard Assessment (WHA) was completed and submitted to the FAA in July 2015. At this time, a Wildlife Hazard Management Plan (WHMP) has not been completed for SPG. As recommended in the WHA, future airport development should be designed to minimize wildlife hazards to the greatest extent possible.

Listed Species

In addition to assessing impacts under NEPA, airport development projects are subject to other federal and state laws associated with wildlife and protected species. Most notable is the federal *Endangered Species Act*, which protects and recovers imperiled species and the habitats upon which they depend. The FAA and/or other federal agencies that may be involved with airport development projects at SPG are required to determine if their action(s) would affect listed species. Depending upon the potentially impacted habitat or species affected, coordination with the U.S. Fish and Wildlife Service (USFWS), National Oceanic and Atmospheric Administration (NOAA Fisheries) and/or the Florida Fish and Wildlife Conservation Commission (FFWCC) may be required. In cases where wetlands are also impacted, this coordination typically occurs in conjunction with the wetland permitting process. A discussion of the listed wildlife species with a likelihood of occurrence at the airport and the coordination required for impacts to each, is included in this section.

A review of publicly available resources such as the Florida Natural Areas Inventory (FNAI) and previous environmental studies (including the WHA) has identified the area around and including SPG as potentially having suitable habitat for a number of federal and state listed wildlife species. **Table 5-2** provides the listed species for which suitable habitat may exist or for which there is a possibility of occurrence on or adjacent to SPG.

**TABLE 5-2
FEDERAL AND STATE LISTED WILDLIFE SPECIES IN THE VICINITY OF SPG**

Common Name	Scientific Name	USFWS / NOAA Fisheries Listing	FFWCC Listing
Fishes			
Gulf sturgeon	<i>Acipenser oxyrinchus desotoi</i>	T	
Opossum pipefish	<i>Microphis brachyurus</i>	SC	
Smalltooth sawfish*	<i>Pristis pectinata</i>	E	
Reptiles			
American alligator	<i>Alligator mississippiensis</i>	T(S/A)	
Loggerhead sea turtle	<i>Caretta</i>	T	

**TABLE 5-2
FEDERAL AND STATE LISTED WILDLIFE SPECIES IN THE VICINITY OF SPG**

Common Name	Scientific Name	USFWS / NOAA Fisheries Listing	FFWCC Listing
Green sea turtle	<i>Chelonia mydas</i>	T	
Leatherback sea turtle	<i>Dermochelys coriacea</i>	E	
Kemp's Ridley sea turtle	<i>Lepidochelys kempii</i>	E	
Hawksbill sea turtle	<i>Eretmochelys imbricata</i>	E	
Birds			
Bald Eagle	<i>Haliaeetus leucocephalus</i>	**	
Piping Plover	<i>Charadrius melodus</i>	T	
Snowy Plover	<i>Charadrius nivosus</i>		T
Little Blue Heron	<i>Egretta caerulea</i>		T
Reddish Egret	<i>Egretta rufescens</i>		T
American Oystercatcher	<i>Haematopus palliatus</i>		T
Least Tern	<i>Sternula antillarum</i>		T
Roseate Spoonbill	<i>Ajaja</i>		T
Tricolored Heron	<i>Egretta tricolor</i>		T
Wood Stork	<i>Mycteria americana</i>	T	
Black Skimmer	<i>Rynchops niger</i>		T
Mammals			
West Indian Manatee	<i>Trichechus manatus</i>	T	

This information is provided as a guide to project planning, and is not a substitute for site-specific surveys. Such surveys may be needed to assess species' presence or absence, as well as the extent of project effects on listed species and/or designated critical habitat.

USFWS = U.S. Fish and Wildlife Service

FFWCC = Florida Fish and Wildlife Conservation Commission

E = Endangered

T = Threatened

SC/SSC = Species of Special Concern

C = Candidate for list at the Federal Level by USFWS

T(S/A) = Threatened (Similarity of Appearance) to American crocodile - *Crocodylus acutus*

* = While current distribution does not include Pinellas County, NOAA considers the entire state of FL for this species

** = Protected under the BGEPA (16 U.S.C. 668-668d), as amended, and the MBTA (16 U.S.C. 703-712)

NOTE: Candidate species receive no statutory protection under the Endangered Species Act (ESA). The FWS encourages cooperative conservation efforts for these species because they are, by definition, species that may warrant future protection under the EPA.

SOURCE: USFWS, FFWCC, Florida Natural Areas Inventory (FNAI).

The upland improvement areas of SPG do not currently contain habitat that would support a majority of the listed species identified in **Table 5-2**. However, given the airport's border with

marine waters and shoreline habitat, future development activities should consider potential impacts to the following listed species: bald eagles, piping plovers, snowy plovers, American oystercatchers, least terns, black skimmers, sea turtles and manatees. Specific species survey, monitoring, and permitting guidelines are established by FFWCC and/or USFWS/NOAA Fisheries, and those activities would be required prior to or during the permitting process for airport development if there is a potential for impacts to any of these species. Further, it should be noted that any construction projects that require clearing of large areas should be stabilized as quickly (avoid leaving large, cleared areas for extended duration) to prevent attracting nesting shorebirds.

The airport sponsor and/or tenants are subject to the requirements of the Endangered Species Act, even for future improvements that do not require a federal action.

Essential Fish Habitat

The *Magnuson-Stevens Fishery Conservation and Management Act* (16 U.S.C. 1801, et seq.) reflects the Secretary of Commerce and Fishery Management Council's authority and responsibilities for the protection of essential fishery habitat. The Act specifies that each federal agency shall consult with the Secretary with respect to any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, by such agency that may adversely affect any Essential Fish Habitat (EFH) identified under this Act. EFH is defined by the Act as "...those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fishes and may include areas historically used by fishes. Substrate includes sediment, hard bottom, structures underlying the waters, and any associated biological communities. Necessary means the habitat required to support a sustainable fishery and the managed species contribution to a healthy ecosystem. Spawning, breeding, feeding, or growth to maturity covers all habitat types used by a species throughout its life cycle. Only species managed under a Federal Fishery Management Plan (FMP) are covered.

NOAA Fisheries, also known as National Marine Fisheries Service (NMFS), reviews potential impacts to marine listed species (such as smalltooth sawfish) and also coordinates for projects that may affect EFH. There are four required components of an EFH consultation. These include: 1) Notification, 2) EFH Assessment, 3) NMFS EFH Conservation Recommendations, and 4) Department of the Army, Corps of Engineers (USACE) Response. SPG is located within the Southeast Regional Office of NOAA Fisheries. Typically, EFH assessments are conducted where projects have the potential to affect identified resources, mostly in-water activities or activities that would affect coastal vegetation or substrate. For SPG, EFH consultation will be required for projects that discharge into the adjacent bay or impact the shoreline or waters of Tampa Bay. This would include development where stormwater improvements require alteration of conveyances or structures within, or connected to Tampa Bay.

5.4 Department of Transportation Act: Section 4(f) and Other Environmentally Sensitive Public Lands

Section 4(f) of the *Department of Transportation Act of 1966* (re-codified and renumbered as Section 303(c) of 49 U.S. Code) states that the Secretary of Transportation will not approve any program or project that requires the use of publicly-owned land of a public park or recreation area; or wildlife and waterfowl refuge of national, state, or local significance; or land of an historic site of national, state, or local significance as determined by the officials having jurisdiction thereof, unless:

1. There is no feasible and prudent alternative to use of such land and such program, and
2. The program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.

At this time, there are eight identified recreational areas and several historic resources (as listed on the National Register of Historic Places and the Florida Master Site File), located adjacent to or within one-half mile of the airport. The Section 4(f) recreational areas include: Pioneer Park, Demens Landing Park, Lassing Park, Poynter Park, Albert Whitted Park, Rio Vista Park, Roser Park, and the Pinellas County Aquatic Preserve. The eastern section of SPG's property boundary runs adjacent and extends into the Pinellas County Aquatic Preserve. However, dredged portions of the Bay located directly north and south of SPG are not included within the Preserve limits (see **Figure 5-2**). This aquatic preserve was designated in 1972 to assist in halting dredge and fill practices that occurred within the developments of the Bay during the 1950's. Future site improvements that may impact the Preserve should take into consideration the goals and objectives established within the Pinellas County and Boca Ciega Bay Aquatic Preserves Management Plan. The implementation of additional Best Management Practices (BMPs) will also need be considered. Historical resources are further identified and discussed in Section 5.6 *Historical, Archaeological, and Cultural Resources*. There are no additional wildlife and waterfowl refuges located on or in the immediate vicinity of SPG.



Source: PINELLAS COUNTY AND BOCA CIEGA BAY AQUATIC PRESERVES MANAGEMENT PLAN, 2021.

Albert Whitted Airport Master Plan

FIGURE 5-2
PINELLAS COUNTY AQUATIC PRESERVE

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5.5 Hazardous Materials and Waste Management

5.5.1 Hazardous Materials

Federal, state, and local laws regulate hazardous materials use, storage, transport, or disposal. Major laws and issue areas include:

- ➔ Resource Conservation and Recovery Act (RCRA) - hazardous waste management.
- ➔ Hazardous and Solid Waste Amendments Act - hazardous waste management.
- ➔ Comprehensive Environmental Response, Compensation, and Liability Act - cleanup of contamination.
- ➔ Superfund Amendments and Reauthorization Act (SARA) - cleanup of contamination.
- ➔ Emergency Planning and Community Right-to-Know (SARA Title 111) - business inventories and emergency response planning.

According to the Florida Department of Environmental Protection (FDEP) RCRA on-line database, two (2) sites that store, generate, transport, treat, and dispose of hazardous wastes are located on SPG property. As shown in **Table 5-3**, both sites are permitted as small quantity generators.

The database did not contain any outstanding contamination or monitoring issues for either of these two sites. Both of these sites are located on the south side of the airport property. National Priority List (NPL) sites, also referred to as “Superfund” sites, are considered by EPA to have the most significant public health and environmental risks to neighboring areas. A review of EPA on-line databases did not reveal any NPL sites or facilities on or in the vicinity of SPG.

TABLE 5-3
RESOURCE CONSERVATION AND RECOVERY ACT SITES AT SPG

Handler ID	Name	Generator Type	Compliance/ Enforcement Issues ^a
FLD982097107	Albert Whitted Water Reclamation Facility	Small Quantity Generator	None
FLR000115196	City of St. Petersburg (Fuel Farm)	Small Quantity Generator	None

NOTES: a. Compliance and enforcement information available in the EPA ECHO report only available for previous 5-year period.

SOURCE: EPA, 2020.

5.5.2 Waste Management

Per FAA Order 5100.38D, Change 1 *Airport Improvement Program Handbook*, master plans funded with Airport Improvement Program (AIP) dollars must address issues related to the airport's recycling, reuse, and waste reduction programs. This includes:

- ➔ Assessing the feasibility of solid waste recycling at the airport;
- ➔ Minimizing the generation of waste at the airport;
- ➔ Identifying operations and maintenance requirements;
- ➔ Reviewing waste management contracts; and
- ➔ Identifying the potential for cost savings or generation of revenue.

The SPG Recycling, Reuse, and Waste Reduction Plan (RRWRP) includes a review of the airport's waste management and recycling throughout the airfield facilities, to include a review of the practices by major tenants. The RRWRP prepared as part of this master plan is included in **Appendix D**.

5.6 Historical, Archaeological, and Cultural Resources

Several laws and regulations require that possible effects on historic, archaeological, and cultural resources be considered during the planning and execution of federally funded projects. The primary laws that pertain to the treatment of historic, architectural, archaeological, and cultural resources during environmental analyses are the *National Historic Preservation Act* (NHPA), the *Archaeological Resources Protection Act*, and the *Native Graves Protection and Repatriation Act*. Historic, architectural, archaeological, and cultural resources may include archaeological sites, buildings, structures, objects, districts, works of art, architecture, and natural features that were important in past human events. They may consist of physical remains, but also may include areas where significant human events occurred, even though evidence of the events no longer exists.

A review of the EPA's NEPAAssist database and the Florida Division of Historical Resources Florida Master Site File Search, indicates that a total of 30 resource structures, one Florida Site, and four resource groups are NHRP-listed historical properties located on or directly adjacent to the airport boundary. Of these structures, a total of ten buildings are located within 500 feet of SPG. These buildings include Hangar 1 (located on airport property) and nine buildings associated with the WWII Coast Guard Air Station (located south of the airport property). These structures are not anticipated to be directly impacted, as a result of the anticipated improvements to SPG.

A total of three structures (PI03094 which is located west of the airport, PI11573 which is Hangar 1, and PI11949 which is associated with U.S. Coast Guard Sector St. Petersburg base) are currently within the 2018 day-night average sound level (DNL) 65 or 70 contours (see **Figure 5-3**). Because the projected 2039 DNL contours shift to the east, structures PI03094 and PI11573 will not be within the DNL 65 or 70 contours if the proposed airfield improvements shown in **Figure 5-4** and described in the following chapter are implemented. However, one additional structure (PI11948) within the U.S. Coast Guard base would be encompassed by the 2039 DNL 65 contour and structure PI11958 would remain. Regardless, due to the location of these resources on an active U.S. Coast Guard base and their current levels of noise exposure, it is not anticipated that the proposed airfield improvements for SPG will indirectly impact these resources. It is important to note that additional structures, located within the U.S. Coast Guard base may also be eligible for listing at this time, even if they were not listed within the Master Site File search. Therefore, for those improvements that project an elevated noise exposure level off-airport property, an evaluation of the existing resources will need to be conducted through the NEPA process, specifically south of the airport, within the U.S. Coast Guard base. Development of the noise contours are addressed in a subsequent section.

5.7 Energy Supply and Natural Resources

Duke Energy is the electric power supplier to SPG and has a network capable of serving existing and prospective tenants at the airport. The proposed airport improvements projects would require lighting; power for specialized equipment, tools, and processes; office equipment; and air conditioning. Local power utility requirements would primarily include electric service. Overall, there is sufficient capacity to accommodate the projects envisioned in this master plan. Additionally, no substantial energy-related impacts or issues regarding the ability to supply energy to SPG were noted during any recent development projects.

5.8 Noise and Compatible Land Use

In order to assess the potential noise impacts that would result from the projected aircraft activity levels over the course of the 20-year planning period, noise contours were developed. The contours were generated using the FAA's Aviation Environmental Design Tool (AEDT) for both the base year (2018) and a future condition (2039). The base year noise contours (**Figure 5-3**) reflect the existing airfield configuration with the actual aircraft operational fleet mix that occurred in the study base year (2018). The contours for the long-term planning horizon (**Figure 5-4**) are based on the annual aircraft activity levels and expected operational fleet mix for 2039 from the approved aviation activity forecasts. Additionally, the long-term noise contours are based on the future configuration of Runways 7-25 and 18-36 proposed for the 20-year planning horizon.

Both **Figures 5-3** and **5-4** include tables which identify the area of the City of St. Petersburg's land uses within the DNL 65, 70, and 75 contours that extend off-airport property. As reflected in the figures, the projected increase in activity by 2039 shows the noise contours expanding while the ultimate improvements proposed for Runway 7-25 results in them shifting to the east. While this analysis does not constitute a Title 14 Code of Federal Regulations (CFR) Part 150 noise study, it does provide an indication of the general noise exposure around the airport today and what could be expected in the future.

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5.9 Water Resources

Prior environmental studies, permit actions, reports, GIS data, and other available information was reviewed to determine the extent of water resources on airport property. USACE, the FDEP, and the State of Florida's Water Management Districts have jurisdiction over these resources.

5.9.1 Wetlands

SPG is located within the Tampa Bay and Coastal Areas Watershed (Watershed #13, HUC 03100206) and while no jurisdictional wetlands have been identified within the upland portions of the airport property limits, Tampa Bay abuts the airport boundaries to the north, south, and east. Impacts to the Bay and any other surface water features (i.e. stormwater swales) will require some level of NEPA review and permitting. Should potential impacts to water resources occur, mitigation may be available at one of two mitigation banks with service areas covering the airport. These banks include the Tampa Bay Mitigation Bank which provides freshwater and estuarine wetland credits and the Mangrove Point Mitigation Bank that provides estuarine credits. Mitigation through a bank is consistent with the hierarchy of mitigation preference established by the USACE in their 2008 Mitigation Rule, and it is compatible with the airport and FAA's goal of reducing wildlife hazards at the airport. Impacts to the Bay will require additional mitigation measures.

Even though FDEP has assumed Section 404 permitting; coordination for potential impacts to water resources located within and adjacent to the airport will still be administered by the ACOE (since a majority of the airport and its surrounding waters are within Retained Waters). Portions of the airport that are not located within Retained Waters, the ACOE will still maintain jurisdiction beyond the 300-foot guideline to the landward boundary of the project, for the purposes of that project only (State 404 Program Applicant Handbook, Section 2.0, Definition 41 (Retained Waters)).

5.9.2 Other Surface Waters

SPG maintains a network of shallow swale features associated with the airport's drainage system, some of which maintain connections to Tampa Bay. These drainage structures are maintained in order to reduce wildlife hazards in and around the runway and taxiway system. In addition, the airport operates under stormwater management permits and implements pollution prevention plans and best management practices. Permitting will be required should a proposed project at SPG be determined to impact these facilities. National Pollutant Discharge Elimination System (NPDES) regulations also serve to protect water quality. In Florida, the NPDES permit program is administered by the FDEP. An NPDES Generic Permit for construction will be required for projects at SPG that disturb more than 1.0 acre.

5.9.3 Floodplains

Executive Order 11988, *Floodplain Management*, directs federal agencies "to take actions to reduce the risk of flood loss, minimize the impact of floods on human safety, health, and welfare,

and restore and preserve the natural and beneficial values served by the flood plains.” Department of Transportation Order 5650.2, *Floodplain Management and Protection*, and FAA Orders 5050.4B and 1050.1F contain policies and procedures for implementing the Executive Order and evaluating potential floodplain impacts. Agencies are required to make a finding that there is no practicable alternative before taking action that would encroach on a floodplain based on a 100-year flood.

The Federal Emergency Management Agency (FEMA) identifies flood hazard areas that are depicted on Flood Insurance Rate Maps (FIRMs). A floodplain is defined as the lowlands and relatively flat areas adjoining inland and coastal waters including flood prone areas of offshore islands that are, at a minimum, prone to the 100-year flood. The 100-year floodplain is considered the base floodplain. The most recent FEMA Flood Insurance Rate Maps (FIRM) were adopted by Pinellas County on August 24, 2021. **Figure 5-5** depicts the updated FIRMs for the area surrounding SPG. Not only did these newer maps increase the Baseline Flood Elevations (BFEs) associated with the airport property, but they also established the Limit of Moderate Wave Action (LiMWA) line, which is a Special Flood Hazardous Area (SFHA). The LiMWA line indicates the inland limit where wave height is estimated to reach 1.5 feet. Therefore, the LiMWA line is established midway through Zone AE (where wave activity is expected to be equal to or less than 3 feet in height). Zone VE indicates the Coastal High Hazard Area (CHHA) where wave heights are greater than 3 feet. Within Zones AE and VE, there is a one percent probability of flooding every year (also known as the 100-year floodplain).

Since there is a higher risk of damage associated with buildings and structures located within the 1.5 to 3 foot wave action area, FEMA encourages construction to Zone VE standards (found in *Title 44 of the Code of the Federal Regulations, Section 60.3* and the *Local Officials Guide for Coastal Construction*) within this area, to promote coastal resilient structures. In addition, airport improvement within areas identified as SFHA will need to be constructed per Pinellas County’s updated Floodplain Management Ordinance (proposed Ordinance 9508-21). Federal floodplain management regulations and mandatory flood insurance purchase requirements apply in these zones.

The airport also has an area of moderate and minimal hazard zones that could be flooded by severe, concentrated rainfall coupled with inadequate local drainage systems. Local stormwater drainage systems are not normally considered in a community’s flood insurance study. The failure of a local drainage system can create areas of high flood risk within these zones. On the FEMA maps these are shown as Zone X areas. Zone X areas that are identified as moderate have a 0.2 percent probability of flooding every year (also known as the 500-year floodplain), while the Zone X areas that have a minimal risk are identified as areas that are outside the 500-year floodplain. No BFEs or base flood depths are shown within this zone and flood insurance is not typically required by regulation.

5.10 Coastal Zone Consistency Requirements

In 1972, the Coastal Zone Management Act (CZMA) was established to restore and enhance the resources of the nation’s coastal zone, through the development and implementation of a

comprehensive management plan for each coastal state. Once approved, federal activities are required to be consistent with a state's management plan. In Florida, the Coastal Management Program (FCMP) was approved in 1981 (Chapter 380, Part II, F.S). Florida's coastal zone includes the state's 67 counties and includes 24 Florida Statutes that are administered by various state agencies.

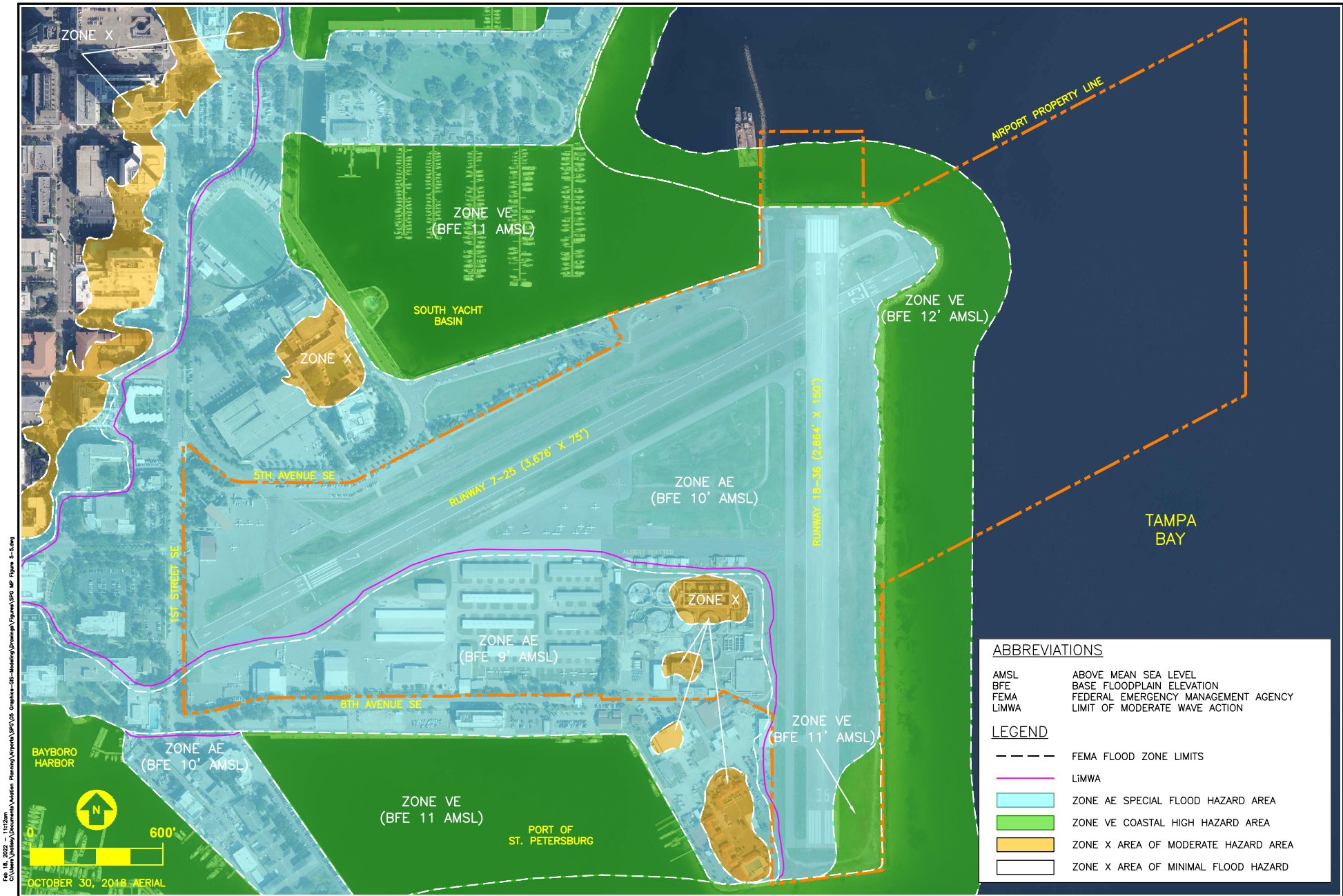
Under Section 307 of the federal Coastal Zone Management Act, improvement projects proposed at SPG that affect Florida's coastal resources may be reviewed for consistency with the FCMP. Through the NEPA process, the Florida State Clearinghouse would review the proposed improvement(s) for consistency with the FCMP, in accordance with Presidential Executive Order 12372, the Coastal Zone Management Act and other federal laws and policies.

5.11 Construction Impacts

Construction impacts are generally short-term in nature and would vary depending on which projects are implemented. The construction required for any improvement or proposed developments could have the potential to impact air quality, surface transportation, water quality, and noise through the use of heavy equipment and vehicle trips generated from construction workers traveling to and from the project sites.

For water quality, each project will have to adhere to the applicable Stormwater Pollution Prevention Plan maintained by SPG. Projects would also require notification or permitting through the FDEP in compliance with the NPDES program. In Florida, this program is delegated to the state and does not require additional authorization through the EPA. This process includes development of, and adherence to, best management practices for preventing or reducing the release of pollutants from a construction site. Construction impacts would be evaluated as part of any NEPA analysis required, prior to constructing any of the proposed development projects.

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Source: FEMA FLOOD INSURANCE RATE MAPS (EFFECTIVE AUGUST 24, 2021).

Albert Whitted Airport Master Plan
FIGURE 5-5
 FEMA FLOOD ZONES

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5.12 Types of Environmental Reviews

5.12.1 Federal Reviews

The FAA is responsible for ensuring compliance with NEPA with respect to actions at federally obligated airports. The processing of Airport Improvement Program grant applications and Airport Layout Plan (ALP) approvals are two types of “federal actions” commonly undertaken by the FAA in support of airport development projects which require environmental review under NEPA. While NEPA requires varying levels of interagency coordination, development of environmental documents under NEPA does not exempt airport development projects from compliance with other federal environmental laws (e.g., *Endangered Species Act*) or state and local environmental regulations.

The process for on-airport development requiring NEPA changed somewhat when Congress passed the FAA Reauthorization Act of 2018. Section 163 of the act modified the scope of actions that trigger a particular class of federal actions under NEPA. Specifically, Section 163(d) narrowed the scope of ALP modifications considered formal actions within the regulatory authority of the FAA. Sections 163(a-c) define other factors related to how the land was acquired and whether a release of the land from aeronautical use is required. In short, all on-airport projects are now subject to a Section 163 review by the FAA Orlando Airports District Office before initiating the NEPA process. Depending on the type of project, the Section 163 could result in 1) a Categorical Exclusion (CatEx) with a release of the Airport Sponsor from federal obligations, 2) a CatEx or Environmental Assessment (EA) for the aeronautical elements, or 3) a combination of the two. NEPA requirements may also bypass the EA and go straight to an Environmental Impact Statement (EIS).

For those projects that involve a federal action and therefore trigger environmental review under NEPA, the three types of documentation are summarized in **Table 5-4**. CatEx and EA documents are usually prepared by the Airport Sponsor and, if the documentation meets FAA requirements, they are accepted by the FAA and become federal documents. EIS documents are prepared by the FAA. Every future development project recommended as part of this master plan is subject to the appropriate level of environmental review at such time that a specific project is considered ready for implementation. It should be acknowledged that most airport development actions require some level of NEPA review and a project does not need to be federally funded to require NEPA compliance.

**TABLE 5-4
TYPES OF FAA NEPA REVIEW DOCUMENTATION**

Categorical Exclusion	<p>The FAA has identified certain actions that may be categorically excluded from a more detailed environmental review. However, extraordinary circumstances, such as wetland impacts, may preclude Categorical Exclusion (CatEx). A CatEx requires a review of impacts and completion of forms provided by the FAA. In some cases, documentation and agency coordination may be necessary to address extraordinary circumstances (see FAA ARP SOP No. 5.00). CatExs that may apply to future airport development projects at SPG are summarized below (emphasis added). See FAA Orders 1050.1F and 5050.4B for a more detailed description of these and other categorically excluded actions that may apply to development projects at SPG.</p> <ol style="list-style-type: none"> 1. Access and service road construction that does not reduce the level of service on local traffic systems below acceptable levels. 2. Construction, repair, reconstruction, resurfacing, extending, strengthening, or widening of a taxiway, apron, loading ramp, or runway safety area; or the reconstruction, resurfacing, extension, strengthening, or widening of an existing runway – <i>provided the action would not result in significant erosion or sedimentation and will not result in a significant noise increase over noise sensitive areas or result in significant impacts on air quality.</i> 3. Construction or limited expansion of accessory on-site structures, including storage buildings, garages, hangars, T-hangars, small parking areas, signs, fences, and other essentially similar minor development items. 4. Construction or expansion of facilities – such as terminal and parking facilities or cargo buildings, or facilities for non-aeronautical uses that <i>do not substantially expand those facilities.</i> 5. Demolition and removal of FAA or non-FAA on-airport buildings and structures, <i>provided no hazardous substances or contaminated equipment are present on the site of the existing facility.</i> Does not apply to historic structures. 6. Placing fill into previously excavated land with material compatible with the natural features of the site, <i>provided the land is not delineated as a wetland</i>; or minor dredging or filling of wetlands or navigable waters for any categorically excluded action, <i>provided the fill is of material compatible with the natural features of the site and the dredging and filling qualifies for an U.S. Army Corps of Engineers nationwide or a regional general permit.</i> 7. Grading of land, removal of obstructions to air navigation, or erosion control measures, <i>provided those activities occur on and only affect airport property.</i> 8. Topping or trimming trees to meet 14 CFR Part 77 standards for removing obstructions which can adversely affect navigable airspace.
Environmental Assessment	<p>An Environmental Assessment (EA) is prepared for proposed actions with expected minor or uncertain environmental impact potential. An EA requires analysis and documentation similar to that of an EIS, but with somewhat less detail and coordination. The FAA will review the EA and decide to either issue a Finding of No Significant Impact (FONSI) or prepare an Environmental Impact Statement (EIS). Future airport development projects and actions at SPG that may require an EA are summarized below (emphasis added). See FAA Orders 1050.1F and 5050.4B for more information.</p> <ol style="list-style-type: none"> 1. Runway extensions due to possible wetland impacts, potential off-airport impacts related to aircraft noise, and potential impacts to affect listed species habitat. 2. Taxiway construction due to possible wetland impacts and potential to affect listed species habitat. 3. Aircraft parking apron; hangar and structures; and/or access road projects that may not qualify for a CatEx due to extraordinary circumstances (e.g., wetland impacts may not qualify for a nationwide or regional general permit). 4. Approval of operations specifications or amendments that may significantly change the character of the operational environment of an airport. 5. New air traffic control procedures (e.g., instrument approach procedures, departure procedures, en route procedures) and modifications to currently approved procedures that routinely route aircraft over noise sensitive areas at less than 3,000 feet above ground level.
Environmental Impact Statement	<p>An Environmental Impact Statement (EIS) is prepared for major federal actions, which are expected or known to significantly affecting the quality of the human environment. At this time, no future airport development projects at SPG are expected to require the preparation of an EIS.</p>

Compiled by ESA, 2022.

5.12.2 State Reviews

For projects that require NEPA compliance, state environmental reviews typically initiate with the Florida State Clearinghouse which is administered by FDEP. A primary function of the Florida State Clearinghouse is to serve as the state's single point of contact for the receipt of federal activities that require interagency review, which includes activities subject to consistency review under the Florida Coastal Management Program. Upon completion of their review, the Clearinghouse will typically issue a letter summarizing any potential concerns or inconsistencies regarding the proposed activity. The clearance letter will also include information on obtaining necessary state permits and will inform the applicant if there is a need to submit additional information to a specific state agency for review. In cases where NEPA compliance is not required, direct coordination with the relevant state regulatory agencies may still be required. Information related to the specific agencies and coordination and/or permits required, is discussed in each of the individual resource sections in this chapter.

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CHAPTER 6

Alternatives for Airport Development

CHAPTER 6

Alternatives for Airport Development

6.1 Introduction

This chapter evaluates potential options to meet the facility requirements identified for the Albert Whitted Airport (SPG) over the 20-year planning period. The identification and evaluation of development concepts and subsequent recommended alternatives were facilitated through meetings with air traffic managers, airport management, local government, the Federal Aviation Administration (FAA), and Florida Department of Transportation (FDOT), as well as input from airport tenants and the public.

While a number of projects to maintain and improve the airport will be required over the course of the 20-year planning period, only the most significant are presented in this chapter. These include providing the proper runway and taxiway requirements; additional aircraft hangar and parking apron space; and some of the support and service facilities. While there are inherent difficulties in expressing certain factors in comparable terms, at a minimum, each development option must meet the applicable FAA and FDOT standards for safety.

6.2 Airfield Constraints Analysis

An analysis of the key operational and physical airfield constraints was conducted prior to defining airport alternatives. This effort ensured that factors impacting project feasibility, the community, the environment, and the long-term viability of the airport were considered during the development of alternatives. Among the constraints considered; airfield design standards, surfaces, and setbacks for the safety of operations are critical. **Figure 6-1** reflects the airfield standards established prior to this master plan study, which are for aircraft with an Aircraft Approach Category (AAC) designation of B, Airplane Design Group (ADG) of I, and a maximum certificated takeoff weight (MTOW) of 12,500 pounds or less (small aircraft). Therefore, it is important to note that many of these constraints will change based on the current and future critical aircraft requirements identified in previous chapters.

6.2.1 Airspace Surfaces

Title 14 Code of Federal Regulations (CFR) Part 77, *Safe, Efficient Use, and Preservation of the Navigable Airspace* defines airspace surfaces for the purpose of identifying obstructions at or in the vicinity of an airport. Some obstructions may be considered a hazard to air navigation. **Figure 6-1** depicts the existing Primary Surfaces associated with SPG's two paved runways. The rectangular Primary Surfaces follow the same elevation as that along the nearest point of the adjacent runway centerline. Because the runway system at SPG is basically flat, only those objects essential to air navigation or the movement of aircraft should be located within the Primary

Surfaces. As shown, the Primary Surfaces also encompass the Runway Safety Areas (RSA) and Runway Object Free Areas (ROFA) associated with each runway.

Fixed and moveable objects are also considered potential obstructions if they penetrate any of the Approach or Transitional Surfaces that extend upward and outward from each Primary Surface. For purposes of clarity, these surfaces are not shown as they vary in height depending on their proximity to the Primary Surface. Likewise, the figure does not reflect the required Threshold Siting Surfaces (TSS) or Departure Surfaces off each runway end; however, they will be included as required in the evaluation of alternatives.

6.2.2 ATCT Line-of-Sight

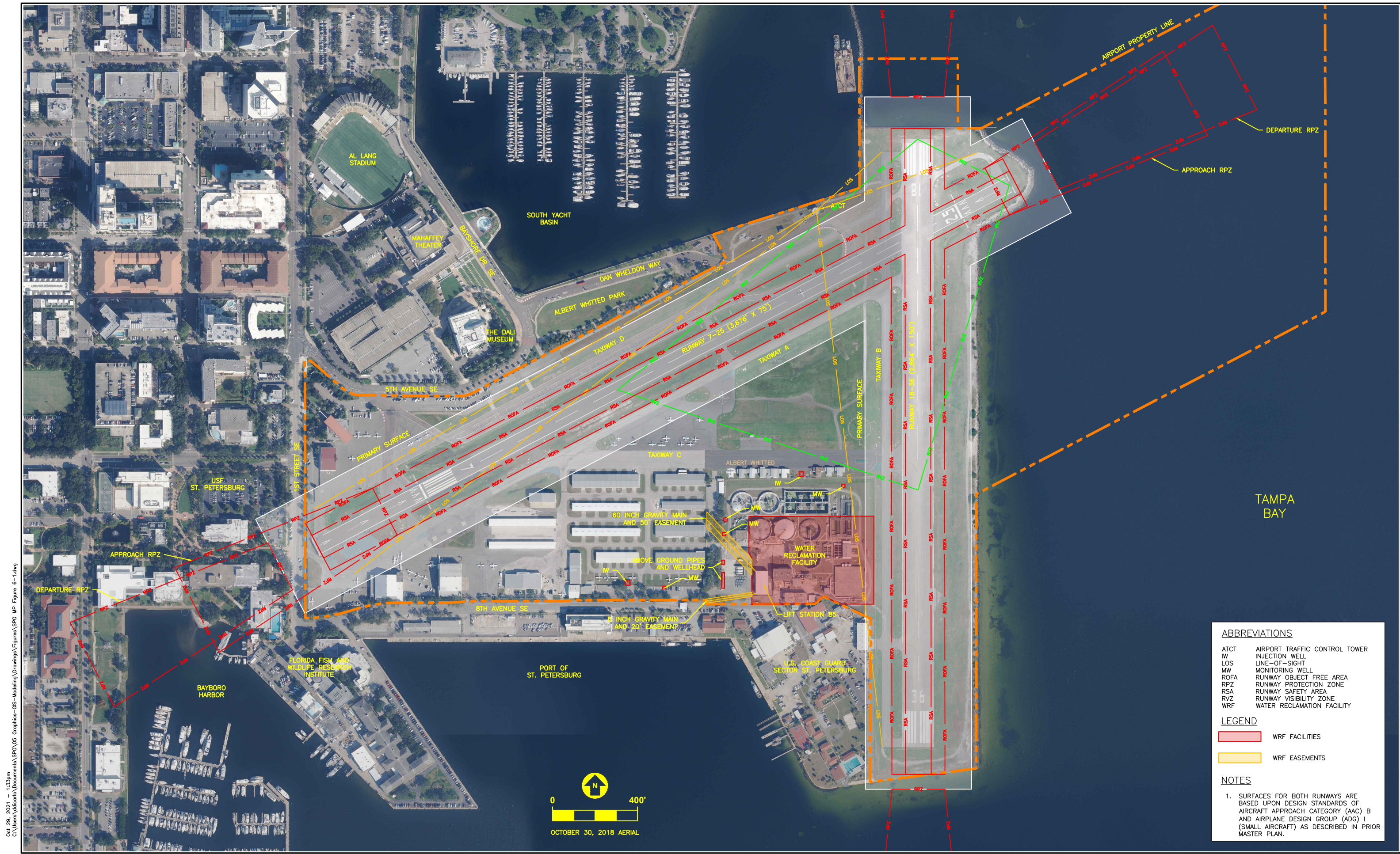
The existing SPG airport traffic control tower (ATCT) line-of-sight must be considered so that the controllers have an unobstructed view of all aircraft movement areas. The line-of-sight lines depicted on **Figure 6-1** are the most critical based on the current airfield configuration. The evaluation of future development alternatives will consider any line-of-sight shifts from potential airfield changes or if line-of-sight would be obstructed by any proposed improvement. Effects on ATCT line-of-sight are evaluated using an eye height of 65.0 feet above mean sea level (AMSL), which is based on the established cab floor height of 60.0 feet AMSL.

6.2.3 Runway Protection Zones

Existing Runway Protection Zones (RPZ) at SPG are shown on **Figure 6-1**. As documented in the facility requirements, there are separate Approach and Departure RPZs at both ends of Runway 7-25 due to the published declared distances. The current FAA document *Interim Guidance on Land Uses Within a Runway Protection Zone* was issued in September of 2012. Under this guidance, any new or modified land use within a RPZ, whether on- or off-airport property, as well as any proposed change to a RPZ location and size must be coordinated with the FAA to determine compatibility. When there are no changes, but still incompatible land uses within an existing RPZ extending beyond the current airport property boundary, the interim guidance states that the FAA will continue to work to remove or mitigate any incompatible land uses as practical.

6.2.4 Physical Constraints

As shown on **Figure 6-1**, the airport is bounded by water on three sides. To the north is the South Yacht Basin of the St. Petersburg Marina; to the south the Port of St. Petersburg; and Tampa Bay to the east. To the immediate west is the University of South Florida St. Petersburg (USFSP) campus. Other uses immediately surrounding the airport property include the Dali Museum, Mahaffey Theatre, and Albert Whitted Park to the north; the facilities of the U.S. Coast Guard Sector St. Petersburg and Florida Fish and Wildlife Research Institute to the south; and businesses and residences adjacent to the USFSP campus to the west. On the airport property, certain infrastructure of the former Albert Whitted Waste Water Treatment Plant, now the Albert Whitted Water Reclamation Facility, cannot be relocated. These include, but are not limited to: Lift Station 85; injection and monitoring wells; above ground wellhead and pipes; underground sewer gravity mains; and the area reserved for an expanded surge tank.



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ABBREVIATIONS

ATCT	AIRPORT TRAFFIC CONTROL TOWER
IW	INJECTION WELL
LOS	LINE-OF-SIGHT
MW	MONITORING WELL
ROFA	RUNWAY OBJECT FREE AREA
RPZ	RUNWAY PROTECTION ZONE
RSA	RUNWAY SAFETY AREA
RVZ	RUNWAY VISIBILITY ZONE
WRF	WATER RECLAMATION FACILITY

LEGEND

	WRF FACILITIES
	WRF EASEMENTS

NOTES

- SURFACES FOR BOTH RUNWAYS ARE BASED UPON DESIGN STANDARDS OF AIRCRAFT APPROACH CATEGORY (AC) B AND AIRPLANE DESIGN GROUP (ADG) I (SMALL AIRCRAFT) AS DESCRIBED IN PRIOR MASTER PLAN.



6.3 Runway and Taxiway System

The principal airfield improvement is to provide the required Runway 7-25 length, as well as the associated runway and taxiway design standards. While improvements are also needed for Runway 18-36, these have already begun and are described at the end of this section. Therefore, the primary focus will be to evaluate alternatives for Runway 7-25 which immediately needs an update to its declared distances and a minimum of 3,600 feet for takeoffs. The facility requirements also demonstrated a 4,000 foot length requirement for Runway 7-25 within the short- to intermediate-term planning horizon.

This alternatives analysis becomes quite complex when the declared distances, runway length requirements, and airfield constraints are coupled with the necessity to also accommodate the design standards of the current and future critical aircraft. Therefore, a systematic approach has been applied to consider all potential options for improving Runway 7-25.

6.3.1 Key Evaluation Criteria

Evaluation of the Runway 7-25 options was based on comparing different key elements. These include the critical design standards; both on- and off-airport compatibility; and the impact to Tampa Bay. Consideration for an alternative airport site was also addressed

Critical Design Standards

All of the options considered provide the proper RSA and ROFA required for the current A-II small aircraft and future B-II critical aircraft categories; which have the same dimension. In order to maximize the runway length available, the options include the application of declared distances. Each option also establishes the proper TSS and Departure Surfaces off each runway end.

An essential standard when comparing alternatives is the RPZ. The size, location, and even number off each runway end vary with the different options. The RPZ size changes based on the critical aircraft and/or available instrument approach procedure, while the runway thresholds and declared distance calculations determine their location and whether separate Approach and Departure RPZs are required.

On- and Off-Airport Compatibility

Changes to the airfield facilities and their associated design criteria can impact facilities both on- and off-airport property. This is especially true at a space constrained airport given the size of the various surfaces that must be protected around the runway environment. While the airport has limited space, adjacent property uses should not be impacted or pose a hazard to aircraft operations. Similarly, impacts to any existing airport facilities should be minimized when possible. The ability to increase the compatibility with adjacent land uses was included as part of the Airport Sustainability Baseline included in **Appendix E**. The sustainability elements also address the need to consider potential noise and community impacts when evaluating the different improvement options.

It should be noted that USFSP officials have indicated that the overflights to Runway 7 are low, noisy, and prevent the upward expansion of most facilities on their property. Even though the university understands the transportation and economic benefits of SPG to the community, the overflights have been a concern for many years. Bayboro Hall, Coquina Hall, Davis Hall, the Science and Technology Building, Tavern Restaurant, Grind Coffee Bar, Sailing Center, and Coquina Hall Pool are all located within current RPZs off the approach end of Runway 7. As a significant stakeholder of this study, a representative from USFSP was appointed to the master plan's Technical Working Group.

Impact to Tampa Bay

Due to the proximity of 1st Street SE, multiple buildings of the USFSP campus, other area structures, and Bayboro Harbor (see **Figure 6-1**), the potential to acquire additional land for expansion of Runway 7-25 to the west is considered unrealistic. In fact, the 2017 Runway 7-25 Feasibility Study (**Appendix C**) documents that while it is the City of St. Petersburg's and USFSP's ultimate desire to be able to remove the incompatible land uses within the current RPZs, the City determined that it was not feasible and cost prohibitive to acquire the land west of the airport within the RPZs. This is due to the extreme development demand in the downtown area around the airport which as noted in the 2015 St. Petersburg Downtown Waterfront Master Plan is commonly referred to as the "Innovation District."

Applying this information, all but one option for improving Runway 7-25 will impact Tampa Bay. In order to compare the impacts to the bay, an offset of 50 feet from the required RSA and/or edge of taxiway pavement was applied to each option. This provides the footprint required for a stabilized shoreline around each proposed option, versus just a bulkhead or seawall. The potential environmental impacts associated with an extension of the runway into Tampa Bay are documented as part of the recommended airfield improvements.

Alternate Airport Site

Given the physical constraints of the current airport property and the need for both additional runway length and greater airfield design standards, the potential for an alternate airport site was addressed. As noted in the first chapter of this master plan, the National Plan of Integrated Airport Systems designates SPG as a general aviation reliever airport to both the Tampa International and St. Pete-Clearwater International Airports. The forecast chapter then acknowledged that Pinellas County was the most densely populated county in Florida based on the number of people per square mile. In fact, the largest tract of undeveloped land in Pinellas County is a 131 acre site on the southeast side of the St. Pete-Clearwater International Airport. Therefore, there is no location in Pinellas County that could serve as an alternate airport site and given SPG's role as a reliever airport, a site to the south in another county across Tampa Bay is not a feasible option.

6.3.2 Initial Runway 7-25 Options Considered

The current displaced Runway 7 threshold was established for approach clearance over obstacles to the immediate west of SPG. The resulting declared distance calculations also provide the proper RSA and ROFA criteria given the physical constraints off each end of Runway 7-25. Therefore, the guidance from FAA Order 5200.8 *Runway Safety Area Program (Appendix 2)* was utilized to develop the initial options to improve the runway. When a traditional graded RSA is not practicable, FAA Order 5200.8 outlines the following alternatives to consider:

- ➔ Relocation, shifting, or realignment of the runway.
- ➔ Reduction in runway length where the existing runway length exceeds that which is required for the existing or projected design aircraft.
- ➔ A combination of runway relocation, shifting, grading, realignment, or reduction.
- ➔ Declared distances.
- ➔ Engineered Materials Arresting Systems (EMAS).

Different combinations of these alternatives were developed, the exception being reducing the length since the runway is already less than the length required. Also, while each of the initial options meet the required ADG II and other runway design standards, the existing parallel Taxiways A and D do not provide the corresponding ADG II taxiway design standards. These are addressed further in subsequent sections.

Potential Revision of Declared Distances

Figure 4-5 in the facility requirements chapter depicted the declared distances currently published for Runway 7-25 which are based on the design standards for B-I small aircraft, versus the current A-II small aircraft category. The A-II small aircraft RSA and ROFA requirements, the November 2018 Airport Geographic Information System (AGIS) survey data, other runway design standards, and airfield features all impact the declared distances, which include calculations for the following:

TORA	Takeoff Run Available
TODA	Takeoff Distance Available
ASDA	Accelerate Stop Distance Available
LDA	Landing Distance Available

For Runway 7-25 today (A-II small aircraft) and in the future (B-II), the RSA and ROFA needs to extend 300 feet beyond the distance declared for both ASDA and LDA. In addition, there needs to be 300 feet of RSA and ROFA prior to the landing threshold for the LDA calculations. As with the current published declared distances, the calculations for departures on Runway 7 have been reduced by 30 feet due to the proximity of the blast fence located just beyond the physical end of the runway.

For takeoffs and landings on Runway 7, there is only 30 feet of full width RSA available beyond the runway end; therefore, the ASDA and LDA must both be reduced by 270 feet (recall the RSA must be clear and graded while the ROFA only needs to be clear of objects protruding above the RSA edge elevation). For landings on Runway 7, the LDA is reduced by the current displaced threshold length, which was established for obstacle clearing, but also provides the 300 feet of RSA and ROFA required prior to the landing threshold.

For takeoffs on Runway 25, the TORA and TODA must both be reduced in order to provide the proper 40:1 Departure Surface clearance over the 19.3 foot AMSL blast fence, the top of which is located 12 feet from the physical end of the useable runway. Using the AGIS runway centerline elevation, the Departure End of Runway for takeoffs on Runway 25 would have to move in 496 feet from the physical end of the runway in order for the 40:1 Departure Surface to clear the blast fence. Therefore, the TODA must be reduced by 496 feet and the TORA as well, since the TORA is limited to the length of the TODA.

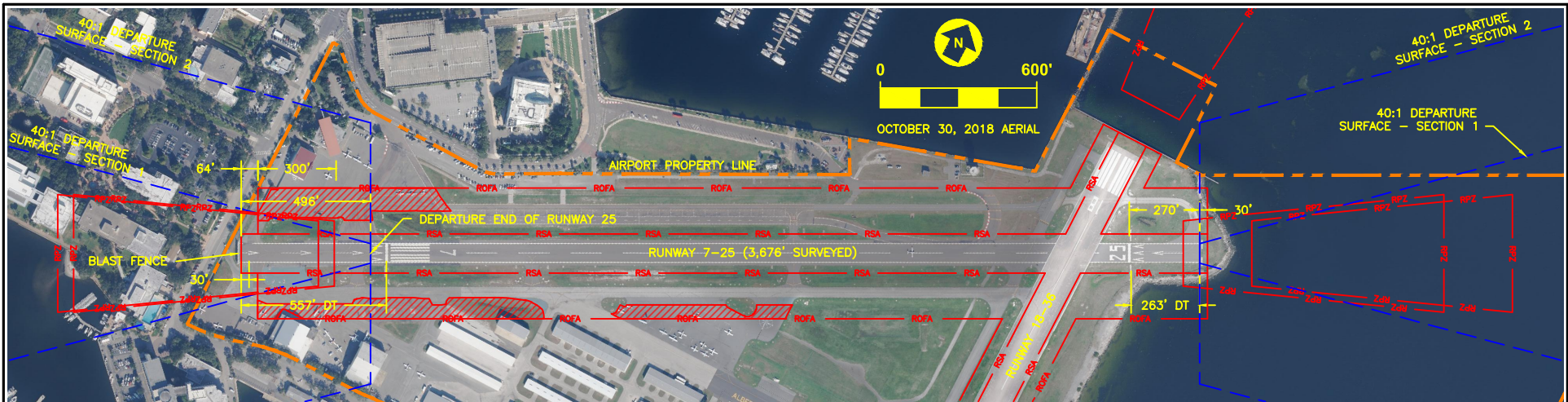
For takeoffs and landings on Runway 25, there is no RSA or ROFA available beyond the physical runway end due to the blast fence and airport property line. In fact, as dimensioned on **Figure 6-2**, 64 feet of the required ROFA would extend off airport property in the northwest corner of the surface. Therefore, the ASDA and LDA must both be reduced by 364 feet to provide the full RSA and ROFA beyond the runway end. For landings on Runway 25, the LDA would need to be reduced and additional 270 feet to provide the 300 feet of RSA required prior to the landing threshold since only 30 feet is currently available. However, because the current displaced threshold is only 263 feet, it would need to be remarked to reflect the additional 7 feet of length required to bring the RSA into compliance with the current A-II small aircraft standards, as well as for the future B-II requirements. In order to displace the Runway 25 threshold another 7 feet, the existing lighting, marking, and landing aids would need to be modified. Additional detail on these requirements are included as part of the overall recommended airfield improvements in this chapter.

The revised declared distances calculated for Runway 7-25 are shown in **Table 6-1** and illustrated on **Figure 6-2**. It is also important to note again that the November 2018 runway survey confirms Runway 7-25 as having an overall length of 3,676 feet (versus 3,677 feet) and the displaced threshold for Runway 7 at 557 feet (versus 558 feet).

**TABLE 6-1
REVISED DECLARED DISTANCES CALCULATED FOR RUNWAY 7-25**

	TORA	TODA	ASDA	LDA
Runway 7	3,646'	3,646'	3,376'	2,849'
Runway 25	3,180'	3,180'	3,312'	3,042'

NOTES: Based on existing A-II small aircraft design standards.
SOURCE: Calculations based on November 19, 2018 runway survey and AGIS data.



TORA TAKEOFF RUN AVAILABLE
 RUNWAY LENGTH AVAILABLE FOR GROUND RUN OF AN AIRCRAFT TAKING OFF.

TODA TAKEOFF DISTANCE AVAILABLE
 LENGTH OF TORA + LENGTH OF REMAINING RUNWAY AND/OR CLEARWAY BEYOND THE FAR END OF TORA.

ASDA ACCELERATE STOP DISTANCE AVAILABLE
 RUNWAY AND STOPWAY LENGTH DECLARED AVAILABLE AND SUITABLE FOR THE ACCELERATION AND DECELERATION OF AN AIRCRAFT ABORTING A TAKEOFF. NEED FULL RSA/ROFA BEYOND ASDA.

LDA LANDING DISTANCE AVAILABLE
 LENGTH OF RUNWAY WHICH IS DECLARED AVAILABLE AND SUITABLE FOR GROUND RUN OF AN AIRCRAFT LANDING. NEED FULL RSA/ROFA PRIOR TO THRESHOLD AND BEYOND LDA.

