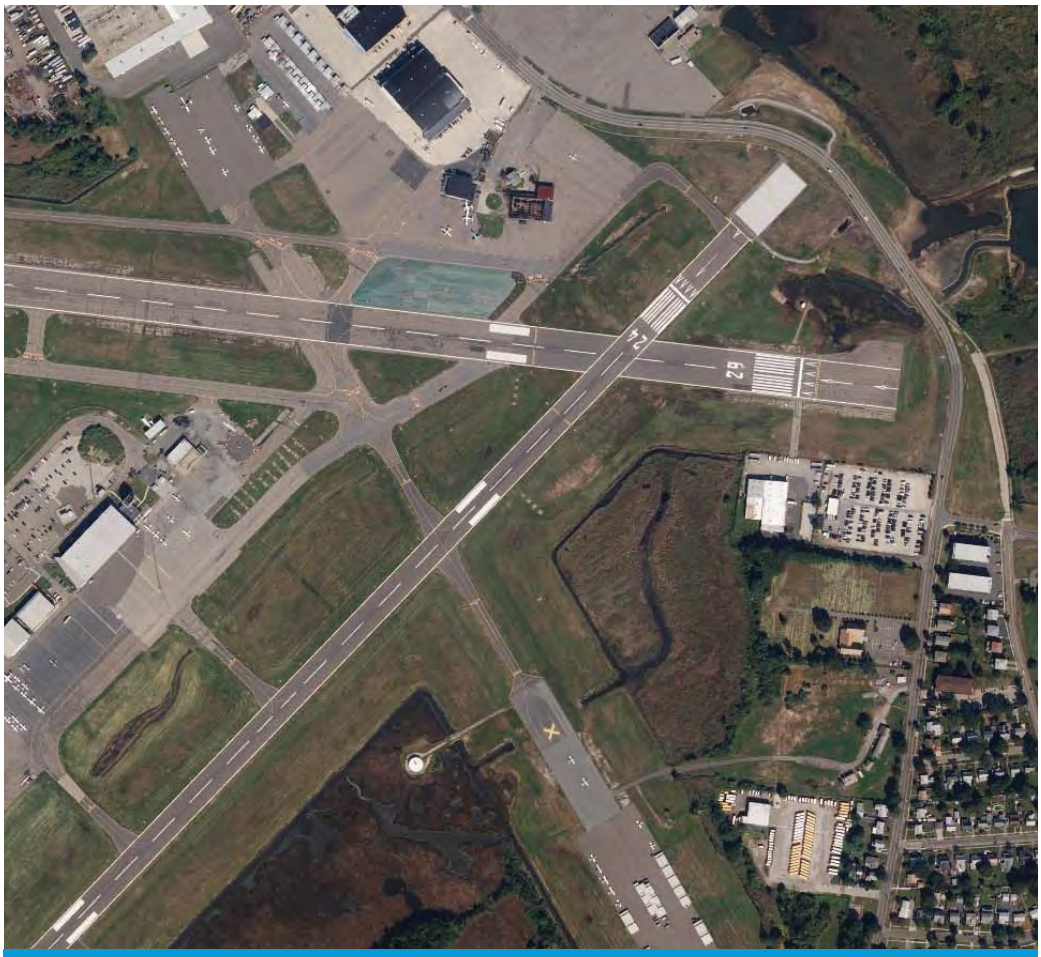

Airport Master Plan

Igor I Sikorsky Memorial Airport

FINAL REPORT

January 2021

Prepared by:

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design/construction solutions

Prepared for:

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1 Introduction

The City of Bridgeport has retained CHA Consulting, Inc. ('CHA') to prepare a Master Plan Update (Study) for the Igor I Sikorsky Memorial Airport ('BDR' or 'the Airport'). The purpose of the study is to evaluate the current utilization and operational characteristics of the airfield, general aviation and support facilities, ground access, and land development considerations. It is the intent to consider all alternatives that can be developed for the best use of space and logical guidance provided for the continued improvements necessary to accommodate projected aviation activity in a logical and financially-feasible manner throughout the 20-year planning period.

This introductory chapter provides a description of the project and a background overview of the Airport and its facilities. Additional information about the Airport and the Study can be found on its website at www.planbdrairport.com. The Airport's website has airport information and maps, driving directions, ground transportation, and parking information.

1.1 Project Description

The airport master planning process assesses how well an airport services existing users, is equipped to meet future demands, and fulfills Federal Aviation Administration (FAA) safety and design standards. The process includes the development of activity forecasts, the identification and evaluation of financial, physical, and environmental issues, and the recommendation of feasible improvements.

An airport master plan is a comprehensive study of an airport that is conducted via a systematic process that evaluates existing facility and market conditions, identifies anticipated facility needs, and formulates short-, medium-, and long-term development plans to meet future aviation demand. The process, methods and ultimate products are guided by Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5070-6B, *Airport Master Plans*. Consistent with this guidance, this Master Plan Update provides recommendations for the improvement and development of the Airport. The recommendations are intended to satisfy aviation demand, minimize environmental impacts, and address community concerns. The study follows the format and design criteria outlined in the following federal guidance materials and regulations:

- FAA Advisory Circular 150/5070-6B, "*Airport Master Plans"*
- FAA Advisory Circular 150/5300-13A "*Airport Design*"
- Federal Aviation Regulation (FAR) Part 77, "*Safe, Efficient Use, and Preservation of the Navigable Airspace*"

The products of the study include this narrative report and an Airport Layout Plan (ALP). The ALP illustrates the existing and proposed airport facilities and will be formally approved by the City of

Bridgeport and FAA. Several additional drawings that illustrate the surrounding airspace, adjacent land use, and airport property support the ALP. The combined set of drawings is called the ALP Drawing Set.

Note that approval of the ALP does not represent a commitment by the City of Bridgeport or the FAA to undertake or financially support the proposed projects, nor does it constitute any environmental approval. However, the FAA's approval of the Forecast and ALP, and acceptance of the Master Plan Update is necessary for specific projects to become eligible for federal and state funding.

1.2 Regional and Airport Overview

BDR is a public-use airport owned and operated by the City of Bridgeport. According to the FAA's National Plan of Integrated Airport Systems (NPIAS) Report, BDR is designated with a service level of "General Aviation" (GA), which is defined as:

> *General Aviation – "A public airport that does not have scheduled service or has scheduled service with less than 2,500 passenger boardings each year."*

In FAA's 2012 Report: General Aviation: A National Asset, Sikorski Memorial Airport is categorized as the highest level of GA airport – National importance. An airport in this classification:

> *"Supports the national airport system by providing communities access to national and international markets in multiple states and throughout the U.S. National airports have very high levels of aviation activity with many jets and multiengine propeller aircraft".*

The other FAA airport categories, include "Regional, Local, Basic, and Unclassified." Of the nearly 3,000 public airports in the study, only 84 airports were considered to be of National Importance.

1.3 Airport History

Igor I Sikorsky Memorial Airport, originally known as Avon Field, was the site of the country's first airshow in 1911 before it was purchased by the City of Bridgeport in 1937. Prior to being rededicated in namesake to Igor I Sikorsky (i.e., Sikorsky Memorial), the Airport was widely known as Bridgeport Municipal Airport from 1937 through 1972.

Throughout the decades, the Airport has received numerous grants and completed

various development improvements on the airfield and the landside including perimeter fencing, runway and taxiway extensions, safety area improvements, development of GA and hangar facilities, and environmental improvements. The airport was originally constructed with three runways, however as part of an effort to provide more aircraft storage and operations area, the third runway was closed

.

2 Inventory of Existing Conditions

Understanding the background of an airport and the region it serves is essential to making informed decisions pertaining to airport-related improvements. Therefore, to develop a well-rounded understanding of BDR, an inventory of key airport elements was conducted and discussed in the subsequent sections.

2.1 Airport Location

BDR is in the Town of Stratford, Connecticut and is approximately three miles southeast of the City of Bridgeport. Bridgeport and Stratford are in Fairfield County, approximately 15 miles from New Haven and 60 miles from New York City (Midtown Manhattan). **Figure 2-1** depicts the location of BDR relative to both the State of Connecticut and the New York, New England region.

Figure 2-1 – Igor I Sikorsky Memorial Airport (BDR) Location

2.2 Airport Service Area and Surrounding Airports

Airport service areas are generally described as the location from which people are expected to use the airport as a first choice, as compared to other neighboring facilities. The airport service area encompasses most businesses, passengers, and based aircraft owners utilizing an airport, as well as the tourist destinations of visitors. In general, a service area boundary for a GA airport is defined within a 20-mile radius, or a 30-minute drive time to the airport. Tweed New Haven Airport is within a 20-mile radius of BDR, however it is on the outer cusp of the drive time at 28 minutes without traffic. Other nearby airports include Waterbury-Oxford to the north, Danbury Municipal Airport to the northwest, and Westchester County Airport to the west. These other airports are beyond the service area.

As depicted in **Figure 2-2**, three airports (one NPIAS), and the counties of Fairfield and New Haven are located with 20 miles of BDR and have been identified as the BDR service area. Although portions of these counties are not within the specific 20-miles service radius, due to relatively

high saturation of airports within the area, the entirety of the county will be included in subsequent socioeconomic evaluations.

Table 2-1 – Airports Surrounding BDR (20 miles)

Airport Name	ID	No. of Runways	Longest Runway	Runway Surface	Instrument Approach	Distance/Dir. from BDR	NPIAS
Igor I Sikorsky	BDR	2	4,761’	Asphalt	ILS/DME	-	Yes
Danbury Municipal	DXR	2	4,422’	Asphalt	LOC/DME, GPS	20.2 / NW	Yes
Waterbury-Oxford	OXC	1	5,801’	Asphalt	ILS/DME	18.9 / N	Yes
Tweed-New Haven	HVN	2	5,600’	Asphalt	ILS/DME	12.2 / E	Yes

Source: CHA, 5010-1 Form, FAA NPIAS, 2019

Figure 2-2 – Igor I Sikorsky Memorial Airport (BDR) Service Area

Source: CHA

2.3 Airport Facilities

A primary role of master planning is developing a detailed listing of recommended facilities and improvements for implementation over the planning period. As such, the first step in this process is to inventory existing facilities and review their current condition.

Airport facilities are often described as either airside or landside, depending upon the type of operation they support. Airside facilities are those related to the landing, takeoff, and taxiing of aircraft in the airfield environment. Examples of airside facilities include: the runway and taxiway system; airfield lighting, marking and visual aids. Landside facilities are those related to the transition from air to ground movement or vice versa. Examples of landside facilities include: the airport terminal building, aircraft refueling area, aircraft storage, and vehicle parking. At Sikorsky, a former passenger terminal building was demolished; however, several airport tenants provide passenger and pilot facilities including Atlantic Aviation, Three Wing Aviation, and Volo Aviation[1].

2.3.1 Inventory of Airfield Facilities

Airside facilities refer to all areas accessible to aircraft. This includes runways, taxiways, and any additional airfield infrastructure such as navigational aids, lighting, and marking.

2.3.1.1 Runways

BDR operates under a two intersecting runway system consisting of a main runway and a crosswind runway. Runway 11-29 is 4,761' long and 150' wide. It is constructed of asphalt and in fair to poor condition. According to the FAA Facility Directory, the runway's load-bearing capacity is estimated at 30,000 pounds for single wheel aircraft and 108,000 pounds for double wheel aircraft. Runway 11 end maintains basic markings while Runway 29 maintains non-precision markings, both are in fair condition.

Runway 6-24 was reconstructed in 2016 and measures 4,677' in length and 100' in width. It is constructed of asphalt and is in excellent condition. As per the FAA Facility Directory, the runway's load-bearing capacity is estimated at 57,000 pounds for single wheel aircraft and 80,000 pounds for double wheel aircraft. The Runway 6 end maintains precision markings in good condition while the Runway 24 end maintains non-precision markings, also in good condition.

Per FAA AC 150-5320-6e, *Airport Pavement Design and Evaluations*, stabilized base and subbase courses are necessary for new pavements designed to accommodate jet airplanes weighing 100,000 pounds or more. The Runway 6-24 reconstruction record drawings do not include a

[1] In 2020, the assets of Volo Aviation were acquired by Atlantic Aviation.

stabilized base in the design, meaning that aircraft operating at over 100,000 lbs would result in additional wear on pavement and could reduce its functional service life. In addition to the lack of stabilized base on Runway 6-24, the FAA published weight bearing capacities on Runway 6-24 are 57,000 lbs. for single wheel aircraft, and 80,000lbs for double wheel aircraft.

Table 2-2 – Runway Data

	Runway 11/29		Runway 6/24	
Runway Length (feet)	4,761’		4,677’	
Displaced Threshold (feet)	0	364’	0	320’
Width (feet)	150’		100’	
Runway End Elevation (feet above MSL)	8.5’	6.5’	6.9’	6.8’
Pavement Type	Asphalt		Asphalt/Grooved	
Pavement Load Bearing	108,000 lbs. (Double Wheel)		80,000 lbs. (Double Wheel)	
Effective Runway Gradient	0.04%		0.01%	
Aircraft Approach Category	C		C	
Airplane Design Group	III		II	
Runway Markings	Basic		Precision	
Runway and Approach Lighting	HIRL, REIL, PAPI-4		HIRL, REIL, PAPI-4	
Navigational Aids	n/a	RNAV	ILS/DME, RNAV	RNAV, VOR
Runway Design Code	C-III-5000		C-II-4000	C-II-5000

Source: FAA 5010-1 Form, CHA, 2019.

2.3.1.2 Taxiways

BDR contains 9 taxiways in its system, however, none are full length parallel taxiways. Runway 24 is the only runway end accessible by taxiway for takeoff while all others require back-taxiing.

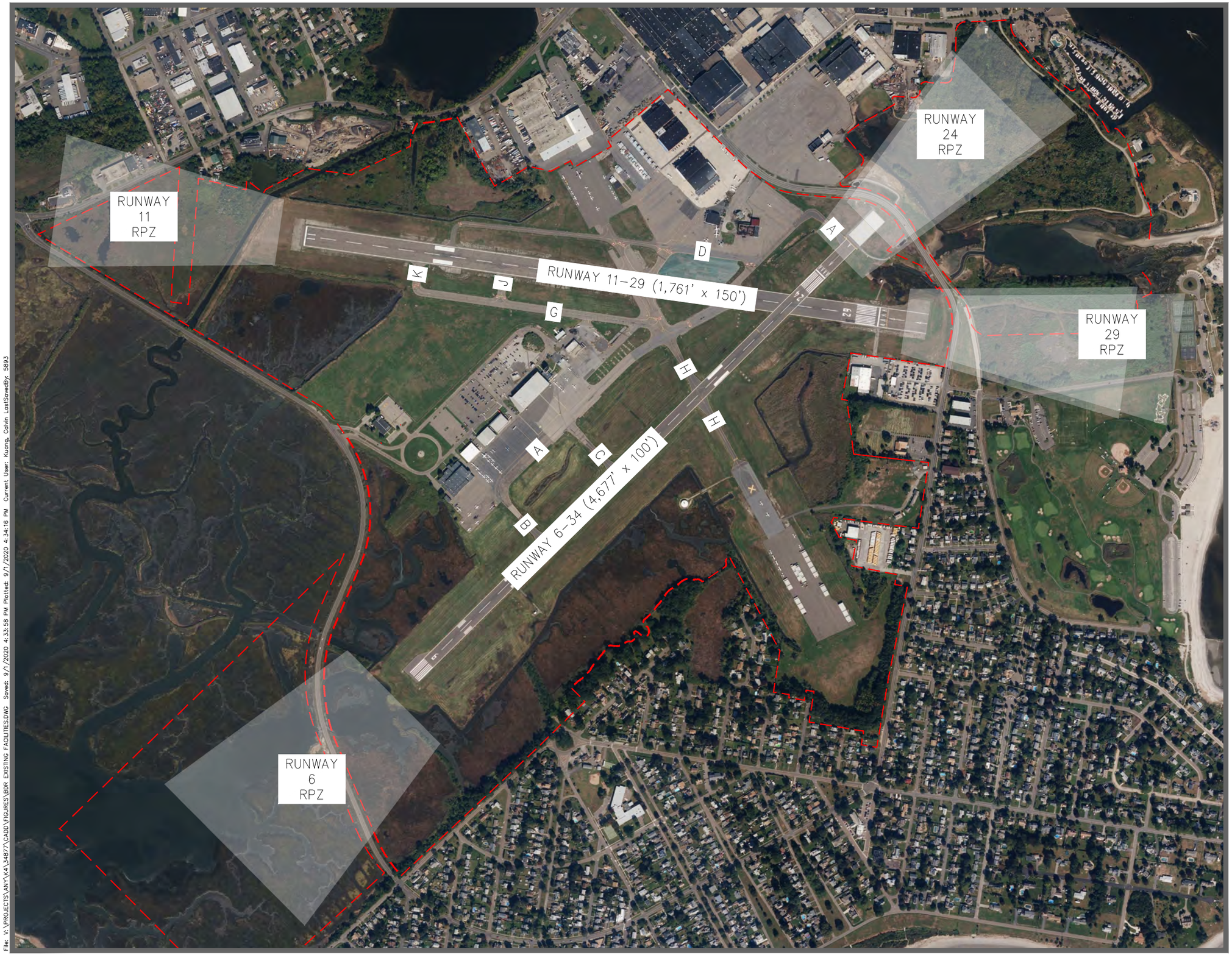
Table 2-3 – Taxiway Data

Taxiway	Description	Width (feet)	Taxiway Design Group (ADG)
A	Parallel to Runway 6-24. Adjacent to the Main General Aviation Apron (Three-Wings and Volo[2] FBO facilities). Provides access to RWY 24 and RWY 6 (back taxi).	varies	4
B	Connects RWY 6-24 to TWY ‘A’	35	2
C	Connects RWY 6-24 to TWY ‘A’	35	2
D	Parallel to Runway 11-29. Adjacent to the North General Aviation Apron (Atlantic FBO facilities). Provides access to RWY 11 via backtaxiing. Connects to TXY ‘A’	35	2
E	Connects RWY 11-29 to TWY ‘D’.	50	3
G	Partial parallel taxiway south of RWY 11-29.	60	3

[2] In 2020, the assets of Volo Aviation were acquired by Atlantic Aviation.

H	Connects the South Ramp and North General Aviation Apron	varies	
J	Connects RWY 11-29 to TWY 'G'	60	3
K	Connects RWY 11-29 to TWY 'G'	60	3

Source: FAA 5010-1 Form, CHA, 2019.



BRIDGEPORT MUNICIPAL AIRPORT

MASTER PLAN UPDATE

GRAPHIC SCALE (FEET)

0 350 700 1400

LEGEND

AIRPORT PROPERTY LINE

Figure 2-3
Existing Facilities

2.3.1.3 Lighting

An airport rotating beacon light universally indicates the location and presence of an airport. The Airport's beacon is equipped with an optical system that projects two beams of light (one green and one white), 180 degrees apart. BDR's rotating beacon is located on the Air Traffic Control Tower. All runway ends are equipped with Runway End Identifier Lights (REILs) that provide identification of the runway approach end at night and during Instrument Meteorological Conditions (IMC). The REIL system consists of a pair of synchronized white flashing lights located on both sides of the runway threshold. All runways maintain High Intensity Runway Lights (HIRLs). However, only Runways 6, 24, 29 are equipped for Instrument Approach Procedures.

2.3.1.4 Marking and Signage

Runway markings denote the type of approach (e.g., visual, non-precision, precision) associated with the runway. Runway 6 approach end has precision markings in good condition. Runway 24 and Runway 29 approach ends both have non-precision markings with good and fair conditions, respectively. Runway 11 approach end has basic visual markings in fair condition. BDR has standard, lighted airfield signage.

2.3.1.5 Landing Aids

BDR maintains 4-light Precision Approach Path Indicators (PAPI-4) on all runway ends. This system provides pilots with visual descent guidance information during an approach to the runway. PAPIs typically have a visual range of approximately four miles, weather permitting, and inform pilots if they are high, low, or on the correct descent path to the threshold. REILs are equipped at all runway ends as mentioned in the previous section. Additionally, a Wind Sock and Segmented Circle is located northeast of the Main General Aviation Parking Apron adjacent to Taxiway "A" approximately 400' northwest of the ATCT.

2.3.1.6 Navigational Aids

BDR is equipped with a full Instrument Landing System on the Runway 6 approach end. All runways, except for Runway 11 approach end, have a GPS RNAV instrument procedure, with Runway 24 approach end having an additional VHF Omnidirectional Range (VOR) procedure using the Bridgeport VOR.

Table 2-4 – Navigational Aids

Runway	Runway Markings	Navigational Aids	Lighting	Instrument Approach Types
6	Precision	ILS/DME	HIRL, PAPI-4, REIL	ILS or LOC, RNAV (GPS)
24	Non-precision	VOR	HIRL, PAPI-4, REIL	RNAV (GPS), VOR
11	Basic/Visual	n/a	HIRL, PAPI-4, REIL	n/a
29	Non-Precision	GPS	HIRL, PAPI-4, REIL	RNAV (GPS)

Source: FAA Form 5010-1, CHA, 2019.

2.3.1.7 Aprons

There are three main apron areas at BDR: The Main Apron to the south and adjacent to Taxiway "A"; the North Apron and Ramp adjacent to Taxiway "D"; and the South Apron accessible via Taxiway "H". All aprons are primarily asphalt and contain tie-downs. A list of approximate apron area and aircraft tie-down spaces are listed in **Table 2-5.**

Table 2-5 – Existing Apron Areas

Apron Area		Approximate No. of Tie-Downs	Approximate Size (SF)
Main Apron	Stratford School for Aviation Technicians	14	42,000
	Three Wing Aviation	17	70,000
	Gama	n/a	40,000
	Volo[3]	15	130,000
North Apron	Atlantic Aviation	15	350,000
	CT Air & Space Museum	10	35,000
	North Ramp (T-Hangar)	28	140,000
South Ramp	N.E. Hangar Development	15	300,000

Source: BDR Airport Management, CHA, 2019.

Table 2-6 – Existing Hangar Space

Tenant	# of Hangars	Approx. Area*
Stratford School for Aviation Technicians	1	38,000
Volo[3]	2	43,000
Gama	1	12,000
Three Wing Aviation	2	43,000
Atlantic	4	112,000
Connecticut Air & Space Center	1	15,000
North Apron T-Hangars (Individually Leased)	~25 T-Hangars	~28,000
N.E Hangar Development	20 T-Hangars	30,000

Source: BDR Airport Management, CHA, 2019.

* - May include office space

2.3.2 Terminal Area Facilities

Landside facilities include all areas at an airport that are not accessible to aircraft. This includes terminal facilities and support buildings, passenger amenities, vehicle parking and access.

2.3.2.1 Airport Buildings (ATCT, Hangars, ARFF, maintenance and snow equipment storage)

BDR currently has 17 buildings and facilities leased out to private tenants in addition to an Air Traffic Control Tower (ATCT), and an Air Rescue and Fire Fighting facility (ARFF). Of the buildings,

[3] In 2020, the assets of Volo Aviation were acquired by Atlantic Aviation.

10 are for aircraft storage totaling approximately 225,000 square feet. Locations of existing airport buildings is shown in **Figure 2-4**.

Sikorsky Memorial Airport
MASTER PLAN UPDATE

GRAPHIC SCALE (FEET)
0 200 400

EXISTING FACILITIES	
ID No	DESCRIPTION
1	ATLANTIC AVIATION HANGAR
2	ATLANTIC AVIATION HANGAR
3	T-HANGARS
4	FUEL FARM
5	HANGAR
6	CT AIR & SPACE MUSEUM HANGAR
7	CIVIL AIR PATROL
8	T-HANGARS
9	FUEL FARM
10	AIR RESCUE & FIRE FIGHTING
11	AIR TRAFFIC CONTROL TOWER
12	VOLO AVIATION HANGAR
13	GAMA HANGAR
14	THREE WING AVIATION HANGAR
15	THREE WING AVIATION HANGAR
16	STRATFORD SCHOOL FOR AVIATION MAINTENANCE TECHNICIANS
17	FLIGHT SERVICE STATION (VACANT)

Figure 2-4
Building Diagram

2.3.2.2 Security Facilities

Overall the security posture at the airport is good with most areas being secure. As compared to other GA facilities, BDR is adequate with security measures including security fencing (in most areas), security gates, and cameras. Other than the growth of shrubs and trees next to hangar number two (between GAMA and Three Wing Aviation) and the gate code on the personnel gate next to the fuel farm, there were no obvious deficiencies that could be identified for immediate repair. The Facility Requirements portion of this Study will further discuss general recommendations regarding existing security practices and procedures in accordance with the Transportation Security Administrations (TSA) *Airport Characteristics Measurement Tool*.

2.3.2.3 Parking, access, and circulation

The Airport is served by Interstate 95 with its main entrance accessible via Connecticut State Route 113 (Lordship Boulevard). BDR offers four connected surface parking lots adjacent to the Main General Aviation area along Great Meadow Road. Additionally, Atlantic Aviation and the City of Bridgeport (former Blue Sky) Hangar have parking adjacent to their respective hangars in the North General Aviation Apron.