	<u>RUNWAY 7</u>	<u>RUNWAY 25</u>
TORA:	3,646' (3,676' - 30')	3,180' (3,676' - 496')
TODA:	3,646' (3,676' - 30')	3,180' (3,676' - 496')
ASDA:	3,376' (3,676' - 30' - 270')	3,312' (3,676' - 64' - 300')
LDA:	2,849' (3,676' - 557' - 270')	3,042' (3,676' - 270' - 64' - 300')

RUNWAY DESIGN STANDARDS
 A-II SMALL AIRCRAFT
 VISIBILITY MINIMUMS NOT LOWER THAN 1 MILE

RUNWAY SAFETY AREA (RSA)
 WIDTH = 150'
 LENGTH PRIOR TO LANDING THRESHOLD = 300'
 LENGTH BEYOND RUNWAY END = 300'

NOTES:

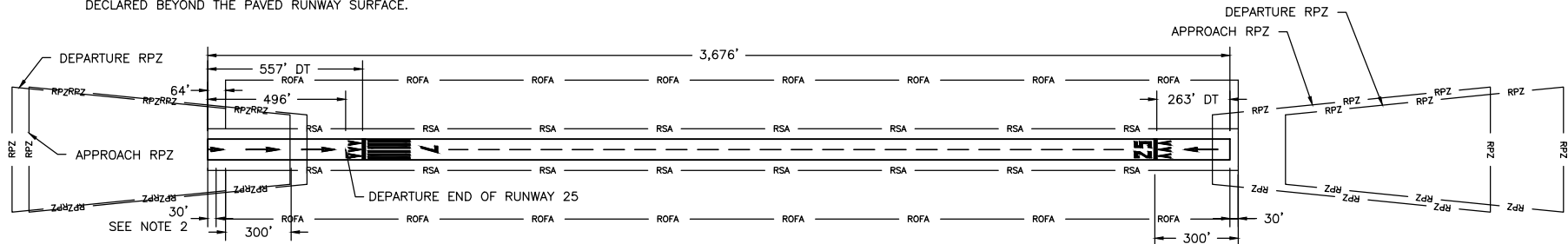
- DISPLACED THRESHOLD IS AVAILABLE FOR START OF TAKEOFF AND LANDINGS FROM OPPOSITE DIRECTIONS IF 300' BEYOND IS AVAILABLE FOR BOTH THE RSA AND ROFA ON LANDING ROLL OUT.
- FIRST 30' OF RUNWAY DETERMINED NOT AVAILABLE FOR DEPARTURES ON 7 DUE TO BLAST FENCE LOCATED 12' FROM THE PHYSICAL END OF RUNWAY.
- DEPARTURE END OF RUNWAY 25 IS 496' PRIOR TO PHYSICAL END OF RUNWAY IN ORDER TO PROVIDE 40:1 DEPARTURE SURFACE CLEARANCE OVER BLAST FENCE OFF RUNWAY END. FOR ALL CALCULATIONS NO ADDITIONAL CLEARWAY OR STOPWAY DISTANCES HAVE BEEN DECLARED BEYOND THE PAVED RUNWAY SURFACE.
-

RUNWAY PROTECTION ZONES (RPZ)

APPROACH OR DEPARTURE
 INNER WIDTH = 250'
 OUTER WIDTH = 450'
 LENGTH = 1,000'

RUNWAY OBJECT FREE AREA (ROFA)

WIDTH = 500'
 LENGTH PRIOR TO LANDING THRESHOLD = 300'
 LENGTH BEYOND RUNWAY END = 300'



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Source: ESA, 2021.

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FIGURE 6-2
 POTENTIAL DECLARED DISTANCES CALCULATIONS FOR EXISTING RUNWAY 7-25 (A-II SMALL AIRCRAFT)

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Extend Runway 7-25 East

Figures 6-3A through **6-3C** illustrate the first options which extend the runway east while keeping the existing Runway 7 end the same. **Figure 6-3A** provides the minimum 3,600 feet required for takeoffs today by extending the runway 288 feet east. **Figures 6-3B** and **6-3C** both provide the 4,000 foot length required for the short- to intermediate-term planning horizon by extending the runway 688 feet east. The difference between the two is that **Figure 6-3B** provides the current A-II small aircraft runway standards while **Figure 6-3C** provides the future B-II standards.

A significant drawback to each of these options is the impact they have on the airport's existing aircraft parking apron space. The red hatched areas shown on **Figures 6-3A** through **6-3C** (as well as **Figure 6-2**) delineate the areas of current apron space that would no longer be available for parking aircraft under the proposed options. These areas are based on the larger ROFA required for the current and future critical aircraft, while the total square yards (SY) of apron impacted for each is included in **Table 6-2**.

Shift and Extend Runway 7-25 East

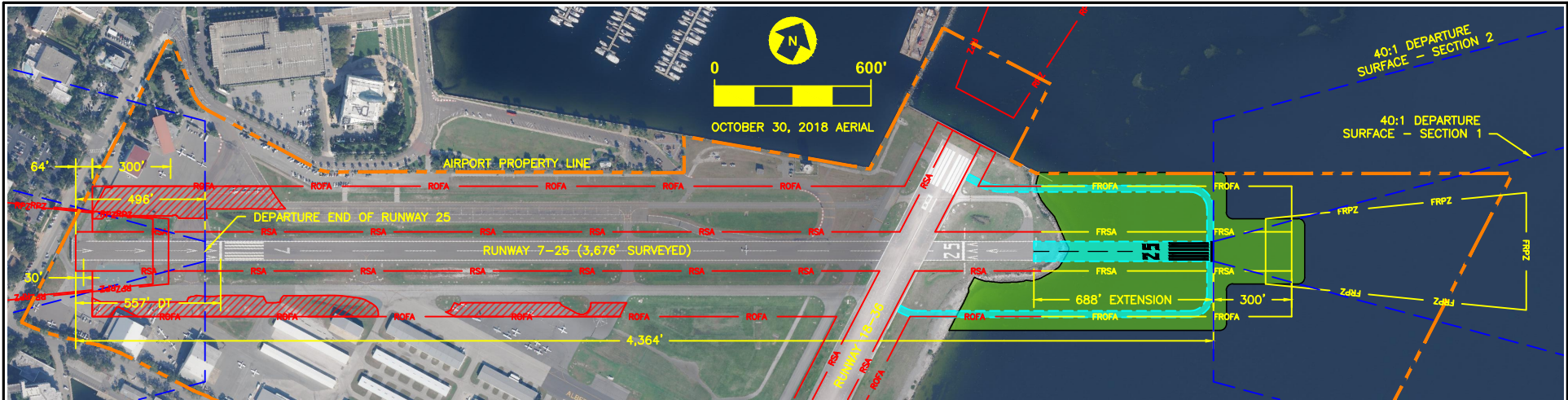
The FAA's September 2012 *Interim Guidance on Land Uses Within a Runway Protection Zone* requires coordination to determine if any incompatible land uses exist within a RPZ as the result of:

- An airfield project (e.g., runway extension, runway shift).
- A change in the critical design aircraft that increases the RPZ dimensions.
- A new or revised instrument approach procedure that increases the RPZ dimensions.
- A local development proposal in the RPZ (either new or reconfigured).

While the critical aircraft for Runway 7-25 changed from B-I small aircraft to A-II small aircraft, the size of the RPZs required did not change. Therefore, it is not technically required to evaluate incompatible use within the RPZs in order to update the current published declared distances (**Figure 6-2**). The same is true for the two options to extend Runway 7-25 east with only A-II small aircraft standards (**Figures 6-3A** and **6-3B**). However, the RPZ dimensions will increase when the future critical aircraft becomes B-II. Therefore, the option depicted in **Figure 6-3C** would require formal FAA coordination given the incompatible land uses within both the Approach and Departure RPZs west of the Runway 7 threshold.

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TORA TAKEOFF RUN AVAILABLE
RUNWAY LENGTH AVAILABLE FOR GROUND RUN OF AN AIRCRAFT TAKING OFF.

TODA TAKEOFF DISTANCE AVAILABLE
LENGTH OF TORA + LENGTH OF REMAINING RUNWAY AND/OR CLEARWAY BEYOND THE FAR END OF TORA.

ASDA ACCELERATE STOP DISTANCE AVAILABLE
RUNWAY AND STOPWAY LENGTH DECLARED AVAILABLE AND SUITABLE FOR THE ACCELERATION AND DECELERATION OF AN AIRCRAFT ABORTING A TAKEOFF. NEED FULL RSA/ROFA BEYOND ASDA.

LDA LANDING DISTANCE AVAILABLE
LENGTH OF RUNWAY WHICH IS DECLARED AVAILABLE AND SUITABLE FOR GROUND RUN OF AN AIRCRAFT LANDING. NEED FULL RSA/ROFA PRIOR TO THRESHOLD AND BEYOND LDA.

	<u>RUNWAY 7</u>	<u>RUNWAY 25</u>
TORA:	4,334' (4,364' - 30')	3,868' (4,364' - 496')
TODA:	4,334' (4,364' - 30')	3,868' (4,364' - 496')
ASDA:	4,334' (4,364' - 30')	4,000' (4,364' - 64' - 300')
LDA:	3,807' (4,364' - 557')	4,000' (4,364' - 64' - 300')

NOTES:

- DISPLACED THRESHOLD IS AVAILABLE FOR START OF TAKEOFF AND LANDINGS FROM OPPOSITE DIRECTIONS IF 300' BEYOND IS AVAILABLE FOR BOTH THE RSA AND ROFA ON LANDING ROLL OUT.
- FIRST 30' OF RUNWAY DETERMINED NOT AVAILABLE FOR DEPARTURES ON 7 DUE TO BLAST FENCE LOCATED 12' FROM THE PHYSICAL END OF RUNWAY.
- DEPARTURE END OF RUNWAY 25 IS 496' PRIOR TO PHYSICAL END OF RUNWAY IN ORDER TO PROVIDE 40:1 DEPARTURE SURFACE CLEARANCE OVER BLAST FENCE OFF RUNWAY END.
- FOR ALL CALCULATIONS NO ADDITIONAL CLEARWAY OR STOPWAY DISTANCES HAVE BEEN DECLARED BEYOND THE PAVED RUNWAY SURFACE.

RUNWAY DESIGN STANDARDS

A-II SMALL AIRCRAFT
VISIBILITY MINIMUMS NOT LOWER THAN 1 MILE

RUNWAY SAFETY AREA (RSA)

WIDTH = 150'
LENGTH PRIOR TO LANDING THRESHOLD = 300'
LENGTH BEYOND RUNWAY END = 300'

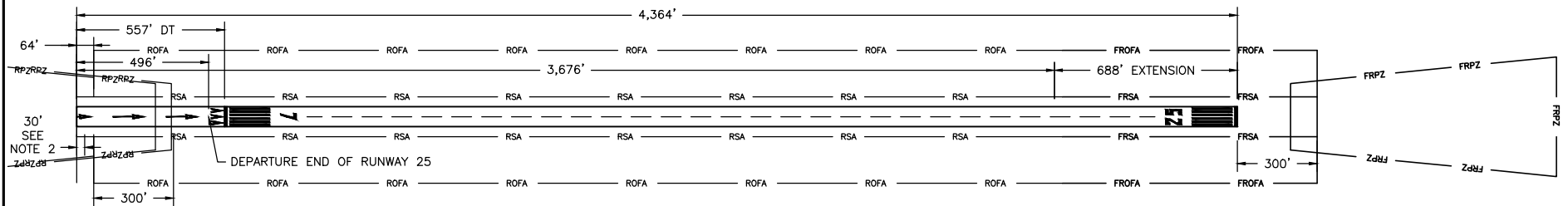
RUNWAY PROTECTION ZONES (RPZ)

APPROACH OR DEPARTURE

INNER WIDTH = 250'
OUTER WIDTH = 450'
LENGTH = 1,000'

RUNWAY OBJECT FREE AREA (ROFA)

WIDTH = 500'
LENGTH PRIOR TO LANDING THRESHOLD = 300'
LENGTH BEYOND RUNWAY END = 300'



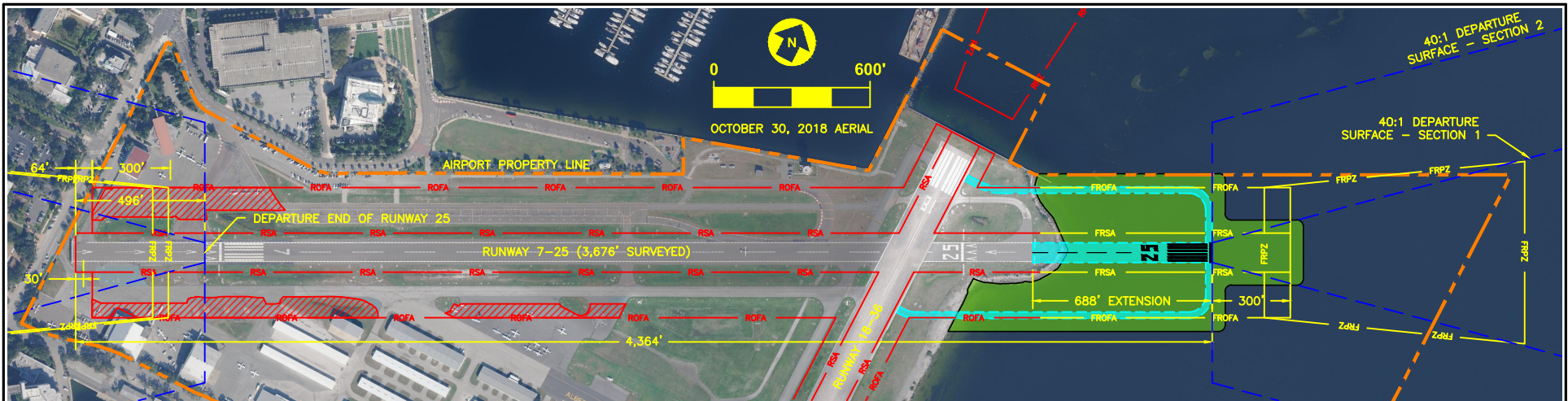
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Source: ESA, 2021.

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FIGURE 6-3B
EXTEND RUNWAY 7-25 EAST 688 FEET (A-II SMALL AIRCRAFT)

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TORA TAKEOFF RUN AVAILABLE
 RUNWAY LENGTH AVAILABLE FOR GROUND RUN OF AN AIRCRAFT TAKING OFF.

TODA TAKEOFF DISTANCE AVAILABLE
 LENGTH OF TORA + LENGTH OF REMAINING RUNWAY AND/OR CLEARWAY BEYOND THE FAR END OF TORA.

ASDA ACCELERATE STOP DISTANCE AVAILABLE
 RUNWAY AND STOPWAY LENGTH DECLARED AVAILABLE AND SUITABLE FOR THE ACCELERATION AND DECELERATION OF AN AIRCRAFT ABORTING A TAKEOFF. NEED FULL RSA/ROFA BEYOND ASDA.

LDA LANDING DISTANCE AVAILABLE
 LENGTH OF RUNWAY WHICH IS DECLARED AVAILABLE AND SUITABLE FOR GROUND RUN OF AN AIRCRAFT LANDING. NEED FULL RSA/ROFA PRIOR TO THRESHOLD AND BEYOND LDA.

RUNWAY 7

TORA: 4,334' (4,364' - 30')

TODA: 4,334' (4,364' - 30')

ASDA: 4,334' (4,364' - 30')

LDA: 3,807' (4,364' - 557')

RUNWAY 25

TORA: 3,868' (4,364' - 496')

TODA: 3,868' (4,364' - 496')

ASDA: 4,000' (4,364' - 64' - 300')

LDA: 4,000' (4,364' - 64' - 300')

NOTES:

- DISPLACED THRESHOLD IS AVAILABLE FOR START OF TAKEOFF AND LANDINGS FROM OPPOSITE DIRECTIONS IF 300' BEYOND IS AVAILABLE FOR BOTH THE RSA AND ROFA ON LANDING ROLL OUT.
- FIRST 30' OF RUNWAY DETERMINED NOT AVAILABLE FOR DEPARTURES ON 7 DUE TO BLAST FENCE LOCATED 12' FROM THE PHYSICAL END OF RUNWAY.
- DEPARTURE END OF RUNWAY 25 IS 496' PRIOR TO PHYSICAL END OF RUNWAY IN ORDER TO PROVIDE 40:1 DEPARTURE SURFACE CLEARANCE OVER BLAST FENCE OFF RUNWAY END.
- FOR ALL CALCULATIONS NO ADDITIONAL CLEARWAY OR STOPWAY DISTANCES HAVE BEEN DECLARED BEYOND THE PAVED RUNWAY SURFACE.

RUNWAY DESIGN STANDARDS

B-II
 VISIBILITY MINIMUMS NOT LOWER THAN 1 MILE

RUNWAY SAFETY AREA (RSA)

WIDTH = 150'
 LENGTH PRIOR TO LANDING THRESHOLD = 300'
 LENGTH BEYOND RUNWAY END = 300'

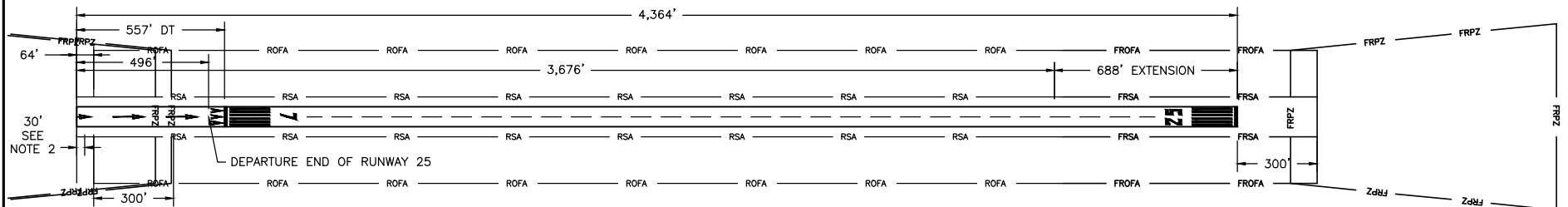
RUNWAY PROTECTION ZONES (RPZ)

APPROACH OR DEPARTURE

INNER WIDTH = 500'
 OUTER WIDTH = 700'
 LENGTH = 1,000'

RUNWAY OBJECT FREE AREA (ROFA)

WIDTH = 500'
 LENGTH PRIOR TO LANDING THRESHOLD = 300'
 LENGTH BEYOND RUNWAY END = 300'



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Source: ESA, 2021.

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FIGURE 6-3C
 EXTEND RUNWAY 7-25 EAST 688 FEET (B-II AIRCRAFT)

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As noted in the interim RPZ guidance, the initial step when coordination is required with the FAA is for the Airports District Office (Orlando ADO) to work with the airport to identify and evaluate different alternatives. A number of meetings were conducted with the Orlando ADO during the course of the master plan to explore options based on shifting the Runway 7 threshold and then extending the runway east into Tampa Bay; however, none of these constituted a formal RPZ alternatives analysis. **Figures 6-4A through 6-4C** illustrate three options which shift and extend the runway east; enabling the RPZs on the west end of the runway to be brought on-airport property, thus eliminating the overlap with multiple incompatible uses off-airport. For each, end connector taxiways have also been included from Taxiways A and D to provide access to the new end of Runway 7.

Re-Align Runway 7-25

Due to the airport's physical constraints and limited property, the re-alignment of Runway 7-25 is not feasible to obtain the minimum 3,600 feet of takeoff length required. Any rotation and/or shift of the runway centerline would impact a number of existing facilities; both on- and off-airport property. Therefore, no options were considered that would re-align and/or laterally shift the centerline of Runway 7-25.

Engineered Material Arresting Systems

An alternative to a standard RSA for Runway 7-25 would be to install an Engineered Material Arresting System (EMAS) to one or both ends of the runway. A standard EMAS installation (based on a 70 knot exit speed) provides a level of safety that is generally equivalent to a full RSA for overruns; however, since both ends of Runway 7-25 have PAPIs providing vertical guidance, the full RSA prior to the landing threshold (300 feet) must still be provided for protection against undershoots.

An EMAS pre-study specific to Runway 7-25 was prepared by the Runway Safe Group. The analysis utilized the Cessna Citation CJ4 as the critical EMAS aircraft. While this is also the future critical aircraft for Runway 7-25, it is worth noting that in 2019 (after the FAA approved the aviation forecasts of this study) a Pilatus PC-24 was based at the airport. If the master plan forecasts were redone today, this would be the representative aircraft for the future B-II family of aircraft, since it is physically bigger and heavier than the Citation CJ4. However, for the purposes of calculating an EMAS bed for Runway 7-25, the Citation CJ4 is still considered the critical aircraft. This is due to variations in aircraft weight versus landing gear configuration versus takeoff/landing performance. In other words, many times the lighter and/or faster aircraft typically have greater EMAS requirements than heavier and/or slower aircraft.

Using the Citation CJ4's MTOW (17,110 pounds) and 80 percent of its maximum landing weight (12,528 pounds) the calculations resulted in a non-standard EMAS (exit speed of 68 knots) with a 263 foot arrestor bed. When combined with the required 35 foot setback, the overall EMAS dimensions would be 298 feet long and 95 feet wide. This EMAS was calculated based on the lighter weight EMASMAX 50 strength materials which is allowed by the FAA for installations intended to accommodate aircraft down to 12,500 pounds.

Both the current and future critical aircraft for Runway 7-25 require a 300 foot long by 150 foot wide RSA. The 298 foot long non-standard (68 knot) EMAS was calculated to compare with the standard RSA since a standard (70 knot) EMAS would exceed the 300 foot graded RSA. It should also be noted that the 95 foot width is only for the actual EMAS blocks, as the overall graded RSA width of 150 feet is still required even when EMAS is installed.

The materials and installation costs for a single 298 foot long by 95 foot wide EMAS is \$3.6 million (in 2020 dollars). In addition, the site at the end of the runway would also have to be prepared to accommodate the EMAS as well as the overall 150 foot graded width for the RSA. Therefore, EMAS was not considered further in this analysis since it would not provide any advantage over the traditional graded RSA.

6.3.3 Comparison of Initial Options

The comparison of the initial options in **Table 6-2** includes the resulting ASDA length for each runway end. Declared distances determine, among other things, the actual Federal Aviation Regulation (FAR) takeoff length available for a runway. For any option it is important to note that the ASDA is the limiting length for takeoffs, which needs to be a minimum of 3,600 feet today and 4,000 feet in the short- to intermediate-term planning horizon.

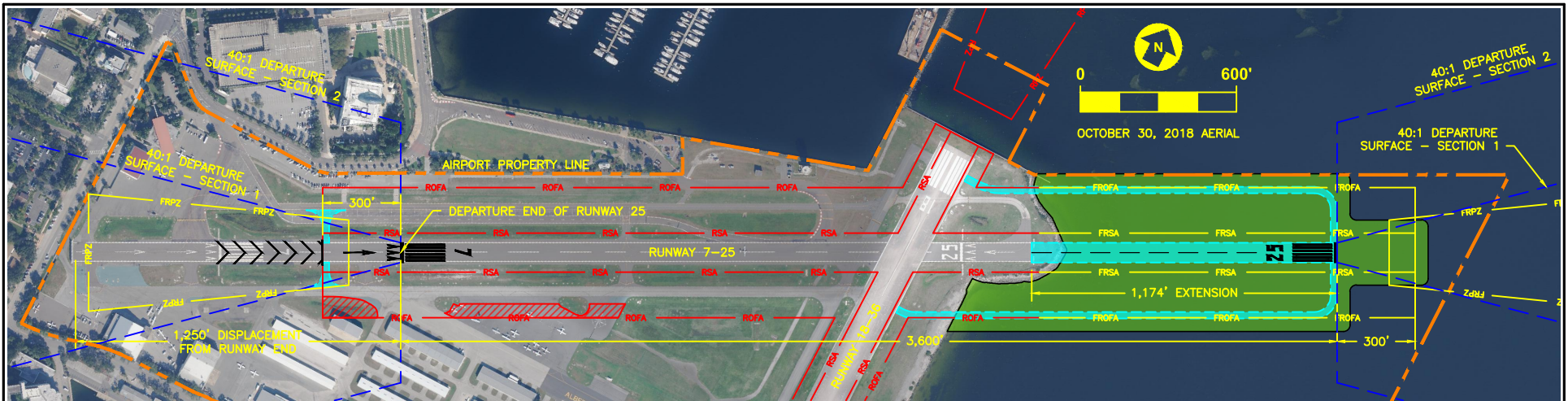
**TABLE 6-2
COMPARISON OF INITIAL OPTIONS TO IMPROVE RUNWAY 7-25**

Figure	Extension (feet)	FAA Design Standard	Runway 7 ASDA (feet)	Runway 25 ASDA (feet)	Apron Loss (SY)	Compatible RPZs	Impact to Bay (acres)
6-2	0	A-II SA	3,376	3,312	19,600	No	0
6-3A	288	A-II SA	3,934	3,600	19,600	No	6.9
6-3B	688	A-II SA	4,334	4,000	19,600	No	12.5
6-3C	688	B-II	4,334	4,000	19,600	No	12.5
6-4A	1,174	A-II SA	3,900	3,600	5,100	Yes	19.2
6-4B	1,574	A-II SA	4,300	4,000	5,100	Yes	24.8
6-4C	1,640	B-II	4,300	4,000	4,500	Yes	25.7

NOTES: Each option to improve Runway 7-25 meets the required runway design standards; however, the existing parallel Taxiways A and D do not provide the corresponding ADG II taxiway design standards. These will be addressed in subsequent sections.

SA = Small Aircraft (< 12,500 pounds).

SOURCE: ESA analysis 2021.



TORA TAKEOFF RUN AVAILABLE
 RUNWAY LENGTH AVAILABLE FOR GROUND RUN OF AN AIRCRAFT TAKING OFF.

TODA TAKEOFF DISTANCE AVAILABLE
 LENGTH OF TORA + LENGTH OF REMAINING RUNWAY AND/OR CLEARWAY BEYOND THE FAR END OF TORA.

ASDA ACCELERATE STOP DISTANCE AVAILABLE
 RUNWAY AND STOPWAY LENGTH DECLARED AVAILABLE AND SUITABLE FOR THE ACCELERATION AND DECELERATION OF AN AIRCRAFT ABORTING A TAKEOFF. NEED FULL RSA/ROFA BEYOND ASDA.

LDA LANDING DISTANCE AVAILABLE
 LENGTH OF RUNWAY WHICH IS DECLARED AVAILABLE AND SUITABLE FOR GROUND RUN OF AN AIRCRAFT LANDING. NEED FULL RSA/ROFA PRIOR TO THRESHOLD AND BEYOND LDA.

	<u>RUNWAY 7</u>	<u>RUNWAY 25</u>
TORA:	3,900' (300' + 3,600')	3,600'
TODA:	3,900' (300' + 3,600')	3,600'
ASDA:	3,900' (300' + 3,600')	3,600'
LDA:	3,600'	3,600'

NOTES:

1. DISPLACED THRESHOLD IS AVAILABLE FOR START OF TAKEOFF AND LANDINGS FROM OPPOSITE DIRECTIONS IF 300' BEYOND IS AVAILABLE FOR BOTH THE RSA AND ROFA ON LANDING ROLL OUT.
2. FOR ALL CALCULATIONS NO ADDITIONAL CLEARWAY OR STOPWAY DISTANCES HAVE BEEN DECLARED BEYOND THE PAVED RUNWAY SURFACE.

RUNWAY DESIGN STANDARDS
 A-II SMALL AIRCRAFT
 VISIBILITY MINIMUMS NOT LOWER THAN 1 MILE

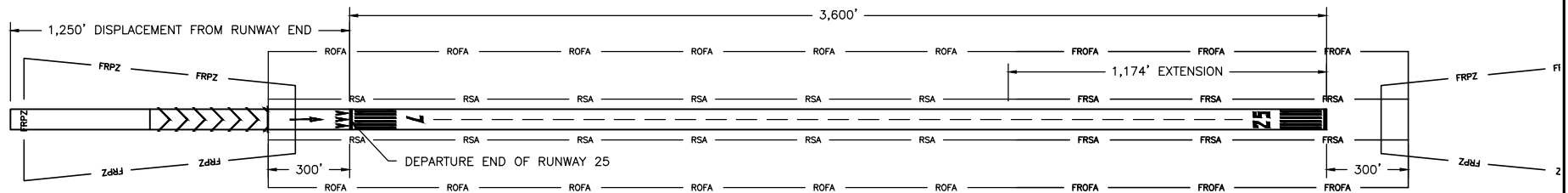
RUNWAY SAFETY AREA (RSA)
 WIDTH = 150'
 LENGTH PRIOR TO LANDING THRESHOLD = 300'
 LENGTH BEYOND RUNWAY END = 300'

RUNWAY PROTECTION ZONES (RPZ)

APPROACH OR DEPARTURE
 INNER WIDTH = 250'
 OUTER WIDTH = 450'
 LENGTH = 1,000'

RUNWAY OBJECT FREE AREA (ROFA)

WIDTH = 500'
 LENGTH PRIOR TO LANDING THRESHOLD = 300'
 LENGTH BEYOND RUNWAY END = 300'



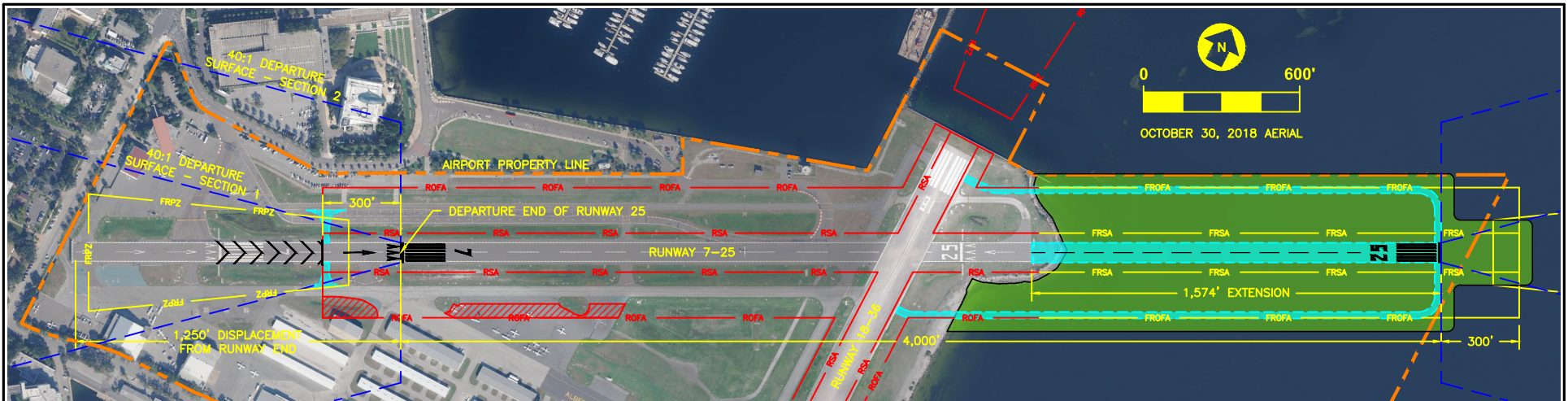
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Source: ESA, 2021.

Albert Whitted Airport Master Plan

FIGURE 6-4A
 SHIFT AND EXTEND RUNWAY 7-25 EAST 1,174 FEET (A-II SMALL AIRCRAFT)

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TORA TAKEOFF RUN AVAILABLE
 RUNWAY LENGTH AVAILABLE FOR GROUND RUN OF AN AIRCRAFT TAKING OFF.

TODA TAKEOFF DISTANCE AVAILABLE
 LENGTH OF TORA + LENGTH OF REMAINING RUNWAY AND/OR CLEARWAY BEYOND THE FAR END OF TORA.

ASDA ACCELERATE STOP DISTANCE AVAILABLE
 RUNWAY AND STOPWAY LENGTH DECLARED AVAILABLE AND SUITABLE FOR THE ACCELERATION AND DECELERATION OF AN AIRCRAFT ABORTING A TAKEOFF. NEED FULL RSA/ROFA BEYOND ASDA.

LDA LANDING DISTANCE AVAILABLE
 LENGTH OF RUNWAY WHICH IS DECLARED AVAILABLE AND SUITABLE FOR GROUND RUN OF AN AIRCRAFT LANDING. NEED FULL RSA/ROFA PRIOR TO THRESHOLD AND BEYOND LDA.

	<u>RUNWAY 7</u>	<u>RUNWAY 25</u>
TORA:	4,300' (300' + 4,000')	4,000'
TODA:	4,300' (300' + 4,000')	4,000'
ASDA:	4,300' (300' + 4,000')	4,000'
LDA:	4,000'	4,000'

NOTES:

- DISPLACED THRESHOLD IS AVAILABLE FOR START OF TAKEOFF AND LANDINGS FROM OPPOSITE DIRECTIONS IF 300' BEYOND IS AVAILABLE FOR BOTH THE RSA AND ROFA ON LANDING ROLL OUT.
- FOR ALL CALCULATIONS NO ADDITIONAL CLEARWAY OR STOPWAY DISTANCES HAVE BEEN DECLARED BEYOND THE PAVED RUNWAY SURFACE.

RUNWAY DESIGN STANDARDS

A-II SMALL AIRCRAFT
 VISIBILITY MINIMUMS NOT LOWER THAN 1 MILE

RUNWAY PROTECTION ZONES (RPZ)

APPROACH OR DEPARTURE

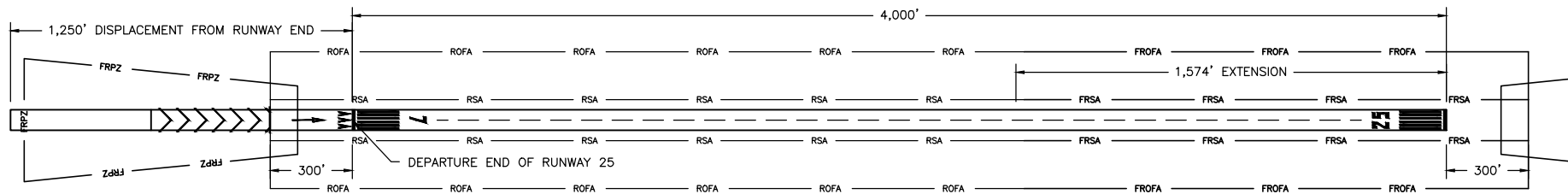
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 OUTER WIDTH = 450'
 LENGTH = 1,000'

RUNWAY SAFETY AREA (RSA)

WIDTH = 150'
 LENGTH PRIOR TO LANDING THRESHOLD = 300'
 LENGTH BEYOND RUNWAY END = 300'

RUNWAY OBJECT FREE AREA (ROFA)

WIDTH = 500'
 LENGTH PRIOR TO LANDING THRESHOLD = 300'
 LENGTH BEYOND RUNWAY END = 300'



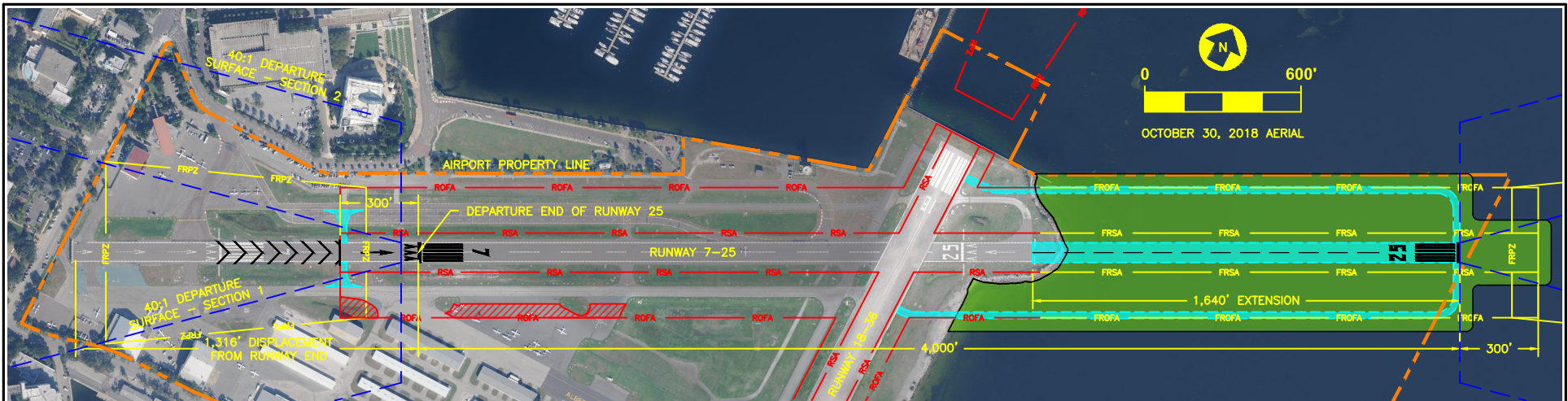
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Source: ESA, 2021.

Albert Whitted Airport Master Plan

FIGURE 6-4B
 SHIFT AND EXTEND RUNWAY 7-25 EAST 1,574 FEET (A-II SMALL AIRCRAFT)

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TORA TAKEOFF RUN AVAILABLE
 RUNWAY LENGTH AVAILABLE FOR GROUND RUN OF AN AIRCRAFT TAKING OFF.

TODA TAKEOFF DISTANCE AVAILABLE
 LENGTH OF TORA + LENGTH OF REMAINING RUNWAY AND/OR CLEARWAY BEYOND THE FAR END OF TORA.

ASDA ACCELERATE STOP DISTANCE AVAILABLE
 RUNWAY AND STOPWAY LENGTH DECLARED AVAILABLE AND SUITABLE FOR THE ACCELERATION AND DECELERATION OF AN AIRCRAFT ABORTING A TAKEOFF. NEED FULL RSA/ROFA BEYOND ASDA.

LDA LANDING DISTANCE AVAILABLE
 LENGTH OF RUNWAY WHICH IS DECLARED AVAILABLE AND SUITABLE FOR GROUND RUN OF AN AIRCRAFT LANDING. NEED FULL RSA/ROFA PRIOR TO THRESHOLD AND BEYOND LDA.

	<u>RUNWAY 7</u>	<u>RUNWAY 25</u>
TORA:	4,300' (300' + 4,000')	4,000'
TODA:	4,300' (300' + 4,000')	4,000'
ASDA:	4,300' (300' + 4,000')	4,000'
LDA:	4,000'	4,000'

NOTES:

- DISPLACED THRESHOLD IS AVAILABLE FOR START OF TAKEOFF AND LANDINGS FROM OPPOSITE DIRECTIONS IF 300' BEYOND IS AVAILABLE FOR BOTH THE RSA AND ROFA ON LANDING ROLL OUT.
- FOR ALL CALCULATIONS NO ADDITIONAL CLEARWAY OR STOPWAY DISTANCES HAVE BEEN DECLARED BEYOND THE PAVED RUNWAY SURFACE.

RUNWAY DESIGN STANDARDS

B-II
 VISIBILITY MINIMUMS NOT LOWER THAN 1 MILE

RUNWAY PROTECTION ZONES (RPZ)

APPROACH OR DEPARTURE

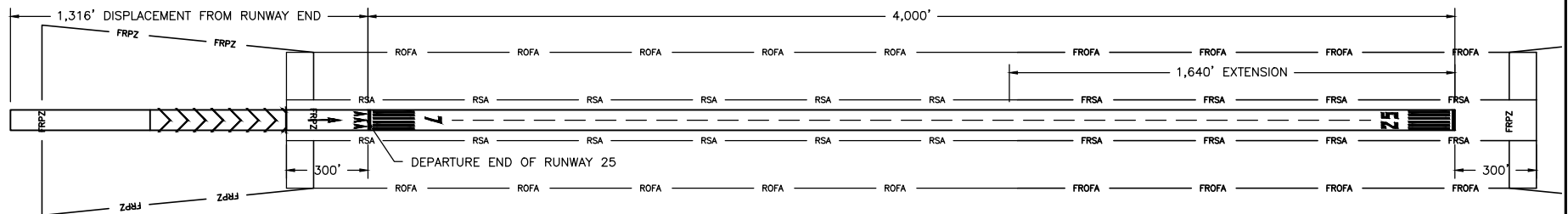
INNER WIDTH = 500'
 OUTER WIDTH = 700'
 LENGTH = 1,000'

RUNWAY SAFETY AREA (RSA)

WIDTH = 150'
 LENGTH PRIOR TO LANDING THRESHOLD = 300'
 LENGTH BEYOND RUNWAY END = 300'

RUNWAY OBJECT FREE AREA (ROFA)

WIDTH = 500'
 LENGTH PRIOR TO LANDING THRESHOLD = 300'
 LENGTH BEYOND RUNWAY END = 300'



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Source: ESA, 2021.

Albert Whitted Airport Master Plan

FIGURE 6-4C
 SHIFT AND EXTEND RUNWAY 7-25 EAST 1,640 FEET (B-II AIRCRAFT)

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As illustrated in **Figure 6-2**, the revised declared distances for the current A-II small aircraft category of Runway 7-25 results in ASDA calculations of 3,376 feet for Runway 7 and 3,312 feet for Runway 25. Since neither of these provide the minimum 3,600 feet required for takeoffs today, this option was not considered further in this analysis.

While the options shown in **Figures 6-3A** and **6-3B** do not technically trigger the need to evaluate the existing incompatible uses within the RPZs, both are limited to the A-II small aircraft runway standards. The future B-II runway standards are provided in the **Figure 6-3C** option and as noted, consultation with the Orlando ADO was conducted given the additional off-airport incompatible land uses that would be encompassed within the larger RPZs required.

Figure 6-5 provides a comparison of the larger RPZ requirement and the additional incompatible land uses it would encompass. The figure also illustrates the impacts that the options in **Figures 6-3A** through **6-3C** would have by keeping the existing physical end and threshold of Runway 7 the same. As shown on **Figure 6-5**, both the TSS and Departure Surface would be penetrated by off-airport buildings, as well as multiple vegetative obstructions (not illustrated). While the current Runway 7 threshold was established for approach clearance over these obstacles, the current penetrations of the TSS are likely the results of the more detailed AGIS data obtained as part of this study. Additionally, the Primary Surface (not shown) would also remain off-airport property and these options do not meet the compatible land use and community impact screening criteria outlined in the Airport Sustainability Baseline (**Appendix E**).

Under the options shown in **Figures 6-3A** through **6-3C**, both the Sheltair fixed base operator (FBO) and St. Pete Air would lose a significant amount of their existing apron area. An additional 16,600 SY of aircraft parking apron space was identified for the 20-year planning horizon in the facility requirements chapter. The options depicted in **Figures 6-3A** through **6-3C** would more than double the 20-year apron space requirement. It has been noted in past discussions that there is the potential to provide additional apron space in the portion of the Albert Whitted Waste Water Treatment Plant site that can be redeveloped of aviation uses; however, this location is far removed from the current Sheltair FBO and St. Pete Air facilities.

Figures 6-4A through **6-4C** each provide compatible RPZs on airport property; remove the off-airport impacts to both the TSS and Departure Surface; and bring the Primary Surface onto airport property. Each of these options also significantly minimize the impact to the airport's existing aircraft parking apron space. Therefore, only **Figures 6-4A** through **6-4C** were carried forward in the evaluation of alternatives.

6.3.4 Revised Alternatives for Runway 7-25

Revisions to the options in **Figures 6-4A** through **6-4C** were made to create final alternatives from which a preferred alternative can be selected. This included an effort to reduce the physical impact to Tampa Bay and explore the potential to include full length ADG II parallel taxiways on both sides of the runway. These are described in the following sections followed by a comparison in **Table 6-3**.

Displacing the Future Runway 25 Threshold

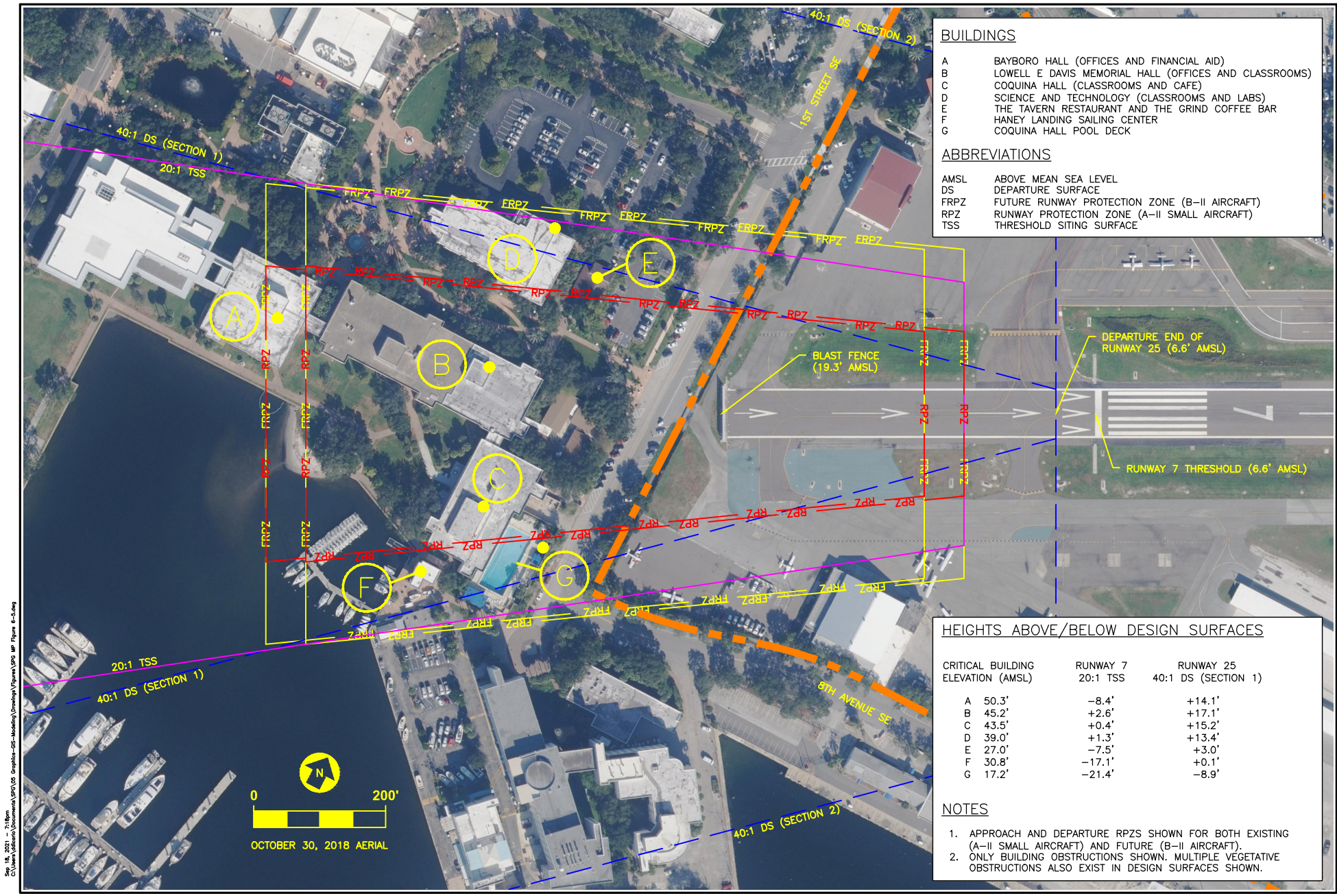
Each of the options carried forward from the previous section included a full 300 foot long RSA beyond the extended runway end. While it is not desirable to have a displaced threshold on a new runway end, the ability to lessen the impact to Tampa Bay while still providing the runway improvements required support this option. Therefore, each alternative has been revised with only 50 feet of graded RSA and the future Runway 25 threshold displaced 250 feet. These changes are reflected in **Figures 6-6A** through **6-6C**.

For aircraft operations, the displacement of the Runway 25 threshold still provides the minimum takeoff distances required for the different alternatives. As shown in **Figure 6-6A** there is an ASDA of least 3,600 feet available in both directions while **Figures 6-6B** and **6-6C** each provide a minimum ASDA of 4,000 feet. The displacement of the Runway 25 threshold will also decrease the LDA by 250 feet in both directions. However, as documented in the runway length analysis, the current landing lengths available are not considered a limitation. This modification would eliminate the ability to provide the recommended paved blast pad at this end; however, the trade-off is that it reduces the physical impact to Tampa Bay by 1.4 acres for each alternative.

Primary Runway Taxiway Improvements

Figures 6-6A through **6-6C** include full length parallel taxiways on both sides of Runway 7-25. Even though they are not dimensioned, the proposed parallel taxiways are configured for the current and future ADG II taxiway standards. This includes a 240 foot runway centerline to taxiway centerline spacing and 131 foot wide Taxiway Object Free Area (TOFA). As noted previously, neither of the existing parallel taxiways provide the ADG II standards required. On the south side, Taxiway A is only offset 150 feet from Runway 7-25 while on the north side the west half of Taxiway D is offset 175 feet and the east half 200 feet. There are no Modifications of Standards (MOS) on file for Taxiways A and D since prior to this master plan, the critical aircraft only required a 150 foot offset. There is space along both sides of the runway to offset the parallel taxiways at 240 feet; however, the space required for the TOFA creates impacts to existing facilities, as shown on the figures.

On the south side an ADG II taxiway is probable between Runway 18-36 and the east side of the mid-field aircraft parking apron. From this point to the future end of Runway 7, the ADG II taxiway standards would impact a majority of the mid-field apron, one T-hangar building, and one clearspan hangar. On the north side the required ADG II TOFA would overlap a portion of the ATCT facilities and airfield electrical vault. These impacts will be detailed in the following section.



BUILDINGS

- A BAYBORO HALL (OFFICES AND FINANCIAL AID)
- B LOWELL E DAVIS MEMORIAL HALL (OFFICES AND CLASSROOMS)
- C COQUINA HALL (CLASSROOMS AND CAFE)
- D SCIENCE AND TECHNOLOGY (CLASSROOMS AND LABS)
- E THE TAVERN RESTAURANT AND THE GRIND COFFEE BAR
- F HANEY LANDING SAILING CENTER
- G COQUINA HALL POOL DECK

ABBREVIATIONS

- AMSL ABOVE MEAN SEA LEVEL
- DS DEPARTURE SURFACE
- FRPZ FUTURE RUNWAY PROTECTION ZONE (B-II AIRCRAFT)
- RPZ RUNWAY PROTECTION ZONE (A-II SMALL AIRCRAFT)
- TSS THRESHOLD SITING SURFACE

HEIGHTS ABOVE/BELOW DESIGN SURFACES

CRITICAL BUILDING ELEVATION (AMSL)	RUNWAY 7 20:1 TSS	RUNWAY 25 40:1 DS (SECTION 1)
A 50.3'	-8.4'	+14.1'
B 45.2'	+2.6'	+17.1'
C 43.5'	+0.4'	+15.2'
D 39.0'	+1.3'	+13.4'
E 27.0'	-7.5'	+3.0'
F 30.8'	-17.1'	+0.1'
G 17.2'	-21.4'	-8.9'

NOTES

1. APPROACH AND DEPARTURE RPZS SHOWN FOR BOTH EXISTING (A-II SMALL AIRCRAFT) AND FUTURE (B-II AIRCRAFT).
2. ONLY BUILDING OBSTRUCTIONS SHOWN. MULTIPLE VEGETATIVE OBSTRUCTIONS ALSO EXIST IN DESIGN SURFACES SHOWN.

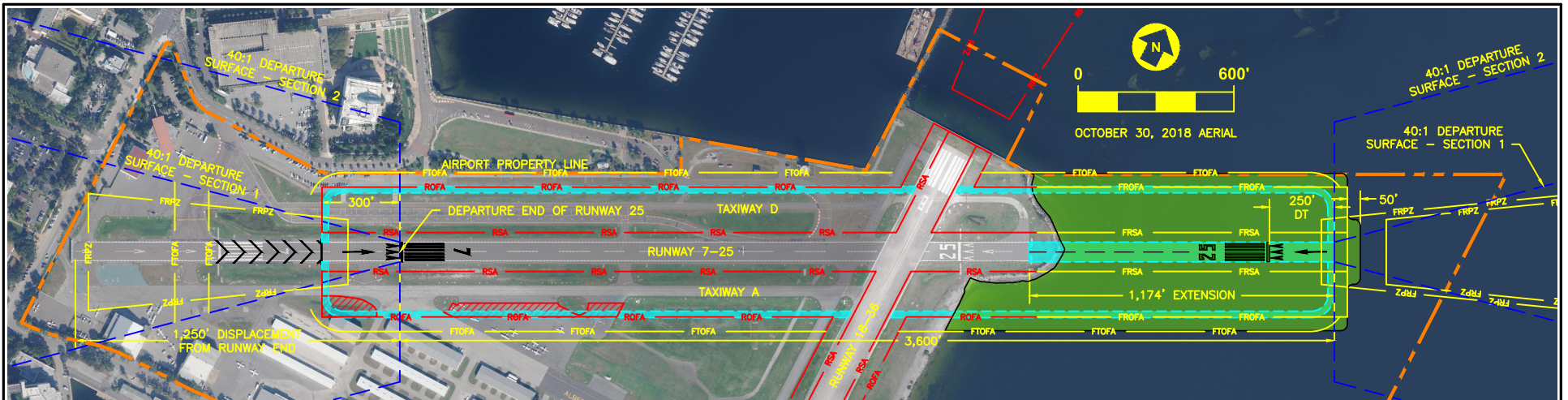
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Source: ESA, 2021.

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FIGURE 6-5
OFF-AIRPORT INCOMPATIBLE LAND USES AND BUILDING OBSTRUCTIONS WITHIN RUNWAY PROTECTION ZONES

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TORA TAKEOFF RUN AVAILABLE
 RUNWAY LENGTH AVAILABLE FOR GROUND RUN OF AN AIRCRAFT TAKING OFF.

TODA TAKEOFF DISTANCE AVAILABLE
 LENGTH OF TORA + LENGTH OF REMAINING RUNWAY AND/OR CLEARWAY BEYOND THE FAR END OF TORA.

ASDA ACCELERATE STOP DISTANCE AVAILABLE
 RUNWAY AND STOPWAY LENGTH DECLARED AVAILABLE AND SUITABLE FOR THE ACCELERATION AND DECELERATION OF AN AIRCRAFT ABORTING A TAKEOFF. NEED FULL RSA/ROFA BEYOND ASDA.

LDA LANDING DISTANCE AVAILABLE
 LENGTH OF RUNWAY WHICH IS DECLARED AVAILABLE AND SUITABLE FOR GROUND RUN OF AN AIRCRAFT LANDING. NEED FULL RSA/ROFA PRIOR TO THRESHOLD AND BEYOND LDA.