Table 2-7 – Existing Parking Spaces (Approximate)

Location	# of Spaces
Main General Aviation Area	600
North General Aviation Area	60

Source: BDR Airport Management, CHA, 2019.

2.4 Inventory of Operations, Airspace, and ATCT Procedures

In addition to facilities, the Master Plan accounts for how the airport is operated and used in order to better understand and address any areas of concern that will ultimately guide the design and development of the future alternatives.

2.4.1 Airport Activity and Based Aircraft

Although BDR currently does not have scheduled airline service, the Airport is active with both public and private users. The majority of operations are General Aviation with some air taxi and charters.

The number of based aircraft at an airport is used to determine the need for aircraft hangar space, apron area, and other related facilities. Based aircraft include those owned by individuals, businesses, or organizations that are stored at the Airport on a regular basis. According to the FAA 5010 Records, BDR has a total of 149 based aircraft. Of that total, there are 109 single engine aircraft, 10 multi-engine aircraft, 28 jets, and 2 helicopters. **Table 2-8** illustrates examples of the fleet mix of aircraft types currently based and used at BDR. The smallest aircraft are single-engine

pistons which are typically used as for recreationally flying. The largest aircraft used at BDR are corporate jets used for chartered flights.

Table 2-8 – Aircraft Types at BDR

Piston	Turbo-Prop	Other
Single-Engine Piston	*Single-Engine Turbo-Prop*	*Corporate Jet*
 Cessna 150	 Pilatus PC-12	 Bombardier Global Express
Multi-Engine Piston	*Multi-Engine Turbo-Prop*	*Helicopter*
 Piper Aztec	 King Air	 Bell 407

Source: CHA, 2019.

2.4.1.1 Operations

An aircraft operation is defined as either a landing or a takeoff. Thus, each flight includes at least two operations; one takeoff and one landing. According to data provided by the Air Traffic Control Tower, there were approximately 55,000 annual operations at BDR in 2018, which amounts to an average of 75 landings per day. Of that total, itinerant and local operations were approximately split evenly. Local flights are conducted mostly by based aircraft, and primarily include single- and multi-engine piston aircraft conducting training and recreational flights. Itinerant operations (i.e., those arriving from outside of the local area) are conducted by a mix of based and transient or visiting aircraft.

2.4.1.2 Wind data

A factor influencing the infrastructure requirements on airfield are the local weather conditions and their effect on both airport operations and capacity. For GA airports, one of the main influencing variables in wind conditions at the airport. Wind conditions affect all airplanes in varying degrees, generally the smaller the airplane, the more affected its operations are by wind, particularly crosswind components. As such, crosswind components of airfields are evaluated

based on FAA guidelines of 10.5, 13, 16, and 20 knots, considering the aircraft types and each individual runway.

Based on the aircraft types operating at BDR (see Table 2-8), the following crosswind components are applicable (per FAA Advisory Circular 150/5300-13A):

- Light single and twin-engine= 10.5 knots
- Turboprop aircraft and light jets = 13 knots
- Corporate & Regional Jets = 16 knots

Furthermore, wind data is evaluated under All Weather (AW), Visual Flight Rules (VFR), and Instrument Flight Rules (IFR) conditions. Per FAA, for a runway to have adequate wind coverage, it must have a 95% wind coverage for the aircraft accommodated. Should a runway fall below 95%, a crosswind runway may be necessary for safety of operations at the airport.

This study utilizes weather observations for the period of 2009 to 2018 recorded by the Automated Surface Observation Station (ASOS) and are the basis of the wind rose analysis. **Table 2-9** lists the wind coverage for the runways at BDR. Both runways provide similar coverage, providing the desired wind coverage of 16 knots for the large corporate jet aircraft operating at BDR. As shown in the table, both runways provide 98% all-weather wind coverage for a 16-knot crosswind component.

Runway 11-29 provides slightly better wind coverage during fair weather or VFR conditions, and during inclement or poor weather conditions Runway 6-24 is the preferred runway from a wind standpoint. However, neither runway alone provides 95% all-weather wind coverage for the 10.5 or 13 knots crosswind component for the light aircraft and turboprops operating at the Airport.

Table 2-9 - Wind Data

	Runway	10.5 Knots	13 Knots	16 Knots	20 Knots
AW	6-24	90.40%	94.49%	98.07%	99.48%
	11-29	88.78%	93.98%	98.16%	99.51%
	All Combined	96.7%	98.76%	99.64%	99.93%
VFR	6-24	90.24%	94.34%	98.09%	99.54%
	11-29	89.15%	94.40%	98.57%	99.68%
	VFR Combined	96.76%	98.87%	99.72%	99.96%
IFR	6-24	91.17%	95.22%	98.05%	99.25%
	11-29	87.36%	92.21%	96.35%	98.84%
	IFR Combined	96.56%	98.36%	99.29%	99.80%

Source: NOAA National Climatic Data Center (Igor I Sikorsky Memorial Airport 2009-2018), CHA, 219.

2.4.1.3 Runway Designations

The FAA classifies each airport runway as either primary, crosswind, secondary, or additional as per the ***Airport Improvement Program (AIP) Handbook***, FAA Order 5100.38D. All but 'additional' runways are eligible for FAA funding. For BDR, the designation of the primary runway is not obvious, as the runways are similar in length and both have relevant factors in the determination, as summarized in the table below.

Table 2-10 – Primary Runway Determination Factors

Potential Primary Runway Criteria	Runway 6/24	Runway 11/29
Runway Length	4,677'	**4,761'**
Runway Width	100'	**150'**
Preferred Runway (noise)	No	**Yes**
Runway Utilization*	**60% estimated**	40% estimated
Approach Capabilities	**ILS (3/4 mile – 250' DH)**	RNAV LPV (1-mile, 400' MDA)
Hourly Capacity	**82 ops/hour**	71 ops/hour
Proximity to Facilities	Good	Good

*Based on wind data.

The above data are used in the primary runway determination; however, the FAA does not provide a specific formula or rubric to identify the primary vs crosswind or secondary runway.

- **Runway 11-29** provides a slightly longer length, greater width, and slightly better crosswind coverage during VFR conditions. Also, Runway 11-29 is the preferred runway for noise abatement. The FAA Airport/Facility Directory recommends use of Runway 11-29 when winds are less than 5 Knots, and runway length is adequate per wind conditions.

- **Runway 6-24** provides the only ILS, with better instrument approach capability, and slightly better crosswind coverage during IFR conditions. The runway was recently reconstructed and has higher utilization rates for all aircraft types, including jets. Runway 6 is the only runway end with an entrance taxiway, which increases its hourly capacity.

Neither runway at BDR provides ≥95% wind coverage during all weather conditions for the 10.5 or 13 knot crosswind components as illustrated in **Table 2-9**. Specifically, at 13 knots, both runways provide approximately 94% coverage, and 90%, or less coverage for 10.5 knots. As such, per FAA Order 5100.38D, a crosswind runway is justified to serve the lighter aircraft that comprise the majority of the total airport activity. With both runways available, the Airport's combined wind coverage is approximately 97% for 10.5 knots, 99% for 13 knots and nearly 100% for 16 Knot crosswind components.

It is noted that currently, Runway 6-24 with higher utilization, available ILS, and recent reconstruction, serves as the existing Primary Runway at BDR, with Runway 11-29 as the crosswind or potentially secondary runway.

Table 2-11 – BDR Current Runway Designation

Runway	Classification
Runway 6-24	Primary
Runway 11-29	Crosswind/Secondary

However, this designation may change in the future based on study recommendation. Runway 11-29 has greater length and has potential to provide improved landing distance in the future. If the runway is reconstructed, it is anticipated that Runway 11-29 will receive additional utilization, especially for the existing and future jet aircraft that operate at BDR. Thus, while Runway 6-24 is currently the primary runway, the runway designations may change based on the Master Plan Recommendations.

2.4.2 Airspace and Air Traffic Control

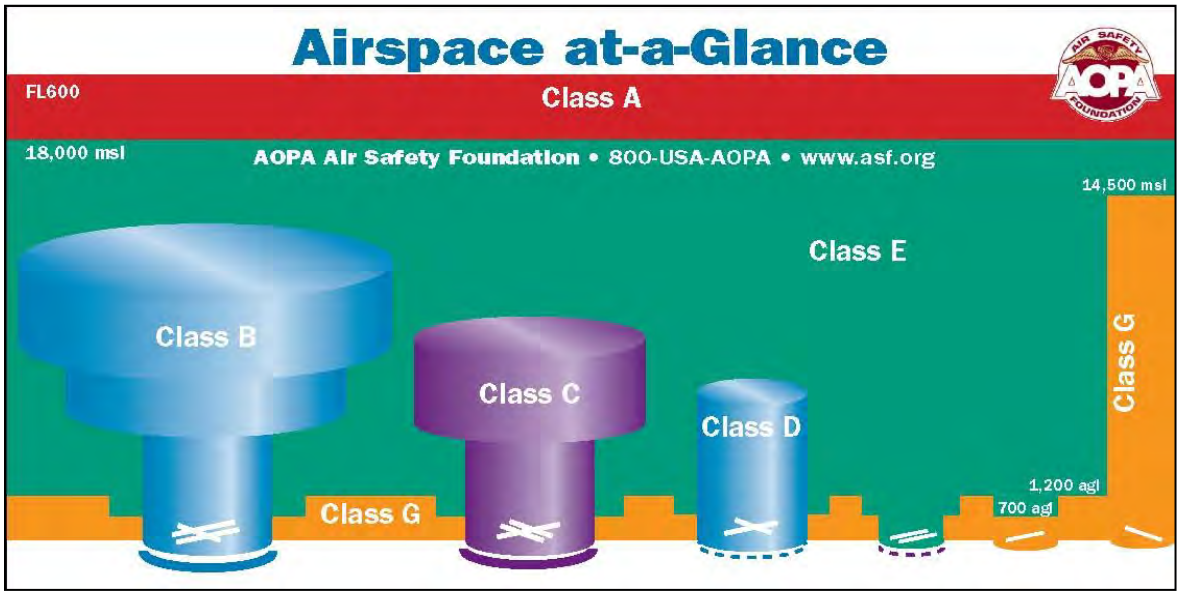
There are two types of aircraft flight operations in the National Airspace System (NAS): Visual Flight Rules (VFR) and Instrument Flight Rules (IFR). VFR operations rely on pilots maintaining visual separation from aircraft and objects and require minimum weather conditions for operation. Conversely, IFR operations rely on radar detection, instrument navigation, and separation by Air Traffic Control (ATC). IFR flights permit operations below VFR weather minimums (i.e., during IMC). As discussed above, Runways 6-24 and 29 all have published instrument procedures to enable approached and landings during IMC.

The NAS classifies airspace uses a lettering-system (e.g., Class A, B, C, D, E, and G) and includes controlled and uncontrolled areas of airspace. Class A airspace is a controlled airspace and is generally reserved for business and commercial aircraft as it begins at 18,000 feet above Mean Seal Level (MSL). Class A airspace requires operation under IFR flight plan and communication with ATC. The Class B, C, and D airspaces are also considered controlled airspace and are generally centered about larger airports. Communication with ATC must be established prior to entering the Class B, C, or D airspaces. The Class E and G airspaces encompass the majority of the NAS's airspace below 18,000 feet MSL. Class E airspace can be either controlled or uncontrolled, depending on the type of operation (i.e., VFR or IFR). Class G airspace is always uncontrolled.

BDR is a towered airport located within Class D airspace. Above BDR, Class E airspace begins at 2,500 feet Above Ground Level (AGL) and extends vertically to the Class A airspace at 18,000 feet MSL. As shown in **Figure 2-5**, BDR is considered Class D airspace. As such, from the ground elevation up to 2,500 feet. The outer radius of the airspace is variable and individually tailored,

when instrument procedures are published, the airspace is normally designed to contain the procedures, or otherwise is generally four nautical miles in radius.

Figure 2-5 – National Airspace System



Source: FAA Aeronautical Information Manual, CHA, 2019.

Figure 2-6 – BDR Airspace

Source: FAA Sectional Aeronautical Chart (Connecticut, May 2019), CHA, 2019.

2.4.2.1 Runway classification by aircraft category

The FAA uses a classification system, known as the Airport Reference Code (ARC), to signify the airport's highest Runway Design Code (RDC), the design standards to which the runway is to be built. RDC consists of three components:

- aircraft approach speed (AAC),
- airplane design group (ADG) relating to either the aircraft wingspan or tail height (whichever is more restrictive), and
- visibility minimums.

The overall ARC is determined by taking the highest RDC minus the visibility component. ARC affects runway and taxiway dimensions, separation standards, pavement marking standards, and other safety standards. Furthermore, it is used for airport planning and design but does not limit the aircraft that may be able to operate safely at the airport. The relationship between the ARC

and design standards is further in FAA AC 150/5300-13A, *Airport Design* and summarized in **Table 2-11**. BDR is currently designated with an ARC D-II.

Table 2-12 – FAA Airport Reference Code Classification

Approach Categories			
Approach Category	**Airspeed (Knots)**		**Example Aircraft**
A	<91		Cessna 152
B	91 ≤ 121		Citation X
C	121 ≤ 141		Gulfstream 450
D	141 ≤ 166		Boeing 757
E	166+		B-2 Spirit
Airplane Design Group			
Design Group	**Tail Height (feet)**	**Wingspan (feet)**	**Example Aircraft**
I	<20	<49	Piper Cherokee
II	20-<30	49 ≤ 79	King Air B250
III	30-<45	79 ≤ 118	Gulfstream 550
IV	45-<60	118 ≤ 171	Boeing 757
V	60-<66	171 ≤ 214	Boeing 747
VI	66-<80	214 ≤ 262	Airbus A380

Source: FAA AC 150/5300-13A *Airport Design*, CHA, 2019.

2.4.2.2 Approach and Departure Procedures

All runways except for Runway 11 approach end have Instrument Approach Procedures (IAPs). All runways with IAPs offer RNAV (GPS). Additionally, Runway 6 approach end includes a full Instrument Landing System (ILS).

Table 2-13 – Runway Minimums

Approach Procedure	Minimum Ceiling (AGL)	Minimum Visibility (MI)
RWY 6 – ILS or LOC	250	3/4
RWY 6 – RNAV (GPS)	250	3/4
RWY 24 – RNAV (GPS)	333	1
RWY 24 – VOR	533	1
RWY 29 – RNAV (GPS)	373	1

Source: FAA Form 5010-1, CHA, 2019.

BDR has one published Departure Procedure named “Bridgehaven Nine”. The Airport has two published Standard Terminal Arrivals procedures named “Bridgeport One” and “Denna Two” and a Standard Instrument Departure procedure named “Bridgehaven Nine Departure.”

2.4.2.3 Noise Abatement Procedures

BDR has implemented Fixed Wing Visual Flight Rules (VFR) Traffic Pattern Procedures in order to reduce noise to nearby residential neighborhoods. Runway 11-29 is the preferred runway for noise abatement. Furthermore, the Airport has adopted a number of restrictions to operations to reduce noise including: touch and go operations are prohibited between 10 pm and 7 am; all runups will be performed on Taxiways "J" and "K" when the ATCT is closed; maintenance runups are prohibited between 10 pm and 7 am unless prior approval has been provided by airport management; and departures between 10 pm and 7 am with takeoff noise levels which exceed 82 dBA are prohibited.

2.4.3 Primary Airport Tenants and Users

BDR has three Fixed Based Operators (FBO): Atlantic Aviation, Volo Aviation[4], and Three Wing Aviation. All three FBOs provide fuel and lease a total of 8 hangars; Atlantic leasing 4 while Volo[4] and Three Wing lease 2 each.

In addition to the FBOs, BDR leases buildings to the Connecticut Air & Space Center, the Stratford School for Aviation Maintenance Technicians, and Gama Aviation.

2.5 Socioeconomic, Land Use, and Community Data

The percentage of aircraft ownership and utilization of GA airports is often relative to the strength of the economy along with the cost and availability of airport facilities and services. On a macro scale, the factors that have the greatest impact on the growth prospects of an airport are the socioeconomic characteristics, such as population, per capita income, and employment, present within the airport's service area. Therefore, an understanding of local economic trends is important to understand an airport's regional environment.

2.5.1 Population

Table 2-13 shows the historic and projected populations and corresponding average annual growth rates (AAGR) for the BDR Metropolitan Statistical Area (MSA), the State of Connecticut, and the United States for years 2008 through 2018 (historic) and 2019 through 2039 (projected).

These trends indicate that the local (i.e., BDR MSA) historic population has grown at a rate significantly above that reported for the State of Connecticut, but well below (0.2%) the United States as a whole. For future projections of population within the State and the MSA, its shown that the service area for BDR and the State of Connecticut are expected to incrementally grow significantly below the rate at which the United States as a whole is projected.

[4] In 2020, the assets of Volo Aviation were acquired by Atlantic Aviation.

Table 2-14 – Population Growth Trends

Year	Bridgeport MSA (1,000)	AAGR	State of Connecticut (1,000)	AAGR	United States (1,000)	AAGR
2008	904		3,546		304,094	
2013	942	0.83%	3,599	0.30%	316,498	0.80%
2018	963	0.44%	3,665	0.36%	330,535	0.87%
AAGR 2009-2018		**0.63%**		**0.33%**		**0.84%**
2019	967	0.42%	3,683	0.49%	333,598	0.93%
2024	991	0.49%	3,772	0.48%	349,344	0.93%
2029	1,013	0.44%	3,858	0.45%	365,568	0.91%
2034	1,032	0.37%	3,933	0.39%	381,548	0.86%
2039	1,047	0.29%	3,992	0.30%	396,688	0.78%
AAGR 2019-2039		**0.40%**		**0.40%**		**0.87%**

Source: Woods & Poole Economics, Inc., CHA, 2019

** The Bridgeport MSA and Fairfield County share the same boundaries

2.5.2 Per Capita Income

Table 2-14 shows the historic and projected per capita income for the BDR service area, State of Connecticut and the United States. As shown, the historic per capita income for each category is relatively the same, and stable over time. This trend is expected to continue, however, as shown is it projected that the MSA will outpace that of the State and Nation as a whole with income trends the highest amongst the three categories throughout the forecast period.

Table 2-15 – Per Capita Income Trends

Year	Bridgeport MSA ($)	AAGR	State of Connecticut ($)	AAGR	United States ($)	AAGR
2008	88,722		57,776		41,082	
2013	94,393	1.25%	62,112	1.46%	44,438	1.58%
2018	110,318	3.17%	72,246	3.07%	51,009	2.80%
AAGR 2009-2018		**2.20%**		**2.26%**		**2.19%**
2019	114,099	3.43%	74,707	3.41%	52,712	3.34%
2024	138,505	3.95%	90,651	3.94%	63,834	3.90%
2029	174,898	4.78%	114,370	4.76%	80,420	4.73%
2034	223,355	5.01%	145,590	4.95%	102,114	4.89%
2039	285,761	5.05%	185,557	4.97%	129,841	4.92%
AAGR 2019-2039		**4.70%**		**4.65%**		**4.61%**

Source: Woods & Poole Economics, Inc., CHA, 2019

2.5.3 Employment

Table 2-15 shows the historic and projected number of persons employed and percent of the population group employed (i.e., persons within the working age currently with employment) for

each category. As shown, employment within the BDR MSA is very strong and steadily increased historically. Additionally, the MSA is projected to outpace the State and the Nation as a whole in terms of percent employed, and the number of jobs available over the course of the forecast period.

Table 2-16 – Employment Trends

Year	Bridgeport MSA (1,000)	AAGR	State of Connecticut (1,000)	AAGR	United States (1,000)	AAGR
2008	616		2,250		179,640	
2013	632	0.51%	2,235	-0.13%	182,390	0.30%
2018	675	1.33%	2,376	1.23%	197,685	1.62%
AAGR 2009-2018		**0.92%**		**0.55%**		**0.96%**
2019	683	1.19%	2,404	1.18%	200,555	1.45%
2024	723	1.14%	2,540	1.11%	214,840	1.39%
2029	760	1.00%	2,664	0.96%	228,826	1.27%
2034	793	0.85%	2,776	0.83%	242,288	1.15%
2039	823	0.75%	2,875	0.70%	255,384	1.06%
AAGR 2019-2039		**0.80%**		**0.77%**		**1.10%**

Source: Woods & Poole Economics, Inc., CHA, 2019

2.5.4 Socioeconomic Summary

On a National level, aviation activity has experienced gains and losses throughout the historical period. These cyclical fluctuations can be attributed to several different variables, mainly the Great Recession amongst others, but most recently, the economy has begun to rebound and brought the aviation industry along with it. As such, socioeconomic and demographic data continues to provide valid insight regarding the strengths and weakness of an economy.

Although the population within the BDR service area is not expected to grow significantly, other factors including employment and per capita income within the MSA are very strong and shows that area, overall, remains economically viable to continue supporting demand for aviation activity. It is acknowledged that future growth in aviation activity may be gradual, and dependent on the Airport to accommodate the demand with infrastructure and development improvement opportunities.

3 Forecasts of Aviation Demand

3.1 Introduction

This chapter of the Master Plan Update projects aviation demand over a 20-year planning horizon for Igor I Sikorsky Memorial Airport (BDR). Facility sizing and capacity recommendations, both airside and landside, are directly impacted by the projected aviation activity levels presented in this chapter. The projections are derived from methodologies in accordance with the requirements provided in Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5070-6B, *Airport Master Plans*.

The assumptions, methodologies, and data used to create the various projections are presented and analyzed in the sections to follow. The specific activity elements include the operational activity that directly affect the facilities and immediately adjacent land use. As such, the evaluations presented in this chapter include assessments and projections of general aviation (GA) based aircraft and operations.

3.1.1 Airport Categorization

Per FAA, BDR is categorized as a General Aviation Airport (nonprimary) within the National Plan of Integrated Airport Systems (NPIAS). According to 49 U.S. Code 47102(8), General Aviation airports are public-use airports that do not have scheduled service or have less than 2,500 annual passenger boardings. General aviation activity can be broken down into several subcategories (i.e., instructional, personal, aerial observation, corporate, etc.), with the largest single category being for personal use (31.7 percent); however, the combined nonpersonal uses of GA aircraft represent the majority of all general aviation activity (54.3 percent).

Table 3-1 shows the categories of airports by type of activity, including commercial service, primary, cargo service, reliever, and general aviation as set forth in 49 U.S. Code 47102.

Based on the information shown below, and the FAA National Forecast for all commercial service airports, BDR will remain in the general aviation (nonprimary) category, unless airline service is re-started. If that does occur, the category of commercial service airport would be based on the annual number of airline passengers. It is noted that most small airports with airline service are classified as a “non-hub, commercial service” airport.

Table 3-1 – NPIAS Airport Classifications

<table>
<tr><th colspan="2">Airport Classifications</th><th>Hub Type: Percentage of Annual Passenger Boardings</th><th>Common Name</th></tr>
<tr><td rowspan="4">Commercial Service:
Publicly owned airports that have at least 2,500 passenger boardings each calendar year and receive scheduled passenger service
§47102(7)</td><td rowspan="3">Primary:
Have more than 10,000 passenger boardings each year
§47102(16)</td><td>Large:
1% or more</td><td>Large-Hub</td></tr>
<tr><td>Medium:
At least 0.25 %
but less than 1%</td><td>Medium-Hub</td></tr>
<tr><td>Small:
At least 0.05%
but less than 0.25%</td><td>Small-Hub</td></tr>
<tr><td>Non-hub:
More than 10,000
but less than 0.05%</td><td>Non-hub Primary</td></tr>
<tr><td>Nonprimary</td><td>Non-hub:
At least 2,500 and
no more than 10,000</td><td>Non-primary Commercial Service</td></tr>
<tr><td colspan="2" rowspan="2">Nonprimary
(Except Commercial Service)</td><td rowspan="2">Not Applicable</td><td>Reliever §(47102(23))</td></tr>
<tr><td>General Aviation §(47102(8))</td></tr>
</table>

Source: FAA, CHA, 2019.

3.1.2 Forecast Data Sources

Information regarding aviation trends is factored into both the planning and the forecasting efforts. The data and assumptions used to define baseline conditions and future activity trends were derived from the following data sources:

- Airport Management – Airport management representatives typically provide the most accurate historical data and future assumptions at the Airport. This includes passenger and operational activity, facility needs, gate requirements, fleet mix transition, and anticipated service growth.
- FAA Terminal Area Forecast (TAF)[5] – TAF activity estimates are derived by the FAA from national estimates of aviation activity. These estimates are then assigned to individual airports based upon multiple market and forecast factors. The FAA looks at local and national economic conditions, as well as trends within the aviation industry, to develop each forecast.
- FAA Operational Network (OPSNET)/Air Traffic Activity System (ATADS) – contains the official NAS air traffic data available for public use. The data systems contain information relating to airport operations and can be separated by IFR/VFR itinerant operations and local operations at the airport, as reported by the Air Traffic Control Tower (ATCT).

[5] Note, the 'FAA 2018 TAF', which was retrieved in March 2019, represents the TAF containing all data from FY 2018.

3.2 General Aviation Forecast

GA includes all segments of the aviation industry except commercial air carriers/commuter service, scheduled cargo, and military operations. GA represents the largest percentage of civil aircraft in the U.S. and accounts for most operations handled by towered and non-towered airports. Its activities include flight training, sightseeing, recreational, aerial photography, law enforcement, and medical flights, as well as business, corporate, and personal travel via air taxi/commuter/charter operations. GA aircraft encompass a broad range of types, from single-engine piston aircraft to large corporate jets, as well as helicopters, gliders, and amateur-built aircraft.

Military activity is often included in the operations projections but are not forecast in the same manner as general aviation activity since their number, location, and activity levels are not a function of anticipated market and economic conditions, but are rather a function of military decisions, national security priorities, and budget pressures that cannot be predicted over the course of the forecast period. Typically, military operations, for forecasting purposes, remain static at baseline year levels throughout the forecast period.

Airport operations are further categorized as either itinerant or local operations. Local operations are those performed by aircraft that remain in the local traffic pattern or within a 20-mile radius of the tower. Local operations are commonly associated with training activity and flight instruction and include touch and go operations. Itinerant operations are arrivals or departures, other than local operations, performed by either based or transient aircraft that do not remain in the airport traffic pattern or within a 20-nautical mile radius. It is important to note that as shown in **Table 3-2**, the FAA's TAF indicates very little growth in GA operations at BDR, with an AAGR of 0.1 percent and 2.9 percent growth from 2019 through 2039. For GA operations, the FAA TAF uses trend models to project growth in the future.

Table 3-2 – FAA TAF (Condensed to GA and Military Only)

Fiscal Year	Itinerant Operations			Local Operations			Total Operations	Based Aircraft
	GA	Military	Total	Civil	Military	Total		
2018	23,640	103	23,743	25,694	108	25,802	49,545	154
2019	23,728	103	23,831	27,490	108	27,598	51,429	157
2024	24,075	103	24,178	27,490	108	27,598	51,776	180
2029	24,435	103	24,538	27,490	108	27,598	52,136	205
2034	24,811	103	24,914	27,490	108	27,598	52,512	230
2039	25,204	103	25,307	27,490	108	27,598	52,905	258
AAGR 2019-2039	**0.3%**	**0.0%**	**0.3%**	**0.0%**	**0.0%**	**0.0%**	**0.1%**	**2.5%**
Growth 2019-2039	**6.2%**	**0.0%**	**6.2%**	**0.0%**	**0.0%**	**0.0%**	**2.9%**	**64.3%**

Source: FAA 2019 TAF, CHA, 2019.

3.2.1 Historical General Aviation Activity

Much like national GA activity trends, BDR has seen a decline in GA activity at the Airport over the historical 10-year period, which can be partially attributed to factors associated with base aircraft.

The Great Recession, which occurred from 2007-2009, impacted national based aircraft and GA activity trends. During this time, the aviation industry saw an increase in costs to purchase aircraft, as well as in increase in the cost of aviation fuel. According to the U.S. Energy Information Administration (EIA), the cost of aviation fuel[6] increased by 39.9 percent from 2007 to 2014. From 2007 to 2018, aviation fuel suppliers[7] experienced an 18.9 percent decrease in sales and deliveries. The recession also resulted in individuals having less disposable income, thus decreasing recreational GA activity and single-engine aircraft operations. However, corporate jet operations have increased due to cost efficiency compared to commercial air travel costs, thus more fixed base operators are transitioning to jets for based aircraft. Although the aviation has a rebound from the recession, recreational and GA as a whole has seen a slower return to pre-2007 activity levels.

At BDR, GA operations are dominated by the based aircraft at the Airport. As shown in **Table 3-3**, itinerant and local traffic have decreased at a similar rate (2.0 percent) as based aircraft (3.4 percent).

Table 3-3 – BDR's Historical General Aviation Activity

Year	Itinerant	Local	Total Operations	Based Aircraft
2009	28,828	32,009	60,837	211
2010	36,635	36,420	73,055	190
2011	32,644	31,591	64,235	190
2012	33,081	28,538	61,619	190
2013	32,112	30,677	62,789	190
2014	31,198	26,888	58,086	190
2015	25,302	17,855	43,157	176
2016	25,279	22,321	47,600	176
2017	23,660	22,122	45,782	149
2018	23,355	26,481	49,836	150

Source: FAA TAF, FAA OPSNET/ATADS, CHA, 2019.

[6] U.S. Energy Information Administration (EIA), Independent Statistics & Analysis (2019). Petroleum & Other Liquids. Retrieved from https://www.eia.gov/dnav/pet/PET_SUM_MKT_DCU_NUS_A.htm

[7] U.S. Energy Information Administration (EIA), Independent Statistics & Analysis (2019). Petroleum & Other Liquids. Retrieved from https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=pet&s=c400000001&f=a

3.2.2 GA Based Aircraft Forecasts

Forecast Methodologies

The FAA provides guidance on multiple acceptable methodologies to be used to project GA based aircraft. To determine the most reasonable scenario for BDR, it is necessary to compare and eliminate forecasts that do not support the key factors and variables that comprise the specific direction of the Airport and its market. This section identifies and describes the methodologies included in this forecast evaluation for the development of the recommended forecast of GA based aircraft at BDR. The following methodologies, and results therein, are described in the following sections and the results are shown in **Table 3-4**. See **Appendix A** for the year-by-year results of each forecast presented in this section.

- FAA Aerospace Forecast Scenario – A forecasting approach that analyzes data provided in the FAA Aerospace Forecasts (FY 2018-2038), such as annual based aircraft projections by category, and then projects growth for based aircraft at the Airport using these growth rates. This methodology assumes that the Airport's GA based aircraft will grow at the FAA projected national rates while maintaining their respective share of fleet throughout the forecast period. The FAA Aerospace Forecast follows the trend of Single and Multi-Engine in decline but strong growth in Turbo-Props and Jets. As shown in **Table 3-4**, the FAA Aerospace Forecast Scenario would show an overall decline in based aircraft. This is a result of a large proportion of Single Engine aircraft based at BDR which skews the results. See **Appendix A** for a breakdown by aircraft type.
- TAF Growth Scenario – This scenario uses the FAA's projected based aircraft annual growth for 2019-2039 and applies that assumption to actual airport-reported based aircraft data. In other words, the TAF growth is applied to an airport- reported 2018 based aircraft count and projected throughout the forecast period. For example, the 2018 TAF has an estimated 2018 based aircraft count of 154. According to airport records, the actual number of based aircraft was 150. The year to year TAF growth rate was then applied to the actual 150 based aircraft and projected from 2019 through 2039. The result of this methodology is 253 based aircraft in 2039, approximately 0.02 percent below the 258 reported in the TAF. **Table 3-4** depicts the results of this evaluation. This scenario was believed to be an unreasonable scenario for projecting-based aircraft at BDR as the growth of 64.3 percent from 2019 – 2039 was considered unrealistic.
- Market Share Scenario (Static)[8] – A Market Share forecast is a "top-down" method where projected growth rates of larger aggregates (e.g., the nation, state, region) are used to derive forecasts for smaller areas (e.g., airports). Future BDR based aircraft were estimated by multiplying the future market share trend and the TAF for National, the New England Region, and State based aircraft. BDR's national and regional market share of

[8] BDR's GA Based Aircraft Percent Market Shares in 2018: National (0.1), New England Region (2.6), and State (14.1).

based aircraft have shown slight decline in the past 10 years. The Airport's state market share experienced a fluctuation in 2012 but has since also experienced a steady decline. However, the market shares have stayed relatively constant in the past few years and thus it was deemed appropriate to use the current market share throughout the forecasting period (see **Appendix A**). **Table 3-4** and **Appendix A** depict the results of this evaluation. As shown, between the State, New England Region, and National projections, this scenario ranges from 177 to 204 based aircraft in 2039.

Table 3-4 – Based Aircraft Forecast Comparisons

Year	TAF	FAA Aerospace Forecast	TAF-Based Growth	Market Share		
				National	Regional	State
2018	154	150	150	150	150	150
2019	157	150	154	151	151	152
2024	180	149	174	158	159	165
2029	205	148	197	164	166	178
2034	230	148	223	170	173	191
2039	258	149	253	177	181	204
AAGR 2019-2039	**2.5%**	**0.0%**	**2.5%**	**0.8%**	**0.9%**	**1.5%**
Growth 2019-2039	**64.3%**	**-0.7%**	**64.3%**	**17.2%**	**19.6%**	**34.3%**

Source: FAA 2019 TAF, FAA Aerospace Forecast, CHA, 2019.

Additionally, BDR experiences high fluctuations in seasonal aircraft activity. During the summer months, a local sea plane business commences, offering private charters to New York City and the Hamptons with a fleet of up to 10 Cessna Caravans on floats. Other factors contributing to the increase in aircraft based at BDR during the summer months include seasonal coastal businesses and seasonal residents. Approximately 15 to 25 additional aircraft utilize BDR as their base of operations during the summer months. While these aircraft are not considered in forecasting based aircraft, they will be incorporated into the facility planning.

3.2.3 GA Operations Forecasts

Like the GA based aircraft forecasts, several methodologies exist that can be used to forecast GA operations. To determine the most reasonable scenario for BDR, it is necessary to compare and eliminate those forecasts that do not support the specific operational direction of the Airport. This section provides the methodology used, as well as methodologies that were analyzed, for the development of the forecasts of general aviation operations at BDR.

- Historical Growth Scenario – Historical Growth is a time trend analysis that uses the airport's historical activity as a metric to provide future growth projections. These historical trends are typically developed as five- and ten-year historical trends. These historical growth rates are then extrapolated over the forecast horizon (20 years). Over

the last decade, BDR has experienced fluctuations in GA activity, ranging between a low of 45,782 in 2017 and a high of 73,055 operations in 2010. In 2018, the Airport received 23,355 itinerant GA operations and 26,481 local GA operations, for a total of 49,836 GA operations. The Historical Growth Scenario was considered unreliable and was not used for this forecasting effort.

- Operations Per Based Aircraft (OPBA) Scenario[9] – A straightforward forecasting methodology which assumes the total number of annual operations is representative of the number of aircraft based at BDR. At BDR, itinerant traffic makes up approximately 47 percent of all GA activity at the Airport. These operations are typically performed by aircraft based at BDR flying charter and corporate aviation operations or flight training (where the flights leave the local airport airspace and return, i.e., cross country flight training). The historical 10-year OPBA (see Appendix A) has shown to be cyclical in nature, fluctuating between 385 (2010) and 245 (2015), averaging 313 over the historical period. However, declines in OPBA can be attributed to local economic fluctuations (i.e., the Great Recession, transition from smaller aircraft to larger GA jet activity, demographic variables, etc.). Most recently, the OPBA at the Airport has been steadily increasing to 332 in 2018. Therefore, for the purposes of this forecast, it was assumed the OPBA for BDR would continue to be stable and would remain relatively static over the forecast period. As such, this forecast scenario assumes that the OPBA will remain as the base year activity level of 332 OPBA throughout the forecast period. See **Table 3-5** and **Appendix A** (includes a breakdown between itinerant and local GA operations.)
- Market Share Scenario (Static)[10] – Compares local GA activity levels with aggregate level trends. This methodology assumes that the activity of any one airport is regular and predictable in accordance with the average of airports within the market. As shown in **Appendix A**, BDR has experienced fluctuation in market share in the past 10 years. A common trait across all three markets (national, regional, and state) is that BDR's share in itinerant and local operations experience a drop from 2014 to 2015. Since BDR is a GA airport, this can be attributed to the loss of approximately 15 based aircraft during the same time period, resulting in fewer operation. Over the past 4 years, BDR's market share has remained relatively stable in itinerant operations and experienced growth in local operations. Since it is anticipated that there will also be a growth in based aircraft, it was

[9] Tower activity was used to identify the existing OPBA. Based on the evaluation of traditional and non-traditional methodologies, correlation between variables (GA operations and based aircraft) were not compatible. Although GA activities are not always directly related to based aircraft, in the case of BDR, it is dependent on based aircraft. However, the FAA projects based aircraft to increase within the forecast period but does not forecast growth in GA activity at the Airport. GA activity can be directly correlated to based aircraft; therefore, the evaluation presented in this section used OPBA in conjunction with based aircraft growth to revise the GA activity at BDR.

[10] BDR's GA Operations Percent Market Shares in 2018: National (Itinerant 0.1) (Local 0.07), Regional (Itinerant 2.4) (Local 2.2), State (Itinerant 13.8) (Local 15.7).

assumed that the Airport will maintain its current (2018) market share throughout the forecast period. An evaluation of local, regional, State, and national FAA GA projections was performed and is detailed in **Table 3-5**. (See **Appendix A** for the full results of the methodology).

Table 3-5 – General Aviation Operations Forecast Comparisons

Year	TAF	Historical Trends		Market Share			OPBA
		5-Year Time Series	10-Year Time Series	National	Regional	State	
2018	49,334	49,836	49,836	49,836	49,836	49,836	49,836
2019	51,218	48,332	48,852	50,252	49,975	49,956	50,262
2024	51,565	41,468	44,215	51,133	50,173	50,161	52,681
2029	51,925	35,578	40,018	52,076	50,374	50,370	55,048
2034	52,301	30,525	36,220	53,091	50,579	50,584	57,475
2039	52,694	26,189	32,782	54,190	50,788	50,802	60,102
AAGR 2019-2039	**0.1%**	**-3.0%**	**-2.0%**	**0.4%**	**0.1%**	**0.1%**	**0.9%**
Growth 2019-2039	**2.9%**	**-45.8%**	**-32.9%**	**7.8%**	**1.6%**	**1.7%**	**19.6%**

Source: FAA 2019 TAF, FAA OPSNET/ATADS, CHA, 2019.

3.3 Commercial Service Forecast

BDR formerly offered scheduled air service from the 1950s to 1999. Destinations included various cities along the East Coast, including Philadelphia, Washington, D.C., Boston, and Newark. Air service returned in 2006 in the form of scheduled helicopter flights to New York's Downtown Manhattan and JFK Airport, however, operations ceased in 2009. Recently, BDR anticipates a return to offering regular commercial air service during the forecasting period. The forecasted commercial service scenario was provided by BDR. It is expected that 3 departures per day (6 total daily operations) would begin before 2024 and gradually increase to 8 daily departures (16 daily operations) by 2039. Passenger enplanements were assumed for a 150-seat airliner at a 90 percent Load Factor (135 enplanements per departure). As discussed above, this airline forecast is for planning purposes. If airline service is formally announced, the Master Plan forecast can be updated.

Table 3-6 – Commercial Service Forecast

Year	Daily Departures	Commercial Annual Operations	Commercial Annual Enplanements	Commercial Service Peak Hour
2019	0	-	-	-
2024	3	2,190	147,825	1
2029	5	3,650	246,375	2
2034	7	5,110	344,925	2
2039	8	5,840	394,200	3

Source: BDR, CHA, 2019.

3.4 Recommended Forecast Summary

The following tables present a summary of the preferred aviation activity forecasts for GA activity (based aircraft and operations), military activity, and air carrier (operations and enplanements), as detailed in the previous sections.

Upon review of the GA based aircraft forecast scenarios, the Regional Market Share scenario was chosen as the recommended based aircraft forecast, which takes into consideration national and regional trends, while staying relatively conservative. **Table 3-7** presents the recommended based aircraft forecast as well as the breakdown by aircraft type.

As BDR is primarily a GA airport with many local operations, the OPBA Scenario for operations is believed to be the most reasonable scenario for the BDR forecast, as GA activity is significantly driven by based aircraft. For forecasting purposes, it was assumed that military activity will remain static at baseline year levels throughout the forecast period, as military operations are a function of military decisions, national security priorities, and budget pressures that cannot be predicted over the course of the forecast period.

The air carrier forecasts were developed in conjunction with Airport Management (**Table 3-6**) and are speculative at this time. The FAA will consider and review these forecasts when a certified airline announces the proposed start of service. As BDR has no schedule passenger services (as of 2019) and has not had service within the past 10 years, the forecasts are based solely on airline operational plans.

Table 3-8 presents the complete summary of the preferred forecasts for based aircraft and activity at BDR. In addition to a summary of the preferred aviation activity forecasts, direct comparisons to the FAA's TAF for BDR are provided for evaluation purposes, as provided in **Table 3-9**. FAA parameters require master plan forecasts to be within 15% of the TAF operations forecast for the 10-year planning period. As indicated in **Table 3-9**, the difference between the TAF and recommended forecast is 5.9% in year 2029, well within the FAA parameter. It is important to note that due to the TAF not accounting for a potential scheduled air service provider, the comparison between the TAF and recommended forecast does not include commercial operations in the total counts.

Table 3-7 – Recommended Based Aircraft Forecast

Year	Single	Multi	Turboprop	Jet	Rotorcraft	Total
2019	103	7	7	32	2	151
2024	103	7	8	38	2	159
2029	102	7	9	44	3	166
2034	101	8	11	51	3	173
2039	100	8	12	58	3	181
AAGR 2019-2039	**-0.2%**	**0.4%**	**2.9%**	**3.0%**	**2.6%**	**0.9%**
Growth 2019-2039	**-3.2%**	**7.4%**	**76.0%**	**79.9%**	**67.7%**	**19.6%**

Source: FAA Aerospace, FAA TAF, CHA, 2019

Table 3-8 – Recommended Forecast

Year	Based Aircraft	Enplanements	Itinerant Operations				Local Operations			Total Operations*
			Commercial	GA	Military	Total	Civil	Military	Total	
2018	150	0	0	23,355	108	23,463	26,481	74	26,555	50,018
2019	151	0	0	23,555	108	23,662	26,708	74	26,782	50,444
2020	153	0	0	23,779	108	23,887	26,962	74	27,036	50,923
2021	154	0	0	24,007	108	24,115	27,221	74	27,295	51,410
2022	155	0	0	24,199	108	24,307	27,438	74	27,512	51,819
2023	157	0	0	24,456	108	24,563	27,729	74	27,804	52,367
2024	159	147,825	2,190	24,688	108	26,986	27,993	74	28,067	52,863
2025	160	167,535	2,482	24,908	108	27,498	28,242	74	28,317	53,333
2026	161	187,245	2,774	25,129	108	28,010	28,492	74	28,566	53,803
2027	163	206,955	3,066	25,353	108	28,526	28,746	74	28,821	54,281
2028	164	226,665	3,358	25,573	108	29,039	28,996	74	29,070	54,751
2029	166	246,375	3,650	25,797	108	29,555	29,250	74	29,325	55,230
2030	167	266,085	3,942	26,022	108	30,071	29,504	74	29,579	55,708
2031	169	285,795	4,234	26,242	108	30,583	29,754	74	29,829	56,178
2032	170	305,505	4,526	26,470	108	31,104	30,013	74	30,087	56,665
2033	171	325,215	4,818	26,698	108	31,624	30,272	74	30,346	57,152
2034	173	344,925	5,110	26,935	108	32,153	30,540	74	30,614	57,657
2035	174	354,780	5,256	27,167	108	32,531	30,804	74	30,878	58,153
2036	176	364,635	5,402	27,404	108	32,913	31,072	74	31,146	58,658
2037	178	374,490	5,548	27,648	108	33,304	31,349	74	31,424	59,180
2038	179	384,345	5,694	27,905	108	33,707	31,640	74	31,715	59,728
2039	181	394,200	5,840	28,166	108	34,114	31,936	74	32,011	60,284
AAGR 2019-2039	**0.9%**	-	-	**0.9%**	**0.0%**	**1.8%**	**0.9%**	**0.0%**	**0.9%**	**1.4%**
Growth 2019-2039	**19.6%**	-	-	**19.6%**	**0.0%**	**44.2%**	**19.6%**	**0.0%**	**19.5%**	**31.1%**

Source: FAA 2019 TAF, FAA OPSNET/ATADS, CHA, 2019.
*Total Operations do not include Commercial Operation numbers

Table 3-9 – Recommended Forecast vs. FAA TAF

Year	FAA TAF	Recommended Operations Forecast			FAA TAF vs. Recommended Forecast
		GA	Military	Total	
2018	49,545	49,836	182	50,018	1.0%
2019	51,429	50,262	182	50,444	1.9%
2024	51,776	52,681	182	52,863	2.1%
2029	52,136	55,048	182	55,230	5.9%
2034	52,512	57,475	182	57,657	9.8%
2039	52,905	60,102	182	60,284	13.9%
AAGR 2019-2039	**0.1%**	**0.9%**	**-**	**0.9%**	**-**
Growth 2019-2039	**2.9%**	**19.6%**	**-**	**19.6%**	**-**

Source: FAA 2019 TAF, FAA OPSNET/ATADS, CHA, 2019.

3.5 Peak Activity Forecast

To properly plan, size, and design general aviation facilities at the Airport, an understanding of peak month and peak month-average day (PMAD) operational demand is necessary. The peak month and PMAD forecasts are key elements in defining the future facility requirements needed to accommodate above average levels of utilization (i.e., peak activity).

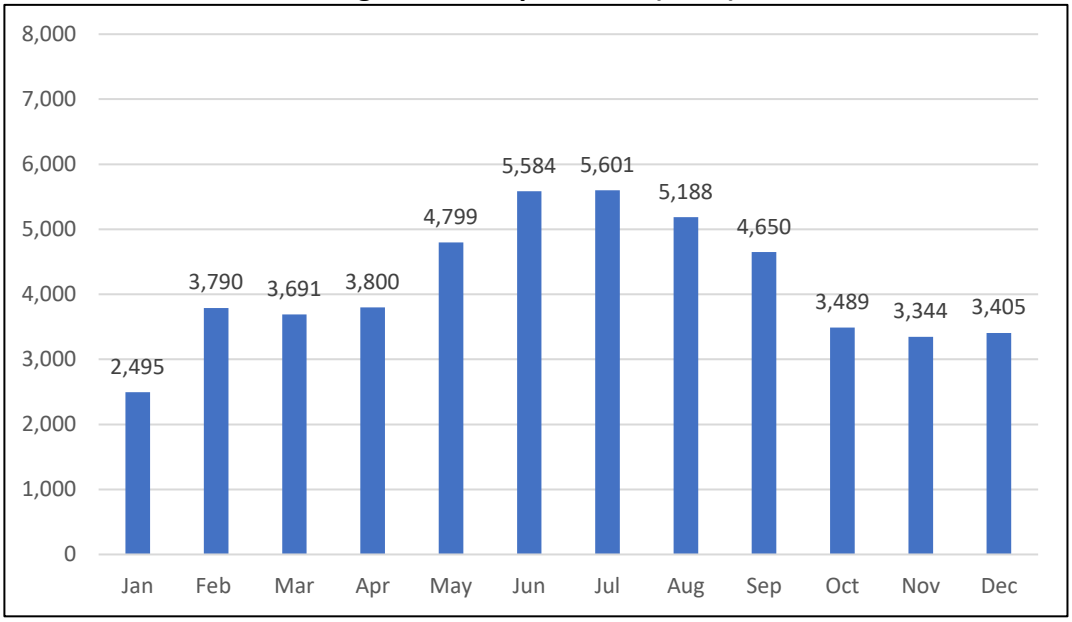
The peak month is the calendar month of the year when the highest level of general aviation operations typically occur. Peak month-average day is simply the total GA operations divided by the number of days in the peak month. Peak hour is the busiest hour of operations on the PMAD, which will later be used when determining airfield capacity.

3.5.1 General Aviation Peak Operations

Historical Peak GA Operations

A review of historical data was developed to identify the peak month for general aviation operations at BDR. When developing the forecast, July was determined to be the peak month in 2018.

Figure 3-1 – Operations (2018)



Source: FAA OPSNET/ATADS, CHA, 2019.

Peak Month - Average Day (GA Operations)

During the month of July in 2018, BDR experienced approximately 5,601 operations related to general aviation activity. To calculate the PMAD, the peak month GA operations (5,601) were divided by the number of days in the peak month of July (31) to define the PMAD. It was assumed that the peak hour would be 11 percent of the PMAD, the same share of Peak Month operations compared to annual operations.

Table 3-10 – Peak General Aviation Activity Forecast Summary

Year	Annual GA Operations	Annual Percent	Peak Month GA Operations	Peak Month Average Day	Peak Hour
2018	49,836	11%	5,601	181	20
2019	50,262	11%	5,649	182	20
2024	52,681	11%	5,921	191	21
2029	55,048	11%	6,187	200	22
2034	57,475	11%	6,460	208	23
2039	60,102	11%	6,755	218	24

Source: FlightAware, FAA OPSNET/ATADS, CHA, 2019.

3.6 Current and Future Critical Aircraft

Evaluating the Airport's current fleet mix and determining the current and projected design aircraft, are important aspects of the Master Plan Study. The critical aircraft (commonly referred to as the "design aircraft") determination is a key consideration in FAA decision making on project justification. The "critical aircraft" or "critical aircraft family" represent the most demanding

aircraft or grouping of aircraft with similar characteristics (relative to AAC, ADG, TDG)[11], that are currently using or are anticipated to use an airport on a regular[12] basis. While the Study is not limited to planning for design aircraft, they must still be considered when planning airfield and landside facilities, as they may require specific facility design accommodations within their designated areas of operation.