	<u>RUNWAY 7</u>	<u>RUNWAY 25</u>
TORA:	3,900' (300' + 3,600')	3,600'
TODA:	3,900' (300' + 3,600')	3,600'
ASDA:	3,650' (300' + 3,600' - 250')	3,600'
LDA:	3,350' (3,600' - 250')	3,350' (3,600' - 250')

NOTES:

1. DISPLACED THRESHOLD IS AVAILABLE FOR START OF TAKEOFF AND LANDINGS FROM OPPOSITE DIRECTIONS IF 300' BEYOND IS AVAILABLE FOR BOTH THE RSA AND ROFA ON LANDING ROLL OUT.
2. FOR ALL CALCULATIONS NO ADDITIONAL CLEARWAY OR STOPWAY DISTANCES HAVE BEEN DECLARED BEYOND THE PAVED RUNWAY SURFACE.

RUNWAY DESIGN STANDARDS

A-II SMALL AIRCRAFT
 VISIBILITY MINIMUMS NOT LOWER THAN 1 MILE

RUNWAY PROTECTION ZONES (RPZ)

APPROACH OR DEPARTURE

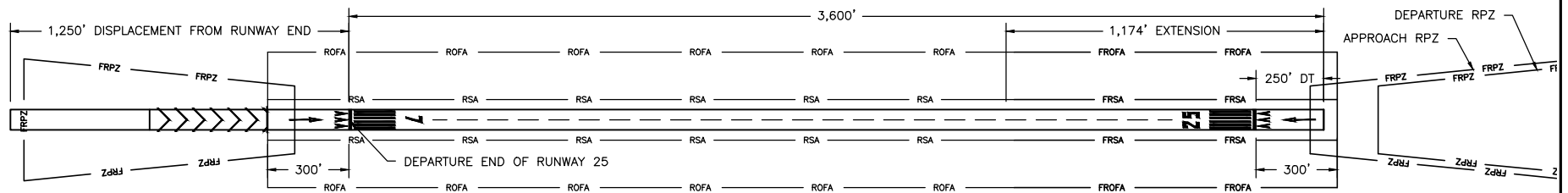
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 OUTER WIDTH = 450'
 LENGTH = 1,000'

RUNWAY SAFETY AREA (RSA)

WIDTH = 150'
 LENGTH PRIOR TO LANDING THRESHOLD = 300'
 LENGTH BEYOND RUNWAY END = 300'

RUNWAY OBJECT FREE AREA (ROFA)

WIDTH = 500'
 LENGTH PRIOR TO LANDING THRESHOLD = 300'
 LENGTH BEYOND RUNWAY END = 300'



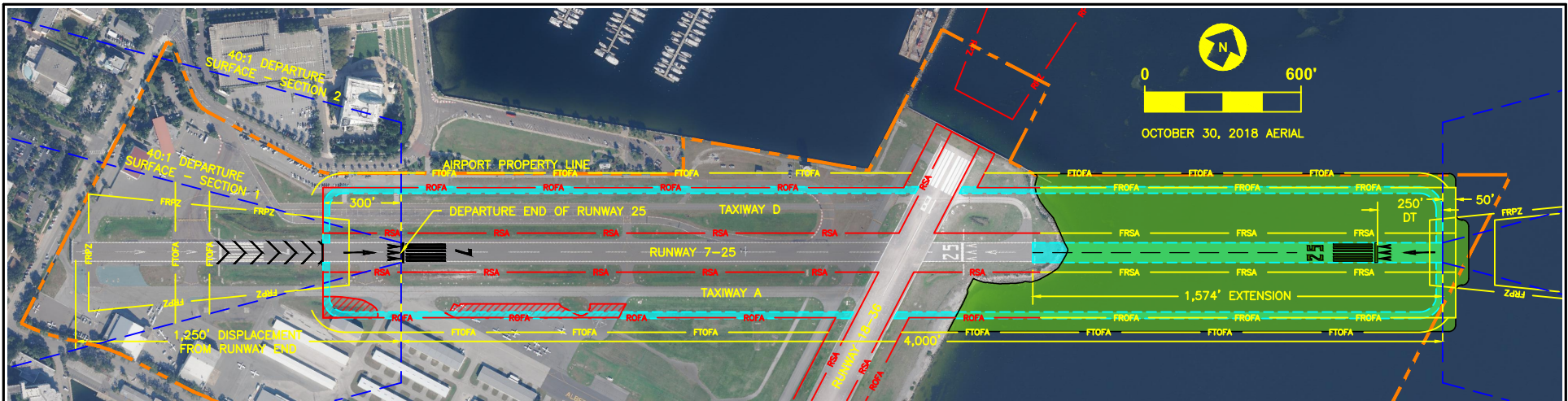
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Source: ESA, 2021.

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FIGURE 6-6A
 EXTEND RUNWAY 7-25 EAST 1,174 FEET WITH DISPLACED THRESHOLDS (A-II SMALL AIRCRAFT)

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TORA TAKEOFF RUN AVAILABLE
 RUNWAY LENGTH AVAILABLE FOR GROUND RUN OF AN AIRCRAFT TAKING OFF.

TODA TAKEOFF DISTANCE AVAILABLE
 LENGTH OF TORA + LENGTH OF REMAINING RUNWAY AND/OR CLEARWAY BEYOND THE FAR END OF TORA.

ASDA ACCELERATE STOP DISTANCE AVAILABLE
 RUNWAY AND STOPWAY LENGTH DECLARED AVAILABLE AND SUITABLE FOR THE ACCELERATION AND DECELERATION OF AN AIRCRAFT ABORTING A TAKEOFF. NEED FULL RSA/ROFA BEYOND ASDA.

LDA LANDING DISTANCE AVAILABLE
 LENGTH OF RUNWAY WHICH IS DECLARED AVAILABLE AND SUITABLE FOR GROUND RUN OF AN AIRCRAFT LANDING. NEED FULL RSA/ROFA PRIOR TO THRESHOLD AND BEYOND LDA.

NOTES:

1. DISPLACED THRESHOLD IS AVAILABLE FOR START OF TAKEOFF AND LANDINGS FROM OPPOSITE DIRECTIONS IF 300' BEYOND IS AVAILABLE FOR BOTH THE RSA AND ROFA ON LANDING ROLL OUT.
2. FOR ALL CALCULATIONS NO ADDITIONAL CLEARWAY OR STOPWAY DISTANCES HAVE BEEN DECLARED BEYOND THE PAVED RUNWAY SURFACE.

	<u>RUNWAY 7</u>	<u>RUNWAY 25</u>
TORA:	4,300' (300' + 4,000')	4,000'
TODA:	4,300' (300' + 4,000')	4,000'
ASDA:	4,050' (300' + 4,000' - 250')	4,000'
LDA:	3,750' (4,000' - 250')	3,750' (4,000' - 250')

RUNWAY DESIGN STANDARDS

A-II SMALL AIRCRAFT
 VISIBILITY MINIMUMS NOT LOWER THAN 1 MILE

RUNWAY PROTECTION ZONES (RPZ)

APPROACH OR DEPARTURE

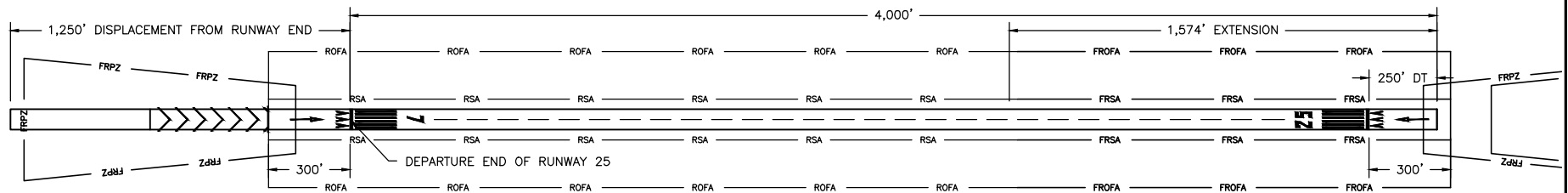
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 OUTER WIDTH = 450'
 LENGTH = 1,000'

RUNWAY SAFETY AREA (RSA)

WIDTH = 150'
 LENGTH PRIOR TO LANDING THRESHOLD = 300'
 LENGTH BEYOND RUNWAY END = 300'

RUNWAY OBJECT FREE AREA (ROFA)

WIDTH = 500'
 LENGTH PRIOR TO LANDING THRESHOLD = 300'
 LENGTH BEYOND RUNWAY END = 300'



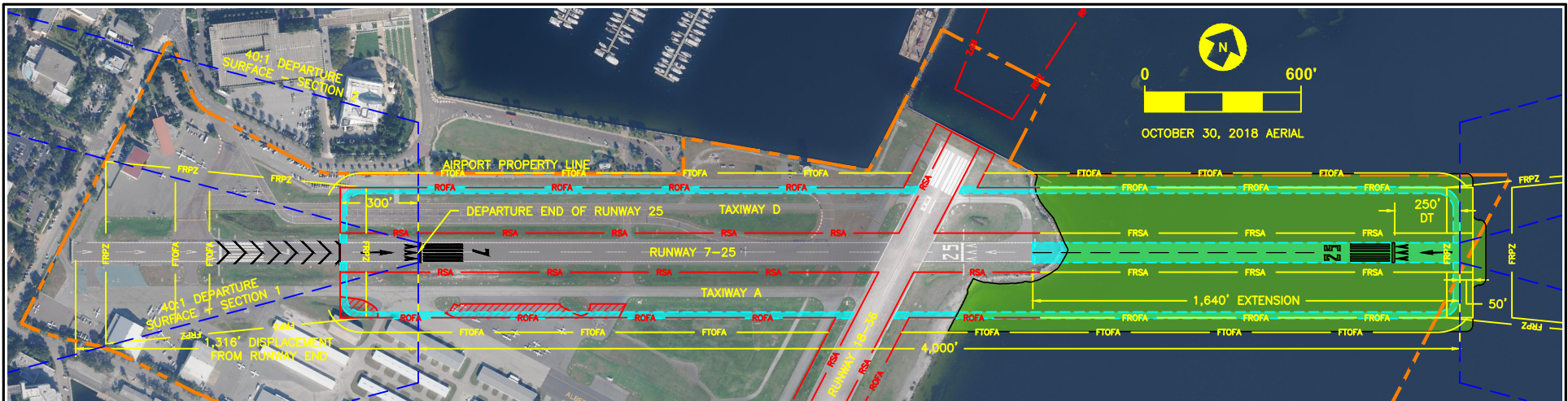
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Source: ESA, 2021.

Albert Whitted Airport Master Plan

FIGURE 6-6B
 EXTEND RUNWAY 7-25 EAST 1,574 FEET WITH DISPLACED THRESHOLDS (A-II SMALL AIRCRAFT)

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TORA TAKEOFF RUN AVAILABLE
 RUNWAY LENGTH AVAILABLE FOR GROUND RUN OF AN AIRCRAFT TAKING OFF.

TODA TAKEOFF DISTANCE AVAILABLE
 LENGTH OF TORA + LENGTH OF REMAINING RUNWAY AND/OR CLEARWAY BEYOND THE FAR END OF TORA.

ASDA ACCELERATE STOP DISTANCE AVAILABLE
 RUNWAY AND STOPWAY LENGTH DECLARED AVAILABLE AND SUITABLE FOR THE ACCELERATION AND DECELERATION OF AN AIRCRAFT ABORTING A TAKEOFF. NEED FULL RSA/ROFA BEYOND ASDA.

LDA LANDING DISTANCE AVAILABLE
 LENGTH OF RUNWAY WHICH IS DECLARED AVAILABLE AND SUITABLE FOR GROUND RUN OF AN AIRCRAFT LANDING. NEED FULL RSA/ROFA PRIOR TO THRESHOLD AND BEYOND LDA.

	<u>RUNWAY 7</u>	<u>RUNWAY 25</u>
TORA:	4,300' (300' + 4,000')	4,000'
TODA:	4,300' (300' + 4,000')	4,000'
ASDA:	4,050' (300' + 4,000' - 250')	4,000'
LDA:	3,750' (4,000' - 250')	3,750' (4,000' - 250')

NOTES:

1. DISPLACED THRESHOLD IS AVAILABLE FOR START OF TAKEOFF AND LANDINGS FROM OPPOSITE DIRECTIONS IF 300' BEYOND IS AVAILABLE FOR BOTH THE RSA AND ROFA ON LANDING ROLL OUT.
2. FOR ALL CALCULATIONS NO ADDITIONAL CLEARWAY OR STOPWAY DISTANCES HAVE BEEN DECLARED BEYOND THE PAVED RUNWAY SURFACE.

RUNWAY DESIGN STANDARDS

B-II
 VISIBILITY MINIMUMS NOT LOWER THAN 1 MILE

RUNWAY PROTECTION ZONES (RPZ)

APPROACH OR DEPARTURE

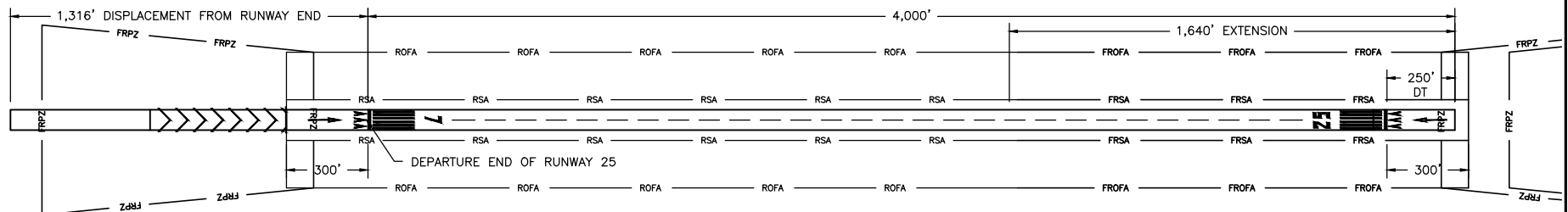
INNER WIDTH = 500'
 OUTER WIDTH = 700'
 LENGTH = 1,000'

RUNWAY SAFETY AREA (RSA)

WIDTH = 150'
 LENGTH PRIOR TO LANDING THRESHOLD = 300'
 LENGTH BEYOND RUNWAY END = 300'

RUNWAY OBJECT FREE AREA (ROFA)

WIDTH = 500'
 LENGTH PRIOR TO LANDING THRESHOLD = 300'
 LENGTH BEYOND RUNWAY END = 300'



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Source: ESA, 2021.

Albert Whitted Airport Master Plan

FIGURE 6-6C
 EXTEND RUNWAY 7-25 EAST 1,640 FEET WITH DISPLACED THRESHOLDS (B-II AIRCRAFT)

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**TABLE 6-3
COMPARISON OF REVISED ALTERNATIVES FOR RUNWAY 7-25**

Figure	Extension (feet)	FAA Design Standard	Runway 7 ASDA (feet)	Runway 25 ASDA (feet)	Apron Loss (SY)	Impact to Bay (acres)	Order of Magnitude Cost (millions)
6-6A	1,174	A-II SA	3,650	3,600	5,100	17.8	\$23.0
6-6B	1,574	A-II SA	4,050	4,000	5,100	23.4	\$26.2
6-6C	1,640	B-II	4,050	4,000	4,500	24.3	\$27.1

NOTES: Each revised alternative to improve Runway 7-25 provides the required runway design standards; however, the ADG II parallel taxiway impacts are detailed in a subsequent section. Each revised alternative also provides compatible RPZs off each end of the runway. The cost estimates include the new construction east of Runway 18-36, the relocation of navigational aids, and the remarking of the entire runway surface.

SA = Small Aircraft (< 12,500 pounds).

SOURCE: ESA analysis 2021.

6.3.5 Additional Considerations for Runway 7-25 Alternatives

In order to refine and develop the best alternative for improving Runway 7-25, a number of other issues were also evaluated.

Parallel Taxiway Limitations

Due to existing facilities and the lateral constraints along both sides of Runway 7-25, there are limitations to providing full length ADG II parallel taxiways. **Figure 6-7A** provides detail on the ADG II parallel taxiway impacts for the revised A-II small aircraft Runway 7-25 alternatives of **Figures 6-6A** and **6-6B**, while **Figure 6-7B** reflects the same for the B-II aircraft alternative of **Figure 6-6C**.

Because of the impact to the mid-field apron, one T-hangar building, and one clearspan hangar, a full length ADG II parallel taxiway is not recommended on the south side of Runway 7-25. This is primarily based on the fact that due to the physical limitations, the airport does not have enough space to develop additional hangars and aircraft parking apron space to accommodate the demand projected. While an ADG II taxiway between the mid-field aircraft parking apron and Runway 18-36 is possible, the eventual tie into the existing Taxiway A alignment near the east side of the apron would create confusing taxiway geometry for pilots. However, an ADG II taxiway could be planned from the east side of Runway 18-36 to the future end of Runway 25.

For the existing portion of Taxiway A west of Runway 18-36, an operational procedure needs to be developed and approved to document that while this part of Taxiway A has the proper ADG II TOFA, it is only offset 150 feet from Runway 7-25 versus the required 240 feet. The procedure would have to state that ADG II aircraft cannot simultaneously use Runway 7-25 and the portion of Taxiway A west of Runway 18-36.

On the north side of Runway 7-25, a similar situation exists. While Taxiway D could be relocated with a 240 foot offset, the ADG II TOFA would overlap ATCT facilities and the airfield electrical vault. Regardless, the ultimate relocation of Taxiway D to provide a full length parallel ADG II taxiway is recommended as a long-term project with the understanding that the size of aircraft operating on the parallel taxiway would be limited to a certain wingspan. ADG II aircraft includes those with wingspans greater than 49 feet, up to 79 feet. The overlap of the TOFA with the ATCT facilities is only a few feet while the airfield electrical vault is approximately 15 feet.

When the relocation of this taxiway is designed, the newer FAA Advisory Circular (AC) 150/5300-13B, Airport Design standards will be applied, which reduces the ADG II TOFA from the previous width of 131 feet to 124 feet. While this will not eliminate the overlap of future TOFA with the airfield electrical vault, it may eliminate the overlap with the ATCT facilities. Therefore, the recommended relocation of Taxiway D would need to include the relocation of the electrical vault north, out of the TOFA, and potentially the development and approval of an operational procedure limiting the wingspan of the aircraft capable of using the taxiway based on whether the ATCT actually impacts the future TOFA.

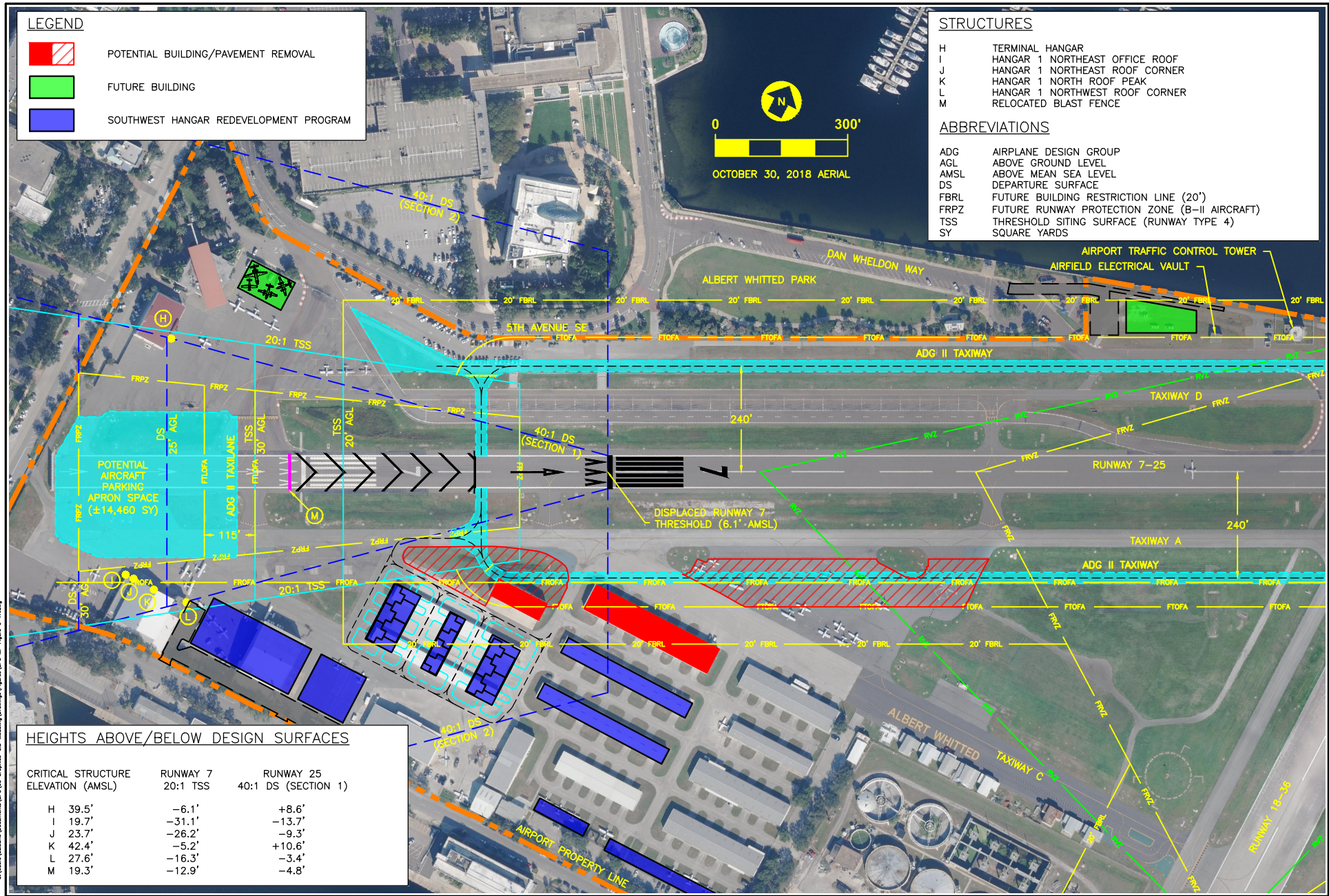
Potential Improvements to West Side of Airfield

While the on-airport RPZs in **Figures 6-6A** through **6-6C** eliminate off-airport incompatible uses, the larger B-II RPZ creates similar challenges to existing and future facilities on the west side of the airfield. The corresponding shifts in the TSS and Departure Surfaces associated with the different Runway 7 threshold locations reduce the number of obstacles on this end of the runway. Detail on the changes to these surfaces is provided in the following sections.

On-Airport RPZs

The future RPZ shown in **Figure 6-7B** would encompass portions of three existing clearspan hangars, as well as one proposed clearspan hangar and one proposed T-hangar building that have already been designed under the Southwest Hangar Redevelopment program. While FAA AC 150/5300-13A, Change 1, *Airport Design*, states it is desirable to clear the entire RPZ of above ground objects; it also states when this is not practical, the RPZ at a minimum should be clear of facilities supporting incompatible activities.

The FAA's September 2012 *Interim Guidance on Land Uses Within a Runway Protection Zone* requires FAA coordination when certain land uses would enter the limits of a RPZ, including buildings and structures. While not specifically listed as an example, the three existing hangars and two future hangars within the on-airport RPZs were discussed during meetings with the Orlando ADO. While not ideal, it was agreed that this was a much better situation given the physical airport constraints and the fact it would remove numerous incompatible off-airport buildings of the USFSP campus from the RPZs (see **Figure 6-5**). Similarly, the on-airport RPZs would encompass portions of the existing and future aircraft parking apron areas. However, if the aircraft parking areas are managed properly, this will create a much better situation than the off-airport buildings, public automobile parking areas, and 1st Street SE currently within the off-airport RPZs. Regardless, a formal RPZ alternatives analysis will be required in future to evaluate the potential of any changes within the limits of the on-airport RPZs.



LEGEND

- POTENTIAL BUILDING/PAVEMENT REMOVAL
- FUTURE BUILDING
- SOUTHWEST HANGAR REDEVELOPMENT PROGRAM

STRUCTURES

- H TERMINAL HANGAR
- I HANGAR 1 NORTHEAST OFFICE ROOF
- J HANGAR 1 NORTHEAST ROOF CORNER
- K HANGAR 1 NORTH ROOF PEAK
- L HANGAR 1 NORTHWEST ROOF CORNER
- M RELOCATED BLAST FENCE

ABBREVIATIONS

- ADG AIRPLANE DESIGN GROUP
- AGL ABOVE GROUND LEVEL
- AMSL ABOVE MEAN SEA LEVEL
- DS DEPARTURE SURFACE
- FBRL FUTURE BUILDING RESTRICTION LINE (20')
- FRPZ FUTURE RUNWAY PROTECTION ZONE (B-II AIRCRAFT)
- TSS THRESHOLD SITING SURFACE (RUNWAY TYPE 4)
- SY SQUARE YARDS

HEIGHTS ABOVE/BELOW DESIGN SURFACES

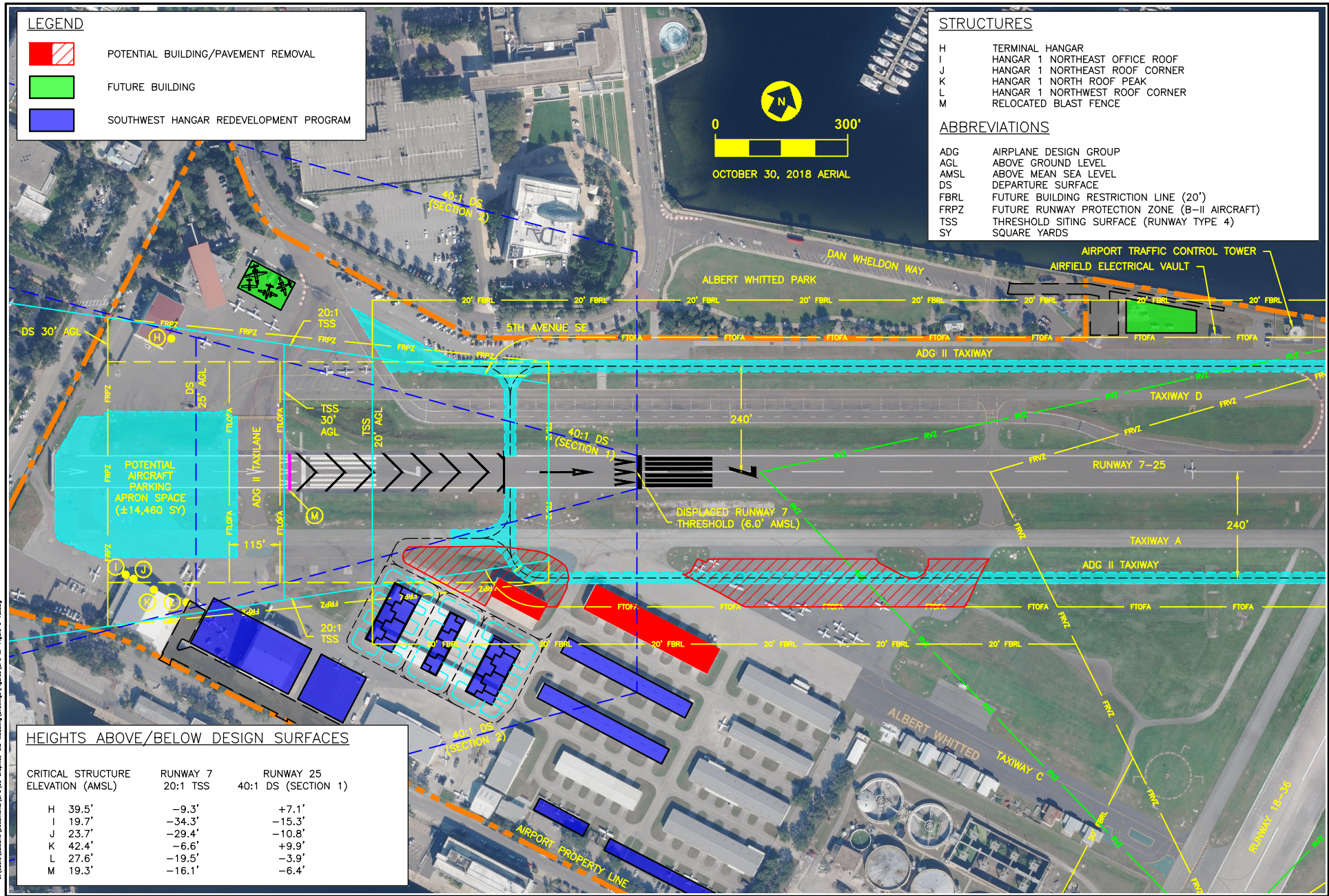
CRITICAL STRUCTURE ELEVATION (AMSL)	RUNWAY 7 20:1 TSS	RUNWAY 25 40:1 DS (SECTION 1)
H 39.5'	-6.1'	+8.6'
I 19.7'	-31.1'	-13.7'
J 23.7'	-26.2'	-9.3'
K 42.4'	-5.2'	+10.6'
L 27.6'	-16.3'	-3.4'
M 19.3'	-12.9'	-4.8'

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Source: ESA, 2021.

Albert Whitted Airport Master Plan
FIGURE 6-7A
 CONCEPTUAL WEST AIRFIELD IMPROVEMENTS (A-II SMALL AIRCRAFT)

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LEGEND

- POTENTIAL BUILDING/PAVEMENT REMOVAL
- FUTURE BUILDING
- SOUTHWEST HANGAR REDEVELOPMENT PROGRAM

STRUCTURES

- H TERMINAL HANGAR
- I HANGAR 1 NORTHEAST OFFICE ROOF
- J HANGAR 1 NORTHEAST ROOF CORNER
- K HANGAR 1 NORTH ROOF PEAK
- L HANGAR 1 NORTHWEST ROOF CORNER
- M RELOCATED BLAST FENCE

ABBREVIATIONS

- ADG AIRPLANE DESIGN GROUP
- AGL ABOVE GROUND LEVEL
- AMSL ABOVE MEAN SEA LEVEL
- DS DEPARTURE SURFACE
- FBRL FUTURE BUILDING RESTRICTION LINE (20')
- FRPZ FUTURE RUNWAY PROTECTION ZONE (B-II AIRCRAFT)
- TSS THRESHOLD SITING SURFACE (RUNWAY TYPE 4)
- SY SQUARE YARDS

HEIGHTS ABOVE/BELOW DESIGN SURFACES

CRITICAL STRUCTURE ELEVATION (AMSL)	RUNWAY 7 20:1 TSS	RUNWAY 25 40:1 DS (SECTION 1)
H 39.5'	-9.3'	+7.1'
I 19.7'	-34.3'	-15.3'
J 23.7'	-29.4'	-10.8'
K 42.4'	-6.6'	+9.9'
L 27.6'	-19.5'	-3.9'
M 19.3'	-16.1'	-6.4'

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Source: ESA, 2021.

Albert Whitted Airport Master Plan
FIGURE 6-7B
 CONCEPTUAL WEST AIRFIELD IMPROVEMENTS (B-II AIRCRAFT)

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Threshold Siting Surfaces

Even though the 20:1 TSS in **Figures 6-7A** and **6-7B** has the same criteria, the location is slightly different given the additional displacement of Runway 7 in **Figure 6-7B** to accommodate the larger ADG II RPZ on-airport. As illustrated there would be no on-airport penetrations to this surface and the three USFSP buildings shown on **Figure 6-5** would no longer penetrate the surface either. Both figures also delineate the points where the TSS would provide 20 foot and 30 foot of vertical clearance. These heights represent the maximum tail heights from FAA AC 150/5300-13A, Change 1 for ADG I and ADG II aircraft, respectively.

To the west of the line delineating the 30 foot vertical clearance of the TSS a future ADG II apron edge taxilane is possible and future aircraft parking apron space west of the required Taxilane Object Free Area (TLOFA). Due to the potential for both jet blast and prop wash, the existing blast fence would be relocated to the east of the proposed ADG II taxilane as shown in **Figures 6-7A** and **6-7B**. Relocating the blast fence to this location would also eliminate the possibility for any aircraft entering the runway environment from the non-movement apron area.

Discussions with the air traffic manager supported the displacement of Runway 7 and creating non-movement areas to the west of the future Runway 7 threshold. While some effort will be required to establish the ultimate movement and non-movement areas; air traffic management believes it would improve the ability to manage ground traffic, most of which utilize Taxiway A to/from the south side of the airport.

Departure Surfaces

The 40:1 Departure Surface on the west side of Runway 7-25 has the same criteria in both **Figures 6-7A** and **6-7B**; however, the locations are slightly different since the departure end of Runway 25 is collocated with the future Runway 7 threshold. As shown, two existing clearspan hangars would penetrate the inner portion (Section 1) of the future Departure Surface. In **Figure 6-7B**, the larger penetration is Hangar 1 at 9.9 feet. The figure also shows that the line where the TSS provides 30 foot of vertical clearance would be the same line for where the Departure Surface provides 20 foot of vertical clearance. Similar to the Hangar 1 penetration, this line is 10 feet lower than the 30 foot maximum tail height of the aircraft using the proposed ADG II non-movement area apron taxilane. With a 40:1 slope, these penetrations would be eliminated if the Departure Surface were shifted 400 feet east; however, due to the change in the Runway 7-25 elevation it would still penetrate the slope by nearly a foot.

A 400 foot shift would also bring the General Aviation Terminal within the inner portion (Section 1) of the Departure Surface. With an overall elevation of 44.3 feet AMSL, the General Aviation Terminal would penetrate the surface by 5.3 feet. Similarly, the future Hangar 2A and a future T-hangar building (both already designed as part of the Southwest Hangar Redevelopment program) would be within Section 1 of the shifted Departure Surface. While the T-hangar would not be an issue, at an estimated height of 51.0 feet AMSL, the future Hangar 2A roof peak would penetrate the surface by 14.8 feet.

Because of these new impacts and the fact that any shift in the Departure Surface would also reduce the TORA and TODA for Runway 25 by the same amount, different shifts were evaluated. The final recommendation is to shift the Departure Surface 200 feet east. Doing so would remove the General Aviation Terminal, future T-hangar, and all but the northwest corner of future Hangar 2A's roof. The expected height of this portion of Hangar 2A would penetrate the Departure Surface by approximately 8.5 feet. The 200 foot shift would also reduce if not eliminate a number of the close-in obstacles currently published in the takeoff minimums for Runway 25. It would also increase the vertical clearance over the proposed ADG II non-movement area apron edge taxilane and potential aircraft parking apron space to the west of the displaced Runway 7 threshold. In fact, each of the vertical clearances shown in **Figures 6-7A** and **6-7B** for the Departure Surface would increase by five feet. This would provide greater than 25 feet of vertical clearance over the proposed apron edge TLOFA and almost unrestricted parking of ADG II aircraft to the immediate west of the proposed apron edge TLOFA.

Given that Runway 25 is only utilized approximately 15 percent of the time, shifting the Departure Surface is a reasonable option, despite the corresponding 200 foot decrease in both the TORA and TODA for departures on Runway 25. While there are no instrument approaches established to Runway 25, air traffic management stressed the importance of retaining the ability for instrument departures off Runway 25, even if there are takeoff penalties as a result of close-in obstructions.

Improvements to Instrument Approach Procedures

Runways 7, 18, and 36 each have straight-in non-precision instrument approach capability with visibility minimums of one mile and varying minimum descent altitudes. Lower instrument approach minimums may be possible by improving the existing non-precision approach procedures with vertical guidance. Instrument procedures with vertical guidance are capable of visibility minimums lower than one mile, but not lower than $\frac{3}{4}$ mile, and have the potential to allow aircraft to descend down to heights greater than or equal to 250 feet above the runway threshold.

Once Runway 7-25 becomes a B-II runway, the 14 CFR Part 77 Approach Surface to Runway 7 will increase in size and the slope will change to 34:1. The Approach Surface would not change again if slightly lower non-precision approach minimums were established. The Type 4 TSS required for Runways 7, 18, and 36 will not change either if any of the visibility minimums were to reduce from 1 mile but remain greater than or equal to $\frac{3}{4}$ statute mile. Given the potential displacement of the Runway 7 threshold and the changes to the improvements underway for Runway 18-36, it may be possible in the future to obtain better non-precision instrument approach capability to one or more of these three runway ends.

A full U.S. Standard for Terminal Instrument Procedures (TERPS) analysis would have to be conducted to identify the controlling obstructions and then a determination made as to whether or not the procedures could be improved based on the changes to the runways. Additionally, FAA AC 150/5300-13A, Change 1 requires a Non-Vertically Guided Survey (NVGS) for any new non-precision approach. Information related to the details of this survey requirement is found in FAA AC 150/5300-18B, *General Guidance and Specifications for Submission of Aeronautical Surveys to NGS: Field Data Collection and Geographic Information System (GIS) Standards*. Essentially,

this AC provides the specifications for the collection of airport survey data needed to support the aeronautical and airport engineering information required. Therefore, a TERPS analysis and NVGS will be included in the capital improvement program to explore this potential as well as to establish the level of environmental review necessary.

Surfaces on the East Side of Runway 7-25

There is no marked channel for boats traversing Tampa Bay in the area to the immediate east of Runway 7-25. Given the depth of water in this area, occasionally recreational boats and sailboats will come very close the airport property as they head into or out of the channel for the St. Petersburg Marina's South Yacht Basin. No matter how much Runway 7-25 is potentially extended, this will continue to be an issue for the areas beneath the 20:1 TSS and 40:1 Departure Surface over the bay. The option of either establishing a channel or no-go boating zone around the lower parts of these surfaces is an of element the recommended airfield improvements for both the existing condition and future project to extend Runway 7-25.

Other Taxiway System Enhancements

Other improvements for the overall operational safety and efficiency of aircraft ground movements throughout the 20-year planning period are needed. These include:

Connector Taxiways

The existing Taxiway A and Taxiway D connectors with Runway 7-25 will require some modifications based on the displacement of the Runway 7 threshold. Taxiways A1, A2, D1, and D2 will become part of the future aircraft parking apron west of the displaced Runway 7 threshold. Depending on the final configuration for this non-movement area, these connector taxiways will either be converted to apron space or taxilanes.

Taxiway A3 would be removed as it would be too close (centerline separation) to the new end connector taxiway required to provide access to the full pavement available for departures on Runway 7. On the north side, Taxiway D3 would need to be extended to tie into the ADG II parallel taxiway and Taxiway D5 should be removed since it would lie within the middle third or "high energy" portion of the runway. Two new connectors should be planned at least 750 feet from the centerlines of the two new Runway 25 end connectors. These connectors would be out of the middle third of the runway and enhance the exit factor for aircraft landing on Runway 7.

While not detailed on any of the figures, all new taxiways will need to meet the current FAA design standards for larger fillet areas and the associated lead-in tapers, to include the existing portion of Taxiway D3 that ties into the runway. In addition, the designation of the connectors for Taxiways A and D will need to be revised and the airfield signage updated.

Run-up Areas

Run-up areas in locations closer to the future runway ends were considered given peak hour operations are expected to be nearly double the level the FAA recommends for run-up areas to be

established. Unfortunately, due to the lateral limitations along both sides of Runway 7-25, there is not enough space for a traditional run-up area to be located on the current airport property. Run-up areas could be included at the Runway 25 end of the future parallel taxiways; however, this would require additional impacts to Tampa Bay. Inboard run-up areas are not possible given there is not enough space between the future ADG II taxiways and runway without impacting the Future Runway Obstacle Free Zone (FROFZ).

The alternate option of bypass taxiways for both ends of Runway 7-25 was also considered. Additional connector taxiways with a 105 foot centerline separation from the end connectors would support simultaneous ADG II operations; unfortunately for SPG's airfield geometry, very limited bypass capability would be created. Due to the location of the future ADG II holding position lines for Runway 7-25, any aircraft holding short on a connector taxiway would be within the parallel taxiway environment. In other words, there would not be enough space for an aircraft taxiing on the parallel taxiway to pass another aircraft holding short on a second connector before the end connector. Only in those situations were an aircraft could reach one of the connectors without passing another aircraft holding short would the dual connectors provide any sort of bypass capability. Therefore, no bypass connector taxiways are recommended.

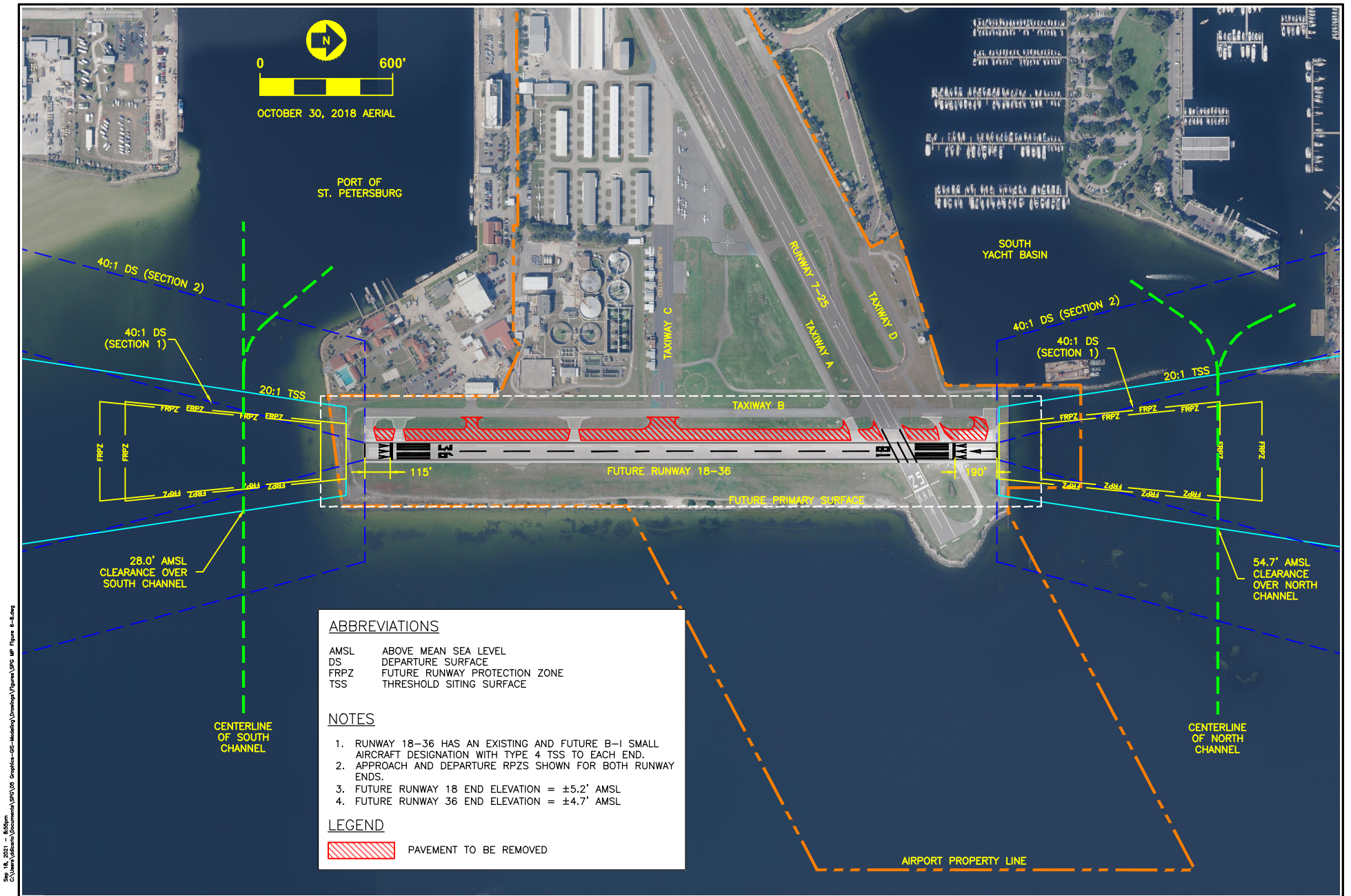
6.3.6 Inclusion of Runway 18-36 Improvements

For Runway 18-36, the current and future critical aircraft category is B-I small aircraft. While the FAA methodology recommends a length of 3,600 feet for Runway 18-36, the ability to extend this crosswind runway is not considered realistic due to the physical constraints off each end of the runway. In 2020, the project to rehabilitate the runway pavement began with the design based on the FAA recommendation from the December 2006 Runway Safety Area Determination Study to apply declared distances in order to address the non-standard RSAs off each end of the runway.

The recent Runway 18-36 rehabilitation project, illustrated in **Figure 6-8**, shifted the runway centerline east to increase the distance between the south half of the runway and existing facilities to the west. The 25 foot centerline shift occurred within the existing 150 foot wide pavement section with 50 feet of the pavement being removed from the west side of the runway. This allowed the final rehabilitated runway to be 75 feet wide with 12.5 foot paved shoulders on each side. The corresponding shift in the RSA slightly altered the declared distances required that were previously calculated in the facility requirements chapter.

For takeoffs and landings on Runway 18, there is only 125 feet of full width RSA available beyond the runway end; therefore, the ASDA and LDA must both be reduced by 115 feet to provide the required 240 foot RSA at the end of the runway. For takeoffs and landings on Runway 36, there is only 50 feet of full width RSA available beyond the runway end; therefore, the ASDA and LDA must both be reduced by 190 feet.

For landings on Runway 18, the threshold must be displaced 190 feet and therefore the LDA reduced the same amount to provide the 240 feet of required RSA prior to the landing threshold since only 50 feet is currently available. Similarly, for landings on Runway 36, the threshold must



ABBREVIATIONS

AMSL ABOVE MEAN SEA LEVEL
 DS DEPARTURE SURFACE
 FRPZ FUTURE RUNWAY PROTECTION ZONE
 TSS THRESHOLD SITING SURFACE

NOTES

1. RUNWAY 18-36 HAS AN EXISTING AND FUTURE B-1 SMALL AIRCRAFT DESIGNATION WITH TYPE 4 TSS TO EACH END.
2. APPROACH AND DEPARTURE RPZS SHOWN FOR BOTH RUNWAY ENDS.
3. FUTURE RUNWAY 18 END ELEVATION = ±5.2' AMSL
4. FUTURE RUNWAY 36 END ELEVATION = ±4.7' AMSL

LEGEND

PAVEMENT TO BE REMOVED

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Source: ESA, 2021.

Albert Whitted Airport Master Plan

FIGURE 6-8
 IMPROVEMENTS TO RUNWAY 18-36 (B-1 SMALL AIRCRAFT)

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be displaced 115 feet and therefore the LDA reduced the same amount to provide the 240 feet of required RSA prior to the landing threshold since only 125 feet is currently available.

The Runway 18-36 declared distance calculations after the centerline was shifted 25 feet east during the rehabilitation project are included in **Table 6-4**. As before, these distances were calculated using data from the November 19, 2018 runway survey and features of the environment surrounding the runway from the AGIS data.

**TABLE 6-4
DECLARED DISTANCES CALCULATED FOR REHABILITATED RUNWAY 18-36**

	TORA	TODA	ASDA	LDA
Runway 18	2,864'	2,864'	2,749'	2,559'
Runway 36	2,864'	2,864'	2,674'	2,559'

SOURCE: Calculations based on November 19, 2018 runway survey, AGIS data, and shift of the Runway 18-36 centerline 25 feet east as part of the pavement rehabilitation project.

6.3.7 Recommended Airfield Improvements

Due to the recent improvements to Runway 18-36, the recommended airfield improvements focus on the need to improve Runway 7-25 for both the current and future critical aircraft. **Table 6-5** summarizes the key requirements for Runway 7-25 addressed and evaluated in this study.

**TABLE 6-5
SUMMARY OF RUNWAY 7-25 REQUIREMENTS**

	Ability of Existing Airfield to Meet Requirements		
	Previous (B-I SA ^a)	Current (A-II SA ^a)	Future (B-II)
Runway Safety Area	✓	✗ (off-airport)	✗ (off-airport)
Runway Object Free Area	✓	✗ (off-airport)	✗ (off-airport)
Runway Protection Zone	✓ (incompatible uses ^b)	✓ (incompatible uses ^b)	✗ (incompatible uses ^c)
20:1 Threshold Siting Surface	✗ (penetrations ^d)	✗ (penetrations ^d)	✗ (penetrations ^d)
40:1 Departure Surface	✗ (obstacles)	✗ (obstacles ^e)	✗ (obstacles ^e)
Parallel Taxiway Offset	✓	✗ (150' - 200' versus 240')	✗ (150' - 200' versus 240')
Parallel Taxiway Object Free Areas	✓	✗ (obstructions)	✗ (obstructions)
Runway Length	✓	✗ (another 163' required)	✗ (another 563' required)

NOTES:

- a. SA = Small aircraft category with maximum certificated takeoff weight of 12,500 pounds or less.
- b. While off-airport property, the Approach and Departure RPZs on the Runway 7 end have not changed in size or location; therefore, the FAA does not require a formal RPZ Alternatives Analysis and the FAA will work with the airport to remove or mitigate the existing incompatible uses as practical.
- c. Formal RPZ Alternative Analysis required since both the Approach and Departure RPZs on the Runway 7 end will increase in size.
- d. Newer survey data indicated a few penetrations to the current 20:1 Runway 7 Threshold Siting Surface exist. Risk of penetrations to the current 20:1 Runway 25 Threshold Siting Surface due to occasional recreational boats traversing the open water of Tampa Bay just east of the airport.
- e. Future obstacles to the 40:1 Departure Surface will depend on the final runway configuration and obstruction survey at the time of design.

SOURCE: ESA, 2022.

Due to the various challenges at SPG to accommodate both the current and future critical aircraft, the recommended airfield improvements have been split into those that need to be addressed as soon as possible (short-term) and those that would accommodate the future requirements in the best case scenario.

Short-Term Plan to Address Current Critical Aircraft Requirements

Given the additional analyses and time required to advance the ultimate recommended airfield alternative, an intermediate plan is required to address the current critical aircraft requirements. To the extent possible, this would include the elements described in the following sections.

Revised Declared Distances

The easiest way to bring the RSA and ROFA required for the current critical aircraft (A-II small aircraft) on-airport property is to revise the declared distances published for Runway 7-25. This was described as part of the section identifying the initial options considered for Runway 7-25; with calculations included in **Table 6-1** and the surfaces depicted on **Figure 6-2**. However, this section also noted that in order to accommodate the required RSA on the east end of the runway; the Runway 25 threshold would have to be displaced an additional 7 feet. This in turn would require the existing runway lighting, marking, and landing aids to be modified.

Further evaluations of the refined Runway 7-25 alternatives revealed that there were also three penetrations to the 20:1 TSS required for Runway 7. This was based on the AGIS data obtained as part of this study, which showed the greatest of these penetrations at 2.6 feet (see **Figure 6-5**). To eliminate this, an additional displacement of the current Runway 7 threshold by at least 52 feet would be required. Overall, this would have a minimal impact on the declared distances calculated in **Table 6-1** since it would only reduce the current published Runway 7 Landing Distance Available by 52 feet. However, as with the Runway 25 end, an additional displacement of the Runway 7 threshold would require the existing lighting, marking, landing aids, and instrument approach procedures to be modified. At a minimum, the additional displacements of both runway end thresholds would require the following:

- ➔ Remarking of the entire runway surface.
- ➔ Reconfiguration of the Medium Intensity Runway Lights (MIRL) system.
- ➔ Relocation of the Runway 7 and Runway 25 outboard threshold lights to the intermediate displaced threshold locations.
- ➔ Relocation of the Runway 7 and Runway 25 unidirectional Runway End Identification Lights (REIL) to the intermediate displaced threshold locations.
- ➔ Potential relocation of the Runway 7 and Runway 25 Precision Approach Path Indicator (PAPI) systems (depends on whether the existing units could be aimed properly for the intermediate threshold locations).
- ➔ Revision to the non-precision approaches (RNAV/GPS LNAV) to Runway 7 and other aeronautical publications for the airport.

To properly revise the current declared distances, a specific runway end survey should be conducted first to formally establish any penetrations to the existing 20:1 TSS for Runway 7. This survey would also provide the data necessary to update the Takeoff Obstacle Notes currently published for departures on Runway 25. Additionally, the area around the east end of the runway needs to be

surveyed to determine the amount of displacement required to provide a standard RSA. A project to conduct this survey and to modify the existing runway lighting, marking, landing aids, and instrument approach procedures will be included in the short-term planning program. For the purposes of this study, **Table 6-6** provides the intermediate declared distances for the Airport Layout Plan (ALP) Drawing set and to prepare an updated Runway 7-25 RSA Determination. The required short-term displacements of the Runway 7 and Runway 25 thresholds, as well as the corresponding changes to the required runway surfaces, are depicted on **Figure 6-9**.