The Airport's previous 2009 Airport Layout Plan (ALP) update identified the Gulfstream III (ARC D-II, TDG 2) as the critical aircraft for airfield and pavement design. Upon review of the FAA's TFMSC and OPSNET data, operations at BDR over the past three years has averaged over the necessary 500 annual AAC "C" and ADG "III" operations to designate ARC C-III as the critical aircraft family. Additionally, the recommended forecast shows increase in jet operations. **Table 3-11** depicts the breakdown of operations by AAC and ADG. It is recommended that the critical aircraft remain ARC C-III throughout the planning period. Sample aircraft of this category include the Bombardier Global Express and Gulfstream 550. **Appendix A** further breaks down operations by aircraft type.

Table 3-11 – Annual Operations by AAC and ADG

Category	I	II	III	Total
2016				
B	234	1,160	6	**1,400**
C	280	254	398	**932**
D	14	270	92	**376**
Total	**528**	**1,684**	**496**	**2,708**
2017				
B	194	1,202	12	**1,408**
C	284	438	440	**1,162**
D	8	272	148	**428**
Total	**486**	**1,912**	**600**	**2,998**
2018				
B	302	1,292	16	**1,610**
C	308	656	328	**1,292**
D	4	308	128	**440**
Total	**614**	**2,256**	**472**	**3,342**

Source: FAA TFMSC, 2019

[11] AAC (Aircraft Approach Category), ADG (Airplane Design Group), TDG (Taxiway Design Group).

[12] According to FAA AC 150/500017, *Critical Aircraft and Regular Use Determination*, the terminology of "regular use" is defined as 500 annual operations, including itinerant and local operations but excluding touch-and-go operations. An operation is either a takeoff or landing.

Table 3-12 – Three Year Average Annual Operations

Year	Total C	Total D	Total III
2016	932	376	496
2017	1,162	430	600
2018	1,292	440	472
Three Year Average	**1,129**	**415**	**523**

Source: FAA TFMSC, 2019

4 Demand/Capacity Analysis and Facility Requirements

This chapter analyzes the ability of the Sikorsky Memorial Airport (BDR) and its existing facilities to accommodate the current and anticipated levels of activity as described in **Chapter 3, *Forecasts of Aviation Demand***. The analysis provided has been used to identify deficiencies and determine facility needs throughout the 20-year planning period. The elements assessed in this chapter include:

- Airside Facility Requirements
- Landside Facility Requirements

The Demand/Capacity Analysis and Facility Requirements provides a basis for assessing the capability of existing Airport facilities to accommodate current and future levels of activity. The evaluation of this relationship frequently results in the identification of deficiencies that can be alleviated through planning and development activities. Analyses of various airside and landside functional areas were performed with the guidance of several publications, including Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5300-13A, *Airport Design*; AC 150/5060-5, *Airport Capacity and Delay*; and FAA Order 5090.3B, *Field Formulation of the National Plan of Integrated Airport Systems (NPIAS)*.

These facility requirement calculations were developed for the planning period of 2019 through 2039 and were based on various forecast components. They should be regarded as generalized planning tools. Should the forecast prove conservative, the schedule for proposed developments should be advanced. Likewise, if traffic growth materializes at a slower rate than projected, deferral of additional facilities would be practical.

4.1 Airside Facility Requirements

It is important for airports to assess their existing infrastructure to determine the need for future improvements and associated airfield requirements. The airside facility requirements analysis includes an examination and evaluation of:

- Critical Aircraft
- Airfield Capacity
- Runway Length Analysis
- Runway Design Standards
- Taxiway Design Standards
- Instrument Approach Procedures
- Lighting and Visual Aids

The following sections provide a description of each item and an evaluation of existing and future requirements according to current FAA and industry standards.

4.1.1 Critical Aircraft & Facility Planning

The design, or critical, aircraft is defined as the most demanding aircraft operating or projected to operate on the airport's runway, taxiway, or apron. According to the FAA, the critical aircraft can be either a specific aircraft model or a composite of several aircraft and must account for a minimum of 500 annual itinerant operations.

As discussed within **Chapter 3**, the critical aircraft is classified using the Aircraft Approach Category (AAC), the Airplane Design Group (ADG) and the Taxiway Design Group (TDG). The selected AAC and ADG are combined to form the Runway Design Code (RDC), which specifies the appropriate design standards for each runway to be built. As such, each runway is classified with an RDC. In addition to the AAC and ADG, the RDC consists of a third component related to runway visibility minimums, expressed as Runway Visual Range (RVR).

Additionally, based upon the evaluation in **Chapter 3**, AAC "C" and ADG "III" aircraft operations at BDR currently include regular operations from the Bombardier Global Express and Gulfstream 550. Therefore, both runways were evaluated using an RDC of C-III.

After determining the RDC for each runway, the airport itself is classified with an Airport Reference Code (ARC). The ARC is used for airport planning and design purposes and is signified by the highest RDC at the airport. The ARC uses the same classification system as the RDC, minus the runway visibility component. Since this study evaluates both runways with an RDC of C-III, the ARC for the Airport is classified as C-III. It is recommended that ARC C-III is maintained throughout the planning period, with a sample Critical Aircraft including the Bombardier Global Express and Gulfstream 550.

Table 4-1 summaries the classifications applicable to BDR throughout the planning period.

Table 4-1 – Runway Design Code Analysis Summary

Runway	AAC	ADG	RVR
6-24	C	III	4000 (i.e., Lower than 1 mile, but not lower than ¾ mile)
11-29	C	III	5000 (i.e., Not lower than 1 mile)
Airport*	**AAC**	**ADG**	**RVR**
Airport	C	III	4000 or lower (i.e., ½ mile)
Crosswind Runway	B	II	5000 or lower

Source: FAA AC 150/5300-13A, *Airport Design*

*Evaluation for a crosswind runway at BDL per FAA Order 5100-38D, funding eligibility

Separately from the critical aircraft defined by aircraft activity, the FAA classifies runways for federal funding eligibility through the guidance in FAA Order 5100.38D, *Airport Improvement Program (AIP) Handbook*. The Handbook is used by the FAA to determine which runways are eligible per FAA parameters for AIP funding. The 2019 update to the Handbook describes when more than one runway is eligible for funding at federally obligated airports. Eligibility for a second runway can be due to capacity or wind coverage related to safety. At BDR, as both runways alone provide adequate capacity (discussed further in Section 4.2.1), the FAA order indicates a crosswind runway is eligible for funding only if necessary for wind coverage (see Section 2.4.1.2). Per the wind analysis, a crosswind runway at BDR is eligible only for smaller AAC "B" and ADG "II" aircraft. As both runways provide adequate wind coverage for jet aircraft, which can accommodate greater crosswinds, the FAA could limit funding for improvements to the second runway to ARC B-II standards. As such, this could require the City to fund the additional cost to support both runways for use by ARC C-III aircraft.

4.1.2 Airfield Capacity

Airfield capacity is defined as the maximum rate that aircraft can arrive at, or depart from, an airfield with an acceptable level of delay. It is a measure of the number of operations that can be accommodated at an airport during a given time period, which is determined based on the available airfield system (e.g., runways, taxiways, NAVAIDs, etc.) and airport activity characteristics.

The current guidance provided by the FAA to evaluate airfield capacity is described in AC 150/5060-5, *Airport Capacity and Delay*. The following provides a brief definition of the two capacity parameters:

- **Annual Service Volume (ASV):** A reasonable estimate of the airport's annual maximum capacity, accounting for annual weather characteristics, runway use, aircraft fleet mix, and other conditions.
- **Hourly Airfield Capacity:** The maximum number of aircraft operations that can take place on the runway system in one hour. As airport activity occurs in certain peaks throughout the day, accommodating the peak hour activity is most critical.

AC 150/5060-5 provides the estimated ASV and hourly airfield capacity for VFR and IFR operations based on various runway configurations and the type of aircraft operating, or projected to operate, at the airport. **Table 4-2** presents the ASV and hourly airfield capacity for the dual runway configuration and type of aircraft operating at BDR.

Table 4-2 – Annual Service Volume & Hourly Capacity

Year	Annual GA Operations	ASV	Peak Hour	Hourly Operations* (VFR & IFR)
2018	49,836	200,000	20	134

2019	50,262		20	
2024	52,681		21	
2029	55,048		22	
2034	57,475		23	
2039	60,102		24	

Source: AC 150/5060-5, *Airport Capacity and Delay*; CHA

*Based on runway configuration #9 and mix index of 21 to 50

Following the guidance provided within AC 150/5060-5 for the runway configuration and operating aircraft at BDR, the ASV is 200,000 operations with an hourly airfield capacity of 134 operations. As shown on **Table 4-2** the current and forecasted annual and peak hour operations for BDR are anticipated to remain below the ASV and hourly operations. It is important to note, however, that this analysis does not suggest that the Airport will not experience delays during inclement weather conditions or briefly during periods of abnormal peak activity. The efficiency of the Airport should be continuously monitored to appropriately determine any changes or improvements the airfield may need in order to maintain a high level of customer service and reduce the potential for delay.

4.1.3 Runway Length Analysis

Runway length requirements are based on a variety of conditions including: airport elevation, mean daily maximum air temperature, runway gradient, and the gross takeoff and landing weights of the critical aircraft expected to regularly use the runway (i.e. at least 500 annual itinerant operations).

AC 150/5325-4B, *Runway Length Requirements for Airport Design*, outlines the process for determining recommended runway length at an airport. In summary, this process involves: identifying the critical aircraft, or family of aircraft, and its maximum certified takeoff weight (MTOW); calculating the recommended runway length for the critical aircraft based on the appropriate "runway length curves"; and, if appropriate, adjusting the recommended runway length for aircraft and runway characteristics (e.g., runway gradient, wet runway conditions).

As mentioned previously, BDR is experiencing regular operations from the Bombardier Global Express and Gulfstream 550. The Bombardier Global Express series aircraft has a Maximum Takeoff Weight (MTOW) between 92,500 pounds and 99,500 pounds requiring 6,170 feet of runway for takeoff at full capacity, with 5,540 feet listed for typical conditions. **Table 4-3** summarizes the most commonly used jets at BDR and their respective runway requirements at

sea level, International Standard Atmosphere (ISA), and MTOW. The length requirements were provided by the manufacturers' respective websites at International Standard Atmosphere (ISA), dry, and private not-for-hire conditions; thus, these are the minimum lengths required for each aircraft.

Table 4-3 – Frequently used Jet Aircraft at BDR

Aircraft Type	Operations (3-year average)	Runway Length Requirements	
		Takeoff	Landing
Cessna Excel	293	3,560	3,180
Gulfstream G400	283	5,600	3,260
Bombardier Global Express BD-700	376	5,540	2,207
Dassault Falcon 900	230	5,360	2,415
Bombardier Challenger 300	223	4,810	2,600
Hawker 800	181	5,032	2,245
Cessna Citation Sovereign	127	3,530	2,600
Embraer Phenom 300	126	3,254	2,220
Cessna Citation V	115	3,160	3,750
Dassault Falcon 2000	93	4,325	2,315
Gulfstream G500	80	5,910	2,770

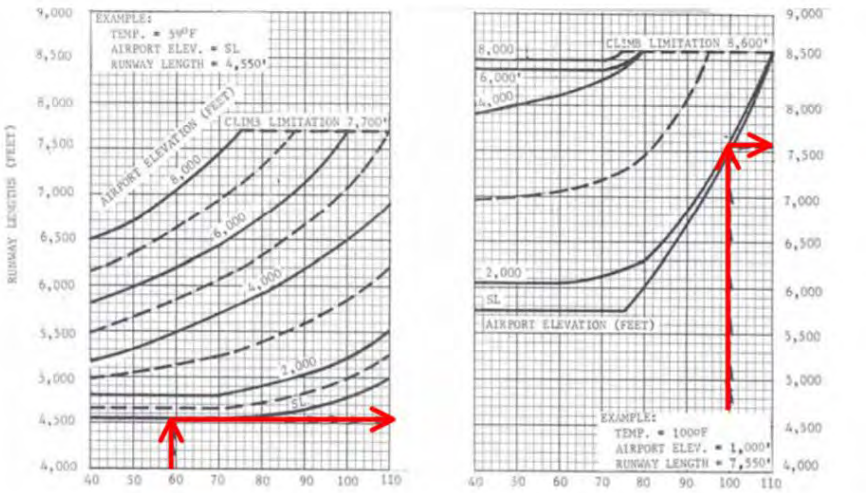
Source: Aircraft manufacture published performance tables

Additionally, AC 150/5325-4B provides charts to determine runway length requirements for medium-sized aircraft (i.e. aircraft weighing from 12,500 up to and including 60,000 pounds). For BDR, a condition of 75% of Fleet at 90% useful load was considered. At ISA, dry, and private not-for-hire parameters, BDR would require a runway length of 5,700 feet according **Figure 4-1**. As such, based on existing activity (Table 4-2) and FAA guidance, a runway length of 5,600 to 5,700 feet is currently justified at BDR.

Figure 4-1 – 75% Fleet Mix at 60% or 90% Useful Load

AC 150/5325-4B 7/1/2005

Figure 3-1. 75 Percent of Fleet at 60 or 90 Percent Useful Load



The Master Plan does not include recommendations to extend either runway due an accepted agreement with the Town of Stratford prohibiting runway extensions. However, because the current and future critical aircraft require runway lengths longer than provided at BDR (at maximum capacity), it is inadvisable to pursue any runway projects that would reduce available distances.

Although it is recommended that both runways remain operational at their current length through the planning period, an extension of Runway 11-29, the preferred runway for noise mitigation may benefit area residents. Currently, Runway 6-24 is used more often for several reasons, including the current pavement condition. However, if Runway 11-29 had greater length, it would encourage jet aircraft to predominately utilize that runway, which could reduce noise exposure in sensitive residential areas in Lordship and Milford.

Lastly, it is important to mention that in addition to the runway length, the critical aircraft weight for BDR is 99,000 pounds for AAC "C" aircraft. Any addition to runway length may require greater weight in design.

4.1.4 FAA Design Standards

AC 150/5300-13A identifies safety areas and zones surrounding runways and taxiways that must be protected from foreign objects, hazards, or obstacles that may impact safety. The key areas that protect the runway and taxiway areas consist of the following:

- **Runway Safety Area (RSA)** and **Taxiway Safety Area (TSA):** The RSA is a defined surface surrounding a runway prepared for reducing the risk of damage to aircraft in the event of an undershoot, overshoot, or excursion from the runway. This area must also support snow removal, aircraft rescue, and firefighting equipment. The RSA should be free of objects, except for those that must be located in the area because of their function.

  The TSA is a defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an aircraft deviating from the taxiway. Safety area enhancement projects are considered high priority by the FAA.

- **Runway Object Free Area (ROFA)** and **Taxiway Object Free Area (TOFA):** The ROFA and TOFA are areas centered on a runway, taxiway, or taxilane centerline provided to enhance the safety of aircraft operations by remaining clear of objects (e.g., roads, buildings, other aircraft, etc.), except for those that need to be within the area due to their function.

- **Runway Protection Zone (RPZ):** The RPZ is a trapezoidal area generally offset 200 feet from each runway end that is used to enhance the protection of people and property on the ground. For runways with displaced thresholds, such as Runway 24 and Runway 29 at BDR, there may be both an approach and departure RPZ. The FAA encourages airport property ownership and compatible land uses within each RPZ and clearing of all above ground objects. Homes and wetlands are wildlife attractants and are considered incompatible land uses within an RPZ.

- **Runway Visibility Zone (RVZ):** The RVZ is an area defined with a clear line-of-sight between two intersecting runways. The RVZ boundaries are defined by imaginary lines between designated visibility points located on each runway along with runway length and configuration. The terrain within the RVZ should be graded and permanent objects designed so that there is an unobstructed line-of-sight. According to AC 150/5300-13A, no part of parked aircraft should penetrate the RVZ.

The spatial dimensions of the RSA/TSA, ROFA/TOFA, and RPZ are defined by the RDC and runway approach visibility minimums. As mentioned, the RVZ is defined by runway length and configuration. Table 3-4 presents the current FAA runway design standards applicable to BDR. Note that these standards do not necessarily reflect existing conditions present at BDR.

Table 4-4 – Runway Design Standards

Design Criteria	Runway 6-24 (RDC C-III-4000)	Runway 11-29 (RDC C-III-5000)	Crosswind Runway (RDC B-II-5000)*
Runway Width	100 FT	100FT	75 FT
RSA			
- Width	500 FT	500 FT	150 FT
- Length Beyond Departure End	1,000 FT	1,000 FT	300 FT
- Length Prior to Threshold	600 FT	600 FT	300 FT
ROFA			
- Width	800 FT	800 FT	500 FT
- Length Beyond Runway End	1,000 FT	1,000 FT	300 FT
- Length Prior to Threshold	600 FT	600 FT	300 FT
Approach RPZ			
- Length	1,700 FT	1,700 FT	1,000 FT
- Inner Width	1,000 FT	500 FT	500 FT
- Outer Width	1,510 FT	1,010 FT	700 FT
Departure RPZ			
- Length	1,700 FT	1,700 FT	1,000 FT
- Inner Width	500 FT	500 FT	500 FT
- Outer Width	1,010 FT	1,010 FT	700 FT
Runway Centerline to			
- Holding Position	250 FT	250 FT	200 FT
- Parallel Taxiway Centerline	400 FT	400 FT	240 FT
- Aircraft Parking Area	400 FT	500 FT	250 FT

Source: FAA AC 150/5300-13A, *Airport Design*

*Evaluation for a crosswind runway at BDL per FAA Order 5100-38D, funding eligibility.

4.1.5 Runway Design Standards

Using the FAA design standards listed in Table 3-4, this section reviews the existing runway conditions at BDR and discusses any related deficiencies.

4.1.5.1 Runway Width

The current widths of Runway 6-24 and Runway 11-29 are 100 feet and 150 feet, respectively. While Runway 6-24 currently meets the design criteria, Runway 11-29 exceeds the minimum width requirement for RDC ARCI. However, the additional width on Runway 11-29 provides an added margin of safety; in particular for the corporate jet usage. Therefore, it is recommended the current runway widths are maintained. It is important to note that that the FAA has indicated that if BDR retains the greater width of Runway 11-29 eligible funding may be limited to the width necessary per FAA standards.

4.1.5.2 Runway Safety & Object Free Areas

The standard Runway 6-24 RSA and ROFA length beyond the departure and runway ends extends 1,000 feet. Resultantly, portions of the Great Meadows marsh along with a portion of the Lordship Boulevard causeway are located within the Runway 6 RSA and ROFA. Additionally, a portion of Main Street is located within the Runway 24 RSA and ROFA. In 2009, the FAA recommended per an RSA study and determination, an Engineered Material Arresting System (EMAS) bed at the northeast end to address Runway 6-24 safety area deficiencies. No improvements were made on the southeast end.

The Runway 11-29 RSA and ROFA length beyond the departure end of runway for RDC C-III standards also extends 1,000 feet, but only 300 feet for RDC B-II standards. Currently, at the Runway 11 end, the RDC C-III RSA standards result in the portions of a drainage ditch, wetland area, and a private property parcel located along Access Road within the ROFA. Off the Runway 29 end, portions of Main Street, Dorne Drive, and City property are located within the RSA and ROFA. However, if RDC B-II standards were applied to Runway 11-29, it would allow for the majority of the RSA and ROFA to remain on airport property except for a portion of Main Street at the Runway 29 end.

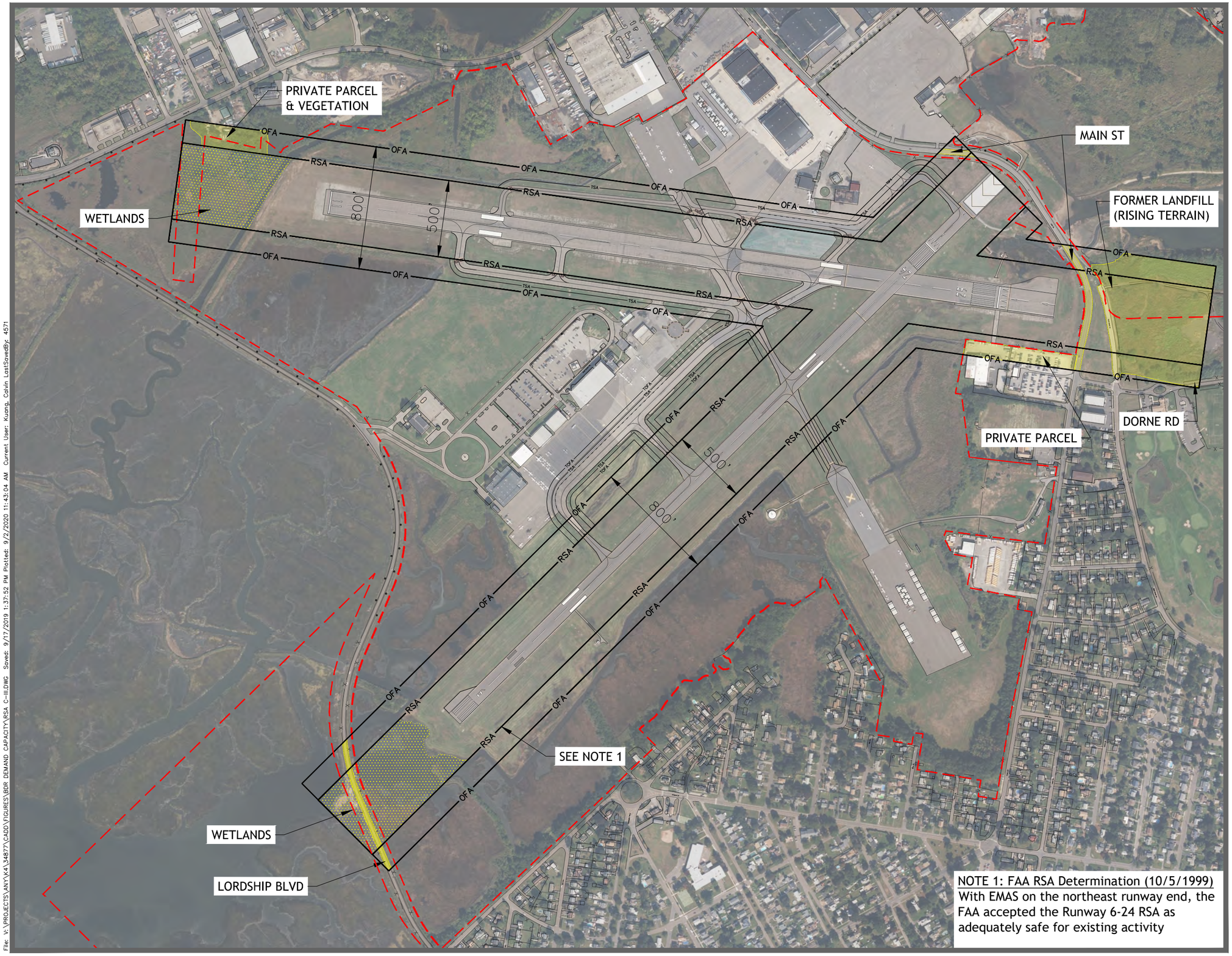
Figure 4-2 depicts the safety area dimensions for RDC C-III, and Figure 4-3 depicts the safety area for RDC B-II for Runway 11-29 for comparison. For both runways, the developed alternatives will address these deficiencies and identify potential improvements.

4.1.5.3 Runway Protection Zones (RPZ)

Airport ownership and control of the RPZs, either through easement or acquisition, is desirable to ensure compatible land uses, airspace, and ground protection within the area. Although RPZs are primarily designated to protect people and property on the ground, the FAA considers the clearing of all objects within RPZs a safety benefit.

Each RPZ at BDR has a portion that is located off airport property. The following discusses these areas:

Runway 6 RPZ: As with the RSA and ROFA, the Runway 6 RPZ extends over the Great Meadow Marsh and a portion of the Lordship Boulevard causeway. Although the land use within the RPZ area is incompatible as it is considered a wildlife attractant, the area is publicly-owned and cannot facilitate future development. **Figure 4-4** depicts the Runway 6-24 RPZs.



File: V:\PROJECTS\ANY\K4\34877\CADD\FIGURES\BDR DEMAND CAPACITY\RSA C-III.DWG Saved: 9/17/2019 1:37:52 PM Plotted: 9/2/2020 11:43:04 AM Current User: Kuang, Calvin LastSavedBy: 4571

BRIDGEPORT MUNICIPAL AIRPORT

MASTER PLAN UPDATE

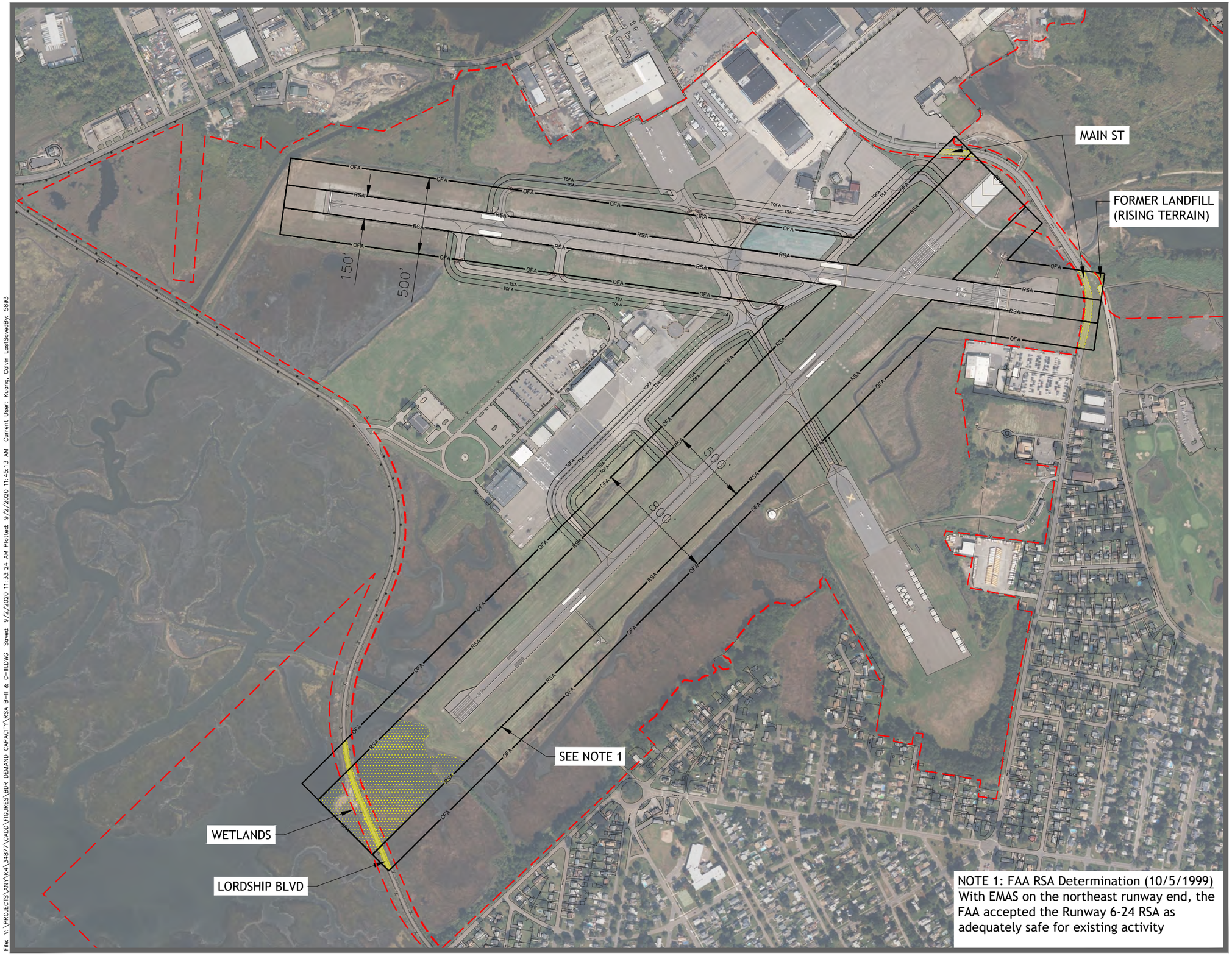
GRAPHIC SCALE (FEET)

0 300 600 1200

LEGEND

- Airport Property Boundary
- RSA — Runway Safety Area
- OFA — Runway Object Free Area
- TSA — Taxiway Safety Area
- TOFA — Taxiway Object Free Area

Figure 4-2
Runway Safety Areas
RDC C-III (Runway 6-24)
RDC -CIII (Runway 11-29)



BRIDGEPORT MUNICIPAL AIRPORT

MASTER PLAN UPDATE

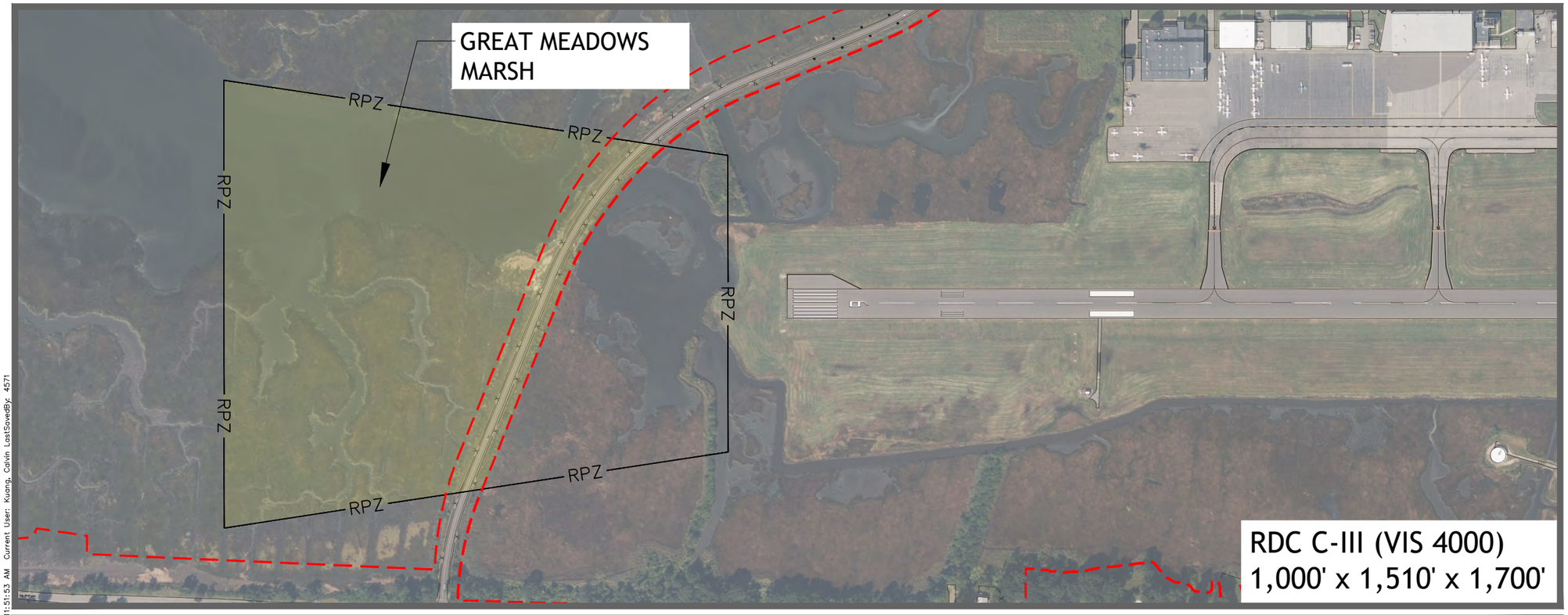
GRAPHIC SCALE (FEET)

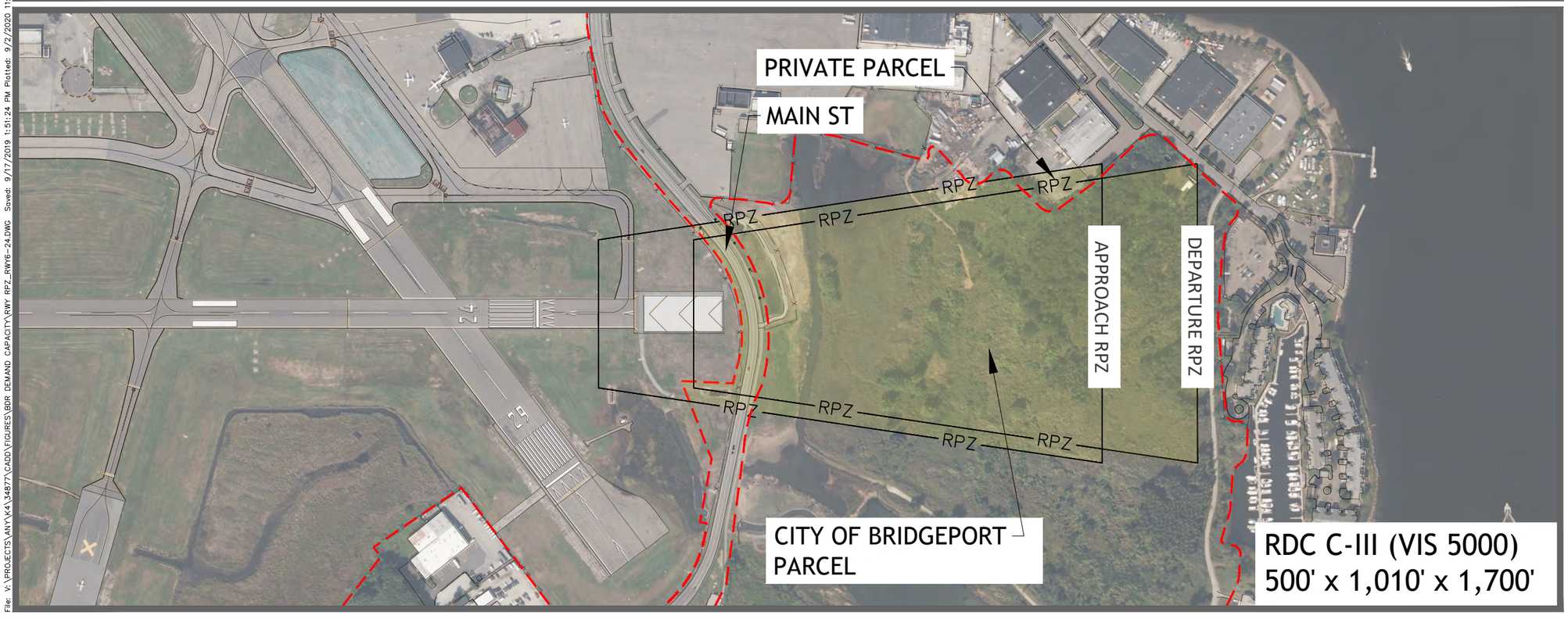
0 300 600 1200

LEGEND

- Airport Property Boundary
- —RSA— Runway Safety Area
- —OFA— Runway Object Free Area
- —TSA— Taxiway Safety Area
- —TOFA— Taxiway Object Free Area

Figure 4-3
Runway Safety Areas
RDC C-III (Runway 6-24)
RDC B-II (Runway 11-29)





BRIDGEPORT MUNICIPAL AIRPORT

MASTER PLAN UPDATE

GRAPHIC SCALE (FEET)

0 200 400 800

LEGEND

Airport Property Boundary

RPZ Runway Protection Zone

Figure 4-4
Runway 6-24 RPZs
RDC C-III

Runway 24 RPZ: Runway 24 has a displaced threshold and both an approach and departure RPZ. The approach RPZ begins 200 feet from the displaced threshold, while the departure RPZ begins 200 feet from the edge of the usable runway pavement. Although the northern quadrant of the RPZs contain portions of private industrial buildings, the majority of the area is undeveloped and includes portions of a closed superfund site. A portion of Main Street is located within the southern quadrants of both RPZs.

Runway 11 RPZ: The Runway 11 RPZ for RDC C-III standards contains several parcels and commercial buildings north of Access Road. To ensure this area is clear of incompatible objects, however, property acquisition is recommended if the property becomes available. Clearing incompatible uses from the RPZs is considered a priority by the FAA.

The Runway 11 RPZ for B-II standards contains only a small portion of Access Road within the northern corner and mostly compatible land uses. A portion of the RPZ is owned by the Town and is undeveloped. The remainder of the RPZ area is own by the City. **Figure 4-5** depicts the Runway 11 RPZ for both RDC C-III and RDC B-II standards.

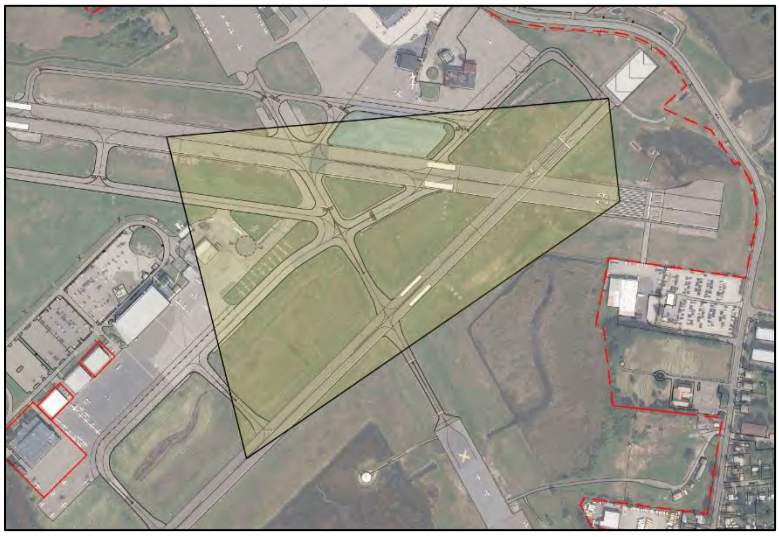
Runway 29 RPZ: Similar to Runway 24, Runway 29 has both an approach and departure RPZ. For RDC C-III standards, the RPZs contain both vacant (i.e., closed landfill) and recreational land (i.e. Yoemans Park and Athletic Field) owned by the Town of Stratford. The small recreational portions of the RPZ is considered incompatible.

The Runway 29 approach and departure RPZs for B-II standards encompass a smaller area and are mostly contained within the vacant portions of the aforementioned land. However, portions of Main Street and Dorne Drive are located within the RPZs. **Figure 4-6** depicts the Runway 29 RPZ for both RDC C-III and RDC B-II standards.

4.1.5.4 Runway Visual Zone (RVZ)

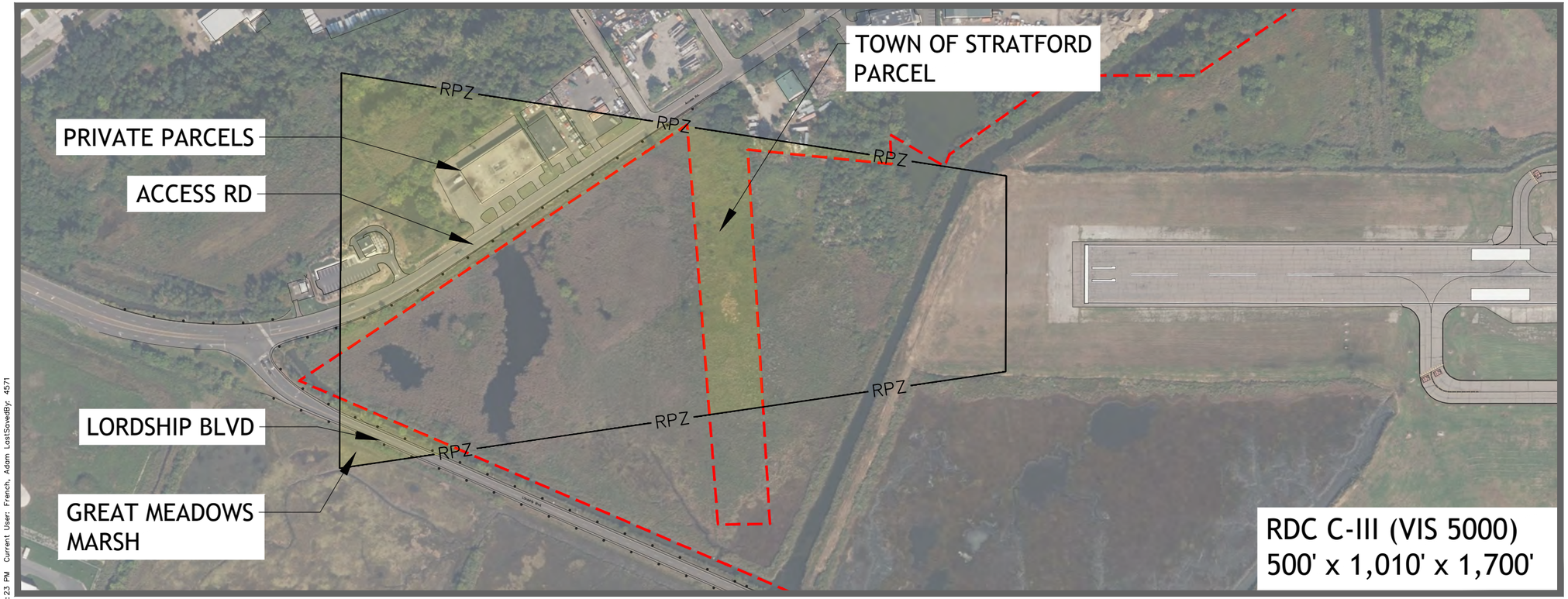
The RVZ at BDR is mostly contained within the runway and taxiway environment. However, as show in **Figure 4-7**, the airport maintenance and SRE building/ARFF facility, a portion of the main ramp fuel farm, and the southwestern corner of the Volo

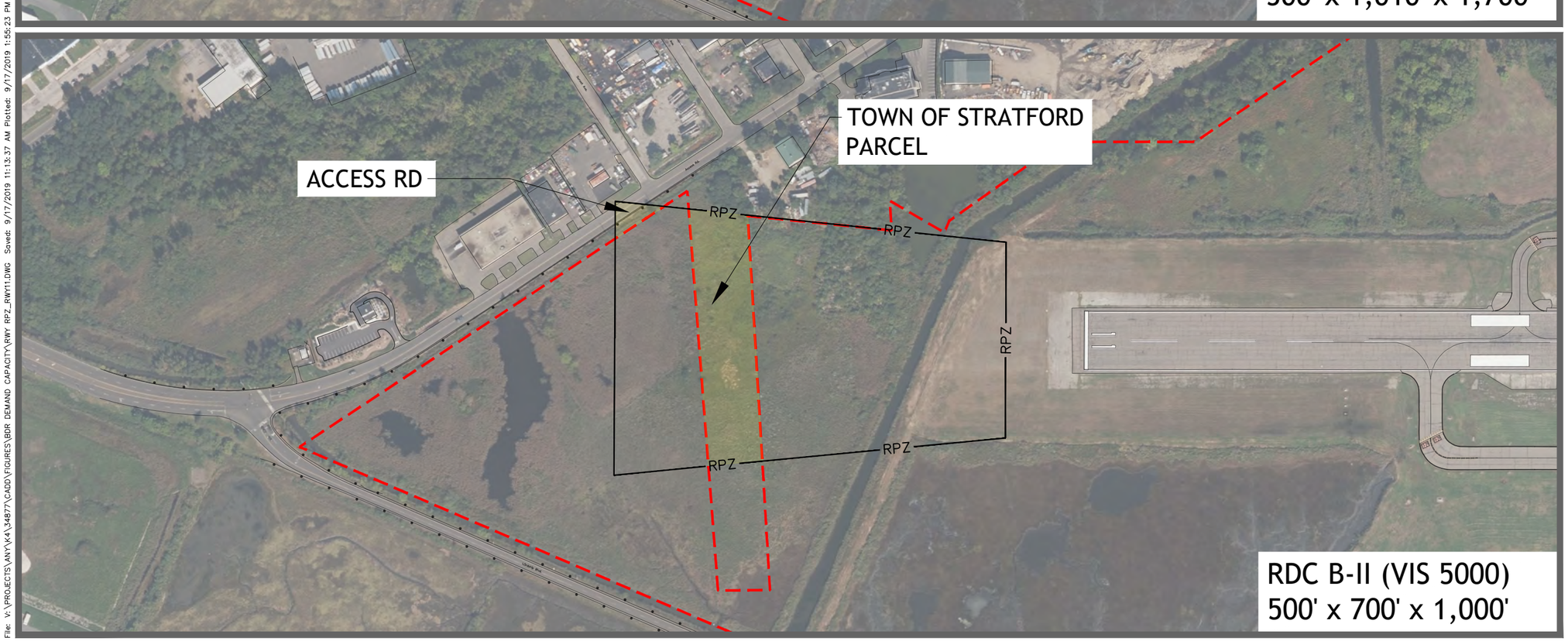
Figure 4-7– Runway Visual Zone



Aviation[13] parking apron is located within the RVZ. It is recommended that upon replacement of the airport maintenance and SRE building/ARFF facility, these facilities be located outside of the RVZ. Additionally, it is recommended that parked aircraft remain outside of the RVZ.

[13] In 2020, the assets of Volo Aviation were acquired by Atlantic Aviation.





IGOR I SIKORSKY MEMORIAL AIRPORT

MASTER PLAN UPDATE

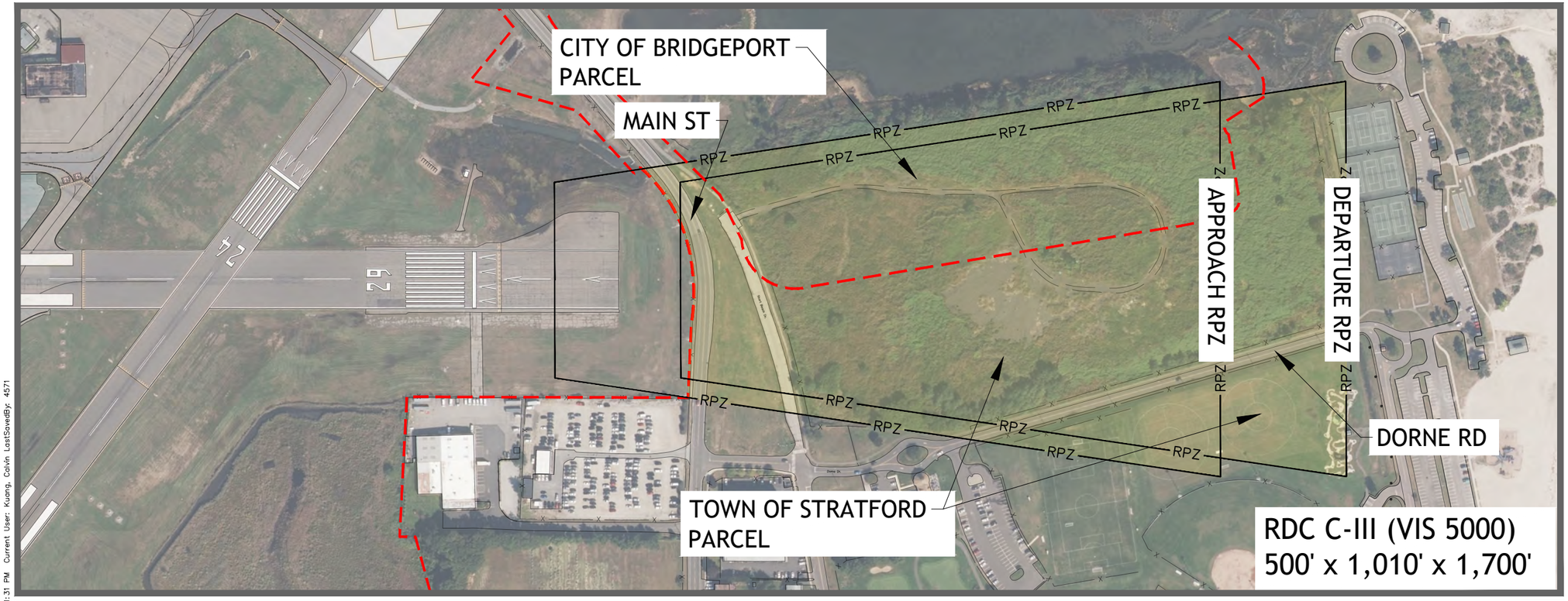
GRAPHIC SCALE (FEET)

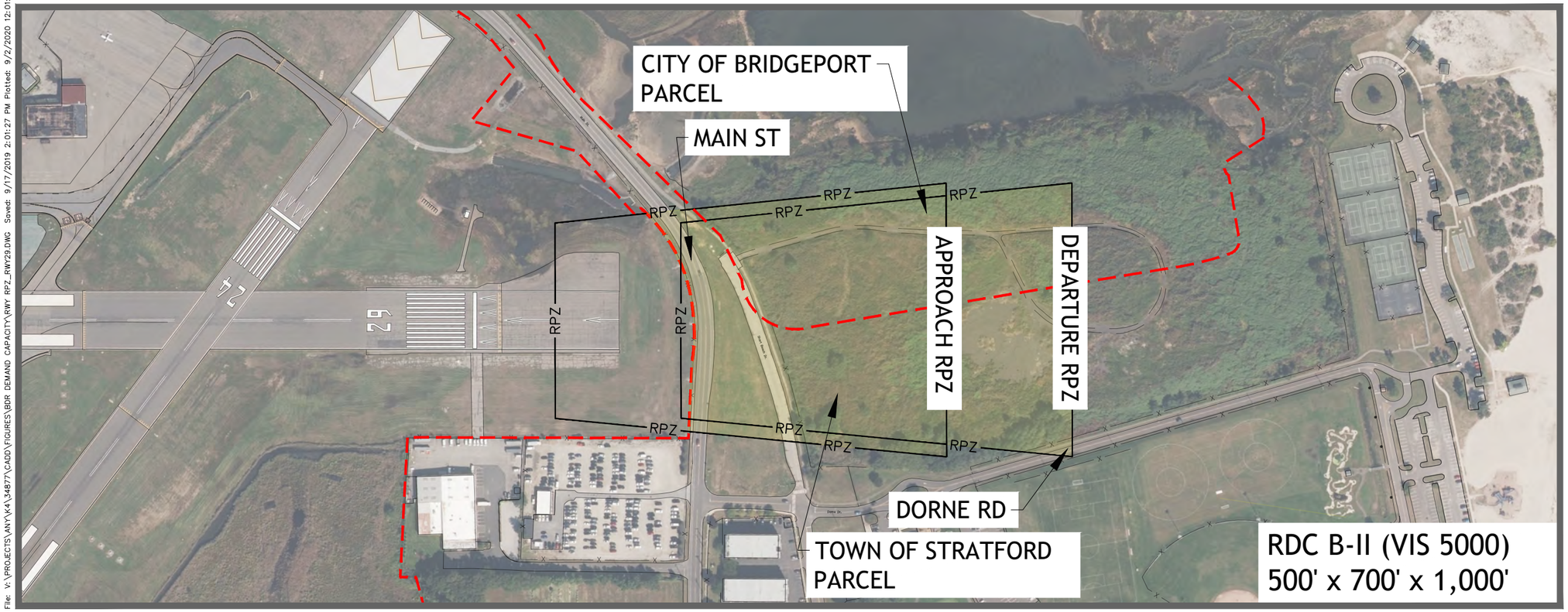
0 150 300 600

LEGEND

- Airport Property Boundary
- —RPZ— Runway Protection Zone

Figure 4-5
Runway 11 RPZ
RDC C-III & B-II





BRIDGEPORT MUNICIPAL AIRPORT

MASTER PLAN UPDATE

GRAPHIC SCALE (FEET)

0 150 300 600

LEGEND

Airport Property Boundary

RPZ Runway Protection Zone

Figure 4-6
Runway 29 RPZ
RDC C-III & B-II

4.1.6 Taxiway Design Standards

4.1.6.1 Taxiway Width & Separation

Using the FAA design standards presented in **Table 4-5**, the following sections review the existing taxiway system at BDR.