**TABLE 6-6
INTERMEDIATE DECLARED DISTANCES FOR RUNWAY 7-25**

	TORA	TODA	ASDA	LDA
Runway 7	3,646'	3,646'	3,376'	2,797'
Runway 25	3,180'	3,180'	3,312'	3,042'

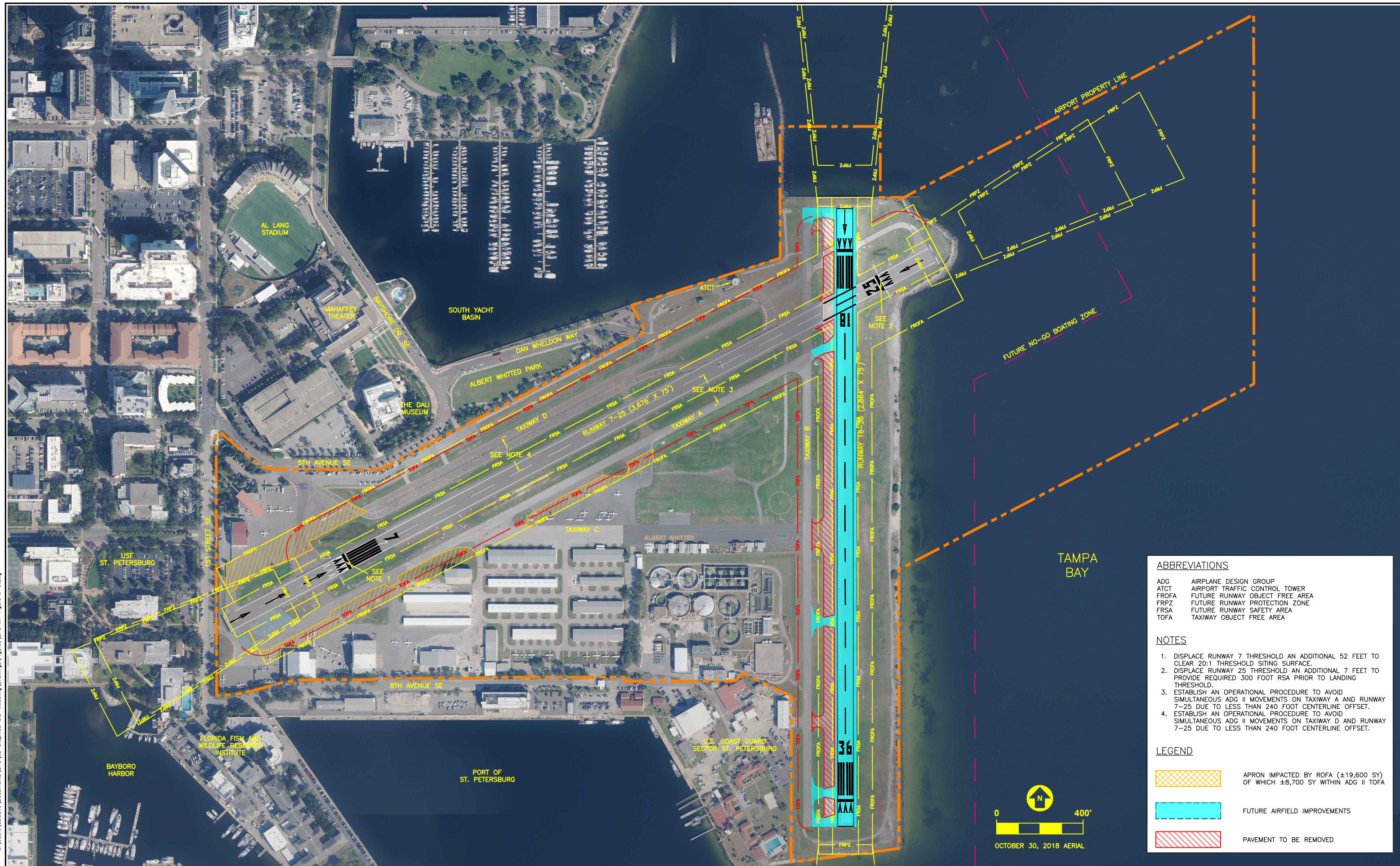
NOTES: Based on existing A-II small aircraft design standards and the additional threshold displacements calculated as needed for each runway end (Runway 7 at 52 feet and Runway 25 at 7 feet).

SOURCE: Calculations based on November 19, 2018 runway survey and AGIS data.

Impacts to Existing Aircraft Parking Apron Space

As noted in the section comparing the initial Runway 7-25 options; once declared distances are applied as shown in **Table 6-6**, the ROFA will impact 19,600 SY of aircraft parking apron space. This will create a significant impact to the airport since it represents more than half of the 36,600 SY of apron space available today. Additionally, the facility requirements demonstrated that another 16,600 SY would be required by the end of the 20-year planning horizon. For these reasons, the project to establish the declared distances as shown in **Table 6-6** should also include exploring the potential of establishing a MOS for some or all of the apron areas that would fall within the ROFA (e.g. some of these areas could be utilized for apron edge taxilanes). The impact to the existing aprons space will also need to be considered as part of the Financial Feasibility Study / Benefit Cost Analysis associated with the long-term plan to improve Runway 7-25.

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ABBREVIATIONS

ADG	AIRPLANE DESIGN GROUP
ATCT	AIRPORT TRAFFIC CONTROL TOWER
FROFA	FUTURE RUNWAY OBJECT FREE AREA
FRPZ	FUTURE RUNWAY PROTECTION ZONE
FRSA	FUTURE RUNWAY SAFETY AREA
TOFA	TAXIWAY OBJECT FREE AREA

- NOTES**
1. DISPLACE RUNWAY 7 THRESHOLD AN ADDITIONAL 52 FEET TO CLEAR 20:1 THRESHOLD SITING SURFACE.
 2. DISPLACE RUNWAY 25 THRESHOLD AN ADDITIONAL 7 FEET TO PROVIDE REQUIRED 300 FOOT RSA PRIOR TO LANDING THRESHOLD.
 3. ESTABLISH AN OPERATIONAL PROCEDURE TO AVOID SIMULTANEOUS ADG II MOVEMENTS ON TAXIWAY A AND RUNWAY 7-25 DUE TO LESS THAN 240 FOOT CENTERLINE OFFSET.
 4. ESTABLISH AN OPERATIONAL PROCEDURE TO AVOID SIMULTANEOUS ADG II MOVEMENTS ON TAXIWAY D AND RUNWAY 7-25 DUE TO LESS THAN 240 FOOT CENTERLINE OFFSET.

LEGEND

	APRON IMPACTED BY ROFA (±19,600 SY) OF WHICH ±8,700 SY WITHIN ADG II TOFA
	FUTURE AIRFIELD IMPROVEMENTS
	PAVEMENT TO BE REMOVED



Protecting the Surfaces to Runway 25

The ability of either establishing a marine channel or no-go boating zone around the existing approach end of Runway 25 needs to be addressed. The depth of Tampa Bay just east of the airport property limits the vessels capable of traversing beneath the existing 20:1 TSS for Runway 25 to recreational boats and sailboats going into and out of the St. Petersburg Marina's South Yacht Basin (north channel on **Figure 6-8**). While the size of these boats can vary, a height of 55 feet AMSL needs to be considered for protecting the existing and future 20:1 TSS for Runway 25 (this represents the larger sailboat mast heights at the marina). Therefore, given the existing and proposed Runway 25 end elevation of 5.8 feet AMSL, the area beneath the existing and future 20:1 TSS needs to be protected out a minimum of 1,000 feet. In order to do so, the establishment of a channel or no-go boating zone around this area needs to be coordinated with the U.S. Coast Guard and marine patrol agencies.

Currently Runway 25 requires a Type 2 TSS (visual serving small airplanes) which will change to a Type 3 TSS (visual serving large airplanes) with the runway's future critical aircraft. Therefore, any channel or no-go boating zone off the east end of Runway 25 should be based on the larger Type 3 surface out to 1,000 feet to protect for 50 foot obstacles (55 foot AMSL sailboat mast height minus the 5.8 foot AMSL Runway 25 threshold). A no-go boating zone is depicted on **Figure 6-9** for the short-term airfield improvements. In addition to protecting the Type 3 TSS to the short-term displacement of Runway 25, the no-go boating zone also includes the areas where obstacles 50 feet above the water would penetrate the CFR Part 77 Transitional Surfaces to both runways.

Establish Operational Procedures for Parallel Taxiways

Operational procedures for both Taxiways A and D need to be established as soon as possible since neither taxiway can provide the full ADG II standards required by the current critical aircraft (A-II small aircraft). The operational procedures need to be based on the following:

Existing Taxiway A

Full ADG II TOFA; however, the runway to taxiway centerline separation is only 150 feet versus the required 240 feet. An operational procedure needs to be developed that addresses the fact that ADG II aircraft cannot simultaneously use Runway 7-25 and Taxiway A.

Taxiway D

Full ADG II TOFA; however, the runway to taxiway centerline separation is only 175 feet for the majority of its length with the exception of the section to the east of Taxiway B, which is offset 200 feet. An operational procedure needs to be developed that addresses the fact that ADG II aircraft cannot simultaneously use Runway 7-25 and Taxiway D.

Notes summarizing the need for these operational procedures are included on **Figure 6-9**, as well as the ALP Drawing set. In addition, **Figure 6-9** documents that of the 19,600 SY of aircraft parking apron space impacted by the short-term ROFA; 8,700 SY would be within the ADG II TOFA associated with Taxiways A and D (again perhaps some of these areas could be utilized for apron edge taxilanes).

Long-Term Plan to Address Future Critical Aircraft Requirements

It is expected that SPG will become a B-II airport well within the first half of the 20-year planning horizon. There are a number of B-II aircraft operations currently occurring at the airport and since the activity forecasts were approved, B-II aircraft (Pilatus PC-24 and Cessna Citation 560) have been based at SPG and there have been inquiries about basing other B-II aircraft at the airport when additional hangar space is available. Therefore, the recommended improvements for Runway 7-25 must include the ability to accommodate B-II aircraft design standards as soon as possible; however, as noted previously, the ability to do so will require additional analyses and time to advance the ultimate recommended airfield alternative.

The primary difference between the final Runway 7-25 alternatives (**Figures 6-6A** through **6-6C**) is the ability to support the 4,000 foot runway length of the future critical aircraft. While only 3,600 feet of takeoff length is required today, FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*, states that expansion consideration for runways serving small aircraft must be given to accommodate airplanes of more than 12,500 pounds. Specifically, the FAA guidance states:

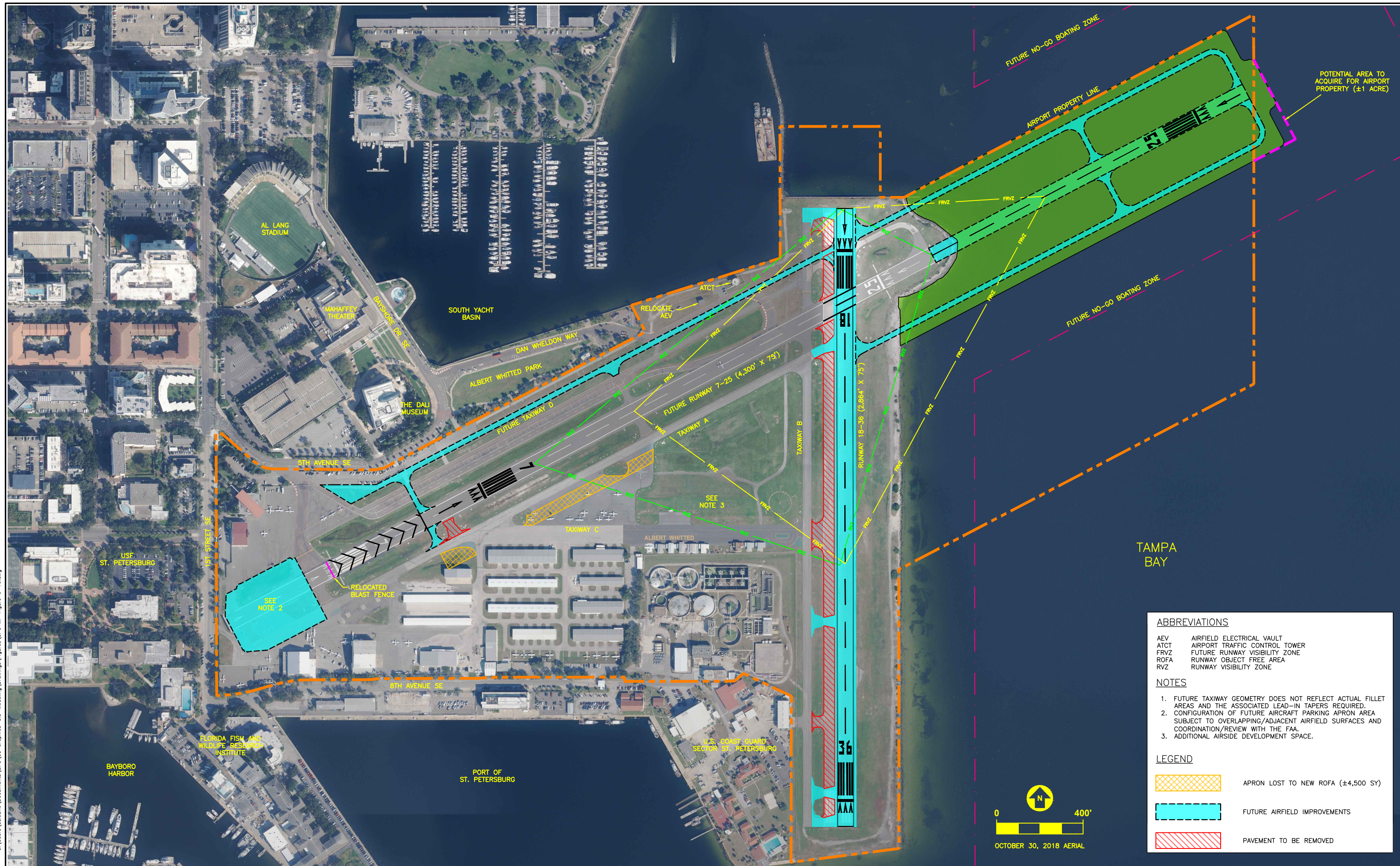
“Failure to consider this change during an initial development phase may lead to the additional expense of reconstructing or relocating facilities in the future.”

Therefore, the alternative to extend Runway 7-25 east by 1,640 feet with displaced thresholds as depicted previously in **Figure 6-6C** is the ultimate recommended alternative to provide the runway improvements identified in this study. The only difference in the ultimate configuration recommended for Runway 7-25 and the alternative depicted in **Figure 6-6C** is that the departure end of the runway for takeoffs on Runway 25 would be moved an additional 200 feet east. This was described in the revised alternatives for Runway 7-25 to minimize the number of obstacles to the 40:1 Departure Surface extending west from the runway. While this alternative is the best for enhancing safety and providing the operational design standards, it will still require a formal RPZ Alternative Analysis per the FAA’s current *Interim Guidance on Land Uses Within a Runway Protection Zone* issued in September of 2012. Given the scale of the project, the FAA has stated that it will need to be evaluated financially, which would include a Financial Feasibility Study / Benefit Cost Analysis, prior to the formal RPZ analysis. Moreover, the project will also require the National Environmental Policy Act (NEPA) environmental review process managed by the FAA.

As noted previously, displacing the Runway 7 threshold east reduces the amount of existing aircraft parking apron impacted; unfortunately, due to the FROFZ the apron area recently constructed around the hangar just south of Taxiway A3 will be impacted. The recommended Runway 7-25 improvements will also move the Runway Visibility Zone (RVZ) such that an additional 2.5 acres could be developed to the east of the mid-field apron. This gain, given the impacts to the existing apron space is a critical issue to consider at an airport that is so space constrained. **Figure 6-10** combines the recommended long-term Runway 7-25 alternative with the other airfield improvements, including those recently completed for Runway 18-36.

Figure 6-10 also notes that some additional area within Tampa Bay may need to be acquired as part of the airport property. This will depend on the configuration of the runway, the parallel

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ABBREVIATIONS

AEV	AIRFIELD ELECTRICAL VAULT
ATCT	AIRPORT TRAFFIC CONTROL TOWER
FRVZ	FUTURE RUNWAY VISIBILITY ZONE
ROFA	RUNWAY OBJECT FREE AREA
RVZ	RUNWAY VISIBILITY ZONE

NOTES

1. FUTURE TAXIWAY GEOMETRY DOES NOT REFLECT ACTUAL FILLET AREAS AND THE ASSOCIATED LEAD-IN TAPERS REQUIRED.
2. CONFIGURATION OF FUTURE AIRCRAFT PARKING APRON AREA SUBJECT TO OVERLAPPING/ADJACENT AIRFIELD SURFACES AND COORDINATION/REVIEW WITH THE FAA.
3. ADDITIONAL AIRSIDE DEVELOPMENT SPACE.

LEGEND

	APRON LOST TO NEW ROFA (±4,500 SY)
	FUTURE AIRFIELD IMPROVEMENTS
	PAVEMENT TO BE REMOVED

Source: ESA, 2022.

Albert Whitted Airport Master Plan
FIGURE 6-10
 RECOMMENDED LONG-TERM AIRFIELD IMPROVEMENTS

taxiway geometry, and footprint required for a stabilized shoreline around the ultimate, proposed improvements. Finally, it should be noted that the recommended improvements to Runway 7-25 do not reflect any commitment on the part of the FAA or FDOT, rather the preference of the airport sponsor. It is acknowledged that the acceptance, approval, and any potential funding will require additional review to address the environmental challenges and requirements outlined in the following section.

Environmental Challenges and Requirements

Existing environmental documentation was reviewed to provide an overview of the challenges and requirements associated with the ultimate recommended airfield improvements. The information collected is summarized below to include wetland quality and quantity; potential listed species occurrence; existing and prior permits within the project area; the environmental constraints and/or permits required; the related environmental authorizations and actions; and a brief discussion on the expected mitigation.

Potential impacts associated with a runway extension into the bay would have to be studied to determine the effects on water quality and tidal flows, including flushing. Water with increased sediments could impact biota and possibly affect existing channel depths. Mitigation for in-water impacts will be the key issue for any runway extension into Tampa Bay. This will require coordination with a number of local stakeholders including Tampa Bay Estuary Program, Tampa Bay Watch, and USFSP. It is also expected to heighten the public's interest in the project. That said, it should be noted that some are curious whether the recommended improvements to Runway 7-25 might create beneficial results to other portions of the City's downtown waterfront facilities. Specifically, the extended runway has the potential to provide an improved breakwater for the channel that serves the City's marina facilities as well as provide additional erosion protection for the shorelines north of the airport, to include elements of the new pier. The recommended improvements may also have some benefits including facilitating hardening of portions of the City's existing downtown shoreline, making it more resilient, increasing protection from wave-induced erosion, major storm events, and even sea level rise. This would be subject to a detailed analysis that would be conducted as part of the overall NEPA review. As part of the NEPA process, an Environmental Assessment (EA) would most likely be required, for the proposed improvements. However, given the location and resources that could be involved, it is possible that an Environmental Impact Statement (EIS) would be warranted.

In general, the NEPA process will require more public engagement, public workshops, and additional stakeholder outreach in order to develop a favorable mitigation plan for the proposed improvements. All of the NEPA categories will need to be addressed for the potential extension of Runway 7-25 into Tampa Bay which includes, but may not be limited to:

- ➔ Air Quality – Impacts anticipated to be insignificant.
- ➔ Biological Resources (including fish, wildlife, and plants) - Impacts to species under the regulation of National Oceanic and Atmospheric Administration (NOAA) Fisheries will need to be addressed. This will include an Essential Fish Habitat (EFH) Assessment for species including, but not limited to, the Smalltooth Sawfish (*Pristis pectinata*).
- ➔ Climate – It is anticipated that climate change impacts will need to be addressed for the proposed improvement activities including, but not limited to, sea level rise, coastal resiliency, and Green House Gas (GHG) emissions review.
- ➔ Coastal Resources – Will require coordination with NOAA for improvement impacts within Tampa Bay, which will also include state coordination and the preparation of a detailed Coastal Consistency Determination.
- ➔ Department of Transportation Act, Section 4(f) – Direct improvement impacts are not anticipated; however, an evaluation of indirect impacts to adjoining 4(f) resources will be required, including impacts related to noise exposure.
- ➔ Farmlands – Not applicable.
- ➔ Hazardous Materials, Solid Waste, and Pollution Prevention - This area of environmental investigation may require sediment sampling within the project area along with discussions of material to be used for in-water fill and construction.
- ➔ Historical, Architectural, Archeological, and Cultural Resources - Analyses will require some level of Section 106 consultation and preparation of a Cultural Resource Assessment Survey (CRAS) for submerged resources within the project limits of the proposed extension of Runway 7-25 into Tampa Bay (if a CRAS has not been previously performed within this area). In addition, Section 106 consultation is anticipated in order to address indirect impacts due to the proposed improvement activities to cultural resources, such as adjacent historical structures. This consultation would also consider any indirect effects associated with potential noise associated with the proposed displacement of the Runway 7 threshold and extending the runway east.
- ➔ Land Use – Will need to be consistent with local plans.
- ➔ Natural Resources and Energy Supply – Impact anticipated to be insignificant.
- ➔ Noise and Compatible Land Use - A noise analysis of any potential changes in flight patterns and use will be required to determine if surrounding communities would be adversely affected by the runway extension.

- ➔ Socioeconomics, Environmental Justice, and Children’s Environmental Health and Safety Risks - At this time, it is believed there would be a reduced incompatible land use impact (from existing), specifically to the USFSP facilities, due to the potential for the various airspace and protective surfaces for Runway 7-25 moving east with the proposed improvements.
- ➔ Visual Effects (including light emissions) - This will be reviewed for both impacts to surrounding uses and for lighting related to natural resources, including sea turtle nesting beaches.
- ➔ Water Resources (including wetlands, floodplains, surface waters, groundwater, and both wild and scenic rivers) –Proposed impacts to Waters of the U.S. (WOTUS) and other water resources will require detailed analyses (including environmental alternatives analysis) that identify that consistent with Section 404 and Section 10 of the Clean Water Act, the recommended alternative represents the Least Environmentally Damaging Practicable Alternative. In addition, resources, impacts, and mitigation planning will require significant analyses to include, but not limited to:
 - floodplain impacts;
 - water quality (including state water quality certification);
 - impacts to submerged resources, including seagrass (Pinellas County Aquatic Preserve);
 - National Pollutant Discharge Elimination System (NPDES) compliance;
 - and listed species evaluations and agency concurrence (may include incidental take).

In addition to a thorough evaluation through the NEPA process, the proposed project will require several permits and authorizations. From an environmental standpoint, these include:

- ➔ Listed species coordination, including development of a Biological Assessment, through both NOAA Fisheries and U.S. Fish and Wildlife Service (USFWS) for sea turtle, EFH species, Smalltooth Sawfish, and other protected species that may occur in the project area.
- ➔ Environmental Resource Permit (ERP) from Southwest Florida Water Management District (SWFWMD) / water quality certification.
- ➔ Section 404 / 10 Permit from the U.S. Department of the Army, Corps of Engineers (USACE).
- ➔ State Lands / Board of Trustees proprietary authorization or concurrence regarding sovereign submerged lands.
- ➔ Local government concurrence from the City of St. Petersburg and Pinellas County.
- ➔ Navigation coordination related to in-water activities with the U.S. Coast Guard and marine patrol agencies (re-establish a marine channel or no-go boating zone around the 20:1 TSS to the ultimate Runway 25 end and other airfield surfaces).

Potential Limitation of Future Taxiway D

On the north side of Runway 7-25, the proposed relocation of Taxiway D to provide the full ADG-II standards is required. While this project would require the relocation of the airfield electrical vault out of the future TOFA, the overlap of the future TOFA with the ATCT site (only a few feet) may not be an issue once the more detailed design has started and the newer FAA AC 150/5300-13B ADG II TOFA (reduced from 131 feet to 124 feet) is applied. However, if there is still an overlap of the future TOFA with the ATCT site then the project would require a MOS or the development and approval of an operational procedure limiting the wingspan of the aircraft capable of using the taxiway based on how much the ATCT site actually impacts the future TOFA. Notes summarizing these options are included on the ALP Drawing set.

Summary of Airfield Improvements

Table 6-7 summarizes how the immediate (short-term) and recommended long-term airfield improvements could accommodate the current and future critical aircraft requirements.

**TABLE 6-7
PROPOSED AIRFIELD IMPROVEMENTS**

	Immediate Improvements for Current (A-II SA ^a)	Ultimate Improvements for Future (B-II)
Runway Safety Area	✓	✓
Runway Object Free Area	✓ (impacts apron areas)	✓ (impacts apron areas)
Runway Protection Zone	✗ (incompatible uses ^b)	✓ (on-airport ^b)
20:1 Threshold Siting Surface	✓	✓
40:1 Departure Surface	✗ (obstacles ^c)	✗ (obstacles ^c)
Offset of Parallel Taxiways	✓ (operational limitations)	✓ (operational limitations)
Taxiway Object Free Areas	✓ (operational limitations)	✓ (operational limitations)
Runway Length	✗	✓

NOTES:

- a. SA = Small aircraft category with maximum certificated takeoff weight of 12,500 pounds or less.
- b. Formal RPZ Alternative Analysis required since the Approach and Departure RPZs on the Runway 7 end have either changed location or increased in size.
- c. Future obstacles to the 40:1 Departure Surface will depend on the final runway configuration and obstruction survey at the time of design.

SOURCE: ESA, 2022.

It should be noted that the surfaces of the intermediate (short-term) improvements are not depicted on the ALP Drawing set. Not only would they create too many lines on the drawings depicting the various surfaces, but they also fall between the protected surfaces depicted for the current airfield and future runway improvements proposed.

6.4 General Aviation Facilities

Only a few areas on the north and south sides of Runway 7-25 are available for the development of new facilities. For the south side this includes the northern third of the Albert Whitted Water Reclamation Facility (WRF) site. These areas have been evaluated to determine their ability to accommodate the different types of aviation facilities required over the 20-year planning horizon. The key objective was to create a plan where the limited remaining airport land would be reserved for the highest and best use to support the facilities needed by the end of the 20-year planning period. From the facility requirements chapter, these include:

- T-hangars (60 additional units)
- Clearspan Hangars (to accommodate 25 new aircraft)
- Aircraft Parking Apron Space (additional 16,600 SY)

6.4.1 Elements for Concept Development and Evaluation

The following sections outline features and considerations applied to the development and evaluation of the potential general aviation facility alternatives.

Hangar Characteristics

As noted in the facility requirements, the additional T-hangars would accommodate a majority of the based single-engine and some multi-engine aircraft. The T-hangars included in the different concepts are based on the Erect-A-Tube N54-42 nested T-hangar building which is 54 feet wide by 231 feet long for a ten unit structure. This is nearly identical in size to Fulfab's LK42 nested T-hangar building, both of which have an overall height under 20 feet. These popular T-hangar buildings can accommodate aircraft with a wingspan up to 41.5 feet and tail height of 12 feet in each unit. T-hangars of this size were used since they can accommodate a number of the most common single-engine and smaller multi-engine (piston and turboprop) aircraft. Each configuration reflects taxilanes with the minimum width of 25 feet and object free area of 79 feet required for ADG I and TDG 1A/B standards.

For the additional clearspan hangar space, the facility requirements identified the need for both small and large clearspan hangars as most would be utilized by the future based multi-engine and jet aircraft, as well as some rotorcraft. Plans for the larger hangars consider the fact that most will provide storage for a mix of aircraft types, some will support specific services such as aircraft maintenance, and others will serve as private facilities. Thus a key element in developing concepts for such facilities is flexibility and the ability to support the larger ADG II aircraft in the operational fleet mix.

Buildings Elevations and Setbacks

Figure 6-1 illustrated the airfield constraints that were established prior to this master plan study. These included the most critical airfield design surfaces and imaginary surfaces; most of which will need to increase in size due to the changes in the current critical aircraft for the airport. While these and other physical limitations must be taken into consideration for the potential development or redevelopment of airfield facilities, there are other elements that need to be addressed. Of key significance is the base flood elevations (BFE) from the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) described in environmental overview chapter and depicted on **Figure 5-4**. Depending on the type and designation of a facility, the BFEs can affect the minimum finished floor elevation (FFE) required.

On August 24, 2021, Pinellas County officially adopted the newest FIRM from FEMA. Not only did these newer maps increase the BFEs associated with the airport property, they also depict the Limit of Moderate Wave Action (LiMWA) line. As shown on **Figure 5-4**, most of the airport property is Zone AE. The LiMWA effectively splits the Zone AE into two portions. The side towards Zone VE (or Tampa Bay) indicates the portion where wave heights can be between 1.5 and 3 feet, while the inland portion shows where wave heights would be less than 1.5 feet during a base flood event. Due to the higher risk of damage from waves to structures in Zone AE, FEMA encourages the practice of building to Zone VE standards within the LiMWA.

While the exact implications of the LiMWA to the construction of future aircraft hangars is not fully known, the ultimate FFE required will be an important consideration as the FAA has centerline longitudinal gradient standards for both taxiways/taxilanes and maximum allowable surface grades for aircraft parking aprons. For facilities like SPG which serve Aircraft Approach Categories (AAC) A and B, the maximum allowable longitudinal surface gradient for taxiways and taxilanes is 2.0 percent. Similarly, aircraft parking aprons can only have a maximum 2.0 percent grade in any direction. The longitudinal and surface gradient standards combined with the minimum FFE for each development site determines the offset needed between proposed aviation facilities and the existing airfield pavements. For a 2.0 percent grade, a 50 foot of offset is needed for every foot of elevation difference between a hangar or apron and the taxiway/taxilane the facility would tie into. Depending on the ultimate layout, features, type, and/or designation of hangar, the required FFE and related offsets could alter the configuration of the hangar facilities included in the various concepts.

Evaluation Criteria

A number of attributes are utilized to evaluate when an area of the airport is capable of accommodating different future development options. The following outlines the overall criteria of those applied to the different general aviation facilities considered.

Airside Access - how each site ties into the ultimate airfield configuration for aircraft operations.

Compatibility with Adjacent Uses – the positive or negative impact a proposed facility might have on existing features, whether airport or community related. Both compatible use and the potential impacts were included as part of the Airport Sustainability Baseline (**Appendix E**).

Flexibility of Configuration - ability to accommodate the initial demand while also preserving the option to accommodate changing needs over the 20-year planning horizon.

Potential Environmental Impact – identification of whether a proposed concept will impact any features documented in the environmental overview chapter.

Landside Access – ability to provide tenants and customers with roadways and automobile parking for facilities.

Constructability – considers if a proposed improvement creates any impacts to existing facilities or airfield operations.

6.4.2 North Side of Runway 7-25

Due to the need to provide an ADG II parallel taxiway on the north side of Runway 7-25 (**Figure 6-10**) and the building setbacks from Runway 7-25, there is very little space remaining for future facilities. In fact, because of this limited space, the option to construct T-hangars is not viable. Similarly, any additional aircraft parking apron would be minimal. However, in the northwest corner by the General Aviation Terminal, there is the ability to develop an additional clearspan hangar as shown on **Figure 6-7B**. Development of this hangar would be dependent upon the ability to be able to provide additional aircraft parking apron space to the west of the relocated Runway 7 threshold (also shown in **Figure 6-7B**).

A small parcel also exists north of the future ADG II parallel Taxiway D, between the airfield electrical vault and Albert Whitted Park. However, due to the size of this site, the building setbacks from Runway 7-25, and the fact that the only landside access to this site is off Dan Wheldon Way (through the park), it is not recommended for any future aviation related development. A consolidated airport maintenance facility was considered for this area; however, since airport maintenance requires regular deliveries of supplies and equipment; this activity is not considered compatible with the park. Therefore, this site should be reserved as a potential future location for the Albert Whitted Airport Preservation Society and/or Civil Air Patrol, should one or both of these organizations desire additional space to relocate and/or expand their current facilities. It should be noted however that due to the required setbacks from Runway 7-25, the height of any facilities in this area may be limited.

The proposed facilities on the north side of Runway 7-25 are shown on the overall recommended airport development plan (**Figure 6-14**) at the end of this section.

6.4.3 South Side of Runway 7-25

Given the current plans under the Southwest Hangar Redevelopment program (summarized in **Table 6-8**), there are only three areas for the potential development of additional general aviation facilities on the south side of Runway 7-25. As described in the following sections, two of these will require the redevelopment of existing facilities and the third is dependent upon the proposed improvements to Runway 7-25.

Redevelopment South of Taxiway C

The ability to redevelop south of Taxiway C is limited to the northern third of the WRF site and the area that currently accommodates 8 port-a-port hangars. As noted in the facility requirements, much of Taxiway C is considered a non-movement area and the alignment has only been protected to provide the 79 feet required for an ADG I taxilane object free area (TLOFA). In fact, the newest clearspan hangar, currently under design, just east of the self-serve fuel facility, will be constructed just outside of the ADG I TLOFA.

Figures 6-11 through **6-13** reflect the three concepts created for the south side of Taxiway C to include different combinations of the required general aviation facilities. The figures also reflect the limitations due to the required setbacks from each runway. These setbacks will vary based on the overall height of the individual buildings or parked aircraft proposed. The 20 foot building restriction line (BRL) shown indicates the general limits for the T-hangars and smaller clearspan hangars envisioned in this area. It should be noted that facilities can be located within (BRL) if they are lower than the reference BRL shown. Each of the concepts for south of Taxiway C will require the redevelopment of the decommissioned facilities in the northern third of the WRF site, the removal of the 8 port-a-ports, and the relocation of the Civil Air Patrol trailer.

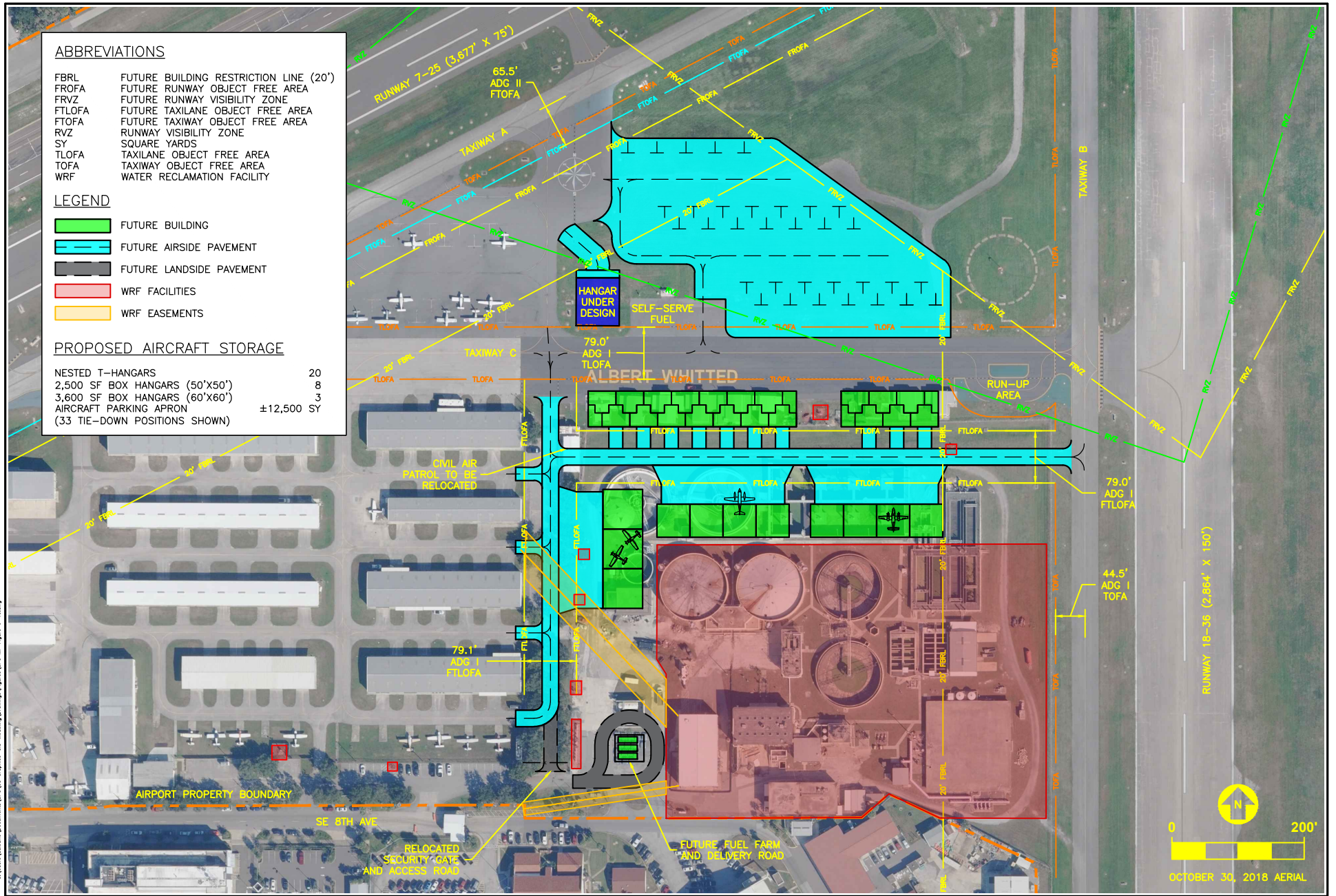
Development North of Taxiway C

As shown on **Figures 6-11** through **6-13**, the current runway visibility zone (RVZ) does not allow any additional facilities to be developed north of Taxiway C. The new clearspan hangar to the east of the self-serve fuel facility will occupy the last parcel that can currently be developed. However, once the recommended improvements to Runway 7-25 are conducted, the future RVZ will create additional space north of Taxiway C for future development. The T-hangars and aircraft parking apron areas considered for this area is also impacted by the required setbacks from the runways.

Redevelopment in Southwest Corner

Once the recommended improvements to Runway 7-25 are conducted, the option to construct additional hangars in the southwest corner of the airport will exist. These facilities are depicted on **Figure 6-14**; however, it should be noted that doing so would eliminate most of the aircraft parking apron space currently in this corner of the airport, as well as a small portion of the new aircraft parking apron space.

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ABBREVIATIONS

FBRL	FUTURE BUILDING RESTRICTION LINE (20')
FROFA	FUTURE RUNWAY OBJECT FREE AREA
FRVZ	FUTURE RUNWAY VISIBILITY ZONE
FTLOFA	FUTURE TAXILANE OBJECT FREE AREA
FTOFA	FUTURE TAXIWAY OBJECT FREE AREA
RVZ	RUNWAY VISIBILITY ZONE
SY	SQUARE YARDS
TLOFA	TAXILANE OBJECT FREE AREA
TOFA	TAXIWAY OBJECT FREE AREA
WRF	WATER RECLAMATION FACILITY

LEGEND

- FUTURE BUILDING
- FUTURE AIRSIDE PAVEMENT
- FUTURE LANDSIDE PAVEMENT
- WRF FACILITIES
- WRF EASEMENTS

PROPOSED AIRCRAFT STORAGE

NESTED T-HANGARS	20
2,500 SF BOX HANGARS (50'X50')	8
3,600 SF BOX HANGARS (60'X60')	3
AIRCRAFT PARKING APRON (33 TIE-DOWN POSITIONS SHOWN)	±12,500 SY

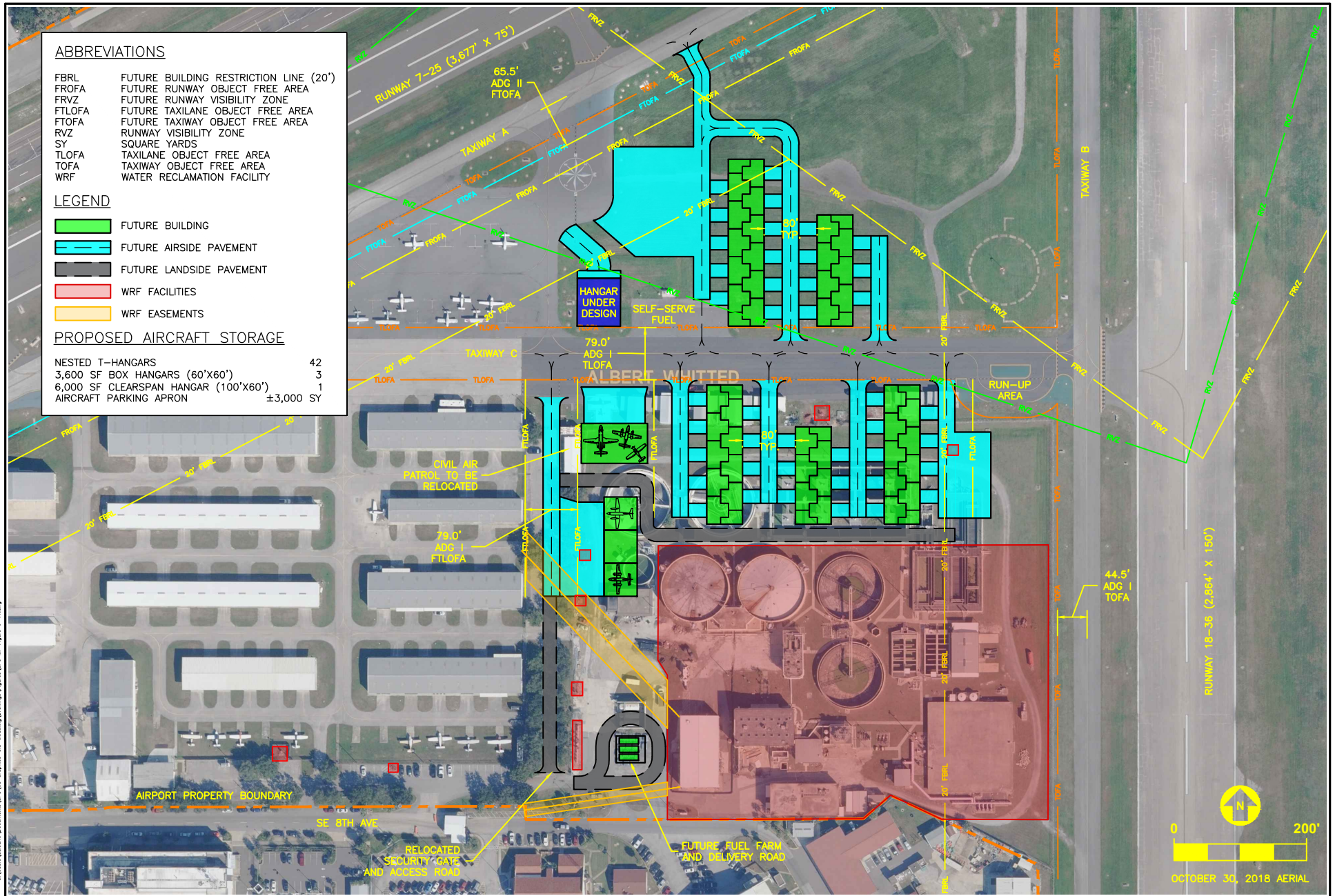
Source: ESA, 2022.

Albert Whitted Airport Master Plan

FIGURE 6-11
SOUTHEAST DEVELOPMENT - CONCEPT A

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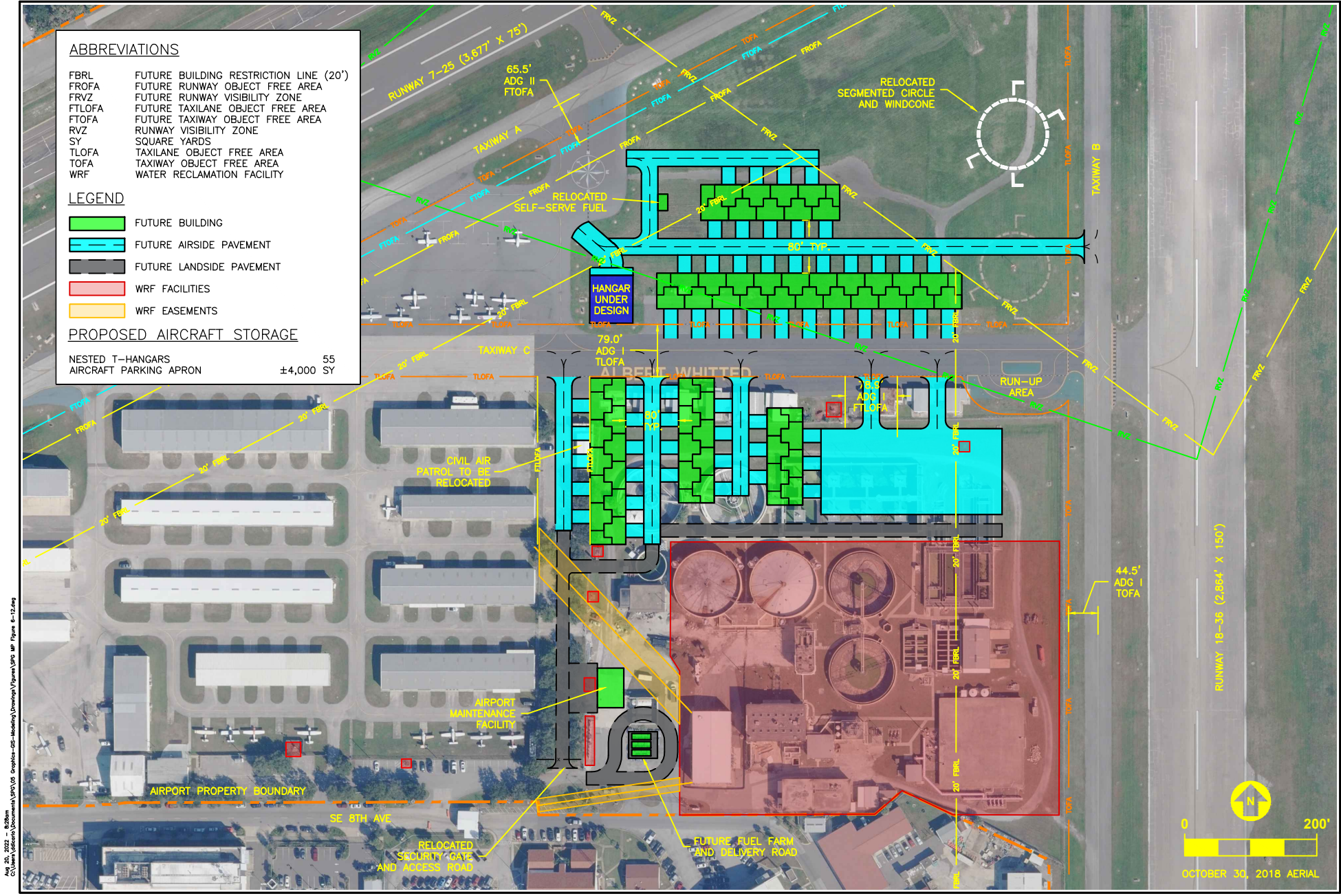


Source: ESA, 2022.

Albert Whitted Airport Master Plan

FIGURE 6-12
SOUTHEAST DEVELOPMENT - CONCEPT B

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ABBREVIATIONS

FBRL	FUTURE BUILDING RESTRICTION LINE (20')
FROFA	FUTURE RUNWAY OBJECT FREE AREA
FRVZ	FUTURE RUNWAY VISIBILITY ZONE
FTLOFA	FUTURE TAXIWAY OBJECT FREE AREA
FTFOFA	FUTURE TAXIWAY OBJECT FREE AREA
RVZ	RUNWAY VISIBILITY ZONE
SY	SQUARE YARDS
TLOFA	TAXIWAY OBJECT FREE AREA
TOFA	TAXIWAY OBJECT FREE AREA
WRF	WATER RECLAMATION FACILITY

LEGEND

- FUTURE BUILDING
- FUTURE AIRSIDE PAVEMENT
- FUTURE LANDSIDE PAVEMENT
- WRF FACILITIES
- WRF EASEMENTS

PROPOSED AIRCRAFT STORAGE

NESTED T-HANGARS	55
AIRCRAFT PARKING APRON	±4,000 SY

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Source: ESA, 2022.

Albert Whitted Airport Master Plan

FIGURE 6-13
SOUTHEAST DEVELOPMENT - CONCEPT C

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6.4.4 Recommended Development Concepts

Due to the limited space available, there are no true alternatives for the potential development north of Runway 7-25. As described, the ability to construct a single new clearspan hangar is the best option to support the need for additional general aviation facilities. To the south of Runway 7-25 there are a few more opportunities; however, those north of Taxiway C and even in the southwest corner are dependent upon the recommended improvements to Runway 7-25. Only the redevelopment of the decommissioned WRF facilities and port-a-ports south of Taxiway C are possible for additional facilities before the recommended Runway 7-25 improvements are complete. It should also be noted that since the same types of facilities are being proposed to the south of Runway 7-25, each of the concepts shown in **Figures 6-11** through **6-13** are considered relatively equal with respect to the evaluation criteria described above, including goals outlined in the Airport Sustainability Baseline (**Appendix E**).

While there is a high demand for additional T-hangar units, the concept in **Figure 6-12** with a mix of hangar types south of Taxiway C is recommended. This concept provides flexibility to accommodate different types of hangar demand, especially since it is the only area available for development in the short-term planning period. It does not however provide space for a future airport maintenance facility. Therefore, the site for a new airport maintenance facility, as shown on **Figure 6-13**, should be included in the final recommended airport development plan. For the north side of Taxiway C, T-hangars will still be required given the need for 60 additional units overall, which does not include the eight port-a-ports that will be redeveloped or the two units lost in the replacement of two T-hangar buildings under the Southwest Hangar Redevelopment program. Therefore, the airport should plan for as many T-hangars as possible given the limited developable space available. However, due to the various limitations north of Taxiway C, the recommended concept in **Figure 6-13** will require the relocation of the current self-serve fuel tank. It would also require the relocation of the segmented circle and windcone for the recommended taxiway access out to Taxiway B. Given the inability to develop T-hangars in any other area on the airport, the required relocation of the self-serve tank and the segmented circle are considered justified in order to maximize the number of T-hangar units that can be developed in this area.

With respect to the future aircraft parking apron required, this also includes the need for an expansion of the dedicated helicopter space. Since the rotorcraft currently operate out of facilities on the west side of the airport, the ability to provide additional helicopter parking space will be dependent upon the recommended improvements to Runway 7-25. The additional aircraft parking apron area created immediately west of the displaced Runway 7 threshold and even the small additional apron area at the west end of the future ADG II Taxiway D will create options to provide more helicopter parking space.

Table 6-8 summarizes the ability of the recommended concepts, as well as the other projects which influence the ability to meet the demand for general aviation facilities over the 20-year planning period. Unfortunately, even after all of the recommended improvements, the airport will run out of space just before the 20-year demand can be met.

**TABLE 6-8
SUMMARY OF RECOMMENDED GENERAL AVIATION FACILITIES**

	T-Hangars	Clearspan Hangars	Aircraft Parking Apron
Additional Needed by 2039	60 units	25 aircraft	(min. 16,600 SY)
Southwest Hangar Redevelopment	(2)	10 to 12	0 SY
North Side of Runway 7-25	0	4 to 5	0 SY
South of Taxiway C	17 ^a	6 to 7	800 SY
Runway 7-25 Improvements	0	0	9,000 SY ^b
North of Taxiway C	30	0	0 SY
Southwest Corner	0	12 to 15	(1,900 SY)
Total Additional Facilities	45	32 to 39	7,900 SY

NOTES: a. Based on 24 new units, loss of 8 port-a-ports, and recapture of the single full unit used by airport maintenance.

b. Based on loss of 4,500 SY due to Runway Object Free Area and gain of 13,500 SY when Runway 7-25 is improved.

SY = square yards.

SOURCE: ESA, 2021.

6.5 Support and Service Facilities

For many of the facilities that support the current and expected increase in aviation activity, there are no true alternatives to consider. Examples include the eventual rehabilitations and upgrades required for the airport administration space, ATCT, and airfield electrical vaults. Others have only limited options such as the ability to provide a consolidated airport maintenance facility, a replacement fuel farm, and additional automobile parking. While the alternatives are limited for some of these facilities, additional information is included to provide a more complete description of the overall recommended airport development plan.

6.5.1 Airport Maintenance Facilities

The operation of the existing airport maintenance department is fragmented, operating out of three different T-hangar end units and a single full T-hangar. As noted previously, the only potential space available north of Runway 7-25 is not considered compatible given the landside access would be through Albert Whitted Park. To the south of Runway 7-25, the only option would be to the south of Taxiway C. While the proposed hangar and aircraft parking apron concepts in this area would require the demolition of the decommissioned portion of the WRF and the port-a-ports; the maintenance facility would not. Therefore, a consolidated airport maintenance facility, just northwest of the existing fuel farm site should be preserved. This site is depicted on **Figures 6-13 and 6-14**.

6.5.2 Fuel Farm

A new fuel farm site is needed since the current system cannot be taken out of service until a replacement is available. The only true option would be for a new fuel farm adjacent to the existing

tanks given the facility requires landside access for tanker truck deliveries. With the constraints of the existing above ground and underground WRF facilities, the options for a new fuel farm only exist immediately to the north or south of the current tanks. As shown on each of the concepts for this area, the site immediately to the south is preferred given it has better landside access and allows for other development to the north. This preferred site is depicted on the final recommended airport development plan (**Figure 6-14**).

6.5.3 Automobile Parking

As noted in the facility requirements chapter, additional automobile parking needs to be considered with any improvement project at the airport. Unfortunately, as shown in **Table 6-8**, there is not enough developable space at the airport to meet the full 20-year demand for general aviation facilities. In fact, 30 of the future T-hangars as well as a majority of the future aircraft parking apron space are only possible after the recommended improvements to Runway 7-25 are complete.

For many of the newer hangar facilities north and south of Taxiway C, tenants will likely have to park in their hangars when they are utilizing their airplane. While not ideal, this is certainly possible given that Taxiway C and the future taxilanes are all non-movement areas. Some automobile parking improvements are possible and have been reflected on **Figure 6-14**.

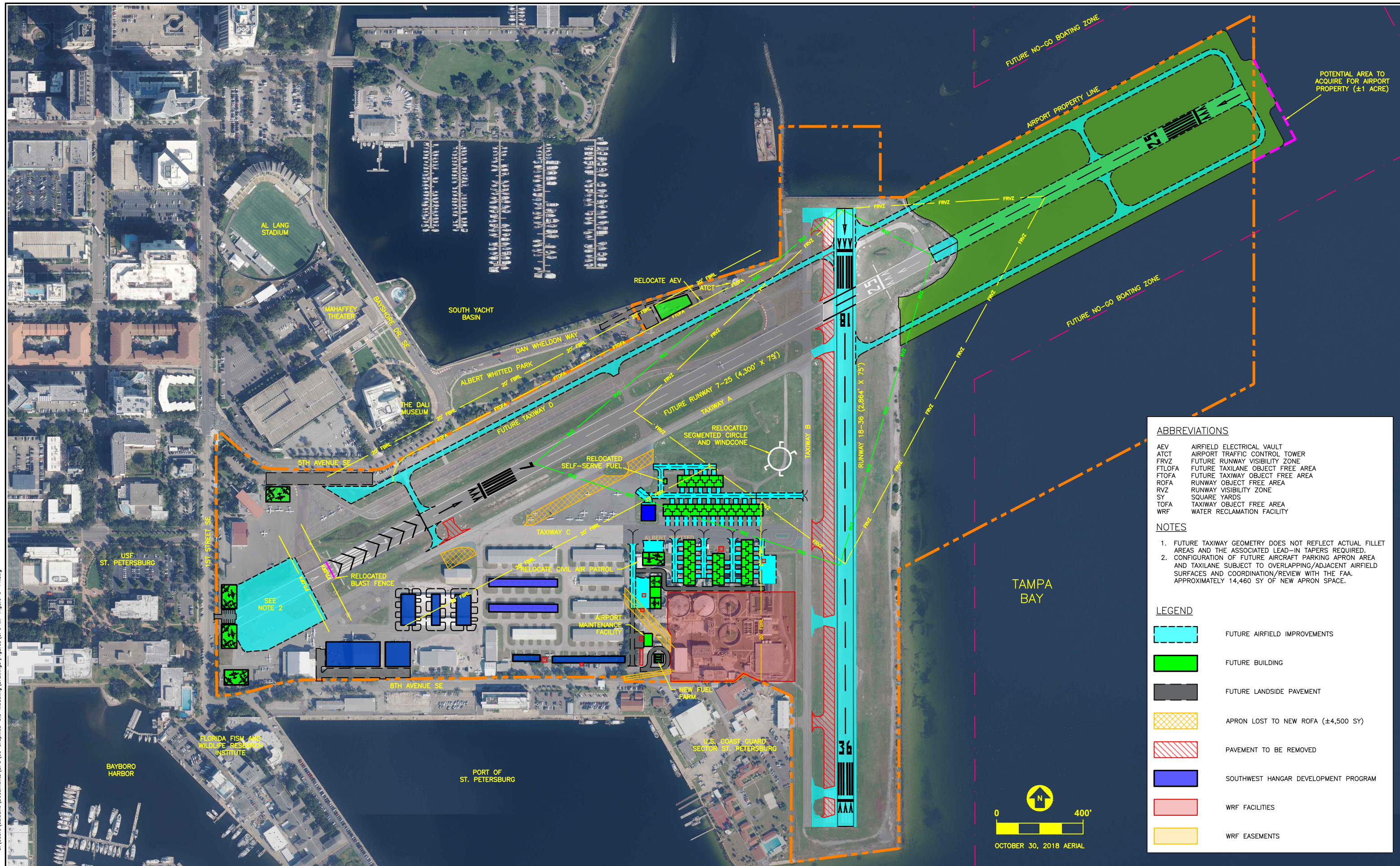
On the north side, this would include improving the on-airport automobile parking just south of 5th Avenue SE. Some of the spaces are currently being rented for employees of the Dali Museum; however, the museum has plans to replace their own surface parking lot with a parking structure. A parking lot has been shown for the potential non-aeronautical facility, which if occupied by the Albert Whitted Airport Preservation Society could free up some space to expand the current parking lot off 8th Avenue SE, on the south side of the airport. For the south side, the Southwest Hangar Redevelopment program does include the replacement and expansion of parking facilities to support future Hangars 2A and 2B.

6.6 Summary of Development Alternatives

The preceding sections have identified and analyzed the key facilities related to the future improvement of SPG. The concepts considered for future aviation related facilities focused on meeting as many of the 20-year requirements while maintaining the airfield's operational efficiency and safety. The various facility improvements and preferred concepts were combined to create the overall recommended airfield development plan shown in **Figure 6-14**. This plan will be utilized as the basis for the development of the new ALP Drawing set and development program described in the following chapters.

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Source: ESA, 2022.

Albert Whitted Airport Master Plan

FIGURE 6-14
 RECOMMENDED AIRPORT DEVELOPMENT PLAN

CHAPTER 7

Airport Layout Plan Drawings

CHAPTER 7

Airport Layout Plan Drawings

7.1 General

This chapter describes the Airport Layout Plan (ALP) Drawing set developed for this master plan study. These drawings identify airfield improvements required to accommodate both the current and future critical aircraft, as well as areas of the Albert Whitted Airport (SPG) needed for aviation related development during the 20-year planning horizon. They also serve as a reference for airport management and the City of St. Petersburg to evaluate existing and/or future obstruction disposition in conjunction with the Federal Aviation Administration (FAA) criteria. The ALP drawing set presented may be amended over time to reflect changes to the airport environment, demand affecting future facilities, or data related to the airfield surfaces.

7.2 Drawing Set

The ALP Drawing set consists of 22 sheets. Each sheet meets the criteria established in FAA Advisory Circular (AC) 150/5070-6B, Change 2, *Airport Master Plans*; FAA Office of the Associate Administrator for Airports (ARP) Standard Operating Procedure (SOP) 2.0, *Standard Procedure for FAA Review and Approval of Airport Layout Plans (ALPs)*, the Florida Department of Transportation (FDOT) *2021-2022 Guidebook for Airport Master Planning*, and FAA AC 150/5300-13B, *Airport Design*. It should be noted that while a majority of the airport master plan was completed before the release of AC 150/5300-13B in March 2022, the ALP Drawing set was developed, reviewed, and submitted based on the new AC.

The ALP Drawing set was also prepared using the airport survey, mapping, and imagery collected at the beginning of the master plan study as part of the FAA Airports Geographic Information System (AGIS) requirements. This data was collected in 2018 and the digital files were conditioned for compliance with the FAA AGIS program standards, then submitted, reviewed, and accepted by both the National Geodetic Survey (NGS) and FAA. The ALP drawing set includes:

- Cover Sheet
- Airport Data Sheet
- Existing Airport Layout
- Airport Layout Plan
- Terminal Area Drawing
- Airport Airspace Drawings and Obstruction Data Tables (5)
- Runway Inner Approach Plans and Profiles (4)
- Runway Centerline Profiles and Safety Areas (2)
- Runway Departure Surface Plans and Obstruction Data Tables (4)
- Land Use Drawing
- Exhibit 'A' Property Inventory Map

The recommended development addresses the needs identified in the assessment of facility requirements, which were then evaluated to determine the best alternatives to create a flexible plan meeting the City's goals. A reduced size set of the ALP Drawings is included at the end of this chapter while a full size version is on file at the airport management office as well as with both the FAA and FDOT.

7.2.1 Existing Airport Layout

The Existing Airport Layout drawing documents the current airfield layout and structures on the airport. Also shown are the key design standards, critical surfaces, as well as roads and buildings in the immediate vicinity of the airport. While this is not a required drawing for an ALP set, the separation of existing and future features simplifies the information provided on the actual ALP.

7.2.2 Airport Layout Plan

The ALP presents the proposed improvements for the airfield along with future design standards, critical surfaces, buildings, roads, and other features on or around the airport. Due to space constraints on the sheet, a separate Airport Data Sheet was developed which precedes the Existing Airport Layout and ALP sheets in the set. In addition to the facility information required per the FAA checklist, the Airport Data Sheet also provides details on the need to meet the FAA design standards for both the existing and future critical aircraft. As such, two tables for the existing and future non-standard conditions have been included. The first identifies all of the airfield geometry that does not meet the requirements for the current Runway 7-25 critical aircraft and the corrective actions planned for the short-term planning period. The second identifies all of the airfield geometry that would not meet the requirements for the future Runway 7-25 critical aircraft and the corrective actions planned for that time.

Once approved by the FAA and FDOT, the ALP becomes the official guidance for pursuing funding for airport improvements since at a minimum projects must be included on the ALP to be eligible for federal and state grants. As such, the drawing should be updated as necessary to reflect the changes to the airfield conditions or future needs. Regardless, before any design or construction could commence, each project will require approval from the City of St. Petersburg. Afterwards, each will also be subject to any potential environmental review and/or airspace analysis by the FAA.

Most of the information presented on the ALP has been analyzed in preceding chapters, justifying the need for the improvements shown. However, the ALP and other sheets of the set also include some revisions from the recommended airport development plan presented in the alternatives chapter. These are primarily the result of minor changes from the various reviews of the ALP Drawing set and projects that have progressed during the study. This includes the need for more detailed studies to determine how existing and future design surfaces may impact the ability to maintain or develop new facilities on the airport. The primary examples include the need for a specific survey of the features to the west of Runway 7-25, an evaluation of the existing aircraft parking apron areas for a potential Modification of Standards request for the Runway 7-25 Object Free Area, a formal Runway Protection Zone (RPZ) analyses (existing and future conditions), and

the coordination to establish a No-Go Boating Zone around the airport. These projects were introduced in the alternatives chapter and refined for inclusion in the airport development program chapter.

7.2.3 Terminal Area Plan

The Terminal Area Plan depicts the same development configuration shown on the ALP at a larger scale so that additional features and greater detail of the proposed facilities can be discerned. This drawing focuses primarily on the west end of the airport, showing the existing as well as planned hangar and aircraft parking apron facilities.

7.2.4 Airport Airspace Drawings

The future airspace surfaces were developed utilizing Title 14 Code of Federal Regulations (CFR) Part 77, *Safe, Efficient Use, and Preservation of the Navigable Airspace*. In order to protect the airspace and approaches to each runway from hazards that could affect the safe and efficient operation of the airport, the full extent of the proposed improvements are utilized on these drawings. The 14 CFR Part 77 criterion has been established for use by local planning and land use jurisdictions to control the height of objects in the vicinity of the airport.

The specific imaginary surfaces include the Primary, Horizontal, Conical, Approach, and Transitional Surfaces. A description and the corresponding dimensions for each surface were included in the facility requirements chapter. The future 14 CFR Part 77 airspace surfaces are adopted as part of the local ordinances in order for the City of St. Petersburg to notify airport management if a proposed permanent or temporary structure penetrates any of the surfaces for SPG. This allows an analysis to be conducted which would determine what, if any impacts to the operational capability of SPG might be created by potential obstructions. The 14 CFR Part 77 surfaces for SPG are incorporated in the City of St. Petersburg Code of Ordinances Chapter 16 – Land Development Regulations, Section 16.30.010 – Albert Whitted Airport Overlay.

Critical structures and obstructions documented in the various data tables of the drawing sheets area based on the FAA AGIS data obtained at the onset of this master plan. While a number of objects penetrate the 14 CFR Part 77 surfaces, it should be noted that the primary function of these surfaces is to determine which potential penetrations need to be further evaluated to determine if they are in fact considered an obstruction to aircraft navigation to and from the airport.

In order to protect the existing utilization and future capability of the airfield, the 14 CFR Part 77 surfaces resulting from this master plan must be updated in Section 16.30.010 – Albert Whitted Airport Overlay, following the completion of this study. However, as noted on the sheets, the potential obstructions to Runway 7-25 may change. In the short-term the project to bring Runway 7-25 into compliance includes a specific runway end survey to confirm the obstructions identified and to determine the proper declared distances required to meet the existing critical aircraft standards. In the future, the final configuration of Runway 7-25 will depend on the additional analyses and environmental review of the extension project. The future dispositions for Runway 18-36 need to also be re-evaluated due to the fact that the obstruction data and analyses were

conducted prior to the project which relocated the Runway 18-36 centerline and thresholds. Therefore, final as-built data is required to re-evaluate those objects initially identified as an obstruction.

7.2.5 Inner Approach Plans and Profiles

The Inner Approach Plans and Profiles illustrate the critical surfaces prior to the landing threshold for each runway end. Federally obligated airports like SPG are subject to Grant Assurances 20 and 21 which require the protection of these surfaces. The FAA reviews all published instrument approach procedures on a periodic basis (approximately every two years). Obstacles found within the critical surfaces will likely result in higher minima, loss of approaches, and/or loss of night instrument capability.

While the 14 CFR Part 77 Approach Surfaces are shown for reference, these drawings reflect the critical Approach (Threshold Siting) Surfaces, Departure Surfaces, Runway Safety Areas (RSA), Runway Object Free Areas, and Runway Protection Zones. Details are provided for objects that penetrate the criteria of these surfaces with existing and potential obstructions listed in the tables for each runway end. These sheets reflect those surfaces with a vertical component out to a height of 100 feet above the respective runway threshold elevation, as per FAA guidance for this type of drawing. Each of these sheets also depict the location of any roadways, structures, ground elevations, and other man-made or natural features within the limits of the various surfaces. The obstacle locations and heights were obtained from the FAA AGIS data obtained as part of this master plan study.

7.2.6 Centerline Profiles and Runway Safety Areas

These sheets detail the longitudinal and transverse RSA grades for both runways based on the FAA AGIS data obtained to demonstrate that they are almost entirely within the gradient standards. The only places where the standards are exceeded are at the runway and taxiway intersections due to crowned pavement in these areas. The drawing also depicts the five-foot line-of-sight required for both the existing and future runway lengths. New RSA Inventory and Determination Forms documenting these conditions for both runways were completed and coordinated with the FAA Orlando Airports District Office as part of the master plan study.

7.2.7 Runway Departure Surface Plans

The Runway Departure Surface Plans illustrate the critical surfaces within the departure area off the ends of both runways. Federally obligated airports like SPG are subject to Grant Assurances 20 and 21 which require the protection of any departure surfaces established. The FAA reviews all published instrument procedures on a periodic basis (approximately every two years). Obstacles found within the associated departure surfaces will likely result in higher minima or loss of the published instrument departure procedure affected.

For both runways, the tables indicate that the obstructions cannot be properly determined. On Runway 7-25, the departure end of the runway for takeoffs on Runway 25 cannot be formally established until the specific runway end survey is conducted as part of the short-term project to

bring the runway into compliance. If an unobstructed Departure Surface cannot be established after the more detailed survey, the option to not authorize instrument departures on Runway 25 will be assessed. For Runway 18-36 the obstruction analyses were conducted prior to the recent project which relocated the runway centerline and thresholds. Therefore, final as-built data is required to determine which objects may be an obstruction to the Departure Surfaces.

7.2.8 Land Use Drawing

The Land Use Drawing depicts the on-airport land uses as well as the off-airport land uses in the areas immediately surrounding airport property. These were obtained from the City of St. Petersburg Interactive Map (egis.stppete.org) and Pinellas County Tax Parcel Interactive Map (pcpao.org). In addition to the airport property boundary, the drawing depicts the recommended airport facility improvements and main airfield design surfaces.

Superimposed over the airport and surrounding area are the future (2039) day-night average sound level (DNL) contours created as part of the environmental overview chapter. Even though the noise contours were not part of an official 14 CFR Part 150 noise study, they were developed utilizing the same general methodology to provide an indication of the expected 65, 70, and 75 DNL noise contour exposure in the future.

7.2.9 Exhibit 'A' Property Inventory Map

The property map included as the last sheet of the ALP Drawing set is based on the full boundary survey and title search conducted by AID, Inc. for the official Exhibit 'A' Property Inventory Map Drawing approved by the FAA in 2015.

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CHAPTER 8

Airport Development Program

CHAPTER 8

Airport Development Program

8.1 General

The analyses conducted in the previous chapters evaluated airport development needs based upon current and forecast aviation activity, as well as the opportunities that will exist after new areas of the airfield are available for development. Once the needs of the airport are well defined and the alternatives have been vetted, the final step in the master planning process is to identify and prioritize the individual elements into a cohesive development program. This involves the application of strategic programming and financial management rationale to each development item so that a responsible and effective implementation process can be assured. The 20-year development program outlining the schedule of proposed capital improvements and the cost estimates for their development are presented in this chapter.

The intent is to assist the City of St. Petersburg in achieving the primary goal of the master plan study, which is to maintain a safe, efficient, economical, and environmentally acceptable airport facility for the city and surrounding Pinellas County communities. Consequently, the timing of the recommended improvement projects have been structured to support this underlying goal. As the official Sponsor of the airport, the City of St. Petersburg needs a responsible and effective implementation plan so that the necessary improvements can be made.

8.2 Sources of Funding for Improvements

All of the funds utilized for the operation and maintenance of SPG are generated by the airport's activities. For the larger airport development projects, funding has not depended on the Sponsor's resources; rather a variety of development grants have been utilized. The predominant sources of such grants are described in the following sections. It will be necessary for the airport to continue to pursue leveraging both state and federal grants for the improvements required over the next 20-year planning horizon.

8.2.1 Federal Aviation Administration

At the federal level, the Federal Aviation Administration (FAA) manages the Airport Improvement Program (AIP). Since 1982, the AIP has provided grants for eligible airport planning, environmental, and improvement projects. AIP funds are generated exclusively through taxes on airline tickets, fuel sales, cargo waybills, and other fees for aviation users. These funds are distributed under appropriations set by Congress to all airports in the U.S. which are considered significant to the national air transportation system and thus considered eligible for grants. For SPG, AIP grants provide up to 90 percent of the funding for eligible projects.

AIP entitlement funds for non-primary (e.g., general aviation) airports are currently allocated at a set amount of \$150,000 annually. Airports do not need to use all of their entitlements in a given year; however, they can only carry funds over for three years with a maximum entitlement grant of \$450,000. The airport currently has the AIP entitlement funds from FAA fiscal year (FY) 2022 available. The existing and future year AIP entitlements available for SPG are summarized in **Table 8-1**.

AIP discretionary funds are distributed to airports based on specific projects that have been determined to rate high in the national priority ranking system. High national priority projects include those which enhance safety, security, and capacity in addition to the reconstruction of existing facilities (prior investments). Discretionary funds are distributed on a priority basis, which is established by each FAA Regional Office based upon the number and dollar amount of grant applications received. As such, SPG competes for discretionary grant funds with other airports in the region, as well as the entire country.

It is reasonable to assume that the airport will receive future discretionary funding in order to meet critical needs. However, the availability of AIP discretionary grants is never guaranteed since year-to-year funding levels are established by congressional appropriations and distributed on a national basis. It should be noted that any proposed projects where discretionary funds are anticipated as a funding source may need to be delayed until the funds actually become available. This of course assumes that the AIP program will continue to exist in its current form and that future AIP authorizations and appropriations will provide similar funding levels.

Another source of federal funding being managed by the FAA are those provided by the Bipartisan Infrastructure Law (BIL). For five years beginning in FAA FY2022, SPG will receive an additional annual entitlement for airport related projects. In the first year, \$295,000 in entitlements was allocated to SPG through the BIL Airport Infrastructure program. In FY2023 the entitlements allocated were \$292,000. Like the AIP entitlement dollars, these funds can be utilized for a number of airfield projects, especially those that increase safety and expand capacity. To date, none of the BIL monies have been utilized for projects at SPG. **Table 8-1** provides a summary of the existing BIL monies available, as well as those expected through the end of the program.

**TABLE 8-1
AVAILABLE FAA ENTITLEMENT DOLLARS FOR SPG**

Program	FY2022	FY2023	FY2024	FY2025	FY2026
Airport Improvement Program	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000
Bipartisan Infrastructure Law	\$295,000	\$292,000	\$292,000	\$292,000	\$292,000
Rolling Total	\$445,000	\$887,000	\$1,329,000	\$1,771,000	\$2,213,000

NOTES: Rolling total included to illustrate the overall amount of FAA entitlement dollars available; however, if monies are not used before they expire based on the program, the FAA will utilize them for other airport projects.

SOURCE: AID and ESA, 2023.

8.2.2 Florida Department of Transportation

Each year the Florida Department of Transportation (FDOT) manages an aviation work program of state grants for planning, design, and construction projects. FDOT generally provides funding to match the local share of federal projects, which at SPG has traditionally represented 8 percent of federal projects funded at 90 percent. In addition, FDOT provides funds for certain non-federal projects. For non-revenue producing projects (e.g., airfield pavement, lighting, etc.), FDOT will provide up to 80 percent of the total cost. For certain revenue-producing projects (such as hangars), FDOT will fund up to 50 percent. It is anticipated FDOT will continue to assist in the airport's non-federal share of AIP projects as well as participate in non-federal projects at either the 80 or 50 percent level.

8.2.3 Economic Development

A number of state programs exist that enable the airport to obtain economic development grants. The most significant of which, specifically programmed for transportation projects, are the Economic Development Transportation Fund (EDTF) grants. These are typically tied to job creation and require different local and/or private contributions to the overall project. There are also grants available from the Transportation Regional Incentive Program (TRIP) which can fund up to 50 percent of a project when requested by an eligible group of local government sponsors; hence the regional aspect.

8.2.4 Private Investment

Certain airport development projects may be funded through third-party resources. These cases are generally reserved for income-producing projects (such as hangars) where the development costs are beyond the airport's ability to fund or simply where there is little interest in assuming risk. Typically, the private developer or investor will provide the funds to develop a facility while the airport receives rent through a long-term ground lease. The developer assumes the capital investment risks while the airport may provide airfield access, landside access, and/or infrastructure development; the costs of which may be included in the rate basis for the lease. At the termination of such leases, ownership of any improvements revert back to the airport.

Over the 20-year planning horizon, there are a number of projects to develop the additional hangar facilities needed. Since each are eligible for potential FDOT funding, they will all be programmed for such. This does not preclude the opportunity for private investment, rather it provides the airport with the flexibility to develop all, some, or none of the facilities.

8.3 Proposed Capital Improvements

The initial step in establishing an airport development program is to determine the cost of each proposed improvement. Cost data used in this study was collected from a variety of sources, including actual project estimates, published engineering indices, government agencies, and similar airport construction projects throughout the State of Florida. In addition, consideration was given to reflect costs related to testing, survey, inspection, and other unknown contingencies. While the

cost estimates were based on 2023 dollars; an annual inflation factor was applied for each year after 2023 that a project is ultimately programmed. The inflation factor has been based on the most recent, 5-year rolling average of the Consumer Price Index published monthly by the Bureau of Labor Statistics. This average was 3.72 percent between February 2018 and January 2023.

The development program is divided into the short-term (2024 - 2028), intermediate-term (2029 - 2033), and long-term (2034 - 2043) horizons. These periods differ from those presented in the aviation activity forecasts, due to the time lag of the study and the grant cycles of the funding agencies. Regardless, it is important to note that a number of projects are based on demand and may need to be either pushed forward or delayed depending upon when certain activity levels or thresholds are expected to be met. This is particularly true for those projects beyond the initial five-year planning period.

Descriptions of the improvements for each period are included in the following sections and illustrated on **Figure 8-1** at the end of the chapter. The associated tables represent the culmination of comparative analysis of basic budget factors, demand for facilities, and priority of needs. Costs for the improvements have been broken down based on the previous funding experiences for similar projects. The allocation of funds from the agencies in no way guarantees funding from that particular source. They are simply potential sources used as part of the financial planning and phasing of projects.

The information in **Tables 8-2** through **8-4** will also be used to update the Joint Automated Capital Improvement Program (JACIP). The JACIP is a secure, internet-based program, which allows the FAA, FDOT, and airport management to interact on a real time basis as different funding needs and issues evolve.

8.3.1 Short-Term Capital Improvement Program

The improvements planned between 2024 and 2028 are listed in **Table 8-2** and included on **Figure 8-1**. The design for two of the first short-term projects (airfield electrical vault improvements and new airport fuel farm) has already started and both are expected to be completed in 2023. There is also a current project to replace some of the equipment in the airport traffic control tower. In addition to the airfield electrical vault and fuel farm projects, an upgrade to the airport's access control, camera, and security systems has been programmed for 2024.

The FAA required short-term improvements to Runway 7-25 have been included as the first new projects in the program with the planning/design phase set for 2025 and construction in 2026. As detailed in both the alternatives chapter and as part of the Airport Layout Plan (ALP) Drawing set, this project is necessary to accommodate the current critical aircraft requirements. The planning/design phase would include a specific airspace survey of the features to the west of Runway 7-25, an evaluation of the aircraft parking apron areas for a potential Modification of Standards request for the Runway 7-25 Object Free Area, a formal Runway Protection Zone (RPZ) analysis for existing conditions, the coordination to establish a No-Go Boating Zone around the airport, and the design of physical runway changes required. Construction for the runway changes would include displacing the Runway 7 threshold, displacing the Runway 25 threshold, remarking

the runway surface, reconfiguring the runway lighting system, and relocation of Runway 7-25 navigational aids, as well as re-establishing the new declared distances and instrument approach procedures.

During the middle of the short-term period, the design for the rehabilitation of Taxiway A begins in 2026 and the construction in 2027. As documented in previous chapters, Taxiway A has the lowest pavement condition rating and needs to be improved as soon as possible. In 2027 the first project in the overall program to extend Runway 7-25 and Taxiway D would be to develop the FAA required Purpose and Need. This would include an updated justification to re-evaluate the required runway length and design standards. The effort would also include a benefit costs analysis of the overall extension project. In 2028 an Environmental Assessment (EA) for the runway and taxiway extension is programmed. As noted in the alternatives chapter, due to the airport’s setting and surrounding resources, it is possible the FAA may require an Environmental Impact Statement (EIS) instead of an EA.

The short-term also includes three hangar projects, each of which were designed in the airport’s previous Southwest Hangar Redevelopment program. These include the construction of Hangar 2B in 2025; T-hangar Buildings 5A, 5B, and 6 in 2027; and Hangar 2A in 2028.

**TABLE 8-2
SHORT-TERM CAPITAL IMPROVEMENT PROGRAM**

Year	ID	Project	Total	FAA	FDOT	Local
2024	S-2	Rehabilitate Airfield Electrical Vault - Construction	\$ 1,100,000	\$ 990,000	\$ 88,000	\$ 22,000
2024	-	Upgrade Airport’s Access Control, Camera, and Security Systems	\$ 132,000	\$ 0	\$ 105,600	\$ 26,400
2024	S-1	Replace Airport Fuel Farm - Construction	\$ 1,100,000	\$ 0	\$880,000	\$ 220,000
2025	-	Runway 7-25 Improvements for Current Critical Aircraft - Planning/Design	\$ 157,049	\$ 141,344	\$ 12,564	\$ 3,141
2025	S-3	Construct Hangar 2B (13,220 SF)	\$ 4,694,268	\$ 0	\$ 3,755,414	\$ 938,854
2026	-	Runway 7-25 Improvements for Current Critical Aircraft - Construction	\$ 660,460	\$ 594,414	\$ 52,837	\$13,206
2026	-	Taxiway A Rehabilitation - Design	\$ 131,646	\$ 118,481	\$ 10,532	\$ 2,633
2027	-	Extend Runway 7-25 and Taxiway D - Purpose and Need	\$ 115,709	\$ 104,138	\$ 9,257	\$ 2,314
2027	-	Taxiway A Rehabilitation - Construction	\$ 1,894,153	\$ 1,704,737	\$ 151,532	\$ 37,883
2027	S-4	Construct T-Hangar Buildings 5A, 5B, and 6	\$ 3,913,271	\$ 0	\$ 1,956,635	\$ 1,956,635
2028	-	Extend Runway 7-25 and Taxiway D - Environmental Assessment	\$ 600,037	\$ 540,033	\$ 48,003	\$ 12,001
2028	S-5	Construct Hangar 2A (28,750 SF)	\$ 8,772,538	\$ 0	\$ 7,018,030	\$ 1,754,508
Short-Term Totals			\$ 23,271,129	\$ 4,193,148	\$ 14,088,404	\$ 4,989,578

NOTES: Estimates for the local share are dependent upon the availability of funding from both FAA and FDOT. An inflation factor of 3.72 percent has been applied for each year a project is programmed beyond the 2023 cost estimate.

SOURCE: AID and ESA, 2023.

8.3.2 Intermediate-Term Capital Improvement Program

As detailed in **Table 8-3** and shown on **Figure 8-1**, the intermediate-term primarily consist of three types of projects: continuation of the Runway 7-25 and Taxiway D extension program; rehabilitating airfield pavements; and additional hangar facilities. Design for the extension of Runway 7-25 and Taxiway D has been programmed for 2029 in order to immediately follow the prior justification and environmental review phases. Construction has been set for as early as 2030, but it should be recognized that given the costs required for the project, it may be delayed due to the availability of funding.

The airfield pavement work starts with the rehabilitation of the west half of Taxiway C and the St. Pete Air aircraft parking apron. Both of these surfaces had pavement condition ratings which were only slightly higher than Taxiway A; therefore, they need to be improved as soon as possible. The final pavement rehabilitation in the intermediate-term is Taxiway B, which also only rated slightly better than Taxiway A.

The hangar projects include a mix of both larger clearspan and smaller box hangar facilities to meet the need identified. There is also the project for a dedicated airport maintenance facility which would eventually free up the single T-hangar and three T-hangar end units currently utilized by the airport’s maintenance department. The final project of the intermediate-term is a new master plan.

**TABLE 8-3
INTERMEDIATE-TERM CAPITAL IMPROVEMENT PROGRAM**

Year	ID	Project	Total	FAA	FDOT	Local
2029	I-1	Extend Runway 7-25 and Taxiway D - Design	\$ 2,451,724	\$ 2,206,552	\$ 196,138	\$ 49,034
2029	I-2	Construct Clearspan Hangar (7,700 SF) - Design	\$ 380,740	\$ 0	\$ 304,592	\$ 76,148
2029	-	Rehabilitate Taxiway C (West Half) - Design	\$ 58,623	\$ 52,761	\$ 4,690	\$ 1,172
2029	-	Rehabilitate St. Pete Air Apron (12,250 SY) - Design/Build	\$ 786,000	\$ 0	\$ 628,800	\$ 157,200
2030	I-1	Extend Runway 7-25 and Taxiway D - Construction	\$ 22,491,784	\$ 20,242,606	\$ 1,799,343	\$ 449,836
2030	I-2	Construct Clearspan Hangar (7,700 SF) - Construction	\$ 3,796,781	\$ 0	\$ 3,037,425	\$ 759,356
2030	-	Rehabilitate Taxiway C (West Half) - Construction	\$ 584,259	\$ 525,833	\$ 46,741	\$ 11,685
2030	I-6	Construct Clearspan Hangar (7,700 SF) - Design	\$ 343,636	\$ 0	\$ 274,909	\$ 68,727
2031	-	Taxiway B Rehabilitation - Design	\$ 219,572	\$ 197,615	\$ 17,566	\$ 4,391
2031	I-6	Construct Clearspan Hangar (7,700 SF) - Construction	\$ 3,427,461	\$ 0	\$ 2,741,969	\$ 685,492
2031	I-3	Airport Maintenance Facility - Design	\$ 133,617	\$ 0	\$ 106,894	\$ 26,723

**TABLE 8-3
INTERMEDIATE-TERM CAPITAL IMPROVEMENT PROGRAM**

Year	ID	Project	Total	FAA	FDOT	Local
2031	I-4	Construct 50' X 50' Box Hangars (3 Units) with Apron - Design	\$ 445,570	\$ 0	\$ 356,456	\$ 89,114
2032	-	Taxiway B Rehabilitation - Construction	\$ 1,666,308	\$ 1,499,678	\$ 133,305	\$ 33,326
2032	I-4	Construct 50' X 50' Box Hangars (3 Units) with Apron - Construction	\$ 4,443,489	\$ 0	\$ 3,554,791	\$ 888,698
2032	I-5	Construct Clearspan Hangar (6,000 SF) with Apron - Design	\$ 298,408	\$ 0	\$ 238,726	\$ 59,682
2033	I-3	Airport Maintenance Facility – Construction	\$ 1,381,705	\$ 0	\$ 1,105,364	\$ 276,341
2033	-	Master Plan Update	\$ 576,071	\$ 518,464	\$ 46,086	\$ 11,521
2033	I-5	Construct Clearspan Hangar (6,000 SF) with Apron - Construction	\$ 2,975,549	\$ 0	\$ 2,380,439	\$ 595,110
2033	-	Construct T-Hangars (9 Units) with Taxilanes – Design	\$ 592,633	\$ 0	\$ 296,316	\$ 296,316
Intermediate-Term Totals			\$ 47,053,932	\$ 25,243,507	\$17,270,550	\$4,539,875

NOTES: Estimates for the local share are dependent upon the availability of funding from both FAA and FDOT. An inflation factor of 3.72 percent has been applied for each year a project is programmed beyond the 2023 cost estimate.

SOURCE: AID and ESA, 2023.

8.3.3 Long-Term Capital Improvement Program

Table 8-4 lists the various projects for the second half of the 20-year planning period which are also reflected on **Figure 8-1**. As shown, many of the projects include additional T-hangar and clearspan hangar projects. While the airport could fill additional T-hangar units today, these projects were programmed in the long-term as the preferred sites for future T-hangars are not ready for development. Those south of Taxiway C require the demolition and redevelopment of facilities previously utilized as part of the original on-airport waste water treatment plant. Once Runway 7-25 is extended, the required Runway Visibility Zone will open up additional space in the infield area for future T-hangars. Development of the infield area will also require the relocation of the exiting self-serve fuel facility and airfield segmented circle, both of which have been included in the program as enabling projects for future T-hangars.

Airfield improvements include the need to relocate Taxiway D to provide the proper centerline offset with Runway 7-25 for the future critical aircraft. Taxiway A is also programmed to be extended east to the end of the future Runway 25 threshold. A project to provide additional aircraft parking apron space to the west of the future Runway 7 threshold is included; however, as noted in the alternatives chapter and on the ALP Drawing set, the ability and/or configuration of this apron will be dependent upon a formal RPZ analysis and airspace evaluation. Other projects include future security improvements, rehabilitating the Sheltair aircraft parking apron area, and at the end of the period, a rehabilitation of the original Runway 7-25 pavement surface.

**TABLE 8-4
LONG-TERM CAPITAL IMPROVEMENT PROGRAM**

Year	ID	Project	Total	FAA	FDOT	Local
2034	L-1	Construct T-Hangars (9 Units) with Taxilanes - Construction	\$ 5,909,293	\$ 0	\$ 2,954,647	\$ 2,954,647
2034	L-2	Construct T-Hangars (6 Units) with Taxilane - Design	\$ 429,881	\$ 0	\$ 214,940	\$ 214,940
2035	L-2	Construct T-Hangars (6 Units) with Taxilane - Construction	\$ 4,286,396	\$ 0	\$ 2,143,198	\$ 2,143,198
2035	L-4	Relocate Taxiway D (240' offset) - Design	\$ 235,319	\$ 211,787	\$ 18,826	\$ 4,706
2036	L-4	Relocate Taxiway D (240' offset) - Construction	\$ 2,345,973	\$ 2,111,376	\$ 187,678	\$ 46,919
2037	L-5	Construct T-Hangars (9 Units) with Taxilane - Design	\$ 698,726	\$ 0	\$ 349,363	\$ 349,363
2037	L-6	Relocate Segmented Circle and Windcone - Design/Build	\$ 118,815	\$106,934	\$ 9,505	\$ 2,376
2037	L-7	Relocate Self-serve Fuel - Design	\$ 143,978	\$ 0	\$ 115,182	\$ 28,796
2038	L-5	Construct T-Hangars (9 Units) with Taxilane - Construction	\$ 6,968,750	\$ 0	\$ 3,484,375	\$ 3,484,375
2038	L-8	Extend Taxiway A (from Runway 18-36 to 25 End) - Design	\$ 154,684	\$ 139,216	\$ 12,375	\$ 3,094
2038	L-7	Relocate Self-serve Fuel - Construction	\$ 1,472,700	\$ 0	\$ 1,178,160	\$ 294,540
2039	L-8	Extend Taxiway A (from Runway 18-36 to 25 End) - Construction	\$ 1,543,185	\$ 1,388,866	\$ 123,455	\$ 30,864
2039	L-9	Construct T-Hangars (21 Units) with Taxilane - Design	\$ 1,623,490	\$ 0	\$ 811,745	\$ 811,745
2039	L-10	Expand Aircraft Parking Apron (14,460 SY) - Design	\$ 377,147	\$ 0	\$ 301,718	\$ 75,429
2040	L-9	Construct T-Hangars (21 Units) with Taxilane - Construction	\$ 16,288,282	\$ 0	\$ 8,144,141	\$ 8,144,141
2040	L-10	Expand Aircraft Parking Apron (14,460 SY) - Construction	\$ 3,761,737	\$ 0	\$ 3,009,390	\$ 752,347
2040	L-11	Construct T-Hangars (9 Units) with Taxilane - Design	\$ 756,661	\$ 0	\$ 378,330	\$ 378,330
2041	L-11	Construct T-Hangars (9 Units) with Taxilane - Construction	\$ 7,584,316	\$ 0	\$ 3,792,158	\$ 3,792,158
2041	-	Airfield Security Improvements	\$ 1,171,564	\$ 1,054,408	\$ 93,725	\$ 23,431
2041	L-12	Construct Clearspan Hangar (7,700 SF) - Design	\$ 503,256	\$ 0	\$ 402,605	\$ 100,651
2042	L-12	Construct Clearspan Hangar (7,700 SF) - Construction	\$ 5,275,712	\$ 0	\$ 4,220,570	\$ 1,055,142
2042	-	Rehabilitate Sheltair Apron (10,250 SY) - Design/Build	\$ 1,106,698	\$ 0	\$ 885,358	\$ 221,340
2042	L-3	Construct Clearspan Hangar (7,700 SF) - Design	\$ 534,551	\$ 0	\$ 427,640	\$ 106,910
2042	-	Rehabilitate Existing Runway 7-25 - Design	\$ 433,160	\$ 389,844	\$ 34,653	\$ 8,663

**TABLE 8-4
LONG-TERM CAPITAL IMPROVEMENT PROGRAM**

Year	ID	Project	Total	FAA	FDOT	Local
2043	L-3	Construct Clearspan Hangar (7,700 SF) - Construction	\$ 5,329,836	\$ 0	\$ 4,263,869	\$ 1,065,967
2043	-	Rehabilitate Existing Runway 7-25 - Construction	\$ 4,318,916	\$ 3,887,024	\$ 345,513	\$ 86,378
Long-Term Totals			\$ 73,373,024	\$ 9,289,454	\$ 37,903,118	\$ 26,180,452

NOTES: Estimates for the local share are dependent upon the availability of funding from both FAA and FDOT. An inflation factor of 3.72 percent has been applied for each year a project is programmed beyond the 2023 cost estimate.

SOURCE: AID and ESA, 2023.

8.4 Improvement Program Summary

Table 8-5 provides a summary of the overall development program costs and the local share anticipated. Continued support from the FAA and FDOT is necessary to ensure the airport is able to meet the area’s aviation needs in a safe, efficient, and timely manner. This support also ensures the airport will continue to be a key component of the economic growth for St. Petersburg and the surrounding communities.

**TABLE 8-5
SUMMARY OF DEVELOPMENT PROGRAM COSTS (IN MILLIONS OF DOLLARS)**

Program Period	Total Project Costs	Local Share
Short-Term (2024 – 2028)	\$ 23.3	\$5.0
Intermediate-Term (2029 – 2033)	\$ 47.1	\$4.5
Long-Term (2034 – 2043)	\$ 73.4	\$26.2
Overall Total	\$143.8	\$35.7

NOTES: Estimates for the local share are dependent upon the availability of funding from both FAA and FDOT. An inflation factor of 3.72 percent has been applied for each year a project is programmed beyond the 2023 cost estimate.

SOURCE: AID and ESA, 2023.

ABBREVIATIONS

CIP CAPITAL IMPROVEMENT PROGRAM

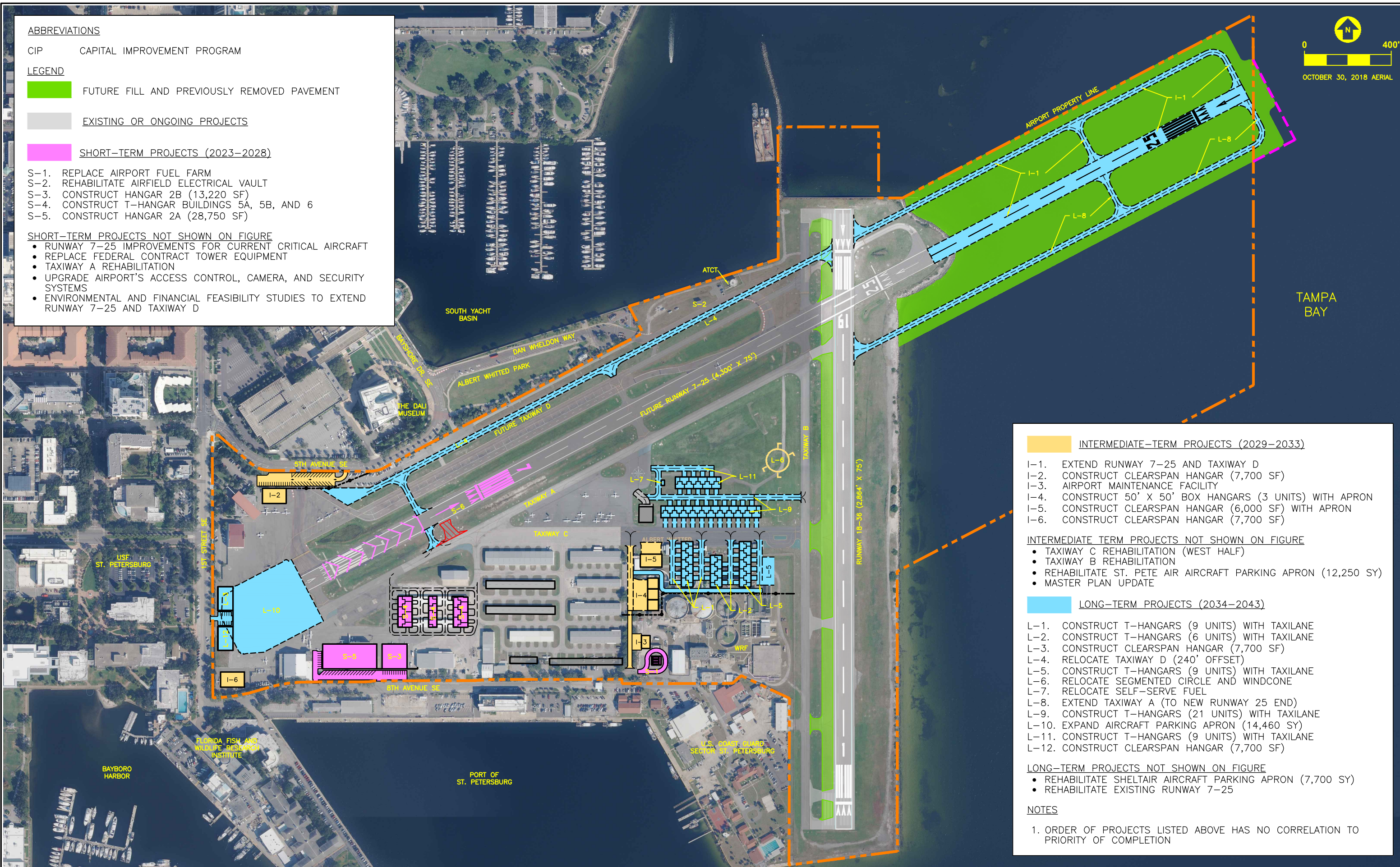
LEGEND

- FUTURE FILL AND PREVIOUSLY REMOVED PAVEMENT
- EXISTING OR ONGOING PROJECTS
- SHORT-TERM PROJECTS (2023-2028)

- S-1. REPLACE AIRPORT FUEL FARM
- S-2. REHABILITATE AIRFIELD ELECTRICAL VAULT
- S-3. CONSTRUCT HANGAR 2B (13,220 SF)
- S-4. CONSTRUCT T-HANGAR BUILDINGS 5A, 5B, AND 6
- S-5. CONSTRUCT HANGAR 2A (28,750 SF)

SHORT-TERM PROJECTS NOT SHOWN ON FIGURE

- RUNWAY 7-25 IMPROVEMENTS FOR CURRENT CRITICAL AIRCRAFT
- REPLACE FEDERAL CONTRACT TOWER EQUIPMENT
- TAXIWAY A REHABILITATION
- UPGRADE AIRPORT'S ACCESS CONTROL, CAMERA, AND SECURITY SYSTEMS
- ENVIRONMENTAL AND FINANCIAL FEASIBILITY STUDIES TO EXTEND RUNWAY 7-25 AND TAXIWAY D



INTERMEDIATE-TERM PROJECTS (2029-2033)

- I-1. EXTEND RUNWAY 7-25 AND TAXIWAY D
- I-2. CONSTRUCT CLEARSPAN HANGAR (7,700 SF)
- I-3. AIRPORT MAINTENANCE FACILITY
- I-4. CONSTRUCT 50' X 50' BOX HANGARS (3 UNITS) WITH APRON
- I-5. CONSTRUCT CLEARSPAN HANGAR (6,000 SF) WITH APRON
- I-6. CONSTRUCT CLEARSPAN HANGAR (7,700 SF)

INTERMEDIATE TERM PROJECTS NOT SHOWN ON FIGURE

- TAXIWAY C REHABILITATION (WEST HALF)
- TAXIWAY B REHABILITATION
- REHABILITATE ST. PETE AIR AIRCRAFT PARKING APRON (12,250 SY)
- MASTER PLAN UPDATE

LONG-TERM PROJECTS (2034-2043)

- L-1. CONSTRUCT T-HANGARS (9 UNITS) WITH TAXILANE
- L-2. CONSTRUCT T-HANGARS (6 UNITS) WITH TAXILANE
- L-3. CONSTRUCT CLEARSPAN HANGAR (7,700 SF)
- L-4. RELOCATE TAXIWAY D (240' OFFSET)
- L-5. CONSTRUCT T-HANGARS (9 UNITS) WITH TAXILANE
- L-6. RELOCATE SEGMENTED CIRCLE AND WINDCONE
- L-7. RELOCATE SELF-SERVE FUEL
- L-8. EXTEND TAXIWAY A (TO NEW RUNWAY 25 END)
- L-9. CONSTRUCT T-HANGARS (21 UNITS) WITH TAXILANE
- L-10. EXPAND AIRCRAFT PARKING APRON (14,460 SY)
- L-11. CONSTRUCT T-HANGARS (9 UNITS) WITH TAXILANE
- L-12. CONSTRUCT CLEARSPAN HANGAR (7,700 SF)

LONG-TERM PROJECTS NOT SHOWN ON FIGURE

- REHABILITATE SHELTAIR AIRCRAFT PARKING APRON (7,700 SY)
- REHABILITATE EXISTING RUNWAY 7-25

NOTES

- 1. ORDER OF PROJECTS LISTED ABOVE HAS NO CORRELATION TO PRIORITY OF COMPLETION

Mar 26, 2023 12:04pm
 C:\Users\eddicario\Documents\SPC\05_Graphics-GIS-Mapping\Drawings\Figures\SPC_MP_Figure_8-1.dwg

APPENDIX A

Correspondence



U.S. Department
of Transportation
**Federal Aviation
Administration**

Orlando Airports District Office
8427 SouthPark Circle, Ste 524
Orlando, FL 32819
Phone: (407) 487-7720
Fax: (407) 487-7135

August 22, 2019
Mr. Richard Lesniak, C.M.
Airport Manager
107 8th Avenue SE
St. Petersburg, FL 33701

RE: Albert Whitted Airport, St. Petersburg, FL
AIP 3-12-0074-026-2018
Approval of Airport Forecast for Airport Master Plan

This letter responds to your submittal of “Chapter 3: Aviation Activity Forecast” for Albert Whitted Airport dated July 2019. The based aircraft, operations forecast and passenger enplanements shown in Table 3-25, of the report are approved to be used in your on-going master planning efforts.

If you have any questions, please feel free to contact me at 407-484-7234.

Sincerely,

“ORIGINAL SIGNED BY”

Jenny Iglesias-Hamann
Program Manager/Community Planner



U.S. Department
of Transportation
**Federal Aviation
Administration**

Orlando Airports District Office
8427 SouthPark Circle, Suite 524
Orlando, FL 32819-9058

Phone: (407) 487-7220

Fax: (407) 487-7135

June 13, 2023

Mr. Richard Lesniak
Airport Manager
107 8th Avenue Southeast
St. Petersburg, Florida 33701
VIA Email

Dear Mr. Lesniak:

RE: Albert Whitted Airport (SPG), St. Petersburg, Florida
ASN 2022-ASO-1977-NRA
Conditional Airport Layout Plan Approval

The Albert Whitted Airport Layout Plan (ALP), prepared by ESA and GAI Consultants, and bearing your signature, is conditionally approved and the master plan is accepted. A signed copy of the approved ALP is enclosed.

The FAA Reauthorization Act of 2018, section 163(d), has limited the FAA's review and approval authority for ALPs. The Act limits the FAA's authority to those portions of the ALP that:

- Materially impact the safe and efficient operation of aircraft at, to, or from the airport.
- Adversely affect the safety of people or property on the ground adjacent to the airport as a result of aircraft operations; or
- Adversely affect the value of prior Federal investments to a significant extent.

FAA has not made a determination on whether or not it retains review and approval authority for any proposed facilities depicted on the ALP associated with this letter (unless otherwise noted). Under Section 49 USC §47107(a)(16) (as revised per section 163(d) of Pub.L. 115-254), FAA must separately determine whether it retains approval authority for each individual proposed facility depicted on an ALP before construction occurs.

Although section 163(d) has limited the FAA's review and approval authority of proposed projects depicted on an ALP, airport sponsors must continue to maintain an up-to-date ALP in accordance with Federal law, 49 U.S.C. §47107(a)(16).

This approval is subject to the condition that any proposed airport development shown on the ALP requires environmental processing and may not be undertaken without the FAA's prior written environmental approval.

All New On-Airport Development, to include:

- Future Runway End 25 Extension
- Future Parallel Taxiway "A & D" Extensions

*** And any other action requiring NEPA documentation under FAA Order 5050.4.*

This ALP approval is conditioned on acknowledgement that any development on airport property requiring Federal environmental approval must receive such written approval from FAA prior to commencement of the subject development. This ALP approval is also conditioned on acceptance of the plan under local land use laws. We encourage appropriate agencies to adopt land use and height restrictive zoning based on the plan.

Please make note and/or take action of the following comments:

- Runway 07/25 is the Primary AIP eligible runway at SPG. Runway 18/36 is the crosswind and is currently found eligible for AIP funds based on Appendix G, Table G-1, Runway Types and Eligibility of [Order 5100.38D, Change 1](#).
- The existing Runway Safety Area (RSA) for Runway 07/25 does not meet current FAA Airport Design Standards. Therefore, the FAA requires that you improve the RSA as proposed on this conditionally approved ALP as soon as possible, but no later than concurrently with your next project for reconstruction or significant expansion of the runway. A project to reconstruct or significantly expand the runway will not be approved unless it includes the RSA improvement. The RSA improvement shall bring the RSA into conformance with FAA Airport Design Standards.
- Airport must implement temporary measures (e.g., operational procedures, declared distances, etc.) while permanent measures are in effect to address existing non-standard deficiencies on Runway 07/25 identified on the "Existing Non-Standards Conditions Table" on sheet 002 of the ALP set.
 1. Runway Safety Area (RSA) through declared distances
 2. Runway Object Free Area (ROFA) through declared distances
 3. Runway Obstacle Free Zone (ROFZ)
 4. Airport Design Approach Surface (20:1)
 5. Runway End Departure Surface (40:1)
 6. Runway to Taxiway Distances on both sides of RW 07/25

Airport sponsor is expected to prioritize addressing these items as soon as possible to conform with sponsor grant assurances, design standards and to continue to maintain a safe airfield environment for its users.

- Sponsor shall develop an Obstacle Action Plan (OAP) per [Policy Guidance Memo, Approach and Departure Surface Protection issued on September 19, 2022](#) where it states that *"airport sponsors incorporate the identification and planned mitigation of*

obstacles penetrating the approach and/or departure surfaces into Master Plans, Airport Layout Plan (ALP) Updates, obstruction studies, and other relevant documents.” Please note that any obstacles to the Airport Design Approach Surface is a priority for the use of AIP Entitlements as per Sponsors Grant Assurances and in accordance with Order 5100.38, AIP Handbook.

It is critical for federally obligated airport sponsors to meet these assurances / obligations to ensure safe and efficient airport operations at all times, protection of the airport’s terminal airspace, and related compatible land use. Failure to do this may lead to violations, request for costly corrective action, and affect eligibility and jeopardize future federal funding.

- Complete and update the OAP, as minimum, on an annual basis. If the clearance of obstacles is not feasible at a particular time, the sponsor is expected to provide documentation of its efforts and the FAA should track the item as an open issue to pursue when a future opportunity arises. To mitigate obstacles in FAA database that are no longer existing, the sponsor can utilize the Runway Airspace Management (RAM) Program in the [FAA Airport Data Information Portal \(ADIP\)](#).
- Non-standard airfield conditions requiring federal funding must obtain a Modification of Standards (MOS) coordination in the FAA Airport Data Information Portal (ADIP) if design standard cannot be met through the completion of the anticipated project. The coordination of an MOS is only required when a non-standard airfield condition contains federal funds. All other non-standard conditions must be included and shown on the ALP “Non-Standards Conditions Table” with adequate mitigation measures.
- Runway 07/25 Extension will require a formal RPZ Alternative Analysis, a financial feasibility analysis, and a Benefit Cost Analysis prior to conducting an environmental review for the project.
- Be aware that that a favorable airspace and Runway Protection Zone (RPZ) Alternative Analysis determination by the agency is required prior to any future development within the approach and RPZ for runway 07/25. The proposed future apron on approach to RW 7 development project associated with the RW extension was found incompatible for this area. Per AC 150/5300-13B, Airport Design, *“The primary goals are to clear the RPZ areas of incompatible objects and activities, and to ensure this area remains clear of such objects and activities.”* It is desirable to clear the entire RPZ of all above-ground objects to minimize risk to the public.

FAA issued a cancellation to the “Interim Guidance on Land Uses Within the RPZ) in January 2023. Please refer to [AC 150//5190-4B, Airport Land Use Compatibility Planning](#), section 2.2.5.7.3 for a list of permissible land-uses without further evaluation. Given the current circumstances of the SPG airfield non-standard conditions documented in this Master Plan/ALP Update, the ADO concurs with sponsor in depicting the proposed development on ALP for planning purposes only while an RPZ alternative evaluation is submitted to FAA early in the planning process. Such alternative evaluation must conform to AC150//5190-4B, Airport Land Use Compatibility Planning or latest edition/guidance.

- ALP was reviewed as a planning document, and this evaluation does not include any obstacle evaluations. Any changes to the runway physical end latitude/longitude coordinates or elevations as well as all proposed construction projects (terminal

buildings, taxiways, etc.) and associated equipment must be filed separately as individual studies for impact on the National Airspace System.