Table 4-5 – Runway Design Standards

Taxiway	Taxiway Design Group (TDG)	Required Taxiway Design Width (feet)	Actual Taxiway Width (feet)	Surplus/ (Deficit)
A	3	50’	Varies	0’
B	3	50’	35’	(15’)
C	3	50’	35’	(15’)
D	3	50’	35’	(15’)
E	3	50’	50’	(15’)
G	3	50’	60’	10’
H	Varies	Varies	Varies	0’
J	3	50’	60’	10’
K	3	50’	60 ‘	10’

Source: FAA AC 150/5300-13A, *Airport Design, CHA*

As discussed, BDR is designated with an ARC of C-III with regular use by the Bombardier Global Express and Gulfstream 550. As these aircraft often taxi across multiple sections of the airport depending upon runway use and their destination on the airfield, it is recommended that all taxiways, with the exception of Taxiway “H” which services the south apron, meet the TDG 3 design criteria requiring a 50-foot width. Correspondingly, all taxiway safety area and object free areas should also meet the standards for ADG III.

Lastly, the standard parallel taxiway to runway centerline separation is 400 feet for ARC C-III. This separation varies across the Airport from 300 to 500 feet. However, the Master Plan recommends pursuing a Modification of Standards (MOS) for a 300-foot separation as adequate for the type of aircraft operating at the airport per a risk assessment evaluation completed for BDR.

4.1.6.2 Taxiway Geometry

In the 2014 the FAA updated the design criteria within AC 150/5300-13A for taxiway geometry standards. Since that time, many airports have progressively worked to update their taxiway system. At BDR, in conjunction with the 2016 rehabilitation of Runway 6-24, Taxiways “A”, “B”, “C”, and “H” from Taxiway “A” to the south ramp were updated to reflect current taxiway design

geometry for TDG 2. The BDR taxiway system north of Taxiway "A" has not been updated to meet current taxiway design standards. Since 2016, the TDG has increased to 3. Therefore, future taxiway improvements should include the higher requirements.

In addition to taxiway geometry standards, the FAA also recommends several considerations with regard to taxiway placement and design including:

- Turning radii that enable nose gear steering angles of no more than 50 degrees
- 90-degree turns, where possible
- No more than three turn options at an intersection (known as the "three-node concept")
- Limiting of taxiway crossings to the outer third of the runway connecting (connecting taxiways within the center third of the remaining runway are known as "high energy" intersections)
- Avoidance of wide pavement expanses, "dual purpose" taxiways, multiple runway crossings, and taxiways providing direct access from an apron to a runway

Additionally, the FAA recommends parallel taxiways to eliminate use of the runway for taxiing, thus increasing capacity and protecting the runway under low visibility conditions. Furthermore, a full-length parallel taxiway is required for instrument approach procedures with visibility minimums below one mile and recommended for all other conditions.

At BDR, both Runway 6-24 and Runway 11-29 have parallel taxiways; however, none of the taxiways are currently full-length, and only one (e.g., Taxiway "A") offers direct connectivity to a runway end (i.e., Runway 24). Thus, when operating on one of the other runway ends, aircraft must back-taxi. A back-taxi procedure, particularly at an FAA certified Part 139 airport such as BDR, leads to inefficient use of the airport, lower operational capacity, and higher risk of operational safety issues. Ideally, full-length parallel taxiways should be provided to each runway end in order to increase efficiency and safety of the Airport. This is particularly recommended for Runway 6, which has a precision instrument approach procedure (i.e., ILS) with a visibility minimum of ¾ mile.

Lastly, several taxiways including "A", "B", "C", "E", and "H" provide direct access from apron areas to the runway environment. Given the limited airside footprint of BDR, it is challenging to configure the taxiway system for total avoidance of direct apron-to-runway access.

4.1.7 Instrument Approach Procedures

Instrument Approach Procedures (IAPs) are published by the FAA for specific runway ends. Only one runway end (Runway 6) is equipped with a precision Instrument Landing System (ILS) providing landing minimums of ¾ mile visibility. Runway 24 and Runway 29 have non-precision approaches, while Runway 11 approach is considered a visual-only runway. **Table 4-6** lists the current IAPs available at BDR.

Table 4-6 – BDR Instrument Approach Procedures

Runway	Current IAP	Required IAP	Deficit
6	ILS, RNAV LPV	ILS, RNAV LPV	None
24	RNAV LNAV	RNAV LPV	RNAV LPV
11	None	RNAV LPV	RNAV LPV
29	RNAV LNAV	RNAV LPV	RNAV LPV

RNAV – Area Navigation

LPV – Lateral Precision with Vertical Guidance

LNAV – Lateral Navigation

For BDR, it is recommended that the Runway 6, 24, and 29 GPS IAPs are maintained with efforts to reduce the Runway 6 landing visibility minimum to ½ mile. To ensure full IAP coverage is provided to each runway, it is also recommended that a vertically guided GPS approach is established for Runway 11. GPS-based approaches are cost-effective IAPs that do not require the use or maintenance of land-based navigational equipment.

Lastly, in addition to the Runway 24 GPS approach, a Very High Frequency Omni-directional Range (VOR) approach is also currently available for the runway using the Bridgeport VOR located between Runway 6-24 and the south ramp. A VOR approach provides only lateral guidance to the runway environment, as opposed to an ILS and many GPS approaches which also provide vertical decent guidance. As such, minimum landing altitudes and visibilities are, generally speaking, higher with VOR-based approaches. To that end, in 2011 the FAA announced plans to systematically decommission certain VORs within the national airspace system; including the Bridgeport VOR. At the time of this Master Plan, the decommissioning of the Bridgeport VOR is scheduled to occur within the FAA Fiscal year 2021-2025 timeframe. Availability of a VOR IAP is beneficial, but not required.

4.1.8 Lighting & Visual Aids

Runway lighting, marking, and instrumentation allows for the safe operation of aircraft, especially during nighttime hours and low visibility conditions. As discussed within **Chapter 1**, ***Inventory***, each runway end is equipped with Runway End Identifier Lights (REILs), 4-light Precision Approach Path Indicators (PAPI-4), and High Intensity Runway Lights (HIRLs). It is recommended that each lighting system is maintained throughout the planning period.

As mentioned, Runway 6 is equipped with an ILS providing landing minimums of ¾ mile visibility. Currently, this runway end is not equipped with an approach lighting system. Per FAA guidance, runways with an ILS, should also be equipped with an approaching lighting system; such as a Medium Intensity Approach Lighting System (MALS), a Simplified Short Approach Light System (SSALS), or an Omnidirectional Airport Lighting System (ODALS). The addition of approach lighting on Runway 6 could reduce the visibility minimum to ½ mile as desired. However, each type of

approach lighting system on Runway 6, environmental impacts would occur as fill and access would be required within the Great Meadows marsh to accommodate the lighting infrastructure.

4.2 Landside Facility Requirements

The landside facility requirements examine existing airport facilities and structures that accommodate the movement and storage of aircraft, pilots, passengers, and employees on the ground. The landside facility requirements analysis includes an examination and evaluation of:

- Aircraft Storage Requirements
- Terminal Building Space Requirements
- Fuel Storage Requirements
- Access Road Requirements
- Airport Support Buildings

The following provides a description of each item and an evaluation of existing and future requirements according to current FAA and industry standards.

4.2.1 Aircraft Storage Requirements

Due the various weather conditions, hangars are highly desirable in the Northeast. Snow storms, frost, and intense cold cause icing on parked aircraft can be extremely disrupting to aircraft operators. Conversely, heat and sun exposure can wear on avionics and fade paint. For most airports, hangar requirements are a function of the number and type of based aircraft, hangar rental costs, owner preference, and relative value of aircraft to be accommodated.

Table 4-7 summarizes the based aircraft and forecast for BDR and **Table 4-8** provides the estimated area requirement by aircraft type (i.e., single-engine, multi-engine, etc.) and storage (i.e., tiedowns, hangars) type.

Table 4-7 – BDR Current and Forecasted Based Aircraft

Aircraft Type	2019	2039
Single-Engine	103	100
Multi-Engine	7	8
Turboprop / Jet	39	70
Helicopter	2	3
Total	**151**	**181**

Source: CHA

Table 4-8 – Estimated Based Aircraft Storage Space Requirements

Aircraft Type	Desired Storage Type	Estimated Aircraft Storage Requirements	
		Percentage	Square Feet/Aircraft
Single-Engine	Paved Tiedown	25%	2,700
	T-Hangar	75%	1,050
Multi-Engine	T-Hangar	25%	1,200
	Conventional Hangar	75%	1,600
Turboprop / Jet	Conventional Hangar	100%	3,000
Helicopter	Conventional Hangar	100%	1,000

Source: CHA

Using the number of based aircraft along with the estimated aircraft storage space requirements, **Table 4-9** lists approximate total aircraft storage space requirements by both aircraft and storage type for current and forecasted based aircraft.

Table 4-9 – Estimated Aircraft Storage Space Demand

Aircraft Type	Desired Storage Type	2019		2039	
		Based Aircraft	Square Feet	Based Aircraft	Square Feet
Single-Engine	Paved Tiedown	26	70,200	25	67,500
	T-Hangar	77	80,850	75	78,750
Multi-Engine	T-Hangar	2	2,400	2	2,400
	Conventional Hangar	5	8,000	6	9,600
Turboprop / Jet	Conventional Hangar	39	117,000	70	210,000
Helicopter	Conventional Hangar	2	2,000	3	3,000

Source: CHA

Finally, **Table 4-10** compares the existing storage spaces at BDR with the current and forecasted demand. It is important to note that the existing storage spaces listed provide an approximate area based upon assumed available storage. That is, hangar space unavailable for aircraft storage, such as office space and aircraft maintenance space, was discounted from the total building areas in order to provide as realistic of a demand as possible.

Table 4-10 – Estimated Aircraft Storage Space Surplus/Deficit

Desired Storage Type	Existing Space	Estimated Space (SF)		Surplus/*(Deficit)*	
		2019	2039	2019	2039
Paved Tiedown	201,000	70,200	67,500	130,800	133,500
T-Hangar	58,000	83,250	81,150	*(25,250)*	*(23,150)*
Conventional Hangar	132,000	127,000	222,600	5,000	*(90,600)*

Source: CHA

As listed, the estimated aircraft storage needs at BDR are summarized as follows:

- Paved aprons and available tiedowns to serve the light aircraft currently exceed demand and is forecasted to remain in surplus throughout the planning period.
- There is an existing deficit of T-Hangars or small private hangars for light aircraft. The potential deficit is anticipated to include hangar storage for up to 24 aircraft, which may decrease over time based on the forecast trend in light aircraft.
- Conventional hangar space for turboprops and corporate jets is adequate overall, but this may vary seasonally and with the percent of existing hangar space used for maintenance and transient aircraft. The need for additional conventional hangar space is forecasted to grow significantly in the future. This is consistent with that stated by the airport FBOs, who have each expressed interest in developing additional conventional hangar storage.

Additionally, although there is current demand for T-hangar space on a national level, many airports within ARC "C" category and above are trending toward increased conventional hangar space. Conventional hangar space allows for greater flexibility for FBOs and other tenants to accommodate storage for changing requirements and interests. Conventional hangars can accommodate various aircraft sizes, including short and long-term storage, temporary itinerant aircraft storage, and aircraft maintenance activities all within the same structure. The primary disadvantage of conventional hangars is the need to tow and reposition aircraft within the hangar.

The figures presented in Table 4-10 should be used as tool for space planning purposes rather than identifying defined areas for specific storage type.

4.2.2 Terminal Building Space Requirements

Although BDR is an FAA certified Part 139 airport, commercial airline service is not currently present. The former passenger terminal building has since been razed, replaced in its location by

the Volo Aviation[14] Hangar. In the event commercial airline service returns to BDR, a new facility and location would need to be cited and sized based upon demand and aircraft fleet mix.

With regard to general aviation terminal building requirements, there are currently three FBOs at BDR as discussed within **Chapter 1**: Atlantic Aviation, Volo Aviation[14], and Three Wing Aviation. Each FBO provides fuel and, in total, lease a total of eight hangars; Atlantic leases four while Volo[15] and Three Wing lease each lease two.

Each FBO provides a general aviation terminal area for based and visiting aircraft. Overall, general aviation terminal spacing (i.e., lobby area, administrative space, restrooms, concessions, circulation areas, and meeting space) is adequate. The addition of general aviation terminal space throughout the planning period will remain a function of the FBOs and likely dependent upon their individual business models and strategy.

4.2.3 Fuel Storage Requirements

At BDR, each FBO provides aircraft fueling services. **Table 4-11** lists the current fuel storage capacity by each provider.

Table 4-11 – BDR Fuel Storage

FBO	Fuel Storage Capacity (Gal.)	
	AvGas (100LL)	Jet-A
Atlantic Aviation	12,000	20,000
Three-Wing Aviation	10,000	10,000
Volo Aviation[14]	5,000	20,000
Total	**27,000**	**50,000**

Source: BDR Management

Although the aircraft fuel sales generally fluctuate seasonally, it is recommended that total fuel capacity is provided for peak activity while provided sufficient reserve periods in the event of interrupted fuel delivery. Therefore, historic FBO fuel sales were examined to determine an average daily fuel sale of total gallons (i.e., AvGas and Jet-A) sold per day. Individual FBO averages were then multiped to calculate a recommended total fuel storage capacity for a seven- and 14-day reserve period. **Table 4-12** provides the recommended minimum fuel storage for BDR.

Table 4-12 – Estimated Fuel Storage Capacity Requirement

FBO		Total Fuel Reserve Capacity (Gal.)

[14] In 2020, the assets of Volo Aviation were acquired by Atlantic Aviation.

	Estimated Daily Fuel Sales	7-Days	14-Day
Atlantic Aviation	2,200	15,395	30,790
Three-Wing Aviation	260	1,840	3,670
Volo Aviation[15]	1,210	8,480	16,960
Total	**3,670**	**25,715**	**51,420**

Source: CHA

Note: Figures include both AvGas & Jet-A fuel

As listed, even with modest activity growth anticipated throughout the planning period, current fuel storage provided at BDR is anticipated to remain adequate throughout the forecast period.

4.2.4 Access Road Requirements

Regional roadway access to BDR is provided via Interstate 95 with direct connectivity to Connecticut State Route 113 (Lordship Boulevard). The primary airport entrance from Lordship Boulevard is approximately 1.6 miles from the Interstate to the airport access road (Great Meadow Road). Great Meadows Road serves the airport facilities along the Main Apron and provides access to several hundred vehicle parking spaces on airport property. This access is considered adequate throughout the planning period.

Additional airport facilities are accessed from Main Street and Stratford Street, including the hangars and tenants located at the North Apron and South Apron areas. These facilities are located approximately 2.5 miles from the Interstate. As vehicle trips to general aviation airports are typically less than that of most commercial facilities, traffic congestion and access improvements are not needed for airport purposes.

4.2.5 Airport Support Buildings

4.2.5.1 Airport Maintenance/SRE Storage & ARFF Facility

The airport maintenance/Snow Removal Equipment (SRE) storage building is collocated with the Aircraft Rescue and Fire Fighting (ARFF) building to the north of the Air Traffic Control tower (ATCT). The airport maintenance building encompasses approximately 5,200 square feet with a garage bay on the northwest side. The ARFF facility encompasses approximately 4,200 square feet with five garage bays on the southeast side.

Both facilities were constructed prior to the following updated FAA guidance:

[15] In 2020, the assets of Volo Aviation were acquired by Atlantic Aviation.

- AC 150/5220-18A, *Buildings for Storage and maintenance of Airport Snow and Ice Control Equipment and Materials*
- AC 150/5210-15A, *Aircraft Rescue and Firefighting (ARFF) Station Building Design*

As these buildings are nearing the end of their useful life, replacement buildings are recommended. For the design of a new replacement SRE building, an evaluation following the guidance of AC 150/5220-18A would be conducted to identify the required and FAA eligible area for storage of SRE vehicles and equipment, materials, and support areas. For this Master Plan, space for a minimum building area of 10,000 square feet should be accommodated, with additional outdoor overflow space for equipment and parking.

For the current FAA ARFF Index A at BDR, only a single ARFF vehicle is needed. Existing space exceeds these requirements. However, if airline service is initiated with aircraft over 90 feet in length, the ARFF Index will increase to B or C, and require a minimum of two vehicles. Area should be reserved for a building of 5,000 SF, which would include office and crew facilities.

As mentioned previously, both facilities should remain outside of the RVZ.

4.2.5.2 Air Traffic Control Tower

The BDR ATCT is located southeast of the Airport Maintenance/ARFF building. Recent airport development, including the adjacent Volo Aviation[16] Hangar, has resulted in line-of-sight issues with portions of the main apron and Taxiway "A" between Taxiways "B" and "C". Furthermore, the outdated configuration of the tower cab restricts upward visibility from the opposite side of the cab. It is recommended that a replacement ATCT is constructed with the guidance listed within FAA Order 6480.7D, *Airport Traffic Control Tower & Terminal Radar Approach Control Facility Design Guidelines*; including increased tower height and improved upward visibility. Note that the existing ATCT location is adequate (with additional height); however other locations could be considered.

[16] In 2020, the assets of Volo Aviation were acquired by Atlantic Aviation.

5 Environmental Overview

This section provides a preliminary assessment of the environmental factors to be considered as part of the development and implementation of proposed master plan projects. This review was conducted in accordance with the FAA Orders 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions* and 1050.1F, *Environmental Impacts: Policies and Procedures*. This review does not provide a complete investigation sufficient for obtaining environmental permits or compliance with environmental documentation, such as an Environmental Assessment (EA) under the requirements of NEPA, as amended. Previous environmental documentation completed at Igor I. Sikorsky Memorial Airport (BDR), a review of existing GIS data and maps and coordination with relevant environmental regulatory agencies were relied upon to develop an inventory of resources to identify potential impacts of study recommendations.

The purpose of this overview is to identify the potential environmental issues and environmentally sensitive areas that may affect future airport project and to identify those environmental issues that may require additional analysis and permits prior to implementation.

The environmental impact categories evaluated herein are:

- Compatible Land Use and Zoning
- Airport Noise
- Social and Economic Environment
- Air Quality
- Water Quality
- Department of Transportation Act, Section 303 (i.e., Section 4(f))
- Historic, Architectural, Archaeological, and Cultural Resources
- Biotic Communities
- Threatened and Endangered Species
- Wetlands and Watercourses
- Floodplains
- Coastal Zone Management Program
- Prime and Unique Farmlands

5.1 Compatible Land Use and Zoning

5.1.1 Compatible Land Use

Land uses that may not be compatible with Airport use, based on noise sensitivity associated with each use, are defined in the FAA Order 1050.1F, Environmental Desk Reference. Potentially

incompatible land uses based on noise sensitivity include residential areas and facilities such as schools, hospitals, and libraries, and are discussed in more detail in Section 5.2.

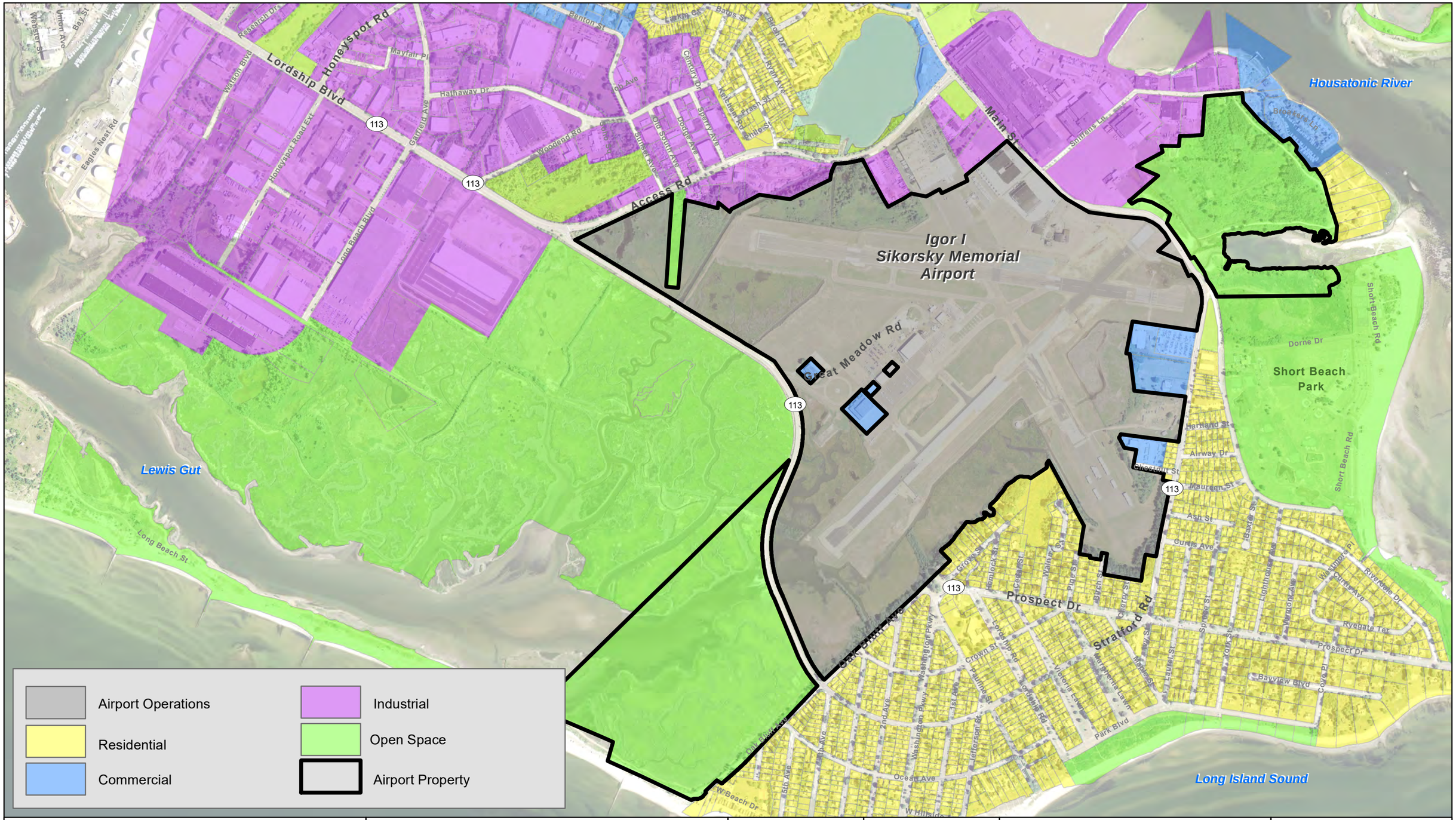
BDR is located in the southern part of the Town of Stratford on land that is roughly bounded by Long Island Sound to the south and east, and the Housatonic River to the northeast. Land uses surrounding the Airport include residential, industrial, commercial and open space areas (see **Figure 5-1**). To the south of the Airport is the coastal community of Lordship, which is predominantly composed of medium-density residential uses. The Great Meadows Marsh, an expansive open space that is part of the Stewart B. McKinney National Wildlife Refuge (NWR), is located to the west of the BDR. A mix of commercial/industrial and residential uses along with Frash Pond are located to north and east of the Airport. A mix of industrial and residential uses along with a Town park are located to the east between the Airport and the Housatonic River.