- VISAIDS COMMENTS:
 1. Relocation of RW 7-25 Thresholds_ Impact on existing RW 7-25 PAPIs & REILs. The proposed relocation of the RW 7-25 thresholds will have a physical effect on the existing RW 7-25 PAPIs & REILs, which will need to be relocated as shown on the ALP drawing.
 2. Relocate PAPIs & REILs on both ends of RW 7-25. a) No object shall penetrate the PAPI Obstacle Clearance Surface (OCS). Moreover, any obstacle penetration of the PAPI Light Signal Clearance Surface (LSCS) identified during site survey shall be addressed during the design phase of the project, in accordance with siting criteria and requirements from FAA Order 6850.2, FAA Flight Inspection Order 8200.1 & Airport Engineering Brief EB 95. b) Coordination will be required with the FAA Aeronautical Information Group, AJV-A312, the PAPI owner to update the existing VGSI Data Forms on file with data from the relocated RW 7-25 PAPIs. c) Future coordination will be required with the FAA Flight Program Operations Group, FAA Flight Inspection Services to perform a commissioning flight check for the relocated RW 7-25 PAPIs along with the relocated RW 7-25 REILs.
 3. Clear line of Sight to airfield vis aids. Coordinate with the airport operator to ensure there is a clear line of sight to the relocated PAPIs, REILs and other airfield vis aids from any controlling point.
 4. FAA Chart Supplement Update. Future coordination will be required with the FAA National Flight Data Center (NFDC) to update the FAA Chart Supplement with the new runway data, including the new RW 7-25 length.
- WEATHER COMMENTS: Show and label the ASOS critical area on drawing titled ALP sheets 003 and 004.
- GENERAL COMMENTS: Airport Layout Plans (ALPs) are long term planning initiatives and limited in scope, therefore conceptual in nature. ALP approval does not constitute blanket approval of new structures given the absence of detailed structure information required for comprehensive review. All new structures require separate aeronautical study submissions with detailed building plans for independent study. Ensure appropriate Notice of Construction/Alteration, FAA 7460-1, is filed for review of all permanent and temporary structures.

In making this determination, the FAA has considered matters such as the effects the proposal would have on existing or planned traffic patterns of neighboring airports, the effects it would have on the existing airspace structure and projected programs of the FAA, the effects it would have on the safety of persons and property on the ground, and the effects that existing or proposed manmade objects (on file with the FAA), and known natural objects within the affected area would have on the airport proposal.

The FAA has only limited means to prevent the construction of structures near an airport. The airport sponsor has the primary responsibility to protect the airport environs through such means as local zoning ordinances, property acquisition, aviation easements, letters of agreement or other means.

Approval of the plan does not indicate that the United States will participate in the cost of any development proposed. AIP funding requires evidence of eligibility and justification at the time a funding request is ripe for consideration. When construction of any proposed structure or development indicated on the plan is undertaken, such construction requires normal 60-day advance notification to FAA for review in accordance with applicable Federal Aviation Regulations (i.e., Parts 77, 157, 152, etc.). More notice is generally beneficial to ensure that all statutory, regulatory, technical and operational issues can be addressed in a timely manner.

Furthermore, the design and location of any stormwater retention/detention facilities on or near the airport must comply with FAA Advisory Circular 150/5200-33, "Hazardous Wildlife Attractants on or Near Airports", and must be approved on the ALP prior to construction.

We look forward to working with you in the continued development of your airport.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Pedro J. Blanco', with a stylized flourish at the end.

Pedro J. Blanco
Lead Program Manager

Enclosure.

Cc (via email):
FAA Lines-of-Business (via ADIP)
FDOT/ 3 w/ALP
FDOT Central Office

APPENDIX B

Public Outreach Program

GENERAL PUBLIC SURVEY

The City of St. Petersburg is continuously working to improve the Albert Whitted Airport (SPG) for its community, tenants, customers, and the traveling public. An important part of this effort is the development of a new 20-year Airport Master Plan. We encourage your participation by sharing your experiences at SPG, ideas for the facilities, suggested improvements, desired services, and long-term vision for the airport. Please take a few minutes to complete and return this survey. Thank you!!

Name	
Address	
Phone Number	
Email Address	
Date	

1. In general, tell us about your overall impression of the Albert Whitted Airport and your experiences when using airport facilities.

2. What would you like to see improved at the airport?

TENANT AND CUSTOMER SURVEY

The City of St. Petersburg is continuously working to improve the Albert Whitted Airport (SPG) for its tenants, the traveling public, and surrounding community. An important part of this effort is the development of a new 20-year Airport Master Plan. We encourage your participation by sharing your experiences at SPG, ideas for the facilities, suggested improvements, desired services, and long-term vision for the airport. Please take a few minutes to complete and return this survey. Thank you!!

Name	
Address	
Phone Number	
Email Address	
Date	

1. How long have you been a tenant and/or customer of the Albert Whitted Airport? _____

2. Do you rent a tie-down, lease/sublease hangar space, or own a hangar? _____ If you sublease, do you do so on a seasonal basis? _____ If you own or rent a hangar space, what type and what size is it? _____

3. Do you participate in any aviation-related organizations or airport committees? _____ If Yes, please list which ones below.

4. In general, tell us about your experience as a tenant and/or customer of the airport. _____

5. What airside improvements would help improve your services at SPG? (i.e., taxiway improvements) _____

6. What type NAVAIDs/instrument approaches would improve your experiences at SPG? Are there any obstructions that hinder your use of the airport? _____

7. What landside improvements would improve your experience at the airport? (i.e. parking, security improvements, etc.) _____

8. What type of additional facilities and improvements at SPG would best suit your needs? (Select all that apply).

- | | |
|--|--|
| <input type="checkbox"/> Regular T-Hangars | <input type="checkbox"/> Large T-Hangars |
| <input type="checkbox"/> T-Shelters | <input type="checkbox"/> Clearspan Hangars (approx. 100' x 100') |
| <input type="checkbox"/> Apron Tie-downs | <input type="checkbox"/> Other _____ |

9. Understanding that many general aviation services are provided by private commercial service providers (FBOs), what general aviation services do you feel need improvement at the airport?

- | | |
|---|---|
| <input type="checkbox"/> Fixed Base Operator Services | <input type="checkbox"/> Apron Tie-downs |
| <input type="checkbox"/> Fuel Sales and Service | <input type="checkbox"/> Apron Parking |
| <input type="checkbox"/> Aircraft Maintenance Services | <input type="checkbox"/> Vehicle Access and Parking |
| <input type="checkbox"/> Avionics Repair | <input type="checkbox"/> Access to Wireless Networks |
| <input type="checkbox"/> Flight Planning / Weather | <input type="checkbox"/> Signage |
| <input type="checkbox"/> Aircraft Rental | <input type="checkbox"/> Food / Refreshments |
| <input type="checkbox"/> Counter Sales | <input type="checkbox"/> Concessions |
| <input type="checkbox"/> Flight Instruction | <input type="checkbox"/> Security / Gate Access Control |
| <input type="checkbox"/> Solid Waste Services and Recycling | <input type="checkbox"/> Security and Lighting |
| <input type="checkbox"/> IT Infrastructure | <input type="checkbox"/> Common Area Landscaping |
| <input type="checkbox"/> Site Drainage | <input type="checkbox"/> Utilities _____ |
| <input type="checkbox"/> Ground Transportation Services | <input type="checkbox"/> Other _____ |

Specifically, what would you like to see improved? _____

10. Looking to the future, what is your vision for SPG and what should be accomplished at the airport over the next 20-year period?

11. Additional Comments: _____

Please visit www.albertwhittedmasterplan.com for more information about the study.

Your information is greatly appreciated!

Please return survey to:

Douglas DiCarlo

Via Mail: ESA

4200 West Cypress Street, Suite 450
 Tampa, FL 33607

Via email:

info@albertwhittedmasterplan.com



Albert Whitted Airport Master Plan Project Kick-off Meeting

January 10, 2019

Name	Representing	Phone Number	E-Mail Address
JOE HALISKY	ESA	813-207-7209	jhalisky@esaassoc.com
RICH LESNIAK	COSP-AIRPORT	727-893-7657	richard.lesniak@stpete.org
DAVE THOMPSON	ADVISORY COMM	727 560-4980	JTHOMP64@TAMPABAY, FL. COM
Douglas D. Carl.	ESA	727-200-7326	dd.carlo@esaassoc.com
JACK TUNSTILL	ADVISORY COMM	727-415-3357	JACKTCFII@AOL.COM
JOEL GILES	ADVISORY COMMITTEE	813-229-4390	JGILES@CALTANFIELDS.COM
CAROL EVERSON	SFD	727-892-5705	Carol.everson@stpete.org
WALT DRIGGERS	ADVISORY COMM	52-804-5900	WDRIGGERS@MAC.COM
Karen DeMott	St Pete Air	727 755 1359	kdemott@stpeteair.org
Danielle Broussard	"	"	dbroussard@stpeteair.org
MARK MILLER	ShelAir	727-278-0339	mmiller@ShelAIRAuthority.com
David Metz	USF St. Petersburg	727 580-3370	dmetz@mail.usf.edu
CHRIS BALLESTRA	CITY	727-776-3636	CHRIS.BALLESTRA@STPETE.ORG



ALBERT WHITTED AIRPORT MASTER PLAN PUBLIC OPEN HOUSE #1

Wednesday, July 31, 2019

5:00-7:00 p.m.

USFSP Harbor Hall Community Room

1000 3rd St. S.

The City of St. Petersburg is in the process of preparing a master plan for the Albert Whitted Airport and will be creating a new 20-year airport development program to maintain a safe, efficient, and environmentally conscious airport facility.

Join us any time during this open house to hear information about the airport, the progress of the master plan study, and to provide input. No formal presentation will be made.



Albert Whitted Airport
Richard Lesniak, Airport Manager
727-893-7657
albertwhittedmasterplan.com

Albert Whitted Airport plan for the future to look at extending runway

And officials say shifting the runway east could create development opportunities for the University of South Florida St. Petersburg. Also expected to get a look: adding hangar space.



A small airplane takes off from Albert Whitted Airport recently. The city of St. Petersburg is updating its master plan for the airport. The plan will look at extending the main runway and building new hangers. SCOTT KEELER | Times



By **Richard Danielson**

Published Earlier Today

Updated Earlier Today

ST. PETERSBURG — Historically, a lot of conversations about the future of Albert Whitted Airport have jumped off from the idea of closing the airport and building something else on its prime waterfront property.

"Same old story: It's an ideal location," says Jack Tunstill, a longtime Albert Whitted pilot, flight instructor and chairman of the airport's advisory committee. He hears this less than he used to, thanks to a 2003 referendum in which St. Petersburg voters affirmed the airport's future as, well, an airport. Still, the idea comes up once in a while. Mayor Rick Kriseman himself floated it in 2014.

Soon, however, the talk will be less about what else could be developed at Albert Whitted and more about what might be developed nearby. The city-owned and -operated airport is putting together its first master plan since 2005. Two topics are expected to get a lot of attention: extending and shifting the main runway and finding space for more hangars.

The runway in question is known as Runway 7-25, which goes roughly from southwest, near First Street S, to northeast, out over Tampa Bay. It's 3,677 feet long and is used for about 70 percent of the takeoffs and landings at Whitted. Most planes that use it are small, carrying fewer than 10 passengers. But planes that need to use the full length of the runway can be required to reduce their weight — either by carrying less fuel, fewer passengers or both.

Adding 263 feet to the runway would help alleviate that problem, according to a feasibility study that American Infrastructure Development of Tampa did for the city in 2016.

Lengthening the runway, however, is only one possible change. Airport officials also are looking at shifting the runway to the west by 1,257 feet, or nearly a quarter mile. That would entail dredging and filling an area of Tampa Bay beyond the current eastern end of the runway at an estimated cost of \$13.25 million to \$15 million.

But airport officials say doing so could create development opportunities just beyond the western end of the runway, near First Street S. That's because shifting the runway to the west would allow the airport to move its "runway protection zone," a cone-shaped area that stretches beyond the end of the runway, onto the airport's property.

Currently, that protection zone is largely over the campus of the University of South Florida St. Petersburg, and it limits how tall USF can build. Moving the zone onto airport property, airport manager Richard Lesniak says, could create new development potential to the west.

USF St. Petersburg likes that idea.

"We are very excited about the opportunities presented by the proposal to extend and shift the main runway at Albert Whitted Airport," regional chancellor Martin Tadlock said in a statement. "The runway extension could benefit USF St. Petersburg in two important ways. First and foremost is safety, which is a top priority for our university. Secondly, by lifting the height restrictions, it could give us the opportunity to expand vertically — a significant advantage in a city where space is at a premium."

Early last year, GAI Consultants of Orlando estimated for the city that shifting the runway could create up to \$392 million a year from a combination of direct new spending on things like wages and indirect spending, such as when workers or businesses spend that new revenue on other things.

Sound like a lot? It's a long-range projection. It's also one that assumes the maximum amount of potential new or re-development and a huge influx of lucrative professional jobs. The consultants broke it down like this:

- Removing the protection zone limitations outside the airport could allow buildings now just one or two stories tall to be replaced by three- to 10-story buildings, expanding the total square footage available from 202,655 square feet to 830,225 square feet. That, the consultants estimated, would create space for 1,800 new workers. GAI Consultants said those new employees could bring a nearly \$208 million increase in economic activity. The firm also estimates that those new jobs, which is assumed would "most likely" be professional, management, scientific, technical or consulting, would indirectly lead to the creation of another 1,320 jobs in everything from food service to real estate and health care, and another \$174 million in spending.

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- The size of aircraft using the airport would not be expected to change, but the type of trip they made might. With a longer runway, planes could take off with more weight, allowing them to plan for longer flights and making the airport more attractive to corporate jets. Shifting the runway also could make 3 acres on airport property available for operations growth. With some new hangar space, airport operations could be expected to grow 5 percent as a result of the change to the runway, consultants said.

- The airport would also become more attractive to new aviation providers, such as non-scheduled charters. A previous proposal for that kind of service at the airport anticipated 16 arrivals and 16 departures a week, serving about 1,500 passengers a year and generating \$6 million to

\$7 million in economic activity. (Tampa International Airport, by comparison, estimates the economic impact of a new international flight at more than \$100 million a year.)

For the master plan, airport officials also will look at adding hangars. About 75 percent of the 180 aircraft based at the airport now have a spot in a hangar. Another 70 owners are on a waiting list.

Some new hangars could go on the 8 acres that's now home to the city's closed waste water treatment plant — if Mayor Kriseman decides to close it permanently. But that's an open question. The City Council voted to close the sewage treatment plant at Albert Whitted in 2011. The Kriseman administration carried out the plan in 2015. In the year that followed, the city's three remaining treatment plants were swamped, and the system released up to 1 billion gallons of waste water, with a fifth of it going to Tampa Bay. Now the plant is available with 10 million gallons of emergency storage capacity, and City Hall is working on a master plan for the waste water system, which is expected to cost \$326 million to fix. That plan is expected to help determine the fate of the treatment plant at the airport.

The potential impact of sea level rise likely will get looked at as part of a review of sustainability and resiliency at the airport, which sees occasional airfield flooding.

The airport will hold an open house at Harbour Hall at USF St. Petersburg from 5 to 7 p.m. on Wednesday where anyone will have a chance to share their thoughts or learn more about the airport. The master plan is expected to take about a year to finish.

"The intent here is to improve the operations of the airport, its viability as a destination for both business and recreational fliers," Tunstill says. "We're not talking about commercial airlines coming in."

Meanwhile, Kriseman isn't talking about redeveloping the airport anymore.

"For as long as the airport is viable, he wants to see it optimized," Kevin King, the mayor's policy chief, said in an email. "He would like to see the runway expansion occur, if possible. He thinks the airport has the potential to catalyze future economic development."

MORE: [Go here for more business news](#)

Contact Richard Danielson at rdanielson@tampabay.com or (813) 226-3403. Follow @Danielson_Times

IF YOU GO

What: Open house updating the city of St. Petersburg's 20-year airport development program for Albert Whitted Airport.

When: 5 to 7 p.m. Wednesday. There's no formal program, so residents can visit anytime during the open house to learn about the process and share their thoughts.

Where: Community room, Harbor Hall, University of South Florida St. Petersburg, 1000 Third St. S.

More information: albertwhittedmasterplan.com



RICHARD DANIELSON

Economic Development,
Port, Airport and Movers
and Shakers Reporter

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**Albert Whitted Airport Master Plan
Public Open House #1
July 31, 2019 5:00 PM – 7:00 PM**

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**Albert Whitted Airport Master Plan
Public Open House #1
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Albert Whitted Airport Master Plan Technical Working Group Meeting #3

November 16, 2021 - 9:30 a.m.

Page ___ of ___

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APPENDIX C

Runway 7-25 Feasibility Study

RUNWAY 7-25 FEASIBILITY STUDY ALBERT WHITTED AIRPORT



PREPARED BY:

AMERICAN INFRASTRUCTURE DEVELOPMENT, INC.



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Tampa, FL 33624
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IN ASSOCIATION WITH:

ENVIRONMENTAL SCIENCE ASSOCIATES



November 2016

(updated, January 2017)

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ATTACHMENTS

- Attachment 1: FAA’s Interim Guidance on Land Uses within a Runway Protection Zone
- Attachment 2: Conceptual Cost Estimate

The City of St. Petersburg has conducted a preliminary study to explore improving the safety and operational utility of Runway 7-25 at Albert Whitted Airport (SPG). The study investigated runway length needs and associated safety requirements as defined by the Federal Aviation Administration (FAA) and the Florida Department of Transportation (FDOT). The intent of the study is to determine what, if any, future improvements are necessary for Runway 7-25 and identify the process necessary to achieve these improvements. The City will ultimately decide if the improvements will be further investigated and planned.

This study addressed two factors in determining the current runway length requirements to safely accommodate the existing aircraft operations and to evaluate the FAA's safety guidelines related to land uses within the Runway Protection Zone.

1. Runway Length Requirement

A runway length analysis was conducted to determine if the existing length of Runway 7-25 is adequate for the operations that are currently being conducted at the Airport. The FAA and FDOT have specific guidance that must be used to determine runway length requirements.

Runway 7-25 is designed for small aircraft operations under FAA design guidelines. Runway 7-25 is the Airport's Primary Runway and is used approximately 70 percent of the time on an annual average basis.

The runway length analysis revealed that the majority of aircraft operations being conducted at SPG consist of small aircraft under 12,500 pounds with less than 10 seats. FAA's Advisory Circular (AC) 150/5325-4B, "Runway Length Requirements for Airport Design" was used to determine the length requirements for small aircraft under 12,500 pounds. In addition, aircraft specific information was used to correlate and verify the existing length needs.

The runway length analysis used both the FAA's preferred methodology as well as the aircraft specific characteristics for one of the most demanding small aircraft currently based at and using SPG on a regular basis. The analysis revealed that 3,700 feet is necessary for the most demanding of those aircraft, including the Beech King Air B200. Runway 7-25 has reduced utility due to the use of declared distances for obstruction clearance in the approaches to Runway 7 and Runway 25.

To meet the existing needs at SPG, an additional 263 feet should be added to the runway length to meet the minimum length for takeoffs. Currently, all aircraft needing the full 3,700 feet for takeoff must take a weight penalty such as a reduction in fuel, passenger load or both, to ensure the aircraft can take off on the available runway length.

2. Runway Protection Zone (RPZ) Incompatible Land Use

The RPZ is a defined area on the ground that is located prior to a runway's landing threshold and beyond the runway end that should be cleared of incompatible objects and activities. Its purpose is to enhance the safety and protection of people and property on the ground. This is accomplished through airport owner control of property within the limits of the RPZ. FAA design standards recommend that airport owners exercise control through property acquisition, but in cases where that is not possible the design standard recommends that airport owners maintain the RPZ clear of

EXECUTIVE SUMMARY

incompatible land uses and activities. Incompatible land uses include schools, hospitals, churches, office buildings, shopping centers, and other uses with similar concentrations of persons.

At SPG, Runway 7 has arrival and departure RPZs located mostly off-airport in an area occupied by several incompatible land uses and buildings that are part of the University of South Florida (St. Pete Campus) as shown in **Exhibit ES-1**. **Exhibit ES-2** provides more detailed information on the buildings located within the RPZ.

Exhibit ES-1: Runway 7 Approach and Departure RPZs



Source: American Infrastructure Development, 2016

To achieve the desired results of this RPZ Concept, Runway 7 must be displaced a total of 1,257 feet and the Runway 25 end shifted by an equal amount. This concept, as presented in **Exhibit ES-3**, would bring the RPZ entirely onto airport property thereby achieving full compliance with FAA land use guidance.

To accomplish this project, permitting will be required from a few state and federal agencies, including the Florida Department of Environmental Protection (FDEP), Southwest Florida Water Management District (SWFWMD), Florida Fish and Wildlife Conservation Commission, and the U.S. Army Corps of Engineers (ACOE). In addition, a federal dredge and fill permit will be required by ACOE.

It is estimated that it will cost approximately \$12.5 million in 2016 dollars to construct these runway improvements. A Master Plan/ALP update and subsequent Environmental Assessment (EA) is the next step required by the FAA.

OBSTRUCTION DATA TABLE - RUNWAY 7 (20:1)			
#	TYPE	TOP OF OBJECT ELEV.	EXIST. ELEVATION DIFFERENCE
1	OL Blast Fence	19'	25.4'
2	Lowell E. Davis Memorial Hall	45.61'	+6.41'
3	Cocquina Hill	36.61'	-4.61'
4	Ol Rod on OL Bldg	48'	+5'
5	Ol Ant on OL Bldg	60'	+1'
6	Bayboro Hall	58.8'	-8.11'
7	Nelson Poynter Memorial Library	52.78'	-11.82'
8	Poynter Institute for Media Studies	52.78'	-33.82'



LEGEND:

SYMBOL	DESCRIPTION
---	Runway Object Free Area
---	Runway Safety Area
---	Runway Visual Zone
---	Property Line
---	Departure Surface
---	Approach Surface

RUNWAY DESIGN STANDARDS

SYMBOL	DESCRIPTION	STANDARD
---	Runway Protection Zone (L x W x OW)	B-1 SMALL
---	Runway Object Free Area	100' x 250' x 450' (8 ac)
---	Runway Safety Area	120'
---	Runway Safety Area Length beyond RW End	240'
---	Runway Object Free Area Width	250'
---	Runway Object Free Area Length beyond RW End	240'
---	Runway Centerline to:	
---	Hold Position Lines	125'
---	Parallel Taxiway or Taxiway	150'
---	Aircraft Parking Area	125'
---	Taxiway Safety Area	48'
---	Taxiway Object Free Area	88'
---	Taxiway Object Free Area	79'

JOB NO:	SPG1008
DRAWN:	RRC
DESIGN:	TC
CHECKED:	JMM
DATE:	JAN, 2017

MAGNETIC DECLINATION
 10° 00' WEST (2008)
 ANNUAL CHANGE
 0 200 400
 SCALE IN FEET



ALBERT WHITTED AIRPORT RUNWAY 7-25 EXTENSION FEASIBILITY STUDY

ENGINEERS & ARCHITECTS
 1000 N. ...
 ST. PETERSBURG, FL 33716

REV. NO.	DATE	DESCRIPTION	APPROVED BY:

OBSTRUCTION DATA TABLE - RUNWAY 7 (20:1)

#	TYPE	TOP OF OBJECT ELEV.	EXIST. APPROACH ELEVATION	ULT. APPROACH ELEVATION	ELEVATION DIFFERENCE
1	OL Blast Fence	19'	25.4'	60.0'	-41'
2	Loyall E. Davis Memorial Hall	45.61'	39.2'	73.9'	-28.29'
3	Coquina Hall	36.61'	41.3'	76.0'	-39.39'
4	OL Rod on OL Bldg	48'	43.0'	77.7'	-29.7'
5	OL Ant on OL Bldg	60'	59.0'	83.7'	-33.7'
6	Bayboro Hall	56.69'	56.8'	93.5'	-42.81'
7	Nelson Poynter Memorial Library	52.78'	64.6'	89.3'	-46.92'
8	Poynter Institute for Media Studies	52.78'	86.4'	121'	-68.22'
9	OL Ant on Hangar	23'	10.9'	21.1'	+1.9'
10	OL Ant on OL Bldg	54'	16.5'	46.9'	+8.1'
11	OL LT Pole	32'	28.7'	63.4'	-31.4'
12	OL Rod on OL Bldg	70'	62.0'	77.4'	-7.4'



LEGEND:

SYMBOL	DESCRIPTION
	Runway Object Free Area
	Runway Safety Area
	Runway Visual Zone
	Property Line
	Approach Surface

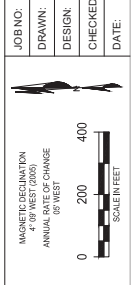
RUNWAY DESIGN STANDARDS

Runway Design Standards	B-I SMALL
Runway Protection Zone (L x W x OW)	100' x 250' x 450' (8 ac)
Runway Safety Area Width	120'
Runway Safety Area Length beyond RWY End	240'
Runway Object Free Area Width	250'
Runway Object Free Area Length beyond RWY End	240'
Runway Centerline to:	
Hold Position Lines	125'
Parallel Taxiway or Taxiway	150'
Aircraft Parking Area	125'
Taxiway Safety Area	49'
Taxiway Object Free Area	89'
Taxiway Object Free Area	79'

RELOCATE RPZ ON AIRPORT PROPERTY (FUTURE B-I SMALL)

EXHIBIT ES-3

JOB NO:	SPG1008
DRAWN:	RRC
DESIGN:	TC
CHECKED:	JMM
DATE:	JAN, 2017



**ALBERT WHITTED AIRPORT
RUNWAY 7-25 EXTENSION
FEASIBILITY STUDY**

ENGINEERS & ARCHITECTS
MEMBERS OF THE
CITY OF ST. PETERSBURG

APPROVED BY:

REV. NO.	DATE	DESCRIPTION	EOR

**FEASIBILITY STUDY – RUNWAY 7-25
ALBERT WHITTED AIRPORT**

TECHNICAL ANALYSIS

TECHNICAL MEMORANDUM



INTRODUCTION

The City of St. Petersburg has been exploring the feasibility of extending Runway 7-25 at Albert Whitted Airport (SPG) to enhance Runway 7-25 utility and operational capabilities. American Infrastructure Development, Inc. (AID, Inc.) was tasked with identifying the length of the extension necessary to achieve the City's goals with an overview of potential impacts. The City will determine if a runway extension should be further studied and pursued within a future Airport Master Plan Update and Airport Layout Drawing (ALD) Update.

FAA guidance states that to justify funding a runway extension, at least 500 annual itinerant aircraft operations must exhibit a need for an extension now or within the next five years. In general, an airport must document aircraft operations that are constrained as a result of runway length. A constrained operation is one that must reduce payload for takeoff, which could include fuel or passengers. If the need for an extension is justified, the project would then go through the FAA's Airport Master Plan/ALP Update process. Once the project is justified through the FAA's planning process, it would then be subject to an Environmental Assessment (EA).

The project approach and analysis used the following FAA and FDOT guidance and regulatory criteria:

1. FAA Advisory Circular (AC) 150/5300-13A, "Airport Design"
2. FAA AC 150/5325-4B, "Runway Length for Airport Development"
3. FAA Memorandum, "Interim Guidance on Land Uses Within a Runway Protection Zone"
4. FAA Order 5050.4B, "Environmental Handbook"
5. Florida Statutes, Title XXV, Aviation, Chapter 333, Airport Zoning (revised 2016)

AID began the study effort by reviewing all existing information available and coordinated with City officials to define the intent and proposed project elements. The main emphasis was to examine the existing runway length and types of operations presently occurring at the Airport. As the study parameters began to evolve, it became clear that any Runway 7-25 extension in the future would also trigger a Runway Protection Zone (RPZ) evaluation for the FAA. Therefore, the study begins with an overview of the existing conditions, an evaluation of runway length needs, followed by a brief RPZ analysis and an environmental overview of potential impacts.

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RUNWAY 7-25 EXISTING CONDITIONS

Runway 7-25 is the Airport's primary runway and is 3,674-foot long and 75-foot wide. The runway meets FAA design standards to serve small aircraft not exceeding approach speeds of 121 knots, with tail heights less than 20 feet and wingspans less than 49 feet (referred to as B-I). In addition, most aircraft operating at SPG are "small aircraft" that do not exceed a maximum certificated takeoff weight of 12,500 pounds. Aircraft that are larger than 12,500 lbs. including mostly small/medium corporate aircraft such as the Hawker 400 Jet (BAE HS125), do on occasion use the Airport and must reduce their payloads due to runway length. Runway 18-36 is the Airport's crosswind runway and is 2,864 feet in length by 150 feet wide.

Runway 7 has a non-precision Area Navigation, Global Positioning Satellite (RNAV GPS) instrument approach with minimums not less than one mile (distance the pilot can see the runway end) with a 555-foot displaced threshold due to building obstructions in the approach.

The approach end of Runway 25 has a visual approach (used during clear weather conditions) and the threshold is displaced 263 feet for intermittent sailboat masts that may occur in Tampa Bay in the approach to the runway. The runway design requirements which are dimensions and areas needed for the dominant aircraft that use this runway, according to FAA AC 150/5300-13A, CHG 1, are depicted below in **Table 1**.

Table 1 – B-I Minimum Runway Design Requirements

Design Standard	Dimension (Feet)	SPG (Feet)
Runway Safety Area (RSA) Length Beyond Departure End	240	240
RSA Length Prior to Threshold	240	240
RSA Width	120	120
Runway Object Free Area (ROFA) Width	250	250
Object Free Zone (OFZ)	250	250
Runway Width	60	75

Source: American Infrastructure Development

As mentioned above, the runway thresholds where aircraft can land are displaced to allow aircraft to clear obstructions on either end. As a result, Runway 7-25 has existing declared distances available for operations. Declared Distances, as defined by the FAA, are runway distances declared by the Airport available for an aircraft's use and further defined by the takeoff run available (TORA), takeoff distance available (TODA), accelerate stop distance available (ASDA), and landing distance available (LDA). This is a notification to pilots that the full length of the runway is not available for takeoffs and landings.

The declared distances at SPG were adjusted as part of the recent Runway 7-25 Rehabilitation Project due to the placement of the Runway 7 end lights. The design placed new runway end lights within the asphalt portion of the runway approximately 3 feet in front of the previous location. This 3-foot shift affected the Runway 7 displaced threshold distance, and the Runway 25 TORA and TODA to change accordingly. **Table 2** shows the changes that occurred to the declared distances.

The LDAs and ASDAs were not affected for either direction because the safety area would still be available regardless of the location of the physical end of the runway.

Table 2: Existing Runway Utility

	EXISTING CONDITIONS	
Runway End	7	25
Total Runway Length	3,674'	3,674'
Displaced Threshold	555'	263'
TORA	3,647'	3,674'
TODA	3,647'	3,674'
ASDA	3,447'	3,437'
LDA	2,919'	3,174'

Source: American Infrastructure Development

In general, the use of declared distances at SPG on Runway 7-25 restricts the use of the runway for many twin turbine engine and jet aircraft. The runway length analysis completed as part of this study will demonstrate the extent of the impact to aircraft operating at the Airport.

RUNWAY USE

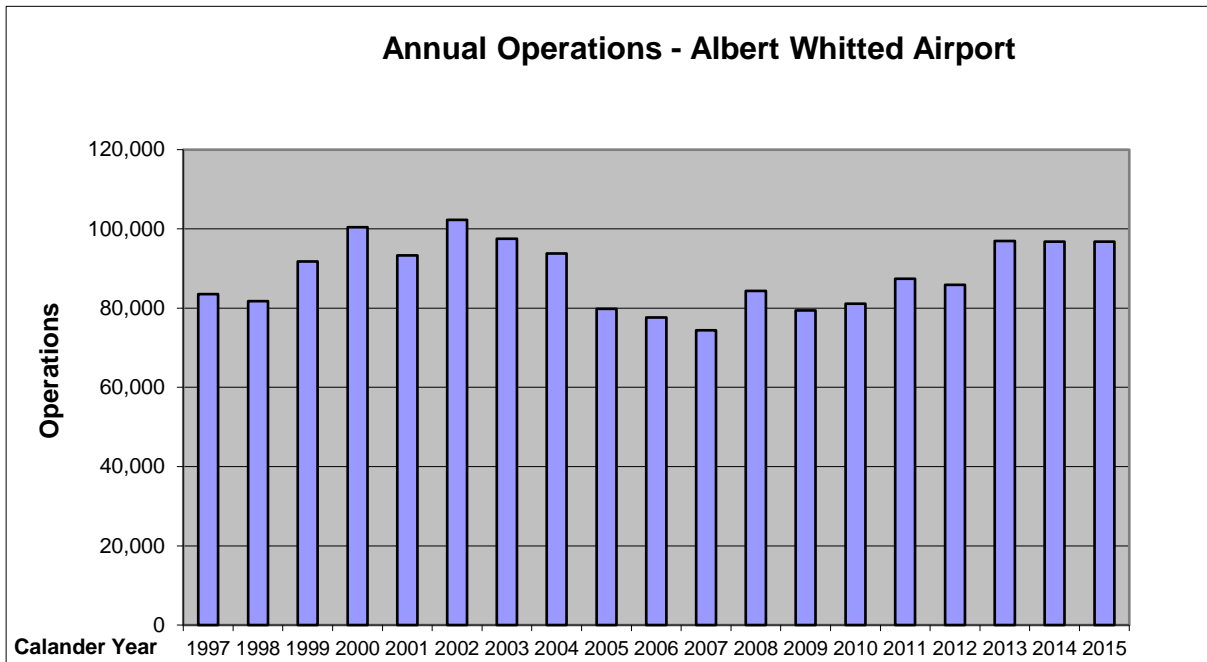
Based on a review of wind data and conversations with Airport staff, Runway 7-25 is used on average 70 percent of the time. Runway 18-36, the Airport’s crosswind runway, is used the remaining 30 percent of the time when weather and winds are favorable for its use.

OPERATIONS

It is important to define the type and number of aircraft that use the Airport’s runway system on an annual basis in order to evaluate the impact of alternatives examined in this feasibility study. Historical traffic counts from the past 10 years were provided by the local Air Traffic Control Tower (ATCT). SPG currently has approximately 98,000 aircraft operations annually, and on average from 2010 to 2013, has seen an annual growth rate of 5.25 percent. Operations from 2013 to 2015 remained flat, as indicated in **Exhibit 1**.

The Airport’s fleet mix includes a combination of aircraft including: single-engine, twin-engine, jet and rotorcraft. According to data received from the Airport and the Fixed Base Operator (FBO), the 98,000 annual operations consist of approximately 55 percent locally based aircraft and 45 percent itinerant operations. In addition, more than 90 percent of the operations are conducted by aircraft weighing under 12,500 lbs. The split between the various aircraft groupings is shown in **Table 3**.

Exhibit 1: SPG Annual Operations



Source: SPG and Fixed Based Operator Statistics for 2015

Table 3: Aircraft Count

	<u>Single Engine</u>	<u>Twin Engine</u>	<u>Jet</u>	<u>Rotor</u>	<u>Total</u>
Local	150	25	1	8	184
Transient	1,320	354	35	3	1,712
Total Aircraft	1,470	379	36	11	1,896
	77.5%	20.0%	1.9%	0.6%	

Source: SPG and Fixed Based Operator Statistics for 2015

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Based upon data received from the Airport and FBO, an example of the fleet mix of aircraft operating at SPG is provided in **Table 4**.

Table 4: Runway 7-25 Fleet Mix

<u>Type</u>	<u>Model</u>	<u>Percent Mix</u>	<u>Engine</u>
BE36	Bonanza	9.43%	Single
P28	Cherokee	32.08%	Single
C172	Skyhawk	28.30%	Single
C182	Skylane	13.21%	Single
PC12	Pilatus	16.98%	Single
PA31	Navajo	69.23%	Twin
PA44	Seminole	23.08%	Twin
BE20	King Air 200	7.69%	Twin
C525	Citation	1.90%	Jet

Source: SPG Airport Management and Fixed Base Operator Records

DESIGN AIRCRAFT

The design aircraft is defined by the FAA as the most demanding aircraft (in terms of approach speed, tail height, wingspan, and dimensions of the aircraft undercarriage) that is likely to use the Airport on a regular basis, or in this case specifically Runway 7-25. Since one type of aircraft may be more demanding than another, the design aircraft may be a composite of various aircraft rather than one specific aircraft. The minimum design requirements previously presented in Table 1 are dimensions and areas needed to accommodate the dominant aircraft that use the Airport's runways.

Aircraft characteristics are grouped and defined by the FAA according to three parameters. The first parameter is the Aircraft Approach Category (AAC) which groups aircraft according to their approach speed. The Aircraft Approach Category is based on the landing speed of the aircraft, which is defined as 1.3 times the stall speed of the aircraft. **Table 5** provides a listing of these categories. The category that is appropriate for SPG is highlighted in blue.

Table 5: Aircraft Approach Category

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 knots
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, *Airport Design*.

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The second parameter is the Airplane Design Group. This parameter addresses two elements: an aircraft's tail height and an aircraft's wingspan both measured in feet. Airplane Design Groups are defined in **Table 6**. These dimensions, along with the Taxiway Design Group (TDG), are used to ensure that the aircraft has adequate clearance to move about the airfield when landing, taking off and taxiing.

Table 6: Airplane Design Group

Group	Tail Height (feet)	Wingspan (feet)
I	Less than 20	Less than 49
II	20 to less than 30	49 to less than 79
III	30 to less than 45	79 to less than 118
IV	45 to less than 60	118 to less than 171
V	60 to less than 66	171 to less than 214
VI	66 to less than 80	214 to less than 262

Source: FAA AC 150/5300-13A, *Airport Design*.

The third and final parameter is the Taxiway Design Group (TDG). This parameter is based upon the undercarriage dimensions of the aircraft, specifically the main gear width and its distance from the cockpit. Unlike the Aircraft Approach Category and the Airplane Design Group, the Taxiway Design Groups do not fit in a simple table format.

Although FAA criteria are based upon these three parameters, aircraft weight should also be considered when assessing the adequacy of pavement strength and length of haul (trip distance from takeoff to first landing point) when assessing runway length requirements.

The design aircraft per the ALP for the taxiways is an aircraft with an Airplane Design Group I (ADG-I) and Taxiway Design Group 1A (TDG 1A) classification. **Table 7** below shows a summary of the ADG-I/TDG 1A requirements.

In addition to the smaller Group I aircraft, the Airport also has approximately 384 operations per year of a larger aircraft, the King Air B200. Because of the frequent operations of the King Air B200, which is an ADG-II /TDG-2 aircraft, the minimum taxiway design guidelines were modified to an aircraft specific design to accommodate the King Air for the recently completed Runway 7-25 Rehabilitation and South Taxiways project. The modified design guidelines used the wider, ADG-II taxiway width of 35 feet, but kept the Taxiway Design Group I Fillet dimensions as shown in the table below. Geometry and fillet design were verified using computer modeling software with the King Air B200 as the design aircraft.

Table 7: Aircraft Specific Design Criteria – For Taxiway Connectors

Taxiway Safety Area (TSA)	49 feet
Taxiway Object Free Area (TOFA)	89 feet
Taxiway Width	35 feet
Taxiway Edge Safety Margin (TESM)	7.5 feet
Taxiway Shoulder Width (if present)	10 feet
Taxiway Fillet Dimensions	Per TDG 1B

Source: American Infrastructure Development

RUNWAY DESIGN CODE (RDC)

The aircraft approach category, airplane design group, and the approach visibility minimums that have been previously discussed are combined for the RDC of a particular runway. The visibility minimums for Runway 7-25 are not lower than 1-mile and is expressed as a runway visual range (RVR) value of 5,000 feet. Therefore, Runway 7-25 has a RDC B-I-5000.

RUNWAY LENGTH ANALYSIS

AC 150/5325-4B, Paragraph 202, *Design Approach*, provides two methods to calculate a recommended runway length. Airport planners can either use the appropriate “runway length curves” in AC 150/5325-4B for the weight and characteristics of the design aircraft or a family grouping of critical design aircraft under consideration can determine the necessary runway length from an airport planning manual (APM) for a specific aircraft. This analysis uses both methods.

The procedures identified in AC 150/5325-4B are provided below in a step-by-step process. The runway length curve method is presented first.

Step 1 - Identify the list of critical design airplanes that will make regular use of the proposed runway for an established planning period of at least five years.

At SPG, there is not one specific type of aircraft that can be identified as the critical aircraft having a minimum of 500 annual operations. The majority of aircraft operating at the Airport are in the small B-I category, or lower, and are 12,500 pounds or less. The aircraft are a mix of small single engine, multi-engine, turboprop, and small business jet aircraft. As indicated in the preceding sections, although there are not 500 annual operations, the Beech Super King Air B200 is a based aircraft and conducts on average 385 annual operations of the total annual operations and therefore was selected as being the representative design aircraft to study for runway length needs.

Step 2 - Identify the airplanes that will require the longest runway lengths at maximum certificated takeoff weight (MTOW).

All aircraft operating into and out of SPG, identified through the use of the FBO and FAA data are under 60,000 pounds MTOW. Therefore, according to the AC, when the MTOW of listed airplanes is 60,000 pounds or less, the recommended runway length is determined according to a *family grouping of airplanes* having similar performance characteristics and operating weights. As identified in step 1, at SPG this would be aircraft 12,500 pounds or less.

Step 3 - Use the Advisory Circular Table 1-1 (shown in Table 8) and the airplanes identified in Step 2 above, to determine the method that will be used for establishing the recommended runway length.

The majority of aircraft identified in the B-I grouping of aircraft, as well as the Beech Super King Air B200, operating at the Airport fall into the highlighted portions of the following table.

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Table 8: Airplane Weight Categorization for Runway Length Requirements

Airplane Weight Category Maximum Certificated Takeoff Weight (MTOW)		Design Approach	Location of Design Guidelines	
12,500 pounds or less	Approach Speeds less than 30 knots	Family grouping of small airplanes	Chapter 2; Paragraph 203	
	Approach Speeds of at least 30 knots but less than 50 knots	Family grouping of small airplanes	Chapter 2; Paragraph 204	
	Approach Speeds of 50 knots or more	With Less than 10 Passengers	Family grouping of small airplanes	Chapter 2; Paragraph 205 Figure 2-1
		With 10 or more Passengers	Family grouping of small airplanes	Chapter 2; Paragraph 205 Figure 2-2
Over 12,500 pounds but less than 60,000 pounds		Family grouping of large airplanes	Chapter 3; Figures 3-1 or 3-2 and Tables 3-1 or 3-2	
60,000 pounds or more or Regional Jets 2		Individual large airplane	Chapter 4; Airplane Manufacturer Websites (Appendix 1)	

Source: FAA AC 150/5325-4B

Step 4 - Select the recommended runway length from among the various runway lengths generated by Step 3 per the process identified in Chapter 2 (AC 150/5325-4B).

Advisory Circular 150/5325-4B describes the procedures for determining the runway length needs of aircraft weighing 12,500 pounds or less with approach speeds of 50 knots or more and having less than 10 passengers. The less than 10 passenger seats category is further broken down based on two percentages of fleet: “95 percent of the fleet” or “100 percent of the fleet” categories. These categories are based on the Airport’s location and the amount of existing or planned aviation activities.

The Airport serves a community (i.e. City of St. Petersburg) on the fringe of a metropolitan area (i.e. Tampa). The Airport has the potential for higher levels of aviation activities as evidenced in yearly operational data in years past. Therefore, the “100 percent of the fleet” category has been used for the analysis.

Using the 100 percent of the fleet curve, on a 92-degree day the aircraft operating at the Airport need a runway length of 3,700 feet (see **Exhibit 2**). The AC indicates that individual Airplane Flight Manual performance information and criteria contained in Part 135 for *Operating Requirements: Commuter and On Demand Operations and Rules Governing Persons on Board such Aircraft*, can be used to develop the runway length curves. However, operations at SPG in the summer months during very hot and wet conditions generally need additional runway length to operate fully loaded and in these weather conditions. Therefore, the second method of using individual aircraft planning manuals was also used and is described in the following paragraphs.

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According to the Advisory Circular, *“airport designers can, instead of applying the small airplane design concept, determine the recommended runway length from airplane flight manuals for the airplanes to be accommodated by the airport in lieu of the runway length curves depicted in the AC’s runway length curves for small aircraft. For example, owners of multi-engine airplanes may require that their pilots use the airplane’s accelerate-stop distance in determining the length of runway available for takeoff”*.

The accelerate-stop distance is defined as the distance it takes an aircraft to accelerate to liftoff speed, experience the failure of one engine, and brake to a complete stop on the remaining runway. During the heat of the summer, with higher density altitudes and temperatures, it is possible that the total accelerate-stop distance will exceed the length of the available runway. If this is the case, the choices are to reduce takeoff weight or delay the flight until the temperature cools enough to improve performance.

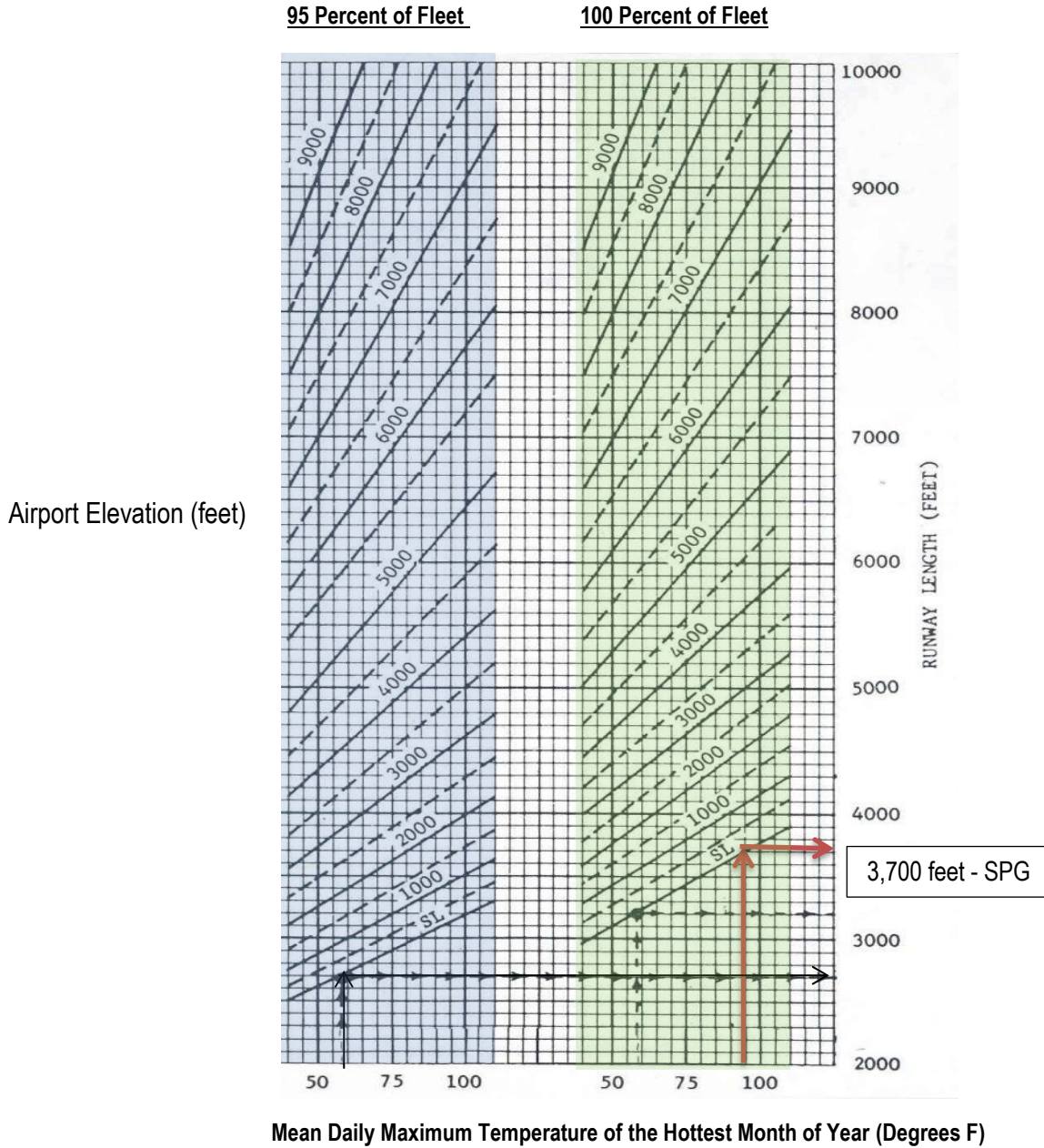
For this analysis, the Airplane Flight Manual (AFM) for the Beech Super King Air B200 was obtained to ascertain the required accelerate-stop distance requirement. It is important to note, that the takeoff and landing distances presented in the manufacturer-supplied AFM reflect performance in a flight test environment with a brand new aircraft and therefore represents optimal flight operations. It represents the best performance the airplane is capable of for the conditions.

According to the performance charts contained in the Super King Air B200 manual, the accelerated-stop distance needed at SPG on a 92-degree day, at sea level and maximum takeoff weight at 12,500 pounds, is approximately 3,700 feet in dry runway conditions (see **Exhibit 3**).

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Exhibit 2: Small Airplanes with Fewer than 10 Passenger Seats

(Excludes Pilot and Co-pilot)

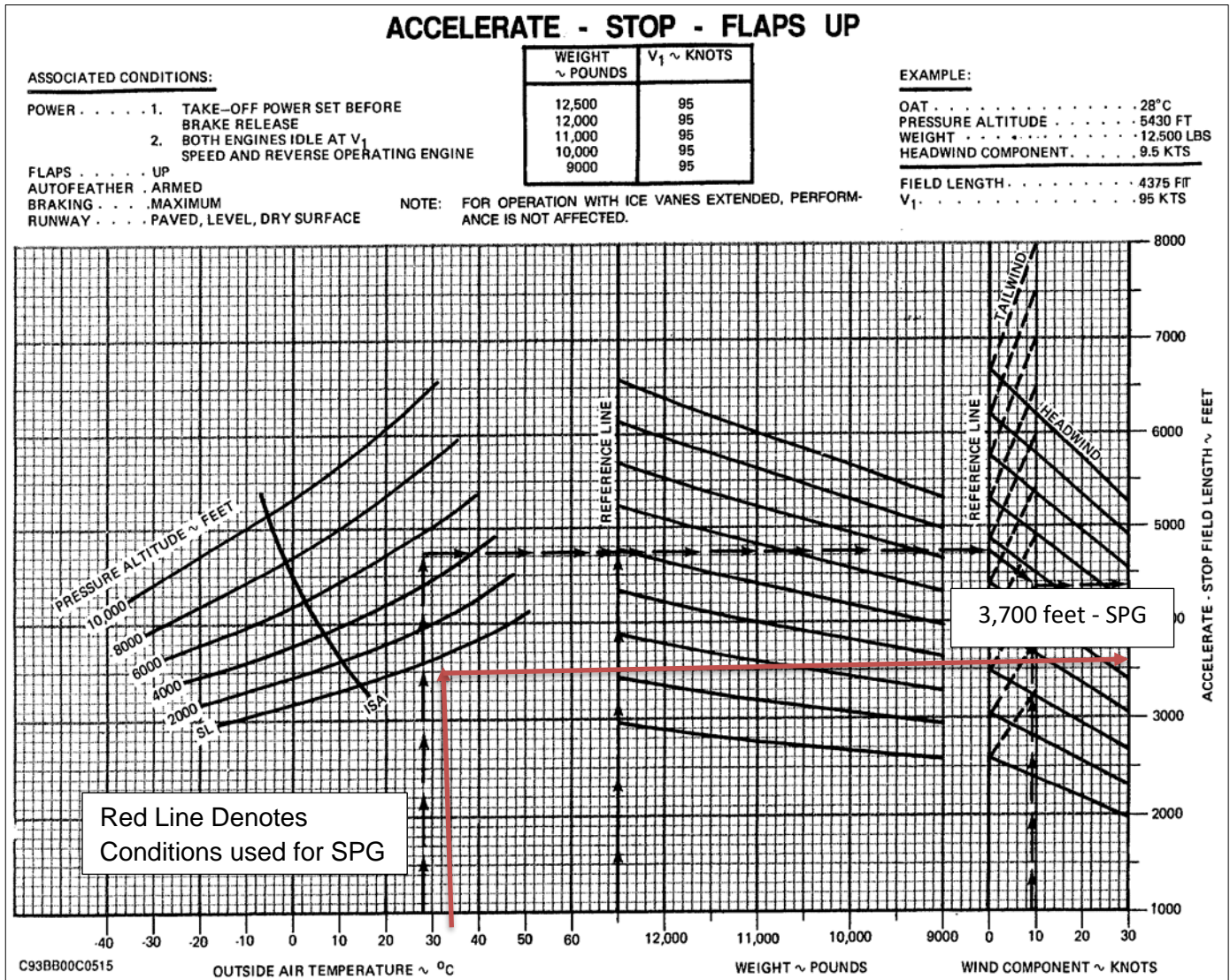


Source: FAA AC 150/5325-4B, Runway Length for Airport Development

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Exhibit 3: Super King Air B200 Takeoff Requirements



Source: Super King Air B200 Airplane Flight Manual

The existing utility of Runway 7-25 requires that the Beech Super King Air B200 aircraft and others with similar characteristics, take payload penalties when operating in these conditions. These conditions occur at a minimum from May through September and can occur at other times sporadically throughout the year. **Table 9** provides a summary of length deficits that appear to be present at SPG.

The existing ASDA on Runway 7 is 3,447 feet, and 3,437 feet on Runway 25. Therefore, using the recommended curve in AC 150/5325-4B as well as the King Air AFM to determine runway length needs, a minimum of 263 additional feet should be provided. The majority of aircraft that use SPG can land within the LDA of 2,919 feet on Runway 7.

Table 9: Existing Runway Utility

	EXISTING CONDITIONS	
	7	25
Runway End		
Total Runway Length	3,674'	3,674'
Displaced Threshold	555'	263'
TORA	3,647	3,674'
TODA	3,647	3,674'
ASDA	3,447'	3,437
LDA	2,919'	3,174

Source: American Infrastructure Development Runway 7-25 and South Taxiways Rehabilitation Project (August 2016)

AC 150/5325-4B, *Runway Length Requirements for Airport Design* also states that the airport designer should consider and at least assess and verify the impacts of expansions to accommodate airplanes of more than 12,500 pounds (5,670 kg). The FAA indicates that “failure to consider this change during an initial development phase may lead to the additional expense of reconstructing or relocating facilities in the future”. Although an in depth analysis of this type typically takes place in the Master Planning process, the Team reviewed the requirements for a B-I design group jet that operates on occasion at SPG. The Cessna C-510 Citation Mustang was selected to serve as this example. The Cessna C650 does occasionally use SPG; however, it belongs in the C-II design category of aircraft.

The Cessna C-510 Citation Mustang, FAA approved, airplane flight manual was used to determine the runway length requirements at SPG for MTOW, at 30 and 35 degrees centigrade and under various pressure altitude scenarios. The flight manual provides charts for operating conditions under dry and wet conditions. The following **Table 10** presents the runway length information for the C-510.

Table 10: C510 Mustang Runway Length Requirements Maximum Takeoff Weight in Hot Conditions (35 degrees C)

Temperature	Pressure Altitude	Runway Length (feet) Dry Conditions	Runway Length (feet) Wet Conditions
30C / 86F	0	4,370	4,570
35C / 95F	0	4,790	5,050

Source: C-510, Citation Mustang, FAA Approved Airplane Flight Manual, November 2008.

The runway length requirements are shown for 30C and 35C because the manual does not provide values for the Centigrade equivalent of 92F (i.e., the Airport’s mean max hot day temperature). The analysis reveals that the C-510 requires a runway length in the range of 4,370 feet in dry conditions to 5,050 feet in wet conditions.

Such length requirements cannot be justified until the number of C-510 or other group of business jet aircraft increases to a minimum of 500 annual operations. However, the City should, in the next Airport Master Plan Update, conduct an

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in-depth operations activity count and Aviation Demand Forecast to determine the appropriate length needed in the future and timing for implementation.

SUMMARY

The runway length analysis used both the FAA's preferred methodology, as well as the aircraft specific characteristics for one of the most demanding small aircraft currently based at and using SPG on a regular basis. The analysis revealed that 3,700 feet is necessary for the most demanding of those aircraft including the Beech King Air B200. Runway 7-25 has reduced utility due to the use of declared distances for obstruction clearance in the approach to Runway 7 and Runway 25.

Table 11: Runway Requirements

	EXISTING CONDITIONS		EXISTING NEEDS	
	7	25	7	25
Total Runway Length	3,674'	3,674'	3,700'	3,700'
Displaced Threshold	555'	263'	N/A	N/A
TORA	3,647	3,674'	3,700	3,700
TODA	3,647	3,674'	3,700	3,700
ASDA	3,447'	3,437	3,700	3,700
LDA	2,919'	3,174	3,700	3,700

Source: American Infrastructure Development Runway 7-25 and South Taxiways Rehabilitation Project (August 2016), Super King Air B200 Airplane Flight Manual

In order to meet the existing needs at SPG, a minimum of 263 additional feet should be added to the runway to meet the critical ASDA requirements for all small aircraft under 12,500 lbs. having fewer than 10 seats. Currently, all aircraft needing the full 3,700 feet for takeoff must take a weight penalty such as a reduction in fuel, passenger load or both, to ensure the aircraft is able to take off on the available runway length.

Although there are business jet aircraft such as the Cessna Mustang C-510 that use the Airport, their frequency of use is not enough to reach 500 annual operations as stated in FAA planning and design guidelines.

RUNWAY PROTECTION ZONE ANALYSIS

There has been a strong focus from the FAA in regards to land uses within a Runway Protection Zone (RPZ). According to FAA guidance, land uses prohibited in the RPZ include buildings, residences, and places of public assembly (i.e. churches, schools, hospitals, office buildings, shopping centers, and other uses with similar concentrations of persons).

In 2012, the FAA published interim guidance about land uses within RPZs. If the existing development around the Airport does not allow for an RPZ clear of buildings, structures, roadways, transportation facilities, or other development, then a RPZ Alternative Analysis following FAA guidelines is required. The FAA’s Interim Guidance on Land Use within a Runway Protection Zone is provided as **Attachment 1** of this report.

A triggering event is a change in the runway end, such as a runway extension or relocation, or the change in a GPS approach or airport classification that could change the dimensions of the RPZ. When the triggering event for this type of analysis is anticipated within five years, the Airport sponsor is required to submit an alternative analysis to the FAA Airports District Office to obtain a determination. This determination needs to be completed prior to initiating the required environmental documentation for a project.

The RPZ is a defined area on the ground that is located prior to a runway’s landing threshold and beyond the runway end that should be cleared of incompatible objects and activities. Its purpose is to enhance the safety and protection of people and property on the ground. This is accomplished through airport owner control of property within the limits of the RPZ. FAA design standards recommend that the Airport owner exercises control through property acquisition, but in cases where that is not possible, the design standard recommends that airport owners maintain the RPZ clear of incompatible land uses and activities. The size of an RPZ varies depending on the type of aircraft that operate at the Airport and the approach minimums to the runway. **Table 12** presents the dimensions of the current approach and departure RPZs on Runway 7-25.

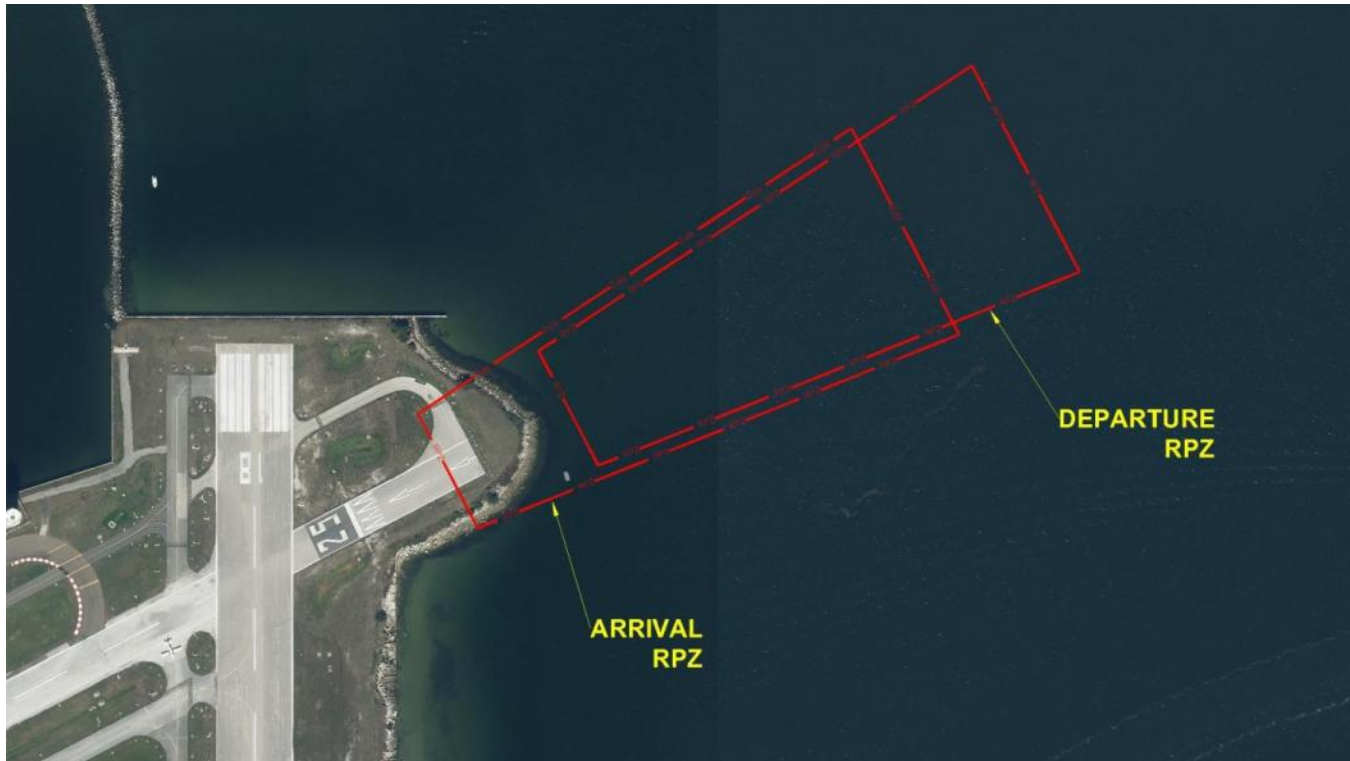
Table 12: Runway 7-25 Approach and Departure RPZ Dimensions

Runway	Design Code	Item	Dimension (feet)
7-25	B-I	Length	1,000
		Inner Width	250
		Outer Width	450

Source: American Infrastructure Development, 2016

At SPG, Runway 7-25 has Arrival RPZs and Departure RPZs due to the declared distances in use on the runway. The Runway 25 RPZs do not contain any incompatible land uses as RPZs are located over Tampa Bay for the most part as depicted in **Exhibit 4**.

Exhibit 4: Runway 25 Approach and Departure RPZs



Source: American Infrastructure Development, 2016

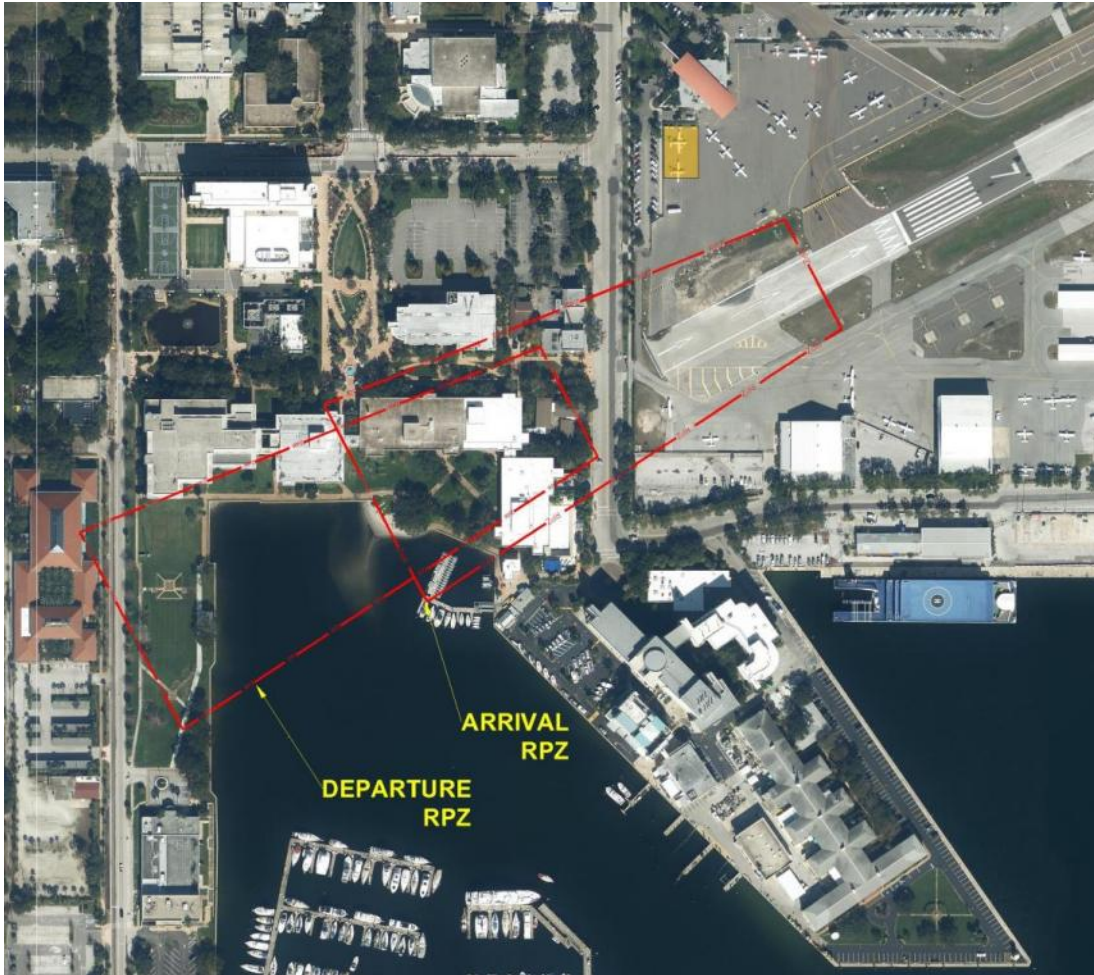
The Runway 7 RPZs are located mostly off-airport in an area occupied by several incompatible land uses and buildings that are part of the USFSP. **Exhibit 5** depicts the approach and departure RPZs for Runway 7.

The Team met with the University of South Florida Administrative and Facilities Services officials to discuss the Airport and the existing land uses that are present within the RPZs as well as the Runway 7 Approach and Departure surfaces.

University officials indicated that the overflights to the Runway 7 threshold are low, noisy, and prevent the upward expansion of any facilities on their property. Although they do understand the transportation and economic benefits the Airport offers to the community, the overflights have been cause for concern for many years. Bayboro Hall, Coquina Hall, Davis Hall and the Science and Technology Building are all located within the limits of the RPZs.

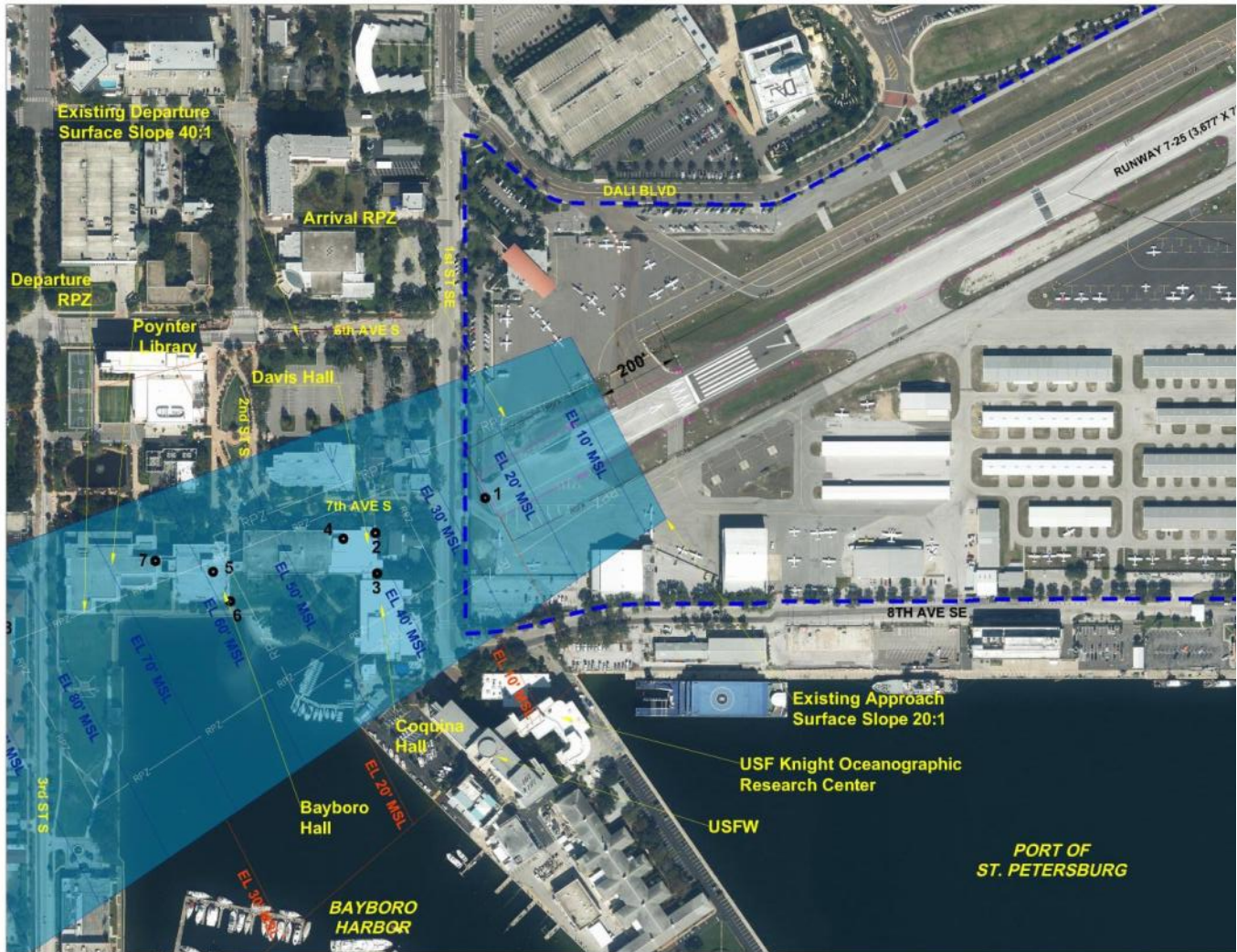
Each of these buildings contain administrative and educational offices, classrooms, and many student services, such as the Office of Campus Computing, the University Cashier's Office located in Bayboro Hall. These buildings and their use are typically incompatible with an airport RPZ. **Exhibit 6** identifies several of the USFSP buildings and where they are located in relation to the RPZs and runway approach.

Exhibit 5: Runway 7 Approach and Departure RPZs



Source: American Infrastructure Development, 2016

Exhibit 6: Property and Buildings Located in Runway 7 Approach and Departure RPZs



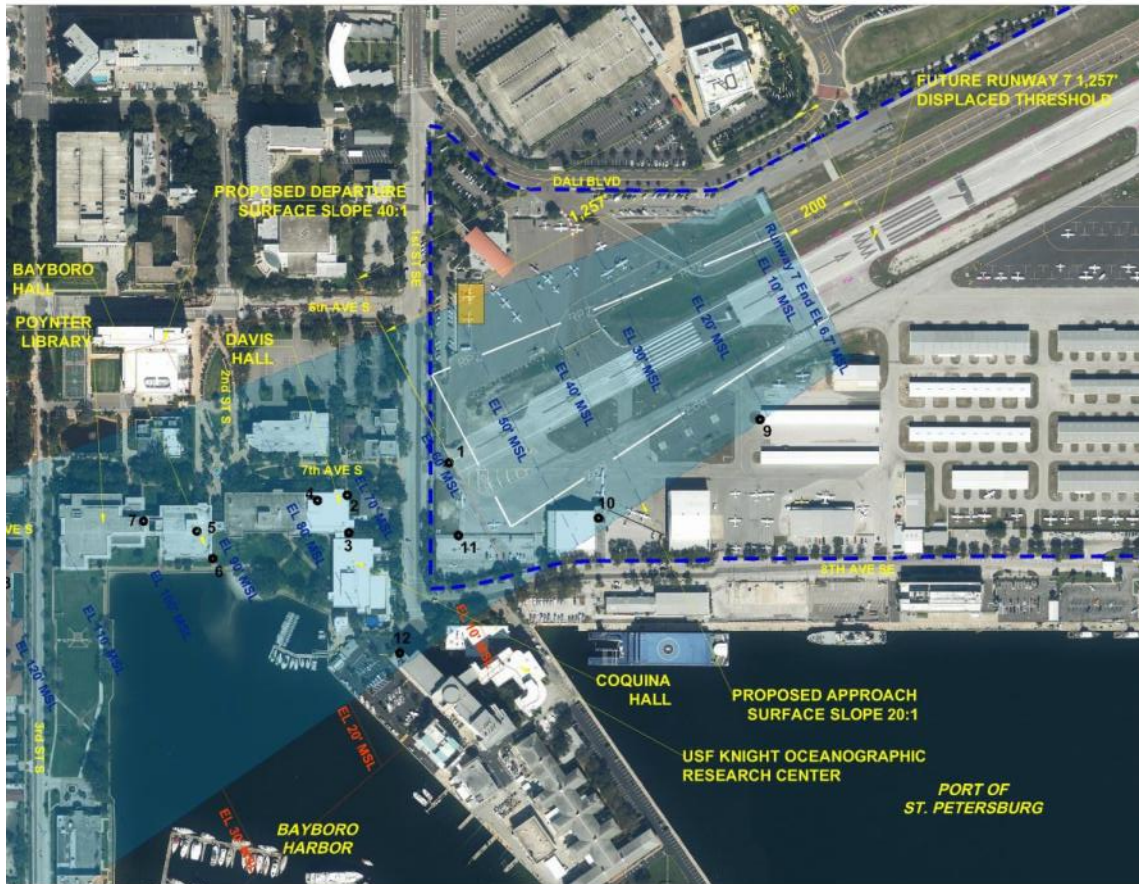
Source: American Infrastructure Development, 2016

The Team investigated methods and alternatives to mitigate or lessen the incompatible land uses found in the Runway 7 Approach and Departure RPZs. It would be the University and City's ultimate desire to be able to remove the incompatible land uses from the RPZ limits. In order to accomplish that goal, there are only two ways to achieve it:

1. Purchase and relocate all of the USFSP facilities located within the RPZ – not feasible and cost prohibitive as previously determined in the past by the City of St Petersburg, or
2. Relocate the RPZ such that the USFSP facilities are no longer located within its boundaries.

The second option, was the only feasible concept to investigate at this point in time. **Exhibit 7** depicts the results of relocating the Runway 7 approach and departure RPZs onto the Airport. The USFSP buildings are no longer located in the Runway 7 RPZs.

Exhibit 7: Relocate Runway 7 Approach and Departure RPZs onto Airport Property



Source: American Infrastructure Development, 2016

However, to achieve the desired results of this concept, Runway 7 must be displaced a total of 1,257 feet and the Runway 25 end extended by an equal amount to maintain (at a minimum) the existing length of 3,674 feet as depicted in **Exhibit 8**. Essentially, the runway would be shifted by 1,257 feet to the east. This concept would bring the RPZ on the west end of the runway entirely on airport property, thereby achieving full compliance with FAA’s RPZ land use guidance.

There is a new hangar that is being constructed, which is located just south of the existing Terminal Building. The hangar which is 42 feet in height would be located outside the relocated RPZ, but within the Runway 7 approach surface. However, based upon the information available at this time, the hangar would not penetrate the approach surface at this location.

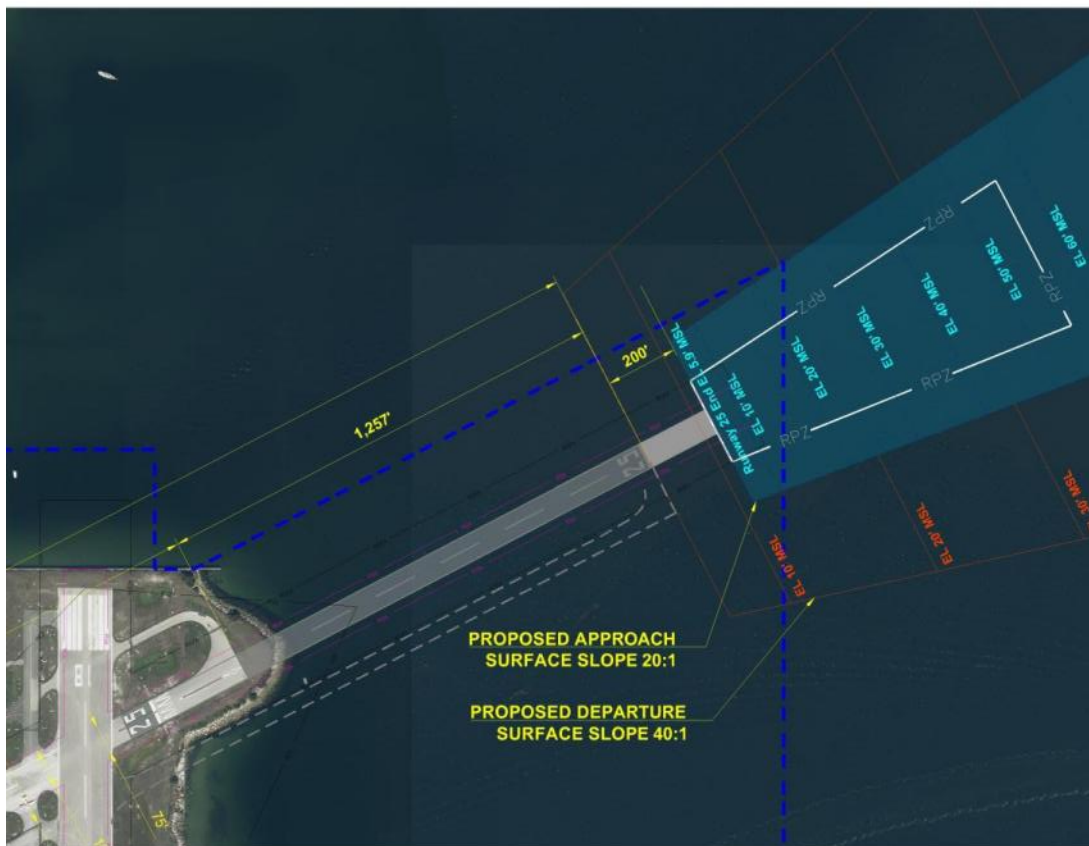
Properties located to the west of the Airport would benefit from aircraft arriving on Runway 7 being approximately 30 feet higher over the buildings located under the approach path to the Airport due to the increased length of the displaced threshold.

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The shift to the east would also open up an area on the airfield previously restricted to any objects or development by a FAA design standard called the Runway Visibility Zone (RVZ). The amount the RVZ is shifted would be commensurate with the ultimate length of a runway shift. In this case, the RVZ shift provides approximately 3 acres that could be used for aeronautical development in the future.

Shifting Runway 25 to the east by 1,257 feet may appear to be a simple solution; however, the exact length of a runway shift and its impacts to on-airport facilities as well as environmental impacts of the project would need to be assessed in a future Master Plan Update and Environmental Assessment. An environmental overview is provided in the following section. **Exhibits 9 and 10** provide a full view of the existing and future conditions being discussed in this study.

Exhibit 8: Shift Runway 25 1,257 Feet to the East



Source: American Infrastructure Development, 2016

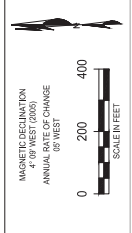
OBSTRUCTION DATA TABLE - RUNWAY 7 (20:1)

#	TYPE	TOP OF OBJECT ELEV.	EXIST. APPROACH ELEVATION	ULT. APPROACH ELEVATION	ELEVATION DIFFERENCE
1	OL Blast Fence	19'	25.4'	60.0'	-41'
2	Loyall E. Davis Memorial Hall	45.61'	39.2'	73.9'	-28.29'
3	Coquina Hall	36.61'	41.3'	76.0'	-39.39'
4	OL Rod on OL Bldg	48'	43.0'	77.7'	-29.7'
5	OL Ant on OL Bldg	60'	59.0'	83.7'	-33.7'
6	Bayboro Hall	56.69'	56.8'	93.5'	-42.81'
7	Nelson Poynter Memorial Library	52.78'	64.6'	89.3'	-46.92'
8	Poynter Institute for Media Studies	52.78'	86.4'	121'	-68.22'
9	OL Ant on OL Bldg	23'	10.9'	21.1'	+1.9'
10	OL LT Pole Bldg	54'	16.5'	46.9'	+8.1'
11	OL LT Pole	32'	28.7'	63.4'	-31.4'
12	OL Rod on OL Bldg	70'	62.0'	77.4'	-7.4'



RELOCATE RPZ ON AIRPORT PROPERTY (FUTURE B-I SMALL)
EXHIBIT 10

JOB NO.:	SPG1006
DRAWN:	RRC
DESIGN:	TC
CHECKED:	JMM
DATE:	JAN, 2017



**ALBERT WHITTED AIRPORT
RUNWAY 7-25 EXTENSION
FEASIBILITY STUDY**

ENGINEERS & ARCHITECTS
MEMBERS OF THE
CITY OF ST. PETERSBURG

APPROVED BY:

REV. NO.	DATE	DESCRIPTION	BY

OVERVIEW OF KNOWN ENVIRONMENTAL IMPACTS AND REQUIREMENTS

AID, in conjunction with its environmental subconsultant, Environmental Science Associates (ESA), reviewed existing and available environmental documentation to provide an overview of the environmental requirements necessary to program and implement the project. Information collected includes: project area wetland quality and quantity, potential listed species occurrence(s), existing and prior permit(s) within the project area, environmental constraints and/or permit(s) required, environmental authorizations/actions, and a brief mitigation discussion.

ENVIRONMENTAL CONSIDERATIONS AT SPG

Water quality issues associated with a runway shift into the bay would have to be studied to determine the impact on tidal flushing. Water with increased sediments could impact biota and possibly affect existing channel depths.

Mitigation for in-water impacts will be the key issue for any runway shift into Tampa Bay. This will require coordination with a number of local stakeholders including Tampa Bay Estuary Program, Tampa Bay Watch and the USFSP Campus and will likely be of heightened public interest.

It is likely a future FAA NEPA document will require public meetings or more public engagement. Stakeholder outreach and development of a favorable mitigation plan will be critical to this project. Specific to the FAA NEPA process, for any runway shift that would extend into Tampa Bay for safety/RPZ improvements, the following NEPA category issues are preliminarily discussed:

- Air quality – impacts would be minor
- Biological resources (including fish, wildlife, and plants)
 - Impacts to species under the regulation of NOAA Fisheries will need to be addressed. This may include an Essential Fish Habitat (EFH) Assessment for species including, but not limited to, Smalltooth Sawfish (*Pristis pectinata*).
- Climate – impacts minor Green House Gas (GHG) emissions review
 - Coastal resources – will require coordination with NOAA related to fill within the coastal barrier and requires a consistency determination by FAA under Coastal Zone Management Act (CZMA)
- Department of Transportation Act, Section 4(f) - minor or not applicable
- Farmlands – not applicable
- Hazardous materials, solid waste, and pollution prevention
 - This area of environmental investigation may require sediment sampling within the project area along with discussions of material to be used for in-water fill and construction
- Historical, architectural, archeological, and cultural resources
 - Future studies will require some level of investigation for submerged resources within project limits of the Runway shift to the east
- Land use – consistency with local plan
- Natural resources and energy supply - minor

TECHNICAL MEMORANDUM



- Noise and compatible land use
 - A complete noise analysis of any potential changes in flight patterns and use will be required to determine if any surrounding communities would be adversely affected by the runway shift
- Socioeconomics, environmental justice, and children’s environmental health and safety risks
 - At this time, it is known that there would be a reduced incompatible land use impact (from existing) to the USFSP education facilities
- Visual effects (including light emissions)
 - This will be reviewed for both impacts to surrounding uses and for lighting related to sea turtle nesting beaches
- Water resources (including wetlands, floodplains, surface waters, groundwater, and both wild and scenic rivers)
 - Waters of the U.S. impacts will require mitigation
 - Floodplain impacts must be evaluated
 - Water quality assurances need to be reviewed, including state water quality certification
 - Impacts to seagrass will require avoidance, minimization, and mitigation (if unavoidable)
 - NPDES compliance demonstration is required
 - Listed species evaluations and agency concurrence is required (may include incidental take)

In addition to a thorough evaluation through the NEPA process, the proposed project will require several permits and authorizations. From an environmental standpoint, this includes:

- Listed species coordination (NOAA Fisheries/USFWS) – sea turtle, Essential Fish Habitat (EFH) species, smalltooth sawfish
- Environmental Resource Permit (ERP) from Southwest Florida Water Management District (SWFWMD) / water quality certification
- Section 404 / 10 Permit from the Army Corps of Engineers (ACOE)
- State Lands / Board of Trustees concurrence regarding sovereign submerged lands
- Local government concurrence from the City of St. Petersburg and Pinellas County
- Shifting Runway 7-25 to the east and into Tampa Bay may include navigation coordination related to the in-water activities with the U.S. Coast Guard, and Marine Patrol

TECHNICAL MEMORANDUM



COST ESTIMATES

As part of this feasibility study, a conceptual estimate of construction costs was developed. It is estimated that it will cost approximately \$12.5 million in 2016 dollars to construct the 1,257-foot extension of Runway 7-25. **Attachment 2** provides a detailed breakdown of the anticipated construction costs.

In general, permitting will require the approval of a few state and federal agencies, including the Florida Department of Environmental Protection (FDEP), SWFWMD, Florida Fish and Wildlife Conservation Commission, and the ACOE. Coastal construction permits, environmental resource permits, and sovereign submerged land authorizations have been organized into a single review process under the 1995 Joint Coastal Permit (JCP) program. The JCP facilitates efficient and simultaneous reviews between FDEP and ACOE and covers all construction projects in Tampa Bay. FDEP may delegate all or a portion of these reviews to the local water management district SWFWMD. In addition to the JCP, a federal dredge and fill permit will be required by ACOE.

INTERPRETATION OF REPORT FINDINGS

This extensive analysis revealed that 3,700 feet is necessary for the most demanding group of aircraft that use SPG (those weighing less than 12,500 lbs. with less than 10 passenger seats). Further, at its current length, Runway 7-25 has reduced utility due to the use of declared distances for obstruction clearance in both of its approaches. The recommended curve in FAA AC 150/5325-4B, as well as the King Air B200 AFM, determined that a minimum of 263 additional feet should be provided on Runway 7-25.

The study reviewed all of the FAA airport design criteria for the current fleet mix, as well as the potential environmental issues and safety concerns for off airport land uses. It is suggested that Runway 7-25 be increased from 3,674 feet to a full and useable length of 3,700 feet. In addition, to achieve RPZ compliance, shifting the runway by 1,257 feet to the east will remove all incompatible land uses from the west end of Runway 7 to the extent practicable. An additional 23 feet of pavement on the Runway 25 end will be necessary to achieve the full useable 3,700 feet. A Master Plan/ALP Update and subsequent Environmental Assessment (EA) is the next step required by the FAA.

Attachment 1

FAA's Interim Guidance on Land Uses within a Runway Protection Zone



Federal Aviation Administration

Memorandum

Date: **SEP 27 2012**

To: Regional Airports Division Managers
610 Branch Managers
620 Branch Managers
ADO Managers

From: *Benito De Leon*
Benito De Leon, Director
Office of Airport Planning and Programming (APP-1)
Michael J. O'Donnell
Michael J. O'Donnell, Director
Office of Airport Safety and Standards (AAS-1)

Subject: Interim Guidance on Land Uses Within a Runway Protection Zone

Background

The FAA Office of Airports (ARP) has identified the need to clarify our policy on land uses within the Runway Protection Zone (RPZ). This memorandum presents interim policy guidance on compatible land uses within Runway Protection Zones (RPZ) to address recurrent questions about what constitutes a compatible land use and how to evaluate proposed land uses that would reside in an RPZ. While Advisory Circular 150/5300-Change 17(Airport Design) notes that "it is desirable to clear all objects from the RPZ," it also acknowledges that "some uses are permitted" with conditions and other "land uses are prohibited."

RPZ land use compatibility also is often complicated by ownership considerations. Airport owner control over the RPZ land is emphasized to achieve the desired protection of people and property on the ground. Although the FAA recognizes that in certain situations the airport sponsor may not fully control land within the RPZ, the FAA expects airport sponsors to take all possible measures to protect against and remove or mitigate incompatible land uses.

ARP is developing a new guidance document for the Regional Office (RO) and Airport District Office (ADO) staff that clarifies our policy regarding land uses in the RPZ. This new guidance document will outline a comprehensive review process for existing and proposed land uses within an RPZ and is slated for publication in 2013. We also intend to incorporate RPZ land use considerations into the ongoing update to the Land Use Compatibility Advisory Circular (AC) which is slated for publication in 2014.

This memorandum outlines interim guidance for ARP RO and ADO staff to follow until the comprehensive RPZ land use guidance is published.

Interim Guidance

New or Modified Land Uses in the RPZ

Regional and ADO staff must consult with the National Airport Planning and Environmental Division, APP-400 (who will coordinate with the Airport Engineering Division, AAS-100), when any of the land uses described in **Table 1** would enter the limits of the RPZ as the result of:

1. An airfield project (e.g., runway extension, runway shift)
2. A change in the critical design aircraft that increases the RPZ dimensions
3. A new or revised instrument approach procedure that increases the RPZ dimensions
4. A local development proposal in the RPZ (either new or reconfigured)

Table 1: Land Uses Requiring Coordination with APP-400

- Buildings and structures (Examples include, but are not limited to: residences, schools, churches, hospitals or other medical care facilities, commercial/industrial buildings, etc.)
- Recreational land use (Examples include, but are not limited to: golf courses, sports fields, amusement parks, other places of public assembly, etc.)
- Transportation facilities. Examples include, but are not limited to:
 - Rail facilities – light or heavy, passenger or freight
 - Public roads/highways
 - Vehicular parking facilities
- Fuel storage facilities (above and below ground)
- Hazardous material storage (above and below ground)
- Wastewater treatment facilities
- Above-ground utility infrastructure (i.e. electrical substations), including any type of solar panel installations.

Land uses that may create a safety hazard to air transportation resulting from wildlife hazard attractants such as retention ponds or municipal landfills are not subject to RPZ standards since these types of land uses do not create a hazard to people and property on the ground. Rather, these land uses are controlled by other FAA policies and standards. In accordance with the relevant Advisory Circulars, the Region/ADO must coordinate land use proposals that create wildlife hazards with AAS-300, regardless of whether the proposed land use occurs within the limits of an RPZ.

Alternatives Analysis

Prior to contacting APP-400, the RO and ADO staff must work with the airport sponsor to identify and document the full range of alternatives that could:

1. Avoid introducing the land use issue within the RPZ
2. Minimize the impact of the land use in the RPZ (i.e., routing a new roadway through the controlled activity area, move farther away from the runway end, etc.)

3. Mitigate risk to people and property on the ground (i.e., tunneling, depressing and/or protecting a roadway through the RPZ, implement operational measures to mitigate any risks, etc.)

Documentation of the alternatives should include:

- A description of each alternative including a narrative discussion and exhibits or figures depicting the alternative
- Full cost estimates associated with each alternative regardless of potential funding sources.
- A practicability assessment based on the feasibility of the alternative in terms of cost, constructability and other factors.
- Identification of the preferred alternative that would meet the project purpose and need while minimizing risk associated with the location within the RPZ.
- Identification of all Federal, State and local transportation agencies involved or interested in the issue.
- Analysis of the specific portion(s) and percentages of the RPZ affected, drawing a clear distinction between the Central Portion of the RPZ versus the Controlled Activity Area, and clearly delineating the distance from the runway end and runway landing threshold.
- Analysis of (and issues affecting) sponsor control of the land within the RPZ.
- Any other relevant factors for HQ consideration.

APP-400 will consult with AAS-100 when reviewing the project documents provided by the RO/ADO. APP-400 and AAS-100 will work with the Region/ADO to make a joint determination regarding Airport Layout Plan (ALP) approval after considering the proposed land use, location within the RPZ and documentation of the alternatives analysis.

In addition, APP-400 and AAS-100 will work with the Region/ADO to craft language for inclusion in the airspace determination letter regarding any violations to ensure that all stakeholders (including tenants, operators, and insurers) are fully apprised of the issues and potential risks and liabilities associated with permitting such facilities within the RPZ.

Existing Land Uses in the RPZ

This interim policy only addresses the introduction of new or modified land uses to an RPZ and proposed changes to the RPZ size or location. Therefore, at this time, the RO and ADO staff shall continue to work with sponsors to remove or mitigate the risk of any existing incompatible land uses in the RPZ as practical.

For additional information or questions regarding this interim guidance, please contact either Ralph Thompson, APP-400, at ralph.thompson@faa.gov or (202) 267-8772 or Danielle Rinsler, APP-401, at danielle.rinsler@faa.gov or (202) 267-8784.

Attachment 2

Conceptual Cost Estimate

ALBERT WHITTED AIRPORT
CITY OF ST. PETERSBURG, FLORIDA

RUNWAY 7-25 EXTENSION FEASIBILITY

CONCEPTUAL ESTIMATE OF PROBABLE CONSTRUCTION COSTS



Item	Description	Quantity	Unit	Average Unit Cost	Total Cost
1	Runway Extension (Incl. subgrade prep, grassed shoulders, minor drainage improvements, 2-Inches AC, 6-inches Limerock, 75' wide x 1,257' long)	10,500	SY	\$ 68.00	\$ 714,000.00
2	Parallel Taxiway (Incl. subgrade prep, grassed shoulders, minor drainage improvements, 2-Inches AC, 6-inches Limerock, 35' Wide)	5,700	SY	\$ 55.00	\$ 313,500.00
3	Service Road - (Incl. subgrade prep, grassed shouldrs, 1.5-Inches AC, 5-inches Limerock, 15' Wide)	6,000	SY	\$ 30.00	\$ 180,000.00
4	Seawall (including temporary sheet piling, demo of old and new rubble rip rap around perimeter)	4,000	LF	\$ 985.00	\$ 3,940,000.00
5	Structural Fill in Dredged Areas (barge operations)	270,000	CY	\$ 10.00	\$ 2,700,000.00
6	Embankment (land operations)	135,000	CY	\$ 18.00	\$ 2,430,000.00
7	Runway and Taxiway Marking (including removal of existing and remarking of entire runway)	60,000	SF	\$ 4.00	\$ 240,000.00
8	NAVAID Relocation (incl. new PAPI's, Flight Check and Vault Mods)	1	LS	\$ 180,000.00	\$ 180,000.00
9	Airfield Lighting and Signage	1	LS	\$ 160,000.00	\$ 160,000.00
10	Erosion Control	1	LS	\$ 60,000.00	\$ 60,000.00
11	Safety and Security	1	LS	\$ 100,000.00	\$ 100,000.00
12	Mobilization	1	LS	\$ 550,000.00	\$ 550,000.00
Subtotal Construction and Design					\$ 11,567,500.00
Total Estimated Construction Cost					\$ 11,567,500.00
Design and Environmental Permitting					\$ 550,000.00
Construction Administration/RPR					\$ 405,000.00
TOTAL PROJECT COST					\$ 12,522,500.00

APPENDIX D

Recycling, Reuse, and Waste Reduction Plan

APPENDIX D

Recycling, Reuse, and Waste Reduction Plan

Per FAA Order 5100.38D, Change 1 *Airport Improvement Program Handbook*, master plans funded with Airport Improvement Program (AIP) dollars must address issues related to the airport's recycling, reuse, and waste reduction programs. This includes:

- Assessing the feasibility of solid waste recycling at the airport,
- Minimizing the generation of waste at the airport,
- Identifying operations and maintenance requirements,
- Reviewing waste management contracts, and
- Identifying the potential for cost savings or generation of revenue.

Following the passing of the FAA Reauthorization bill, the FAA issued guidance¹ on preparing recycling, reuse, and waste reduction plans as part of airport master plans. This appendix provides detailed information regarding the management of the Albert Whitted Airport (SPG) waste and recycling programs. This Recycling, Reuse, and Waste Reduction Plan (RRWRP) includes a review of SPG waste management and recycling operations throughout the fixed based operator (FBO) facilities and airfield, as well as a review of tenant practices.

D.1 Airport Description and Background

SPG is owned and operated as a department of the City of St. Petersburg and as such receives handling services through the City. To date, there is no airport-wide recycling program.

Most of the airport's tenants do not recycle and most of the waste at the airport is generated by general aviation pilots, passengers, tenants, and other airport users. Common waste disposed at SPG includes:

- Common office/FBO waste: paper, plastic (hard plastic containers and film plastics), cans and bottles, and cardboard boxes.
- Restaurant related waste such as food and food-packaging waste, paper products, and cardboard,
- Construction and demolition waste from construction projects,
- Hazardous waste such as batteries, fluorescent light bulbs, solvents, and paint.

¹ FAA. *Guidance on Airport Recycling, Reuse, and Waste Reduction Plans*. September 30, 2014.
<http://www.faa.gov/airports/environmental/media/airport-recycling-reuse-waste-reduction-plans-guidance.pdf>

D.2 Waste Review

Due to concerns regarding the ongoing COVID-19 pandemic at the time of this study, an in-person waste walk-through was not completed. In place, airport staff as well as key airport tenants and stakeholders were contacted, and a virtual review was conducted. There are numerous dumpsters located around the airfield and accessible by all tenants and businesses. Waste disposal services on the airport are provided by the City of St. Petersburg's Sanitation Department using City owned and operated equipment.

While there is no airport-wide recycling pick-up service at SPG, the airport restaurant (The Hangar) started their own recycling program about four years ago. They recycle glass, cardboard, and metal containers typically found in restaurant waste. There is a recycling specific container just outside the restaurant and it is picked up once a week.

D.3 Review of Recycling Feasibility

There are a number of factors which impact the airport's ability to recycle. The primary factor is that a recycling pick-up service is not currently offered in parallel with regularly scheduled solid waste pick-up across the airport.

While the airport footprint is relatively small, SPG has limited staff resources, which could make implementing a recycling program logistically challenging to coordinate with every tenant and subtenant at the airport. Additionally, discussions with airport tenants revealed that contamination due to airport users incorrectly disposing of trash (i.e., placing recyclables in trash receptacles) would possibly be one of the greatest barriers to an effective recycling program.

Annually, in partnership with sponsors, the City hosts the Grand Prix of St. Petersburg which takes place throughout downtown utilizing city streets and a portion of airport property. Typically lasting a week, and drawing a crowd of well over 100,000 attendees, this event provides an opportunity for vendors to provide a recycling stream for a small part of the year.

D.4 Operation and Maintenance Requirements

Each tenant business is responsible for collecting in-house waste from their own facilities as well as transporting it to one of the airport's marked disposal containers (dumpsters). The City is responsible for tracking and paying bills related to waste management services at the airport.

The airport has a very limited number of staff and additional responsibilities could be a burden, specifically on janitorial staff that maintain the spaces and buildings managed directly by the airport. This could provide a barrier to the implementation of an airport-wide recycling program. Conversely, there are airport tenants that have considerably more staff than the airport and would be less burdened rolling out a larger-scale program.

D.5 Potential for Cost Savings or Revenue Generation

The airport may be able to sell scrap metal, particularly from construction and demolition projects. However, the low volume of waste limits the potential for savings or a reliable revenue generation source.

D.6 Plan to Minimize Solid Waste Generation

SPG does not have a formalized recycling or waste reduction program. Therefore, the following potential initiatives were identified that could advance SPG's recycling and waste reduction efforts.

- **Provide Airport-Wide Recycling Bins:** Co-locate recycling receptacles with waste receptacles throughout the offices and facilities and use same-sized receptacles where practical.
- **Develop a Waste Reduction Program:** Develop and implement a waste reduction program and encourage employee participation. The program should incentivize waste reduction, diversion, and recycling. Identify relevant waste reduction goals as well as office wide recycling methods (e.g., reusable toner cartridges, rechargeable batteries, reusable packaging, etc.) and individual participation (e.g., reusable water bottles, etc.) to further this program.
- **Develop Environmentally Preferable Purchasing Procedures:** Work with the City to establish procedures for purchasing materials with recycled/bio-based content, low toxicity, or other environmentally friendly products. Consider Green Label equipment in purchasing guidelines or other equipment that has low emissions and/or low sound levels.
- **Develop an Awareness Campaign:** Educate employees, tenants, and customer about proper recycling practices; this could include posters and additional signage. The campaign could also be expanded to encourage the use of reusable water bottles, coffee mugs, and lunch containers.
- **Periodic Monitoring:** Conduct a regular walk-through of SPG's offices and facilities to monitor the progress of the waste reduction and recycling program.
- **Provide Hand Dryers:** Install high-efficiency hand dryers in all restrooms and reposition towel dispensers to reduce paper towel use.
- **Enhance Tenant Engagement:** Coordinate with tenants to consolidate materials and improve economies of scale, and expand awareness about recycling practices.
- **Host a Periodic Universal Waste Collection Day:** Coordinate with the City of St. Petersburg Sanitation Department to host a periodic (recommend quarterly or semi-annually) collection day for universal waste. Provide an opportunity to airport employees, tenants, and the local community to drop off materials such as batteries, lightbulbs, electronics, pesticides, and more.

APPENDIX E

Airport Sustainability Baseline

APPENDIX E

Airport Sustainability Baseline

E.1 Introduction

This appendix begins the process of defining the Albert Whitted Airport (SPG) sustainability program, which seeks to institutionalize the regular consideration of sustainability as part of daily operations and long-term planning and decision making processes at the airport. This appendix defines the relationship of SPG sustainability planning to the City of St. Petersburg Integrated Sustainability Action Plan (ISAP), provides baseline information for five selected focus areas specific to the airport, and outlines recommended next steps in the evolution of this program. The information given in this appendix is considered and incorporated as guiding principles throughout the SPG master plan.

As the SPG Sustainability Program continues to grow in its inclusivity and success, further iterations may include identification of baseline tracking systems, the establishment of performance targets, inclusion of tenants and other onsite businesses, and the development of sustainability-focused initiatives within the airport footprint.

E.1.1 Definition of Sustainability

The Airports Council International – North America and Florida Airports Council define airports sustainability as “a holistic approach to managing an airport so as to ensure the integrity of the Economic viability, Operational efficiency, Natural resource conservation, and Social responsibility (EONS) of the airport.” The SPG Sustainability Program is guided by the EONS approach, and incorporates lessons learned from other airport sustainability planning efforts.¹



¹ National Academies of Sciences, Engineering, and Medicine (NASEM), 2015. *Lessons Learned from Airport Sustainability Plans*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/22111>

In general, the implementation of sustainability principles stimulates environmental and mission efficiencies, such as:

- Improved long-term environmental quality, resource availability, and prevention of environmental degradation
- Improved worker health and safety
- Reduced compliance costs, including reduced need for expensive environmental controls
- Diminished risk of non-compliance and long-term liabilities
- Reduced costs associated with the lifecycle management of raw materials, including procurement, storage, use, treatment, and disposal
- Decreased operating costs, including energy and water use
- Enhanced relations with federal, state, and local regulators, as well as the general public and neighboring communities

Successful sustainability projects often result in cost savings that can be used to offset other program costs, fund the purchase of new equipment, provide additional training, and/or improve the quality of life for employees and the public.

Sustainability planning uses baseline assessments of an organization’s environmental resource consumption and community outreach programs to identify near-term and long-term objectives to reduce environmental impacts and realize economic benefits and improved community relations in relation to those reduced impacts.

The City of St. Petersburg ISAP serves as “the blueprint to work on ambitious goals for a transition to 100% clean energy, environmental stewardship, resiliency, and racial justice while growing smart to have a thriving economy and quality of life for the residents of St. Pete.”² The ultimate goal of the ISAP is efficient integration of sustainability principles and programs between departments, including the airport. The ISAP includes baseline data relevant to over 500 metrics representing the built and natural environments, economic development, workforce readiness, arts and culture, and other considerations specific to the St. Petersburg lifestyle.

E.1.2 SPG Sustainability Planning Vision and Objectives

The vision of SPG Sustainability Program is to effectively tier from the City of St. Petersburg ISAP, highlighting baseline and priorities specific to the airport, and to provide an organizational structure that maintain sustainability as a uniting concept at the core of all SPG programs and decisions. This initial effort is focused on developing a baseline program and data collection protocol. This plan is linked to the SPG airport master planning process and includes the development of sustainability screening criteria for addition into the master plan and application as master plan projects are implemented. It is also anticipated that SPG will continue to grow this program, eventually expanding to include SPG tenants.

² City of St. Petersburg, Integrated Sustainability Action Plan (ISAP), 2019. Accessed in May 2020 at: https://www.stpete.org/sustainability/integrated_sustainability_action_plan.php

E.1.3 Sustainability Focus Areas

In collaboration with the City of St. Petersburg sustainability representatives, SPG targets the following specific focus areas for the development of baseline establishment:

- ➔ Natural Resources
 - Energy Use
 - Water Use and Water Quality
 - Greenhouse Gas (GHG)
- ➔ Social Responsibility
 - Noise – to be included in a future draft of this appendix
 - Community Impact, including integration with the Downtown Waterfront Master Plan and vision for the South Basin District

Table E-1 identifies the elements of a typical EONS sustainability program, which may be considered in future iterations of the SPG Sustainability Program and sustainability planning initiatives.

TABLE E-1
RANGE OF EONS SUSTAINABILITY PROGRAM ELEMENTS

Economic Viability	Natural Resource	<i>Green Procurement / Eco-purchasing</i>
<i>Airport Economic Contribution</i>	Conservation	
<i>Business Partners</i>	<i>Water Conservation</i>	
<i>Customer Satisfaction</i>	<i>Water Quality</i>	Social Responsibility
	<i>Energy</i>	<i>Noise</i>
Operational Efficiency	<i>Solid Waste and Recycling</i>	<i>Employee Wellness</i>
<i>Airport Vehicle Fleet</i>	<i>Air Emissions</i>	<i>Employee Satisfaction</i>
<i>Aviation Operations</i>	<i>Hazardous Materials</i>	<i>Community Impact</i>
<i>Airport Facilities Operations</i>	<i>Procurement/ Consumption/</i>	
<i>Employee Training</i>	<i>Disposal</i>	
	<i>Fuels</i>	

E.1.4 Sustainability Program Ownership

The SPG Sustainability Program is an executive program, led by the Airport Manager and managed through the airport administration office.

E.1.5 Master Plan Alternatives Screening Criteria

Sustainability-based alternative screening criteria were incorporated into the master plan. These criteria are intended to help identify preferred airport development alternatives that align with

sustainability principles. These criteria are relevant to the master plan's focus areas for improvement and the specific categories identified in the alternatives chapter (Table E-2).

→ Energy Use:

- Does the alternative include energy-efficient components?
- Would the alternative induce increased consumption, have a neutral effect, or result in a net decrease of energy resource use at SPG?
- If the alternative increases energy consumption, are there related opportunities to offset this increase by installing energy efficient technologies or renewable energy systems elsewhere at the airport?
- Does the alternative consider the City of St. Petersburg Facility Sustainability Ordinance? The Ordinance states the following requirements:
 - All City projects will follow an early, integrated design approach using Envision guidance for infrastructure and Leadership in Energy and Environmental Design (LEED) guidance for buildings.
 - All projects must use the most recent regional best available science for studying sea level rise and other climate change effects.
 - Any infrastructure project or group of related projects over \$2 million must work to reach Envision Gold-level certification and verification by a third-party.
 - All new or significantly redeveloped buildings 5,000 square feet or over must also attain Gold-level LEED certification through third-party verification.

→ Water Use and Water Quality:

- Does the alternative incorporate water conservation measures?
- Would the alternative induce increased consumption, have a neutral effect, or result in a net decrease of water resource use at SPG?
- Does the alternative incorporate methods to preserve and/or improve water quality?
- Does the alternative effectively manage additional water that may be produced from increased impervious surfaces?
- Does the alternative incorporate and implement green infrastructure, including (where possible) permeable pavement and reduction of urban heat island solutions?
- Does the alternative incorporate best management practices or policies associated with resiliency planning?

→ Greenhouse Gas:

- Does the project prioritize or promote aircraft to operate in a manner that reduces emissions at the airport, while not compromising the safety or security of the airport?
- Does the project prioritize or promote the use of low-emissions and energy efficient support vehicles and equipment?
- Does the project require the use of aerosols, refrigerants, or other GHGs?