The Stratford Army Engine Plant (SAEP), a US Army Tank-Automotive and Armaments Command Installation, is sited on 117 acres to the north of the Airport. Under the Defense Base Closure and Realignment Act of 1990, the Defense Base Closure and Realignment Commission (BRAC) recommended the closure of the SAEP in July 1995. The installation closed on September 30, 1998. The *Final Environmental Impact Statement on the Disposal and Reuse of the Stratford Army Engine Plant* was prepared and a Record of Decision (ROD) was issued in 2001. The ROD concluded that portions of the property would be transferred to a Local Reuse Authority and four acres would be transferred for aviation purposes. In March 2010, 1.07 acres of the SAEP was transferred to the FAA.

The project area considered with respect to compatible land use for this master plan is primarily limited to on-airport property and associated uses, including roadways, parking areas, commercial properties and airport operational facilities, but also includes small areas off-airport, including nearby vacant and developed lands. Land use compatibility is of most concern in the locations immediately beyond the runway ends. At BDR, Figure 5-1 illustrates that most of these areas are undeveloped airport property. However, the area east of the Runway 29 end includes a capped (i.e., closed) landfill and some open fields of Short Beach Park.

However, the location along Access Road within a ½ mile west of Runway 11 does include several commercial developments, including a restaurant and two industrial buildings. This location is within the defined Runway Protection Zone (RPZ). This property would be eligible for FAA funding for

easements or acquisition for safety purposes. It is noted that no homes are located within any of the RPZs at BDR.

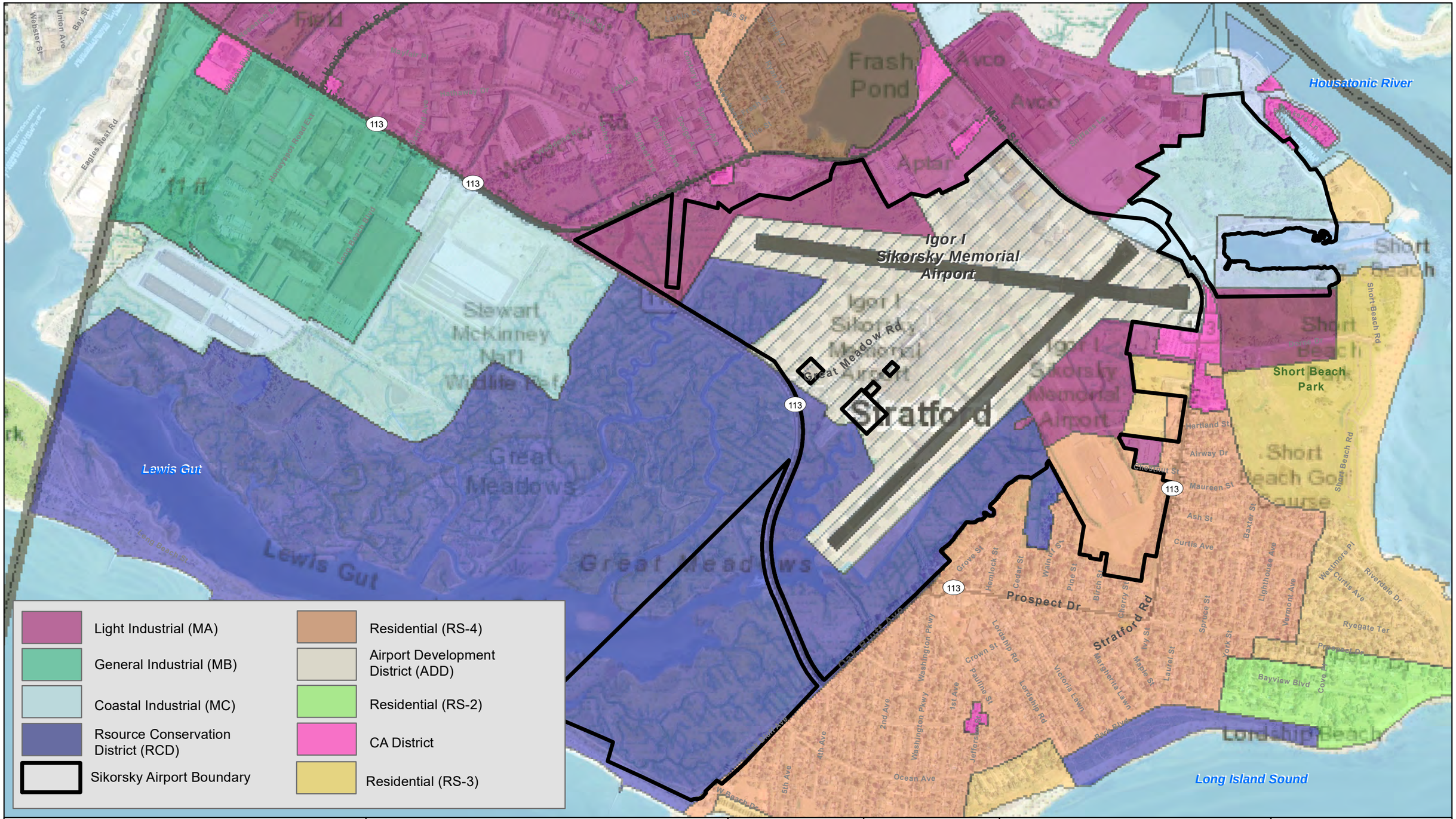


Project Name: **Sikorsky Airport Master Plan Update**	Source: FHI aerial photo interpretation, June 2019	Date: **6/10/2019**	**Figure 5-1**	N W E S 1:12,000 0 500 1,000 1,500 2,000 Feet
Town(s): **Stratford, Connecticut**		Map Title: **Land Use Map**		FITZGERALD & HALLIDAY, INC. Innovative Planning, Better Communities

5.1.2 Zoning

As depicted on **Figure 5-2**, most of the central portion of BDR property is zoned Airport Development District (ADD). The undeveloped areas on BDR property around the ADD zoned areas are zoned Resource Conservation District (RCD), Light Industrial District (MA) and Coastal Industrial District (MC). Zoning in the immediate vicinity of BDR includes: RCD to the west and south, MA to the north, east and south, MC to the east and a small area of Retail Commercial District (CA) to the east.

Since the study recommendations would occur within areas zoned as ADD or industrial on BDR property, and are consistent with the current airport use and existing facilities, there would be no impact on zoning.



- Light Industrial (MA)
- General Industrial (MB)
- Coastal Industrial (MC)
- Rsource Conservation District (RCD)
- Sikorsky Airport Boundary
- Residential (RS-4)
- Airport Development District (ADD)
- Residential (RS-2)
- CA District
- Residential (RS-3)

Project Name: **Sikorsky Airport Master Plan Update**	Source: METROCOG GIS for the Town of Stratford, accessed May 2019	Date: **6/10/2019**	**Figure 5-2**
Town(s): **Stratford, Connecticut**		Map Title: **Zoning Map**	

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CHA design/construction solutions

5.2 Airport Noise

At BDR, the adjacent community of Lordship, the residential area adjacent to Frash Pond (Town of Stratford), and the southern portions of the Town of Milford each experience airport noise. Airport and aircraft noise are regulated at the federal level, and the impact parameters are often considered by communities to be very loud before they are considered a significant impact. Additionally, impacts are determined based on average airport noise levels, rather than peak noise levels that may occur during a single-event aircraft takeoff.

At BDR, it is known that airport noise disturbance occurs, including within locations with noise levels considered acceptable by federal standards. As such, the City of Bridgeport is preparing a separate evaluation to evaluate noise levels based on the current aircraft types using BDR, the number of operations, and the time of day. This effort will identify average and peak noise conditions, as well as anticipated future noise in surrounding neighborhoods and at local schools.

The findings of the separate noise study will be incorporated into this Master Plan Update.

5.3 Social and Economic Environment

5.3.1 Socioeconomic Resources

According to the FAA Order 1050.1F, Environmental Desk Reference, socioeconomics is an umbrella term used to describe aspects of a project that are either social or economic in nature. A socioeconomic analysis evaluates how elements of the human environment such as population, employment, housing, and public services might be affected by the proposed action and alternative(s).

In general, the project area is limited to the immediately surrounding area of the airport. Socioeconomic data, including population and housing data, based on information available through the U.S. Census Bureau and Connecticut Economic Resource Center (CERC), is provided below for the Town of Stratford, Fairfield County and the State of Connecticut.

Table 5-1– Socioeconomic Study Area, Population and Median Household Income

Municipality	2012-2016 American Community Survey (ACS) Population	Population Density (population per square mile)	Population Growth/Year 2016-2020	2012-2016 ACS Median House Income
Stratford	52,300	2,992	-0.2%	$69,336

Fairfield County	941,618	1,507	0.1%	$86,670
Connecticut	3,588,570	741	0.1%	$71,755

Source: Connecticut Economic Resource Center, 2018, accessed February 2019.

Social and induced socioeconomic impacts are typically defined by disruptions to surrounding communities, such as shifts in patterns of population movement and growth, changes in public service demands, loss of tax revenue, and changes in employment and economic activity stemming from airport development. These impacts may result from the closure of roads, increased traffic congestion, acquisition of business districts or neighborhoods, and/or by disproportionately affecting low income or minority populations.

Development anticipated at BDR does not have the potential for these types of broad impacts. There will be no impacts to housing that would result in the relocation of residents; no impacts or relocation of businesses that would create severe economic hardship on the community; no substantial loss to the community tax base. Past FAA studies have identified that social and induced socioeconomic impacts are not normally significant unless substantial impacts are anticipated in other categories (e.g., noise, land use, property acquisition), and this would not be the case with the master planning projects being considered at BDR.

5.3.2 Environmental Justice

The U.S. Environmental Protection Agency (EPA) defines environmental justice as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations and policies. Title VI of the Civil Rights Act of 1964 was enacted to protect against discrimination based on race, color, and national origin in programs and activities receiving federal financial assistance.

Executive Order 12989, "General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," enacted in 1994, requires all federal agencies to identify and address the disproportionately high and/or adverse human health environmental impacts of their programs and policies on minorities and low-income populations and communities. The guidance provides six principles for consideration of environmental justice, which are: 1) composition of affected area and whether there are low-income populations, minorities, or Indian tribes, 2) public health and industry data for assessment of environmental hazards, 3) recognition of interrelated cultural, social, occupational, historical, or economic factors that could amplify environmental effects, 4) encouragement of public participation and accommodations to overcome linguistic, cultural, institutional, geographic, and other barriers, 5)

meaningful community representation with awareness of diverse constituencies, and 6) soliciting tribal representation.

The Council on Environmental Quality's (CEQ) "Environmental Justice Guidance Under the National Environmental Policy Act" provides guidance to federal agencies on how to determine the presence of low-income and minority populations within an appropriate unit of geographic analysis. The guidance defines the identification of a minority population where either "(a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis."

EPA's online Environmental Justice Screening and Mapping Tool based on the 2011-2015 American Community Survey (ACS) data was used to determine the percentage of minority population for U.S. Census Tract 805 Block Group 1 where BDR is located. The minority population in this Census Tract Block Group is approximately 10 percent, which is below the CEQ threshold of 50 percent and below the state average for Connecticut of 31 percent.

The CEQ guidance does not provide a specific threshold to identify low-income populations, therefore, thresholds/criteria established by the Connecticut Department of Economic and Community Development (CT DECD) for Distressed Communities were used. According to the CT DECD 2017 list of Distressed Communities, the Town of Stratford does not meet the criteria for a distressed community for the purposes of Environmental Justice. Further, based on the 2011-2015 ACS data for U.S. Census Tract 805 Block Group 1 of the Airport Property, the low-income population is approximately 19 percent, which is below the state average of 24 percent.

However, there is a minority and low-income environmental justice population located north of BDR in U.S. Census Tract 804, concentrated within the Frash Pond neighborhood. Similar to all communities surrounding BDR, the Frash Pond neighborhood experiences airport noise, but does not fall within the federal limits of significance, or an average Day-Night Noise Level of 65 decibels, with current or forecasted airport activity. Therefore, projects and improvements proposed in this airport master plan would not have a disproportionately high and adverse impact on minority or low-income populations. The recommended projects and improvements are on BDR property, so they would not result in direct physical off-site impacts. Prior to implementation of recommended projects, more detailed analysis may be required to fully assess environmental impacts, including those to potential environmental justice populations as future demographic and economic characteristics of the surrounding area may be different at the time of project implementation.

5.3.3 Children's Health and Safety

Executive Order 13045, "Protection of Children from Environmental Health Risks and Safety Risks" requires that federal agencies make it a high priority to identify and assess environmental health and safety risks that may disproportionately affect children. Such disproportionate impacts would be likely to occur at schools, day care centers, or similar facilities with higher concentrations of children. Such facilities within 1 mile of the Airport include:

- Lordship Elementary School located 0.1 miles to the southeast
- Lordship Community Preschool located 0.2 miles to the southeast
- Birdseye School located 0.7 miles to the northwest
- Alpha Senior High School located 0.7 miles to the northwest
- Joseph Daycare and Family Support Service located 0.7 miles to the northwest
- Honeyspot Elementary School located 0.8 miles to the northwest
- Stratford Academy: Johnson House located 0.8 miles to the northwest

The master plan recommendations will have no anticipated impact on children's health and safety. The proposed projects would occur on Airport property and, as identified above, away from areas where children are likely to be present on a consistent basis. As discussed above, a separate noise study will identify noise levels in neighborhoods and at schools near the Airport.

5.4 Air Quality

The Clean Air Act Amendments (CAAA) of 1990 requires the EPA to set National Ambient Air Quality Standards (NAAQS) for six "criteria" pollutants considered harmful to public health and the environment. The NAAQS identify two types of air quality standards: primary and secondary. Primary standards provide public health protection, including protecting the health of "sensitive" populations, such as asthmatics, children, and the elderly. Secondary standards were established to provide public welfare protection, including protection against impaired visibility and damage to animals, soils, crops, vegetation, and buildings. The six "criteria air pollutants" that have been established by EPA to protect public health and welfare include:

- Ozone (O_3)
- Carbon monoxide (CO)
- Particulates (PM10 and PM2.5)
- Sulfur dioxide (SO2)
- Nitrogen dioxide (NO2)
- Lead (Pb)

Connecticut has adopted the national standards and has developed a State Implementation Plan (SIP) to attain and maintain the standards. The state is divided into two air quality districts: The Greater Connecticut District (Hartford, New London, Tolland, Windham, and Litchfield counties) and the New York-Northern New Jersey-Long Island (NY-NJ-CT) District. Fairfield County, where

the Airport is located, as part of the NY-NJ-CT Nonattainment Area, is subject to planning and emissions reduction requirements of the Clean Air Act. Nonattainment for an air pollutant is assigned when one or more of the standards have been violated in at least one region in Connecticut. Fairfield County, as well as the entire State of Connecticut, is currently designated as nonattainment for O_3, based on the 2008 8-hour Ozone standard of 0.075 parts per million (ppm).

Section 176(c) of the CAAA requires that Federal actions conform to applicable federal and state air quality plans and, ensure that the actions will not:

- Cause or contribute to any new violation of any standard in any area
- Increase the frequency or severity of any existing violation of any standard in any area
- Delay timely attainment of any standard of any required interim emission reductions or other milestones in any area.

No air quality modeling was conducted as part of this study. However, it is anticipated that proposed airport improvements will require air quality modeling that would be conducted during preparation environmental reviews under NEPA and CEPA documentation (i.e., before construction). The results of the air quality modeling will establish whether the above requirements are met and/or if additional actions are required by BDR to ensure compliance.

In the short-term, any construction projects could result in minor impacts on air quality at and in the immediate vicinity of BDR related to the use of construction vehicles and equipment. It is anticipated that pollutants from the use of such vehicles and equipment would include volatile organic compounds (VOCs), nitrogen oxide (NOx), and CO.

5.5 Water Quality

Water quality standards applicable to the Airport are established under the federal Clean Water Act (CWA) and the Connecticut General Statutes (CGS). Together, these regulations include requirements for controlling discharges into surface water and groundwater, develop waste treatment management plans and practices, and establish federal permitting requirements for discharges (Section 402 of the CWA) and dredged and fill materials (Section 404 of the CWA). Existing surface water and groundwater quality at BDR are described below.

5.5.1 Surface Water

The Airport is located at the junction of the Housatonic River and Long Island Sound. Surface water features on, and in the vicinity of, the Airport are depicted on **Figure 5-3**. The majority of the Airport is within the Lewis Gut Subregional Basin that is part of the larger Southwest Eastern Regional Basin. The far eastern portion of the Airport is within the Housatonic River Subregional Basin that is part of the larger Housatonic Main Stem Regional Basin. A very small portion of BDR is also within the Southwest Shoreline Subregional Basin that is part of the larger Southwest

Shoreline Regional Basin. Surface water features, on and in the immediate vicinity of, BDR include a network of ditches, unnamed tidal streams and wetlands that all ultimately drain to Long Island Sound. Existing wetlands are described in more detail in a subsequent section of this chapter.

Surface water features on, and adjacent to, BDR have either an inland surface water classification of "A" or a coastal and marine surface water classification of "SB" (see **Figure 5-3**) (CT DEEP, 2018). The man-made ditches around the airport runways are classified as "A". Frash Pond to the north of BDR and other smaller pockets of surface water surrounding the airport are also classified as "A". The tidally influenced streams and open water areas in the southwest portion of BDR are classified as "SB". The open water areas to the west of the airport in the Great Meadows marsh complex and Lewis Gut are also classified as "SB", as are the Housatonic River and Marine Basin to the east of BDR. Long Island Sound is classified as "SA". The designated uses and discharge restrictions for "A", "SA" and "SB" water quality classifications are:

5.5.1.1 Class A (inland)

Designated uses: potential drinking water supply; fish and wildlife habitat; recreational use; agricultural and industrial supply and other legitimate uses including navigation.

Discharges restricted to: discharges from public or private drinking water treatment systems, dredging and dewatering, emergency and clean water discharges.

Class SA (marine)

Designated uses: marine fish, shellfish and wildlife habitat, shellfish harvesting for transfer to approved areas for purification prior to human consumption, recreation, industrial and other legitimate uses including navigation.

Discharges restricted to: same as allowed in A and cooling waters, discharges from industrial and municipal wastewater treatment facilities (providing Best Available Treatment and Best Management Practices are applied), and other discharges subject to the provisions of section 22a-430 CGS.

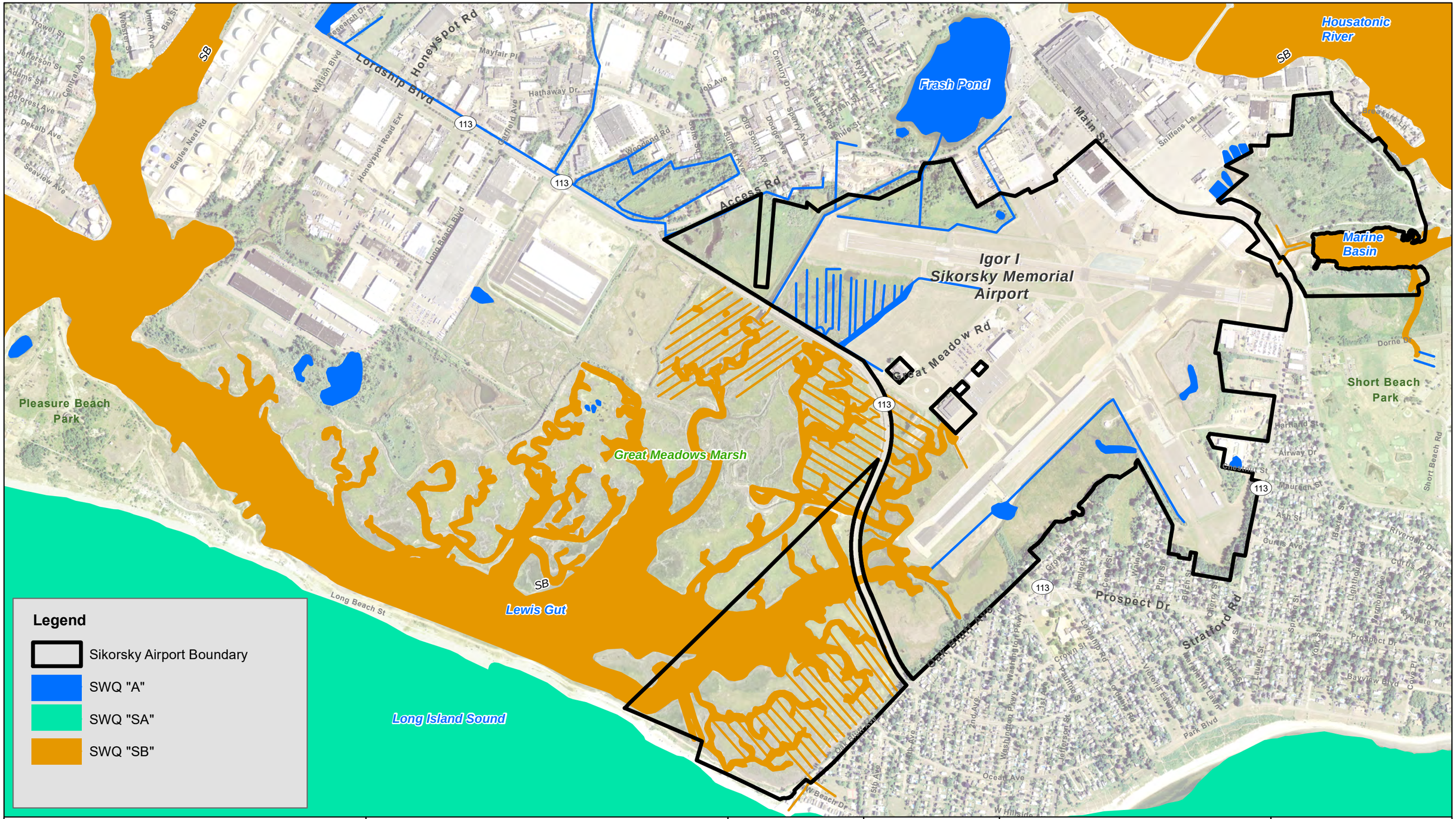
5.5.1.2 Class SB (marine)

Designated uses: marine fish, shellfish and wildlife habitat, shellfish harvesting for transfer to approved areas for purification prior to human consumption, recreation, industrial and other legitimate uses including navigation.

Discharges restricted to: same as allowed for inland water quality class A and cooling waters, discharges from industrial and municipal wastewater treatment facilities (providing Best Available Treatment and Best Management Practices are applied), and other discharges subject to the provisions of section 22a-430 CGS.

According to the 2016 State of Connecticut Integrated Water Quality Report (CTDEEP, April 2017), the waterbodies classified as "A" on, and adjacent to, BDR were not assessed. The "SB" classified waterbodies on, and adjacent to, the west side of BDR that are associated with Great Meadows marsh and Lewis Gut (CT-W1_001-SB) were assessed as impaired and not supporting marine aquatic life, recreation and shellfish. The cause for impairment was identified as dissolved oxygen saturation, nutrient/biological indicators, polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs) and enterococcus. The "SB" classified waterbodies on, and adjacent to, the east side of BDR that are associated with the mouth of the Housatonic River (CT-C2_024-SB) were assessed as impaired and not supporting marine aquatic life and shellfish. The cause for impairment was identified as fecal coliform, copper dioxin, lead, PCBs and zinc.

If new projects are implemented that would result in a net increase in pavement/impervious surface area at BDR, the additional impervious areas would increase the volume of and the potential for runoff from the airport to enter nearby surface waters. Prior to implementation of improvements, more detailed documentation would be required to quantify the additional impervious surface area and assess resulting impacts to surface water. Drainage improvements would most likely be required to minimize stormwater runoff and associated potential for adverse impacts. These drainage improvements, together with other stormwater best management practices will be fully evaluated in project-specific environmental documentation to be conducted closer to the time of construction. If such elements are incorporated, it is not anticipated that the proposed projects would result in adverse impacts to surface water quality.



Project Name: **Sikorsky Airport Master Plan Update**	Source: CT Enviornmental Conitions Online - Advanced Viewer Accessed May 2019	Date: **6/10/2019**	**Figure 5-3**	1:12,000 (0, 500, 1,000, 1,500, 2,000 Feet)
Town(s): **Stratford, Connecticut**		Map Title **Surface Water Quality**		CHA design/construction solutions; FITZGERALD & HALLIDAY, INC. Innovative Planning, Better Communities

5.5.2 Groundwater

Groundwater beneath the Airport is classified by CT DEEP as "GB" (CT DEEP, 2018). Class GB designated uses are industrial process water and cooling waters; baseflow for hydraulically connected surface water bodies; presumed not suitable for human consumption without treatment. Drinking water in the study area is supplied by Aquarian Water Company. Although the groundwater in the study area is not used for drinking water, potential impacts to groundwater associated with recommended projects would be evaluated closer to implementation, when more details are available, in a project-specific environmental document.