- Does the project reduce the use of materials or their byproducts that have a high GHG impact during extraction, production/assembly, shipment, or disposal?
- ➔ Noise and Compatible Land Use:
 - Does the alternative have the ability to mitigate or reduce aircraft noise in the vicinity of the airport?
 - Does the alternative have the ability to increase the compatibility of land uses in the vicinity of the airport?
- ➔ Community Impact:
 - Does the alternative provide a benefit to the community at large?
 - Does the alternative provide additional revenue streams to help ensure the airport’s financial security and stability as a community asset?
 - Does the alternative support the SPG commitments in the Downtown Waterfront Master Plan and vision for the South Basin District, including and the airport’s ongoing commitment to collaboration with the University of South Florida St. Petersburg (USFSP), Port of St. Petersburg, South Yacht Basin of the St. Petersburg Marina, and other surrounding stakeholders?
 - Does the alternative support community diversity, equity, and inclusion?

**TABLE E-2
RELEVANCE TO MASTER PLAN FOCUS AREAS**

Category	Runway 7-25	Runway 18-36	Aviation-Related Development	Support and Services Facilities	Non-Aeronautical Development
Energy Use	X	X	X	X	X
Water Use and Water Quality			X	X	X
Noise and Compatible Land Use	X	X	X		
Greenhouse Gas			X	X	X
Community Impact / Integration	X	X	X	X	X

E.2 Focal Area Assessment

This section provides an assessment of the current and ongoing performance of resource use at SPG for each of the selected focal areas. At this time SPG has not developed baseline tracking databases or assigned a lead point-of-contact for all recommended sustainability metrics; however, this report provides tracking recommendations for the selected focal areas. Establishing a baseline assists with identifying opportunities for improvement and tracking performance metrics. Example targets and

metrics and specific initiatives for the resource focal areas reviewed in this baseline study are also provided for use and consideration as the SPG sustainability program evolves.

E.2.1 Energy Use

E.2.1.1 Energy Background

All forms of electricity generation have an environmental impact on our air, water, and land. Of the total energy consumed in the U.S., about 40 percent is used to generate the electricity we use. Producing and using electricity more efficiently has substantial environmental effects, including the reduction of both the amount of fossil fuel extracted and the amount of greenhouse gas and other air pollution emitted as a result of combustion. Efficient electricity use also reduces impacts to water resources, often used to produce steam or provide cooling, such as reduction in quantities extracted from a watershed as well as avoiding thermal pollution as cooling water is discharged to the ecosystem.

Energy consumption metrics are generally tracked per gross square foot (SF) of building space. Using this metric to track energy consumption between years highlights the relative efficiency of various buildings and can serve to normalize consumption between years given facility development or space utilization.³ FAA Order 1053.1C, *Energy and Water Management Program for FAA Buildings and Facilities* (2017) and Executive Order 13693 *Implementing Instructions* (2019) recommend that local energy managers develop measures customized to their organizations to better support the implementation of sustainable energy programs. For example, for internal measurement and benchmarking purposes, it may be helpful for energy managers to categorize the different types of facilities by use or adjust data as needed for weather influence.

Reducing energy intensity across an airport requires increasing the energy efficiency of appliances, fixtures, and equipment, and promoting energy conservation through behavioral change. LEED is a green building certification program that recognizes best building strategies and practices in design, construction, and maintenance of resource-efficient and cost-effective buildings. Any new construction can be designed to achieve LEED or High Performance and Sustainable Building (HPSB) certification to aid in reducing energy consumption across the airport. Likewise, existing infrastructure can be retrofitted or redesigned with modern, durable, energy-efficient appliances and fixtures.

In addition, increasing the use of clean and renewable materials sourced to produce the electricity consumed in airport facilities further reduces energy intensity. Electricity from clean or renewable energy resources generally reduce GHG emissions and improve local air quality because no fossil fuels are combusted in the process. Renewable energy sources include solar, wind, renewable biomass, landfill gas, ocean/tidal, geothermal, and hydroelectric.

³ Executive Order 13834; Energy Policy Act of 2005; Energy Efficiency Improvement Act of 2015/Energy Independence and Security Act of 2007.

The FAA is working to implement sustainable practices, including the reduction of electricity consumption, for the operation and maintenance of its buildings (Energy Policy Act 2005 §104(a), amending 42 USC §8259(b)). This includes ensuring equipment is replaced with the most energy- and water-efficient option that is life cycle cost-effective. FAA Order 1053.1C, *Energy and Water Management Program for FAA Buildings and Facilities* (2017) outlines FAA policies, procedures, organizational responsibilities, and goals for complying with national mandates for the efficient use of national resources.

The FAA provides Airport Improvement Program discretionary funding to conduct Airport Energy Efficiency Assessments to evaluate an airport’s energy requirements or to implement an airport energy efficiency project for the purpose of increasing energy efficiency of airport power sources.

The City of St. Petersburg is one of 70 U.S. municipalities that has committed to 100 percent clean energy, and the City’s ISAP focuses on how this goal will be reached by 2035. This needs to be kept in mind since the new master plan capital improvement program goes to 2039.

E.2.1.2 Energy Baseline

This baseline study focuses on electricity consumption rather than other sources of energy, such as on-airport fuel use. Fuel consumption was not considered in this round of sustainability planning as fuel is dispensed on-airport by one of the fixed based operators (FBO) and the airport has no control over the efficiency of the aircraft that utilized SPG. Additionally, the airport has one truck in its “fleet” of support vehicles, so fleet fuel efficiency was likewise not a pertinent resource focus at this time.

The airport maintains and pays for energy service for four buildings that have heating, ventilation, and air conditioning (HVAC) systems (general aviation terminal, airport administration office, airport traffic control tower [ATCT], and airfield electrical vault). There is airport-provided electricity in an additional six buildings (hangars) and four open structures (gates/gate parking lights, beacon, and wash rack) that have power but no centralized HVAC systems. Note that there are quite a few other grid connections that serve tenants and other activities across the airport; however, the only ones included in this baseline analysis are those that the airport pays for directly. In particular, the terminal consumption data only captures the western portion of the facility; the tenant downstairs and restaurant upstairs pay their utility bills directly. The T-hangar electrical meter feeds at least six other T-hangar buildings as well as port-a-ports and the self-serve fuel facility.

Duke Energy provides service to SPG, and energy consumption and cost data is maintained by the airport. Energy use (kilowatt hours [kWh] used per month) is listed on Duke Energy billing statements, which are paid monthly and tracked by the airport manager.⁴

Figure E-1 describes total energy consumption at SPG from 2016 through 2020 for all 14 metered facilities at SPG for which utility costs are paid for directly by the airport. The ATCT, terminal

⁴ Duke Energy, 2020, *Reading Your Bill*. Accessed in October 2020 at: <https://www.duke-energy.com/home/billing/reading-your-bill>

(first floor), Building 14 Hangar, and the airfield vault are consistently the highest energy consumers. The ATCT, terminal (first floor), Building 14 Hangar, Hangar 3 (fire alarm), Hangar 5, and the Avis wash rack have consistently decreased overall annual energy use between 2016 and 2020; the airfield vault and Hangars 7 and 8 have increased consumption; and the other facilities have generally remained the same or varied year-to-year with no discernable trend.

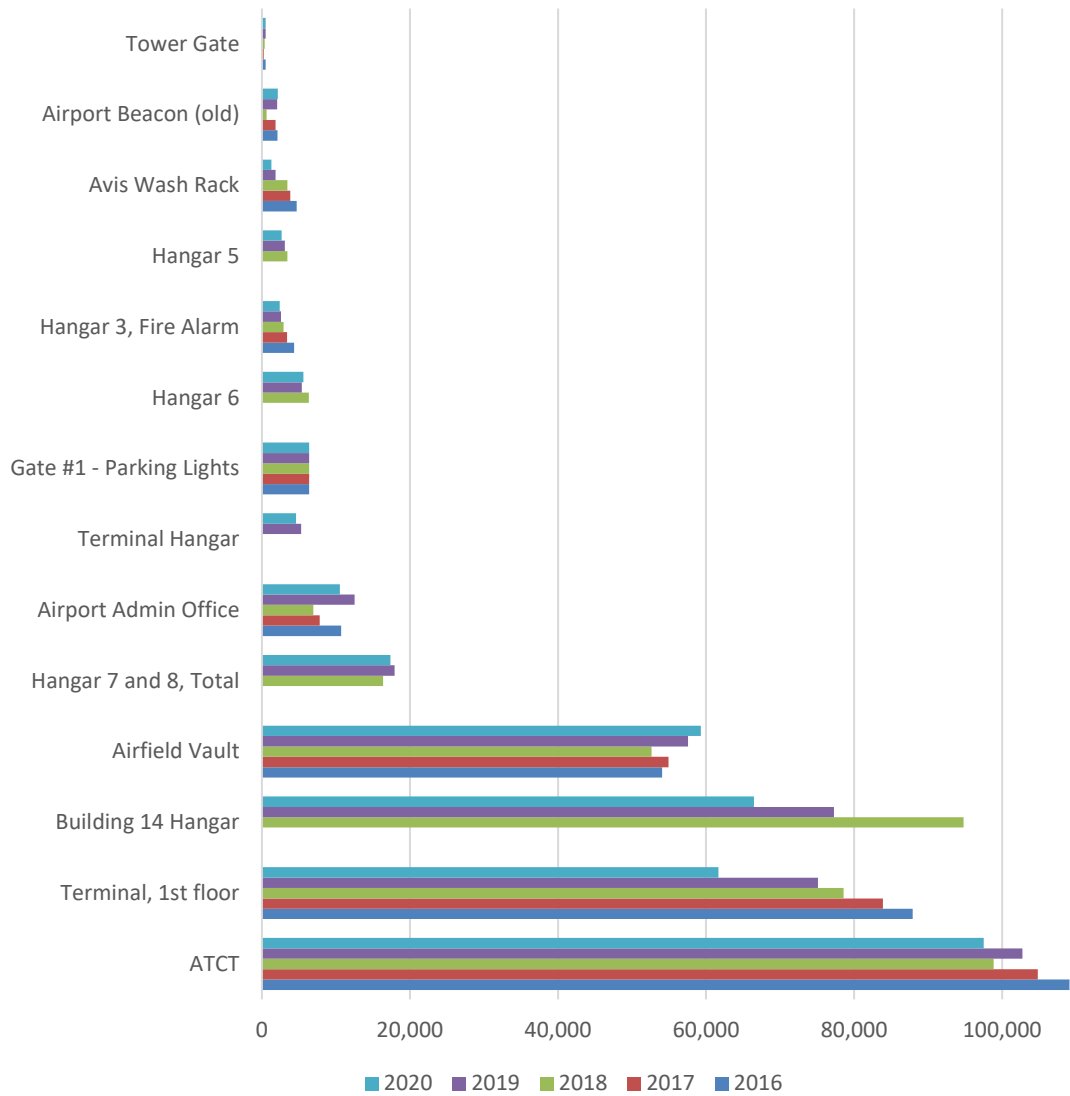


FIGURE E-1. TOTAL GROSS ENERGY CONSUMPTION AT ALL SPG METERED FACILITIES (TOTAL KWH PER YEAR FOR 2016-2020)

Figure E-2 shows average total energy consumption for the top five energy-consuming SPG facilities per month for the study years 2016-2020. This figure may illustrate potential seasonality in energy use, either resulting from a phase of increased passenger travel/airport use or increased HVAC load during summer months. The airport admin office and ATCT show a trend for increased energy consumption from April to October, and the airfield vault sees a relatively dramatic decrease in energy consumption in March through April. The Building 14 Hangar may display peak energy consumption in the late summer/early fall (August through October); however, these data only span 2018 to 2020, and the trend may not be reliable without additional future year observation. While the airport terminal does not have a remarkable trend that correlates to seasonal energy consumption, any increases in summer energy consumption may be offset by the relative decrease in passenger traffic in the summer months; however, the difference between the peak travel month (October) is on the average only about 400 operations per month greater than the month of lowest historical demand (January).

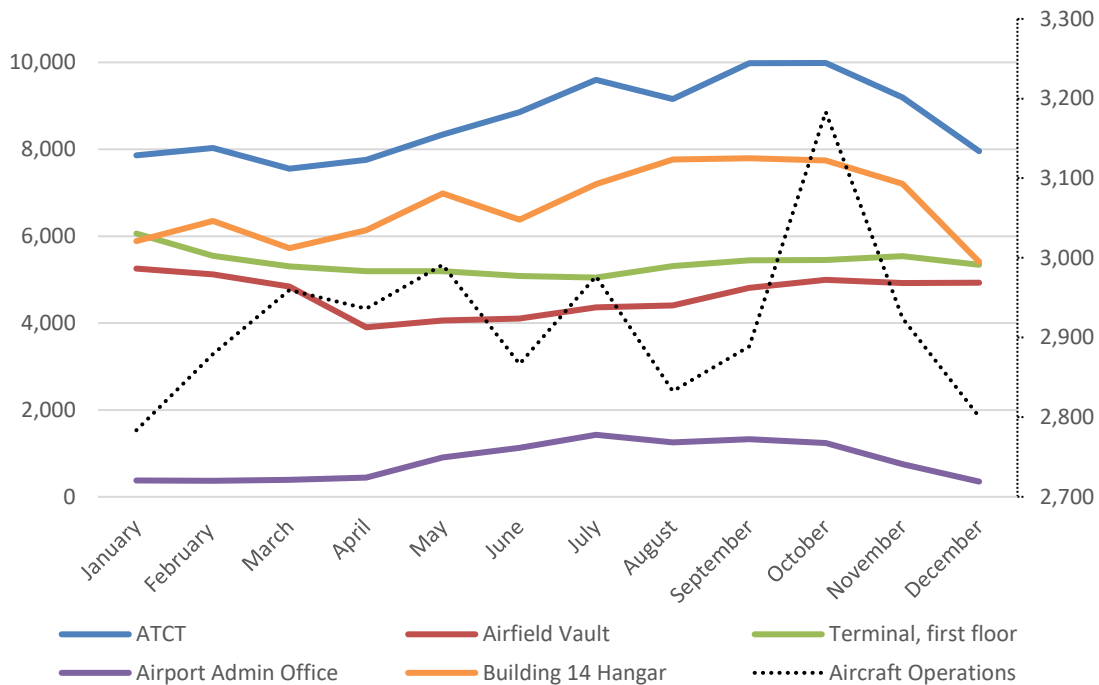


FIGURE E-2. MONTHLY AVERAGE GROSS ENERGY CONSUMPTION FOR TOP FOUR CONSUMERS (KWH, 2016-2020) vs. MONTHLY AVERAGE AIRCRAFT OPERATIONS (2009 – 2018)⁵

⁵ Note that the Building Hangar 14 was constructed in 2017 and thus data is only available for 2018-2020.

There have been few minor improvements to airport infrastructure and some changes in operations or use across the airport that may help explain some of these energy consumption trends. Some of these trends for the major energy consuming facilities are described below.

Galbraith Terminal Building: The general aviation terminal building, built in 2007, is open to two stories connected by an open staircase and predominantly enclosed in glass (see inset pictures). The second floor is occupied by The Hangar Restaurant and observation area, and terminal facilities and the Sheltair FBO are located on the first floor. Heating and cooling demand at this facility is the major factor affecting energy consumption, especially considering the sunlight, radiant heat, or ambient outdoor temperatures penetrating the windows, and the frequent movement of people in and out of multiple large doorways that mixes outside air with inside air. Any improvements to building or HVAC efficiency are likely to translate to energy consumption and cost savings. Within the past five years the HVAC controls for the Terminal Building were relocated to a controlled-access utility room and are operated by an automatic sensor system, which has likely contributed to the general decreasing trend of energy consumption seen in **Figure E-1**.



Albert Whitted General Aviation Terminal

The 2020-2021 COVID-19 pandemic affected passenger travel, and use of the terminal facilities and restaurant declined. This reduction in use may explain the more drastic drop in energy consumption for 2020.

Airfield Vault. The airfield vault powers all airfield operations and has generally increased in energy consumption over time (**Figure E-1**). The warm season drop in consumption may correspond to less traffic in spring/summer when winter residents from up north go home and rise again during the peak fall travel season (**Figure E-2**). In 2016-2017 the lights on Runway 7-25 were replaced with LED technology, and the Runway 18-36 reconstruction project (scheduled for October, 2021) includes the replacement of this runway’s lighting system with LED, which is expected to noticeably reduce the energy demand on the airfield vault. A full airfield vault rehabilitation project is scheduled for 2022, which will include the installation of a new backup generator and the full replacement and upgrade of the electrical system. These upgrades may increase efficiencies in these systems and likewise translate to additional net energy savings throughout future years.

Airport Administration Office. The airport administrative office building includes airport functions on the second floor, with other offices and restrooms in the building. Although there are separate, isolated offices with minimal transient movement in and out of the building throughout the day, of the past five years there is no discernable or explainable trend in energy consumption. There does appear to be a slight increase in energy use over the summer months as the HVAC system works to cool the 1,400-square-foot space. The airport administration office building is scheduled for a

full rehabilitation, including the installation of energy-star and storm resistant windows and upgraded HVAC units.

ATCT. The current ATCT was built in 2011. The tower cab is the only area that has central HVAC, with pack units on the other four floors (generally limited to cooling the staircase and break room). The HVAC for this building, including both the central system and the pack units, has been replaced and upgraded within the past five years. Otherwise, energy reduction strategies or the installation of energy-efficient technologies at this facility are difficult as the main electricity draw is from the computer-based systems and other such equipment, which was recently upgraded to more modern standards.

Hangars. All hangars have consistently operated at full capacity and do so throughout the year. Hangars 7 and 8 were taken off line and are in the process of being replaced. The Building 14 hangar was open for occupancy late 2017.

E.2.1.3 Energy Sustainability Program Recommendations

FAA Targets⁶: Reduce building energy intensity (Btu/SF) or kWh used across the airport 2.5 percent per year over 10 years, relative to a FY2020 baseline, for a total of 25 percent energy use reduction by 2030. Increase use of clean energy sourced from renewable, low-carbon technologies. Ensure all new construction is compliant with HPSB guiding principles and at minimum LEED Silver-level design criteria.

Sample SPG Target: Establish data tracking process, assign program responsibility, and establish SPG appropriate targets (note that the FAA target for new all new construction is LEED Silver-level and the City of St. Petersburg target is LEED Gold-level for all new or significantly redeveloped buildings 5,000 square feet or over).

Metrics: Energy intensity (kWh/SF) or gross energy use (kWh). Percent of renewable resources used to offset conventionally-fueled energy sources.

Recommended SPG Initiatives:

- Engage all onsite tenants.
- Continue to consult and partner with the City of St. Petersburg ISAP Program
- Continue to implement the City of St. Petersburg Facility Sustainability Ordinance
 - Follow an early, integrated design approach using Envision guidance for infrastructure and LEED guidance for buildings.
 - Use the most recent regional best available science for studying sea level rise and other climate change effects.
 - Reach Envision Gold-level certification and verification by a third-party for all substantial onsite infrastructure projects and attain Gold-level LEED certification through third-party verification for new or significantly redeveloped buildings 5,000 square feet or over.

⁶ Recommendations are given in FAA Sustainability Planning – FAA Order 1053.1C (2017) *Energy and Water Management Program for FAA Buildings and Facilities*.

- ➔ Develop a baseline energy consumption level (electricity) and assign program responsibility. Track and report energy consumption data and cost savings for ensuing years relative to the established baseline.
- ➔ Incorporate and implement green infrastructure, including (where possible) permeable pavement and reduction of urban heat island solutions, including the consideration of vegetated green roofs. While this consideration will promote water conservation and water quality, in this instance it is recommended to decrease the demand for cooling adjacent facilities during summer months.
- ➔ Purchase renewable/alternative energy generated off-site.
- ➔ Construct onsite solar farm, or install smaller scale solar projects per individual facilities or assets (signs, parking lights, etc.) in accordance with FAA guidelines.⁷
- ➔ Pursue relevant initiatives as outlined by the U.S. Green Building Council LEED, HPSB, and the Institute for Sustainable Infrastructure Envision:
 - Install additional LED lighting and signals
 - Install window tinting/coating
 - Install motion/occupancy sensor lighting systems
 - Retrofit hot water system with tankless/on-demand water heaters
 - Use natural daylight options over artificial lighting in new construction

E.2.2 Water Use and Water Quality

E.2.2.1 Water Background

Water efficiency is defined as the sustainable use of freshwater resources for drinking and domestic purposes. Focusing on water efficiency as a sustainability goal ensures ongoing availability and accessibility of water resources, but will also improve water quality and surrounding aquatic ecosystems. Water efficiency can be achieved through low impact development (LID), improved landscaping practices, and retrofitting existing infrastructure. LID includes a variety of practices, including those that mimic natural draining processes to encourage the retention of rainwater so it soaks into the ground rather than contributing to stormwater runoff and nonpoint source pollution. Identifying ways to reduce water usage in buildings and other built infrastructure decreases water consumption, and new construction and landscaping projects incorporate strategies that conserve water supply, manage stormwater generation, and potentially reuse or recycle water resources.

As with energy consumption, water consumption at FAA facilities is also governed under FAA Order 1053.1C, *Energy and Water Management Program for FAA Buildings and Facilities* (2017).

E.2.2.2 Water Baseline

The City of St. Petersburg provides water and wastewater services to SPG as part of the Tampa Bay Regional Water system. Water is provided to users from groundwater, surface water, and desalination sources. Groundwater originates from thirteen well fields drawing from the Floridian

⁷ FAA Policy: Review of Solar Energy System Projects on Federally-Obligated Airports. 86 FR 25801 (May 11, 2021)

Aquifer. Surface water comes from the Alafia River, the Hillsborough River, and the Tampa Bypass Canal and excess is stored in the C.W. Bill Young Regional Reservoir.⁸

Water use data is maintained by the City of St. Petersburg utility department. There are seven separate meters associated with different SPG facilities or activities. Installing individual meters at various buildings helps track water use, which can identify priority facilities for retrofit or monitor for potential system leaks.

Figure E-3 illustrates total water consumption at SPG for 2015 through 2020. Most facilities appear to have fairly typical consumption patterns through the years queried. (**Figure E-4** removes the terminal to increase the scale and visibility of the data for the rest of the activities.) While the terminal and airport administration office experienced significant water consumption declines in 2020, likely as a result of limited use during the COVID-19 pandemic, the T-hangars, Hangars 4 and 6, and the VM Hangar increased water consumption over previous years. As noted in Section H.2.1.2, all hangars have consistently operated at full capacity and do so throughout the year; however, Hangars 7 and 8 were taken off line and are in the process of being replaced.

Figure E-5 shows average total water consumption across metered SPG facilities per month for the study years 2016-2020. As with energy consumption (**Figure E-2**), the terminal shows an increase trend in water use during winter months that may correspond to increased airport operations during that time period. Conversely, water use at the hangars (T-hangars, Hangars 4 and 6, and the VM Hangar) tends to be elevated during summer months (April – September) as well as winter (November – February).

⁸ City of St. Petersburg, 2020. *Drinking Water Treatment and Supply*. Accessed in October, 2020 at: https://www.stpete.org/water/drinking_water/treatment_and_supply.php
Tampa Bay Water, 2020. *Regional Water Supply*. Accessed in October 2020 at: <https://www.tampabaywater.org/tampa-bay-regional-water-supply>

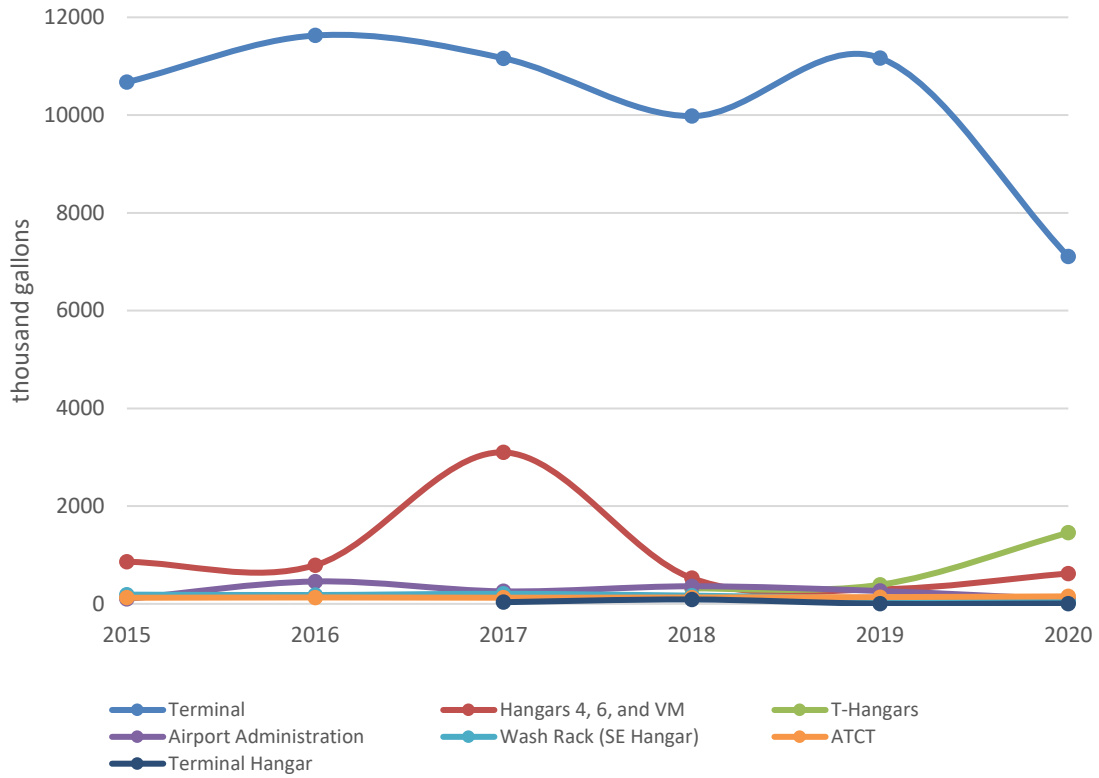


FIGURE E-3
ANNUAL POTABLE WATER CONSUMPTION AT METERED SPG FACILITIES (KGAL, 2015 THROUGH 2020)

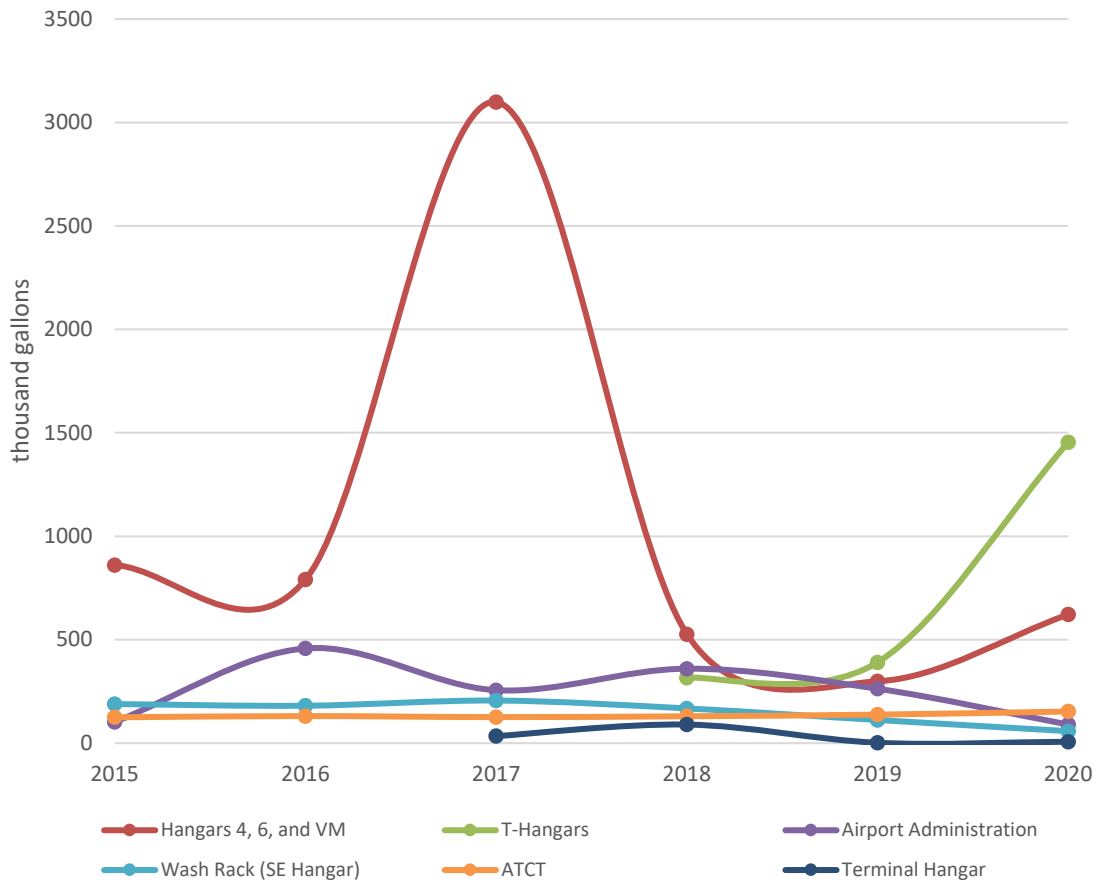


FIGURE E-4 ANNUAL POTABLE WATER CONSUMPTION AT METERED SPG FACILITIES (MINUS TOP CONSUMER BY VOLUME (KGAL, 2015 THROUGH 2020))

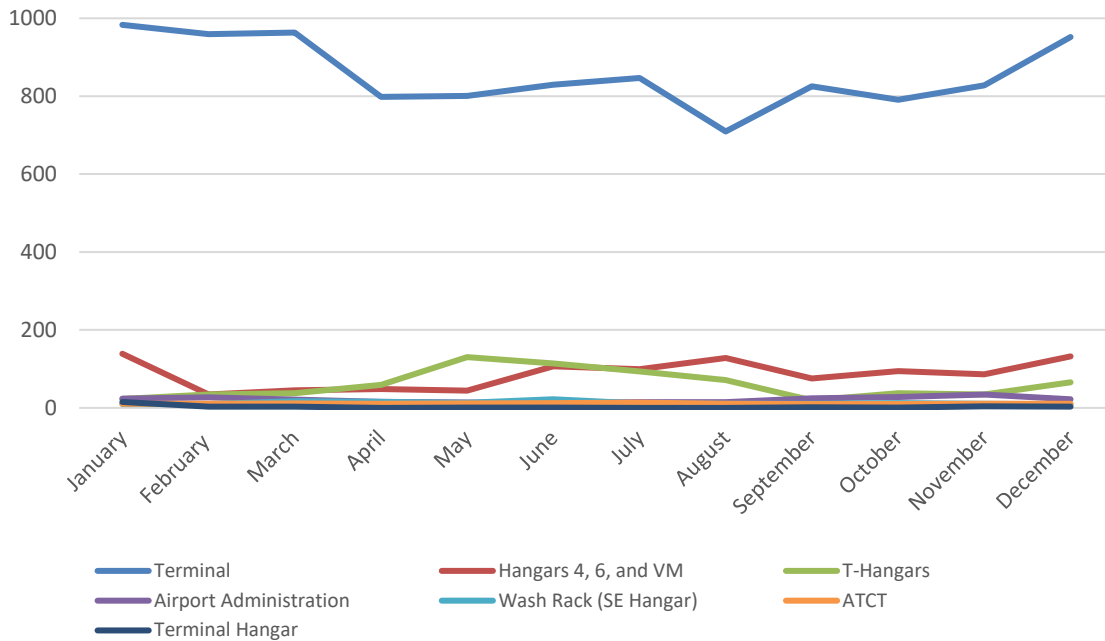


FIGURE E-5. MONTHLY AVERAGE GROSS WATER CONSUMPTION TRENDS FOR METERED FACILITIES AT SPG (KGal, 2016-2020)

There has been no specific water related projects in the past five years and no water efficiency related projects are planned at this time. The decline in water use at the airport administration office may be related to the COVID-19 pandemic (reduced presence of employees and reduced travelers).

In order to ensure water quality is preserved, the airport maintains a Stormwater Pollution Prevention Plan (SWPPP; 2020) and Spill Prevention, Control, and Countermeasure Plan (SPCC; 2020). The SWPPP provides stormwater management, erosion and sediment controls, and recommended structural projects to divert pollutants (e.g., drainage fixtures, silt fences, etc.). The SPCC identifies preventive practices; procedures to contain, clean-up, and mitigate areas affected by spills; and control measures to prevent spills from contaminating water resources. The airport manages stormwater within the airport boundary and addresses treatment of stormwater runoff to preserve water quality.

E.2.2.3 Water Sustainability Plan Recommendations

FAA Targets: Reduce potable water consumption intensity (gal/SF) 2.0 percent annually over 10 years, relative to a FY2020 baseline, for a total of 20 percent water consumption reduction by 2030. Install appropriate green infrastructure features, including the requirement for all new construction to incorporate LID best practices for stormwater management.

Sample SPG Target: Establish data tracking process, assign program responsibility, and establish SPG-appropriate targets.

Metric: Gross water consumption (gal).

Recommended SPG Initiatives:

- Engage all onsite tenants.
- Develop a baseline water consumption level and assign program responsibility. Track and report water use data and cost savings for ensuing years relative to the established baseline.
- Install metering in relevant, unmetred buildings.
- Use low-volume, high pressure sprayer nozzles on water hoses used for vehicle washing.
- Test and repair water supply and wastewater conveyances to conserve water and stop leaks.
- Educate maintenance staff, employees, passengers, and customers on water conservation strategies.
- Collect and reuse stormwater for non-potable uses such as landscape irrigation and building flush systems.
- Install cisterns to capture rainwater from roof runoff for irrigation.
- Plant drought-tolerant and native plants that do not require excessive irrigation to maintain.
- Continue to pursue relevant initiatives for new construction or renovations as outlined by the U.S. Green Building Council LEED and the Institute for Sustainable Infrastructure Envision:
 - Install motion sensors on sink faucets
 - Install dual-flush toilets
- Continue to incorporate LID principles and practices into all facility design and placement

E.2.3 Greenhouse Gas

E.2.3.1 GHG Background

Greenhouse Gases (GHG) trap heat in the atmosphere. The primary six GHGs of concern and their typical sources include:

- Carbon dioxide (CO₂): burning of fossil fuels and deforestation.
- Methane (CH₄): livestock (i.e., cows) enteric fermentation and manure management; paddy rice farming; land use and wetland changes; pipeline losses; and covered vented landfill emissions.
- Hydrofluorocarbons: refrigeration, air conditioning, propellants/industrial aerosols, foam blowing, solvent cleaning, and fire extinguishers; generally, as replacements for chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs).
- Perfluorocarbons: refrigerating units as replacements for CFCs.
- Nitrous oxide (N₂O): anesthetic and analgesic as well as an oxidizer in rocketry and in motor racing to increase the power output of engines.
- Sulfur hexafluoride: electrical industry as a gaseous dielectric medium for high-voltage (35 kiloVolts and above) circuit breakers, switchgear, and other electrical equipment.
- Nitrogen trifluoride: cleaning of equipment that manufactures liquid-crystal displays (LCD) and silicon-based thin-film solar cells.

For management and regulatory purposes, GHGs are divided into three categories, referred to as Scope 1, 2, and 3 GHGs. Scope 1 GHGs are directly emitted from sources that are owned or controlled by the agency; Scope 2 GHGs are directly emitted as a result of the generation of electricity, heat, or steam purchased by an agency; and Scope 3 GHGs are emitted from sources not owned or directly controlled by an agency but related to agency activities such as vendor supply chains; delivery and transportation services; and employee travel and commuting. Greenhouse gases are measured in carbon dioxide equivalents (CO₂e).

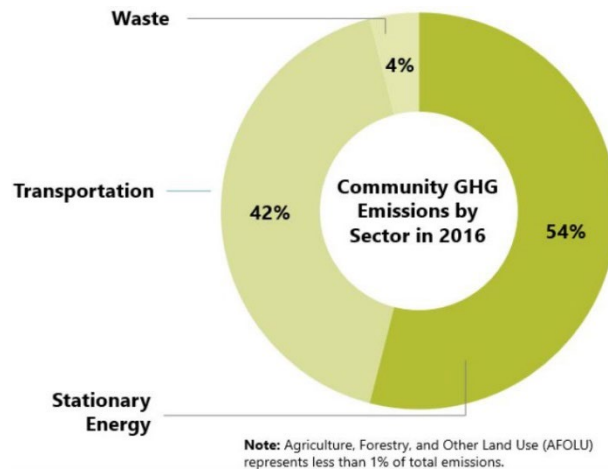
Most GHGs are created and emitted solely through human activities, such as in the combustion of fossil fuels. Although CO₂ occurs naturally and is emitted into the atmosphere through natural processes, the rising concentration of CO₂ in the atmosphere has a causal relationship to global climate change.

E.2.3.2 GHG Baseline

The City of St. Petersburg ISAP prepared a citywide GHG inventory for the baseline year 2016. For this effort, data was collected by the ISAP team from the City, Pinellas County, State agencies, and energy providers Duke Energy and TECO Energy.⁹

The St. Petersburg ISAP estimated 2.7 million metric tons of CO₂e were emitted by the City in 2016, equating to 10.9 metric tons of CO₂e per capita. This volume of emissions ranks St. Petersburg lower than national and state averages, but still greater than the global average and that of denser cities like New York.

The stationary energy and transportation sectors were the largest contributors (see inset figure). The ISAP estimated in 2016 that Aviation (as a subset of the transportation sector) was responsible for 2,501 metric tons of Scope 1 and 3 CO₂e in 2016. Scope 2 emissions are not included here because they were originally estimated as a whole for the City and not parsed out specifically for the Airport.



St Pete's 2016 Community GHG Emissions by Sector

A full air quality inventory and associated GHG baseline was not prepared for this round of sustainability planning at SPG, but given the international focus on reducing GHG emissions in

⁹ All ISAP information is reproduced from: St. Petersburg Integrated Sustainability Action Plan, Climate Action Planning and Mitigation: Base Year 2016 GHG Inventory Results. ISAP data was gathered in accordance with (1) the California Air Resources Board, California Climate Action Registry, ICLEI – Local Governments for Sustainability, and The Climate Registry, 2010: *Local Government Operations Protocol (LGOP)*, and (2) the World Resources Institute, C40 Cities Climate Leadership Group, and ICLEI – Local Governments for Sustainability (ICLEI), 2014: *Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC)*.

light of current climate science, this baseline instead provides a roadmap for the consideration of a GHG monitoring and reduction program tailored to SPG.

Sample Targets: Achieve net-zero GHG emissions from Airport-related sources (Scopes 1 and 2) by 2050.^{10,11} Establish data tracking process and assign program responsibility.

Metrics: To evaluate the Airport's progress towards its GHG target, Airport staff should annually capture and track the following metrics. Once the data is obtained, metrics can be evaluated using a variety of tools either developed by the airport sponsor or industry trade group. For example, The Airports Council International's (ACI's) Airport Carbon and Emissions Reporting Tool (ACERT) is a self-contained Microsoft Excel spreadsheet that enables an airport sponsor to calculate its own GHG emissions inventory. The tool is available at no cost to airports and can be used without emissions or environmental expertise by inputting readily available operational data.¹²

- Scope 1: Emissions from Airport-owned or controlled sources such as fuel use (and emissions) from generators, ground equipment, airport fleet vehicles, and other combustion equipment owned and operated by the Airport.
- Scope 2: Indirect emissions from the consumption of purchased energy (electricity, heat, etc.) (see **Section E.2.1**)
- Scope 3 (as available): Indirect emissions that the airport does not control but can influence. Examples include emissions from aircraft operations, passenger and employee vehicles, and waste disposal. Scope 3 also include vendors (such as fuel providers and delivery companies), supply chains, and fixed-base operators and other airport tenants with businesses at the Airport. Given the complexity and high level of effort for capturing Scope 3 emissions, it is not recommended for annual recording and tracking unless readily available or part of a specific initiative, but SPG and its operators can help achieve reductions in GHG emissions from Scope 3 sources, when practicable.

Scope 3 emissions specific to aircraft operations at SPG were calculated in conjunction with the noise analysis performed for this Master Plan Update (see **Appendix X** for noise and air quality model inputs). It is estimated that 1,887.27 short tons of CO₂e are presently emitted by aircraft at SPG and 2,868.71 are anticipated by 2039.¹³ These emissions are directly associated with aircraft fuel, estimated at 227,627 gallons (AvGas [898,760

¹⁰ U.S. Department of Transportation, 2021. *United States 2021 Aviation Climate Action Plan*. November.

¹¹ ACI defines 'net zero' as any airport-controlled carbon emissions are balanced by an equivalent amount being removed without the use of offsets. While carbon offsets prevent GHG emissions from occurring, carbon removals directly remove and sequester carbon from the atmosphere.

¹² The methodologies included in ACERT are consistent with the ACI's Guidance Manual: *Airport Greenhouse Gas Emissions Management* (2009) and the GHG Protocol.

¹³ Note that these data cannot be compared with the ISAP number estimated for the aviation industry as a whole in St. Petersburg – these data are limited to representing aircraft operations occurring at and around SPG up to the mixing height only (do not represent full flights that originate/arrive at SPG) and are not comprehensive of scope 1-3 GHG production at the airport.

pounds] and JetA [876,089 pounds]) in 2018 and 412,634 (AvGas [1,215,242 pounds] and JetA [1,439,347 pounds]) in 2039.¹⁴

Sample Initiatives:

- Purchase carbon offsets that are 100% verified and certified.¹⁵
- Pursue ACI Airport Carbon Accreditation (ACA) Level 1 certification.¹⁶
- Provide electric charging stations in public parking areas for airport customers, tourists, and residents in partnership with the City of St. Petersburg electric vehicle support programs.
- Replace gasoline- or diesel-powered (e.g., gasoline) landscaping equipment to all-electric counterparts.
- As older vehicles end their useful life, transition Airport fleet (including maintenance and support vehicles) to electric vehicle counterparts, including the installation of electric GSE rechargers.
- Reduce aircraft taxiing times.
- Encourage single-engine taxiing.
- Promote the use of automobile and aircraft sunshades.
- Enact employee rideshare or provide public transportation subsidy.
- Encourage sustainability principles in tenants, vendors, and suppliers by requiring certain standards in contract arrangements; revise contracts to include these standards as they are renewed.

E.2.4 Noise and Compatible Land Use

E.2.4.1 Noise Background

As with most airports around the country, encroachment of incompatible land uses is a concern for SPG, and one potential result of encroachment is an increase in noise complaints. The Albert Whitted Airport is located on urban bayfront land in the center of City of St. Petersburg in an urban setting surrounded by residential, tourism, and industry interests. Encroachment occurs as land is developed and communities establish services and residential areas closer to the airport, often resulting in noise complaints.

City Code Chapter 6, Article II states the rules and regulations for the operation of SPG, and City Code 16 is the local zoning ordinance that governs other interests in the vicinity of the airport. These codes and ordinances help prevent incompatible uses from establishing that would hinder airport function or full use of private land.

¹⁴ Note that these emissions estimations consider below mixing-height only.

¹⁵ Carbon offsets are used to reduce the amount of carbon that an individual or institution emits into the atmosphere. Carbon offsets work in a financial system where, instead of reducing its own carbon use, a company can comply with emissions caps by purchasing an offset from an independent organization.

¹⁶ ACI ACA, 2022. *6 levels of certification*. Accessed in January 2022 at <https://www.airportcarbonaccreditation.org/about/6-levels-of-accreditation/mapping.html>

SPG has adopted the FAA standard day-night average sound level (DNL) 65 contour for zoning and land use planning. The noise contours developed as part of this master plan are included as part of the environmental overview chapter.

E.2.4.2 Noise Baseline

Although no formal logs are maintained, SPG typically receives fewer than 12 noise complaints per year. As such, SPG does not operate a formal noise complaint tracking system or abatement program, such as request voluntary nighttime curfew or other procedural/operational adjustments. Typically, noise complaints are received by the Airport Manager who will research the issue and close the loop with a formal response to the originator of the complaint.

Although there are no formal noise abatement procedures established for SPG, a sign is posted at the end of Runway 18 to request pilots to avoid overflying the neighborhood $\frac{3}{4}$ of a mile south on the extended runway centerline whenever possible.

E.2.4.3 Noise Sustainability Program Recommendations

Sample Targets: Formalize complaint logging, tracking, and response system. Respond to all noise comments requiring such in a timely manner. Ensure no new incompatible land uses or adverse impacts to airspace.

Metrics: Number of noise complaints. Percentage of DNL 65 contour that contains incompatible uses.

Recommended SPG Initiatives:

- Continually update noise and land use compatibility policy.
- Work with the local Board of Realtors to establish disclosure requirements in areas exposed to regular aircraft operations. Maintain presence at relevant City and County planning meetings.

E.2.5 Community Impact

E.2.5.1 Community Background

In 2003 the City of St. Petersburg voted overwhelmingly to retain and to invest in SPG as a City asset. The Blue Ribbon Task Force was assembled to evaluate existing airport resources and ultimately made 36 recommendations for airport upgrades and additions that would specifically broaden SPG services and engage and benefit the local community.¹⁷ Many of these recommendations have been implemented or are in process as the airport continues to develop.

The airport is connected to the City through its services and its linkage to the adjacent Downtown Waterfront. Its proximity to the Port of St. Petersburg, USFSP, Salvador Dali Museum, and

¹⁷ Albert Whitted Blue Ribbon Advisory Task Force Committee, 2004. *New Opportunities and Recommendations for Redevelopment of Albert Whitted Airport: Our Vision of Tomorrow*. September.

Mahaffey Theatre also require good stewardship and cooperation as space limits growth for all neighbors in this area. As SPG offers no commercial passenger airline service, not all residents have a need for airport services. Despite the potentially limited local use, the airport exists to serve the general public and strives to be a good neighbor to the greater St. Petersburg community. SPG is engaged with its neighbors both to ensure that the airport's benefits are communicated, its impacts are minimized, and it helps to enhance the quality of life for the City.

E.2.5.2 Community Baseline

Airport Economic Impact. SPG is self-sustaining and does not use City of St. Petersburg tax dollars for operation. Capital improvement projects are generally funded through federal and state grants, and the City will often provide repayable loans to SPG for grant-matching funds. Approximately 90 percent of airport revenue is derived from hangar rentals, which are always at 100 percent occupancy with an ongoing shortage and demand for hangar space. There are also fuel flowage and ramp fees, but the airport does not charge landing fees. The total annual economic impact of SPG into the surrounding community is estimated at nearly \$80 million.¹⁸

Tenant Services and Engagement. In addition to offering local general aviation services, a variety of local business and other tenants are served by SPG facilities, including:

- Sheltair (FBO)
- The Hangar (restaurant)
- Advertising Air Force (aerial advertising and banner towing)
- Aerophoto (aerial photography)
- Biplane Rides (rides/sightseeing and aerial photography)
- Civil Air Patrol (air/sea rescue)
- Executive Helicopters (rides/sightseeing)
- Hertz (car rental)
- It's Time to Shine (aircraft detailing services)
- Med Trans (medical transport)
- Romac Air (aircraft maintenance)
- Shave Cave (headquarters and laboratory)
- Sky Addict Aviation (maintenance)
- St. Pete Air (flight school, maintenance, avionics)
- Airport Traffic Control Tower (RVA, Inc.)
- Tampa Bay Air Charter (aircraft charter)
- Suncoast Air Medical (medical transport)
- Tampa Bay Aviation (helicopter rides and sightseeing tours)
- Total Traffic Networks (aerial news/traffic reporting)
- St. Pete Grand Prix (seasonal)

As part of this baseline survey, a subset of tenants was interviewed to assess individual company sustainable practices or the use of corporate programs, and to gauge willingness to participate in a

¹⁸ Florida Department of Transportation, 2019. *The Economic Impact of Albert Whitted Airport (SPG)*.

larger, airport-wide effort. All tenants that responded to the query did not already participate in corporate environmental management systems or sustainability programs, but were willing to consider any proposals initiated by the airport. In particular, the Hangar Restaurant is notably progressive in both its connection and service to the community as well as the performance of sustainable practices. The Hangar employs 50 to 60 employees with 15 present at any given time. It is open to the public and serves an average of approximately 150 customers per day. The Restaurant Manager/ Executive Chef has independently and successfully executed the following sustainability program elements:

- Implemented its own recycling program.
- Offers customers paper straws only.
- Promotes sustainable food supply by sourcing local ingredients, including local seafood.
- (Pre-COVID) Donates excess food to local food banks to limit food waste.

Community Connections. The mission of the Blue Ribbon Task Force was specifically to provide direction to address current and future needs that would support the success of the airport – and key to that success is the creation of a “synergistic community for the immediate area” that “benefits a broad segment of the population of St. Petersburg.”¹⁹ The Task Force suggestions included the development and functional neighborhood connection of a public Terminal Building that would offer to the public, including the local community and tourists, a high-end restaurant facility, conference room, business service center and coffee shop, observation deck, art gallery, aviation museum, educational center, and voting precinct. The Terminal was constructed in 2007 and operates amenities as originally recommended by the Task Force. Additional recommendations were made to increase the accessibility, safety, efficiency, and capacity of the airport itself, and its use and visual/aesthetic integration in the urban atmosphere.

Another Task Force recommendation that has since been constructed is the connection of SPG to the City of St. Petersburg Waterfront Development²⁰ through the establishment of Albert Whitted Park, located on the north side of the airport and open to the public until sunset each day. The park has observation areas overlooking the airport, an aviation-themed playground, and can be reserved for private functions.

SPG leads and supports other ongoing or annual community events. The largest of these is the annual Firestone Grand Prix at St. Petersburg, which uses airport property and requires all aircraft operations to stop for the days surrounding the event. The volunteer-run Albert Whitted Airport Preservation Society offers airport tours and operates an education center, National Airlines museum, and hosts monthly pancake breakfasts and other events. SPG also supports the Chapter 47 Experimental Aircraft Association and Albert Whitted Airport Preservation Society’s Young Eagles Program, which is focused on the introduction of young people to the experience of flight through hosting numerous days of free flights for children between the ages of 8 – 17 each year. The onsite Hangar Restaurant and Flight Lounge provides fine dining overlooking the airport and

¹⁹ Albert Whitted Blue Ribbon Advisory Task Force Committee, 2004. *New Opportunities and Recommendations for Redevelopment of Albert Whitted Airport: Our Vision of Tomorrow*. September.

²⁰ City of St. Petersburg, 2015. *The St. Petersburg Downtown Waterfront Master Plan*, June 4.

occasionally offers live music and food specials. Other activities available at SPG that are available to the public include flight instruction and sightseeing tours offered by tenants listed above.

E.2.5.3 Community Sustainability Program Recommendations

Sample Targets: Operate the airport within approved budget. Achieve five percent annual growth in community economic impact.

Metrics: Aeronautical revenue (e.g., gross hangar rental fees) and overall annual economic impact to community. Non-aeronautical revenue as a percentage of total operating revenue. Diversity (quantity and relative quality/stability) of revenue streams. Number of outreach events, including community events, tours, and on- or offsite presentations.

Recommended SPG Initiatives:

- ➔ Consider initiating an internal education campaign through the Blue Lightning Initiative (BLI) to help raise awareness among employees and stakeholders on human trafficking.²¹
- ➔ Engage City in discussion to extend driverless electric shuttle system (“Downtown Looper Service”) an additional half block to provide access to SPG and The Hangar public restaurant. Note, this suggestion originated in the Blue Ribbon Task Force Recommendation list, but is also currently recommended by The Hangar Manager and the City’s Sustainable Development Program Coordinator.
- ➔ Engage all tenants in SPG sustainability initiative; reinstate quarterly tenant meetings / SPG Advisory Committee group.
- ➔ Work with the City of St. Petersburg to institute a City-led/City-run recycling program.
- ➔ Promote additional aviation programs, such as Tony Janus Society, Vibrant and Safe, and Bloomberg Challenge Winner.
- ➔ Make sustainability monitoring and reporting data available to the public.
- ➔ Highlight airport businesses in marketing material.
- ➔ Participate in local school career programs.
- ➔ Revise concession agreements/contracts to require transition to and use of biodegradable plastic utensils, straws, plates, etc. and discourage single-use plastics.
- ➔ Continuously re-evaluate rental and fuel rates to ensure they are sustainable and competitive.
- ➔ Provide aviation-related and other community events (e.g., runway 5K, concerts, Fly-in/Cruise-in, boat shows, etc.).
- ➔ Continue to participate in on-airport education events (e.g., Albert Whitted Airport Preservation Society).
- ➔ Donate surplus equipment and other goods to charity.
- ➔ Develop a mentorship/intern program.

²¹ The Blue Lightning Initiative is an element of the Department of Homeland Security (DHS) Blue Campaign, led by the Department of Transportation (DOT) and DHS Component Agency, U.S. Customs and Border Protection (CBP). The BLI trains aviation personnel to identify potential traffickers and human trafficking victims, and to report their suspicions to federal law enforcement. Visit www.dhs.gov/blue-campaign/blue-lightning-initiative on how to get involved.

- Develop and continually implement and improve a local community outreach plan.
- Developed a Strategic Airport Plan and communicate it with external stakeholders.
- Maintain relationships with local, state, and federal policy makers.

E.3 Sustainability Plan Development

Although this effort did not include the formal establishment of a sustainability program or plan at SPG, the following recommendations are generally pursued as the next steps in a sustainability program and may be considered for further program development at SPG:

- Continue to *communicate and integrate* sustainability efforts into City's ISAP.
- Establish *sustainability performance targets* for each focal area, including FAA recommended targets or federal Executive Orders as relevant. These targets are intended to aim initiatives toward making measurable, meaningful changes in support of the airport's strategic sustainability goals. Tracking specific metrics will help measure success towards these targets.
- Envision program *initiatives and projects* to further advance the targets. Continue to implement, promote, or enhance any existing, ongoing efforts.
- Develop a *project selection process* that qualitatively identifies the general resources required (financial and staff hours) and estimates an anticipated payback period for the implementation of selected or proposed sustainability initiatives.
- *Monitor progress*. Integrate sustainability into *existing* SPG systems, such as utility bill payment, maintenance programs, and contracts and leases. Communicate annual progress monitoring and success with the greater community, and maintain connection to the City ISAP.