5.5.3 Stormwater

The Stormwater Pollution Prevention Plan (SWPPP) for BDR describes existing stormwater drainage systems, non-stormwater discharges, and potential pollution sources on BDR, and then identifies a variety of short- and long-term controls and measures to minimize stormwater pollution from BDR operations. Measures proposed in the SWPPP include best management practices (BMPs), stormwater treatment, materials storage and loading/unloading practices, deicing procedures, erosion controls, and aircraft, vehicle, and equipment storage, and maintenance protocols. Procedures for training, inspection, spill control and response, and preventative maintenance are also included in the SWPPP.

As noted above, if the recommended airport developments result in additional paved areas on the airport prior to implementation, more detailed environmental documentation would be required to specifically quantify the additional impervious surface area and assess resulting stormwater impacts. Drainage improvements would be required to minimize stormwater runoff. Any modifications to the drainage system at BDR should be incorporated into a revised SWPPP.

5.6 Department of Transportation Act, Section 303

Pursuant to Section 303 of the U.S. Department of Transportation (49 USC 303, commonly referred to as Section 4(f)), programs or projects requiring the use of any publicly-owned land, including public parks, recreation areas, wildlife or waterfowl refuge areas, and historic sites (including traditional cultural properties) of national, state, or local significance shall not be approved by the Secretary of Transportation unless there is no feasible and prudent alternative to the use of such land, and such program includes all possible planning to minimize harm.

The Great Meadows Unit of the Stewart B. McKinney National Wildlife Refuge (NWR) is located on the west side of Lordship Boulevard that forms the western boundary of BDR. There are no other Section 303 properties adjacent to BDR.

5.7 Historic, Architectural, Archaeological, and Cultural Resources

Under the National Historic Preservation Act of 1966 and the Archaeological and Historic Preservation Act of 1974, federal undertakings, such as the actions included in the Master Plan, are subject to Section 106 review to ensure that properties or data having historic, scientific, prehistoric, archaeological or paleontological significance are surveyed, recovered or preserved.

Past studies conducted for BDR were reviewed to determine if historic and/or archaeological resource exist on the airport property. According to the *Final Environmental Impact Statement Re-evaluation for Sikorsky Airport* that was completed in June 2011, there are no historic architectural properties located within the Area of Potential Effect (APE) that was developed for that analysis. In support of that Final Environmental Impact Statement Re-evaluation, a geomorphological investigation was conducted to identify areas of buried, intact, non-wetland soils that had the potential to contain archaeological deposits and features. Shovel testing and test unit excavations were conducted within the area of intact soils accessible through hand excavations. A light scatter of prehistoric quartz lithic debitage (chipped stone from tool making by the early Native Americans) was recovered at one of the test units. In addition, a piece of prehistoric ground stone used as a tool for grinding was recovered on the surface, in a disturbed context. Despite these finds, it was concluded in the 2011 Final Environmental Impact Statement Re-evaluation that no historic, architectural, cultural, or archaeological properties were located within the proposed APE.

In addition to reviewing former studies conducted at the airport, a GIS and file record review will be conducted at the Connecticut State Historic Preservation Office (SHPO) to determine the presence and/or absence of federal and state listed historic and archaeological resources on airport property prior to planned developments/improvements. Additionally, as a follow-up to the records review, a coordination/data inquiry letter will be sent to SHPO to identify their potential concerns. Prior to implementation of specific airfield recommendations, a more detailed environmental review, including formal SHPO consultation, would be conducted to confirm existing resources and assess potential effects.

5.8 Biotic Communities

Information regarding biotic communities (i.e., habitats) at BDR was obtained through a review of previous reports, and previous coordination with the CTDEEP's Natural Diversity Database (NDDB), screening through the U.S. Fish & Wildlife Service's (USFWS) Information Planning and Conservation (IPaC) System, GIS screenings, and field investigations.

5.8.1 Biotic Communities Surrounding BDR

BDR is within the Southern New England Coastal Lowland ecoregion subset (Dowhan and Craig, 1976). This ecoregion includes lands lying within five miles of the coast and is characterized by coastlands, extensive tidal marshes, sand beaches, estuaries and relatively level but rolling nearshore lands. BDR is in the vicinity of several major habitat complexes. Great Meadows Marsh, including Lewis Gut, are directly to the west of the BDR and the lower Housatonic River estuarine and marsh complex is to the east of the BDR. Lands to the north, south and east of BDR consist of a mix of residential, commercial and industrial development. The southwest undeveloped portion of BDR property that is on the south side of Lordship Boulevard is directly adjacent to Long Island Sound.

Great Meadows Marsh is a large tidal marsh system that is part of the Stewart B. McKinney NWR (The Great Meadows Unit). The 421-acre Great Meadows Unit is the largest unditched tidal marsh in Connecticut. Great Meadows Marsh is a significant area for migratory birds, including waterfowl, shorebirds, and wading birds. It provides feeding and nesting habitat for over 270 species of birds and is an important nesting and wintering area for the American black duck and northern harrier. Lewis Gut, which channels water into the marsh from Long Island Sound, formerly contained one of the most productive shellfish beds in the state. It serves as breeding and feeding grounds for several fish species (USFWS, 2006).

The Housatonic River ecosystem includes bottom habitats and overlying waters of the river's lower main stem and Marine Basin and the Nells Island/Charles E. Wheeler Game Preserve tidal wetland complex. Tidal wetlands in the study portion of the Housatonic River main stem consist of areas associated with the Marine Basin. The shorelines of the Marine Basin and its tributaries consist of debris and rubble fill slopes which limit the extent of the tidal wetland vegetation in most areas. The remainder of the Marine Basin consists primarily of open water surrounded by a smooth cordgrass (*Spartina alterniflora*) fringe which gives way to dense monocultures of common reed (*Phragmites australis*) along the upper borders.

5.8.2 Biotic Communities on BDR

The upland biotic communities on BDR property are predominantly areas of maintained grass and herbaceous species that are adjacent to paved surfaces that include runways, taxiways, buildings and airplane and automobile parking areas. In addition to common grass and herbaceous species, several State-listed plant species are present in these managed habitats. Protected plant and animal species on BDR are discussed in Section 5.9. The only upland areas that are not maintained grass on BDR property are on the northwest side of the west end of Runway 11-29 and in the undeveloped areas on the east side of Short Beach Road. These areas consist of a mix of small trees and shrubs along with mowed areas.

Wetland habitats are present throughout BDR property. Most of the wetlands on BDR are tidal but some inland wetlands are also present. Wetlands are discussed below in a Section 5.10. Aquatic habitats include many small to medium sized tidal creeks and man-made ditches, the majority of which drain west to Great Meadows Marsh/Lewis Gut. Tidal creeks and man-made ditches on the east side of BDR property drain east to the Housatonic River.

Wildlife on BDR property is managed to prevent or reduce wildlife/bird strikes. The BDR's Wildlife Hazard Management Plan (WHMP) is intended to discourage breeding and other usage of the airport by wildlife through both passive and active means. However, the uplands do provide habitat for common, human tolerant, wildlife species such as gray squirrel (*Sciurus carolinensis*), raccoon (*Procyon lotor*), Virginia opossum (*Didelphis virginiana*), eastern cottontail (*Sylvilagus floridanus*), eastern chipmunk (*Tamias stratus*) and woodchuck (*Marmota monax*). For both security purposes and to prevent large mammals, such as white-tailed deer (*Odocoileus virginianus*) and coyote (*Canis latrans*) from traversing the runways, BDR maintains fencing around portions of the airfield.

The tidal marshes on, and adjacent to, BDR property provide habitat to a number of vertebrate and invertebrate species. Numerous wading birds such as great blue heron (*Ardea herodias*), great egret (*Ardea alba*) and snowy egret (*Egretta thula*) utilize the tidal marsh habitats. Aquatic habitats within the tidal marshes provide spawning, nursery and feeding grounds for various commercially and recreationally important shellfish, finfish and forage species.

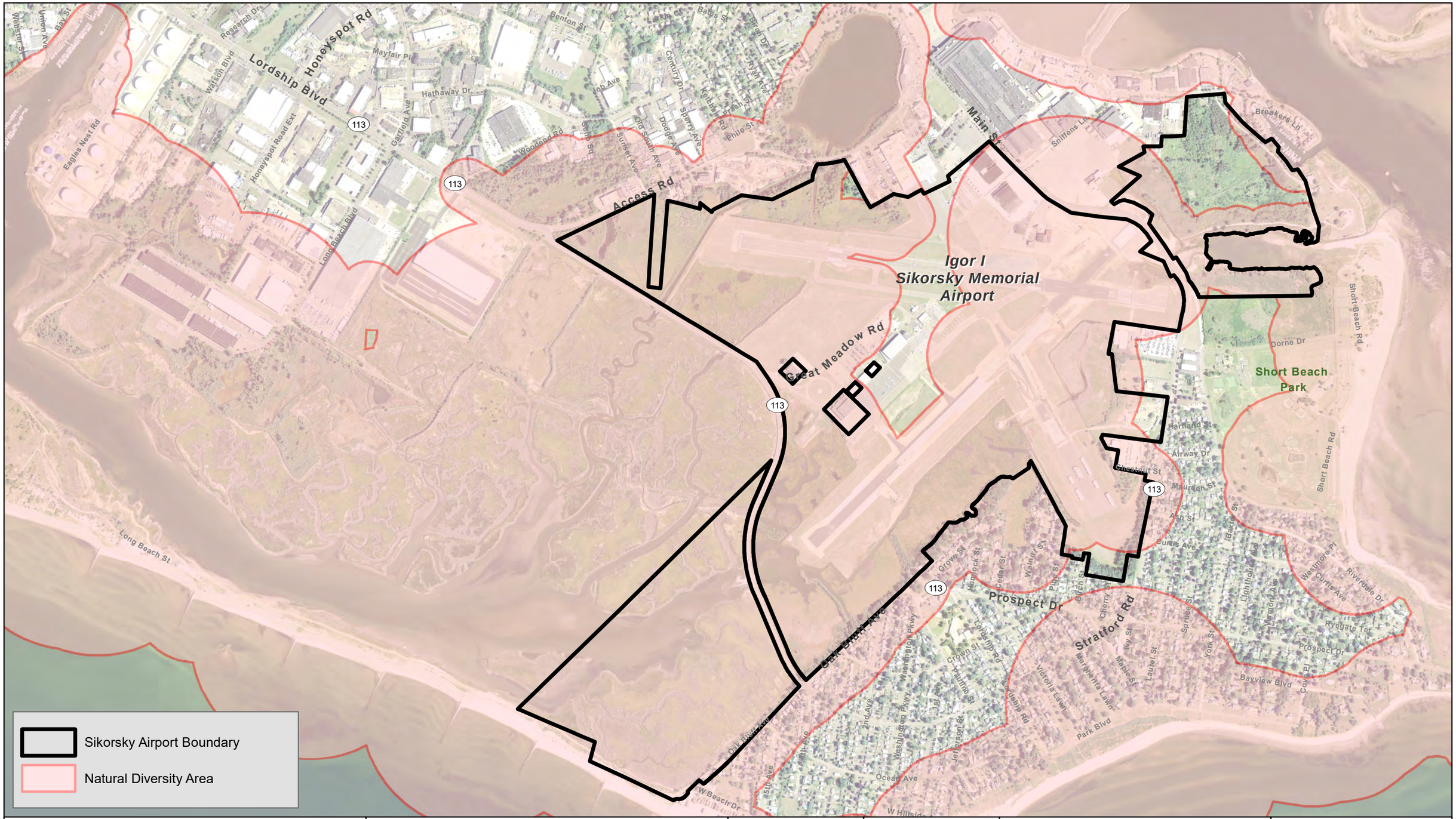
For implementation of master plan recommendations, a more detailed environmental analysis would be conducted to assess potential impacts to biotic communities in the areas where development activities and improvements are proposed.

5.9 Threatened and Endangered Species

Federally-listed and State-listed threatened and endangered species that may occur, or are known to occur, within or adjacent to BDR property were evaluated through a review of previous reports, and associated coordination with the CTDEEP's NDDB, screening through the USFWS IPaC System, GIS screenings, and field investigations.

Most recently in 2012, extensive biological surveys for protected species were conducted at BDR in conjunction with the relocation of Route 113 and runway safety area project. The results of these surveys are presented in the *Incidental Take Report* (Fitzgerald & Halliday, Inc., March 2013). Two state-listed endangered plant species; two-state listed plant species of special concern; twenty-two bird species on the Connecticut list of endangered, threatened, or species of special concern; one moth species of special concern, and one tiger beetle species of special concern were found on airport property. The most recent NDDB map for the Airport property is depicted on **Figure 5-4**.

More detailed environmental analysis would be conducted prior to implementation of master plan recommendations, including formal consultation with CTDEEP and other state agencies, confirmation of existing species within the project area, an evaluation of potential impacts to those species and habitat areas. If appropriate, mitigation measures to address adverse impacts would be pursued.



Project Name: **Sikorsky Airport Master Plan Update**	Source: CT DEEP 2019 NDDB December 2018	Date: **6/10/2019**	**Figure 5-4**	1:12,000
Town(s): **Stratford, Connecticut**		Map Title: **Natural Diversity Database**		0 500 1,000 1,500 2,000 Feet

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5.10 Wetlands and Watercourses

Wetlands and watercourses at BDR are regulated and protected under both federal and State regulatory programs. It is anticipated that prior to initiating specific projects identified in the master plan, a current wetland delineation would be required to determine the federally- and State-regulated wetland and watercourse boundaries in the project area. Work occurring within designated federal or State wetlands or watercourses will require securing the appropriate permits from the U.S. Army Corps of Engineers (USACE) and/or CTDEEP, as applicable.

5.10.1Federal Wetland Regulations

U.S. Department of Transportation Order 5660.1A, *Preservation of the Nation's Wetlands*, implements Executive Order 11990, *Protection of Wetlands*. The USACE administers Section 404 of the CWA (33 CFR 320-332) which regulates discharges of fill into federal wetlands and waters of the United States. Federally regulated wetlands, as defined in 33 CFR Part 328, are "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions."

5.10.2State of Connecticut Wetland Regulations

State regulated wetlands are defined in Section 22a-38(15) of the Connecticut General Statutes (CGS) according to soil types. Specifically, Connecticut inland wetland boundaries are determined by the limit of any soil types designated as poorly drained, very poorly drained, alluvial, and floodplain by the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service's (NRCS) National Cooperative Soils Survey. State watercourses are defined in CGS Section 22a-38(16) as "…rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs, and all other bodies of water, natural or artificial, vernal or intermittent, public or private, which are contained within, flow through or border upon this state or any portion thereof, not regulated pursuant to CGS Sections 22a-28 to 22a-35 inclusive."

5.10.3Wetlands Delineation and Mapping

In order to identify wetlands and watercourses occurring on BDR, previous reports and studies along with publicly available online data were reviewed. Wetlands and watercourses were not formally delineated as part of this study.

Wetlands were field delineated on different parts of BDR over the past 20+ years related to several improvement projects. Previous reports that describe the various wetland delineations that were conducted include:

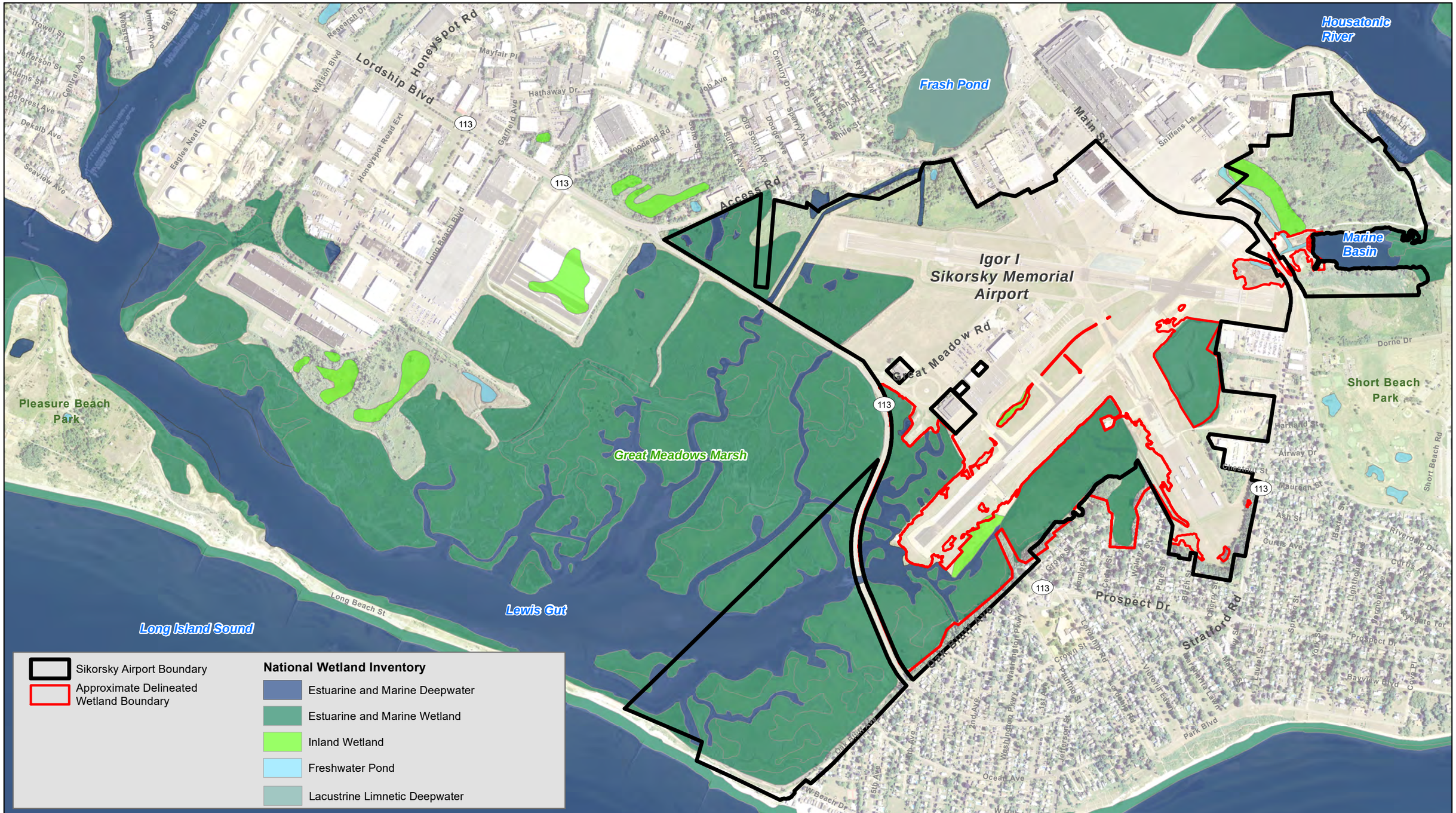
- *Draft Environmental Impact Statement (DEIS)/Environmental Impact Evaluation (EIS) for Proposed Improvements to Runway 6-24* (CTDOT, May 1998)

- *Final Written Reevaluation for the EIS* (URS Corporation, June 27, 2011)
- *Wetland Field Investigation and Delineation for Route 113 Relocation* (Fitzgerald and Halliday, November 2010)

Online data sources reviewed included:

- USFWS National Wetlands Inventory (NWI) mapper
- NRCS Web Soil Survey
- CT DEEP Advanced Map Viewer

The results of the past delineations and review of data sources listed above were compiled into a single wetlands map (**Figure 5-5)**. Since the last wetland field delineation, the east end of Runway 6-24 has been extended and Route 113 has been relocated to the east. These activities resulted in impacts to wetlands in this area. Post construction aerial photography was reviewed to approximate the current wetland boundaries in this area. Additionally, wetland mitigation projects have been undertaken on BDR property since completion of the Route 113 relocation and runway safety area project, resulting in additional wetland areas on the airport property. Based on review of the USFWS NWI maps, wetlands on and adjacent to the airport property are predominantly estuarine and marine habitats with classifications of estuarine, intertidal, emergent, irregularly flooded. (E2EM1P and E2EM5P). Most of the tidal marshes are vegetated with native species such as smooth cordgrass, salt meadow grass (*Spartina patens*), spike grass (*Distichlis spicata*), groundsel tree (*Baccharis halimifolia*) and high-tide bush (*Iva frutescens*). However, some of the tidal marshes are dominated by common reed, an invasive species. In addition to vegetated tidal wetlands, tidal creeks and ditches on and around BDR property are mapped by NWI as estuarine deep water habitats with a classification of estuarine, subtidal, unconsolidated (E1UBL).

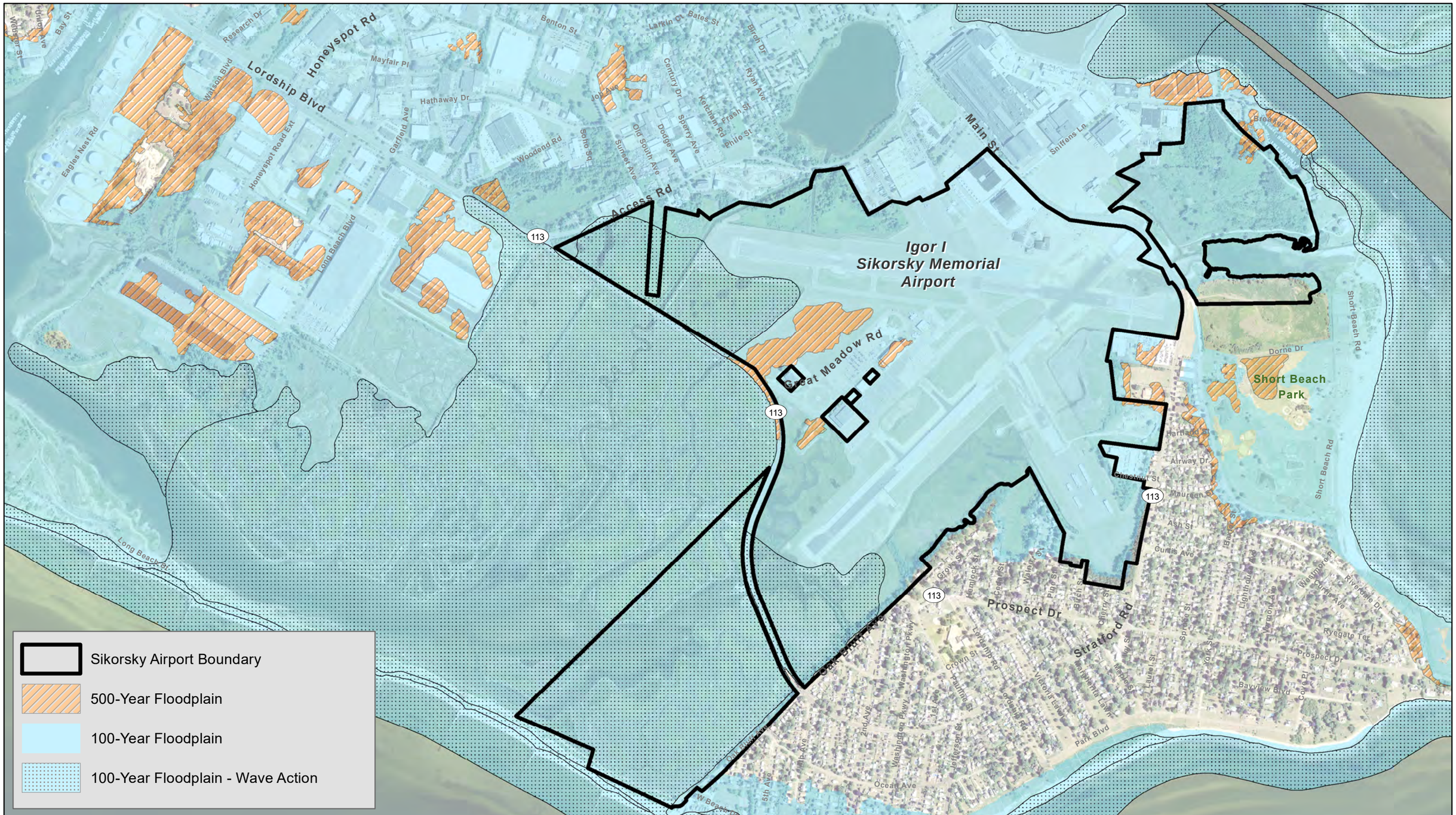


Project Name: **Sikorsky Airport Master Plan Update**	Source: NRCS Soils, accessed May 2019 USFWS - NWI Mapping, accessed May 2019 Final Written Reevaluation EIS Delineated Wetlands 2011 Aerial Mapping Date: 2016	Date: **6/10/2019**	**Figure 5-5**	N W E S 1:12,000 0 500 1,000 1,500 2,000 Feet
Town(s): **Stratford, Connecticut**		Map Title: **Wetland Resources**		CHA design/construction solutions FITZGERALD & HALLIDAY, INC. Innovative Planning, Better Communities

5.11 Floodplains

Executive Order 11988, *Floodplain Management*, defines floodplains as "the lowland and relatively flat areas adjoining inland and coastal waters including flood prone areas of offshore islands", including the area that would be inundated by a 100-year flood. 100-year floodplain is an area that has a 1% chance of being flooded in any given year (Zone A). A 500-year floodplain is an area that has a 0.2% chance of being flooded in any given year (Zone X).

Figure 5-6 depicts the Federal Emergency Management Agency (FEMA) floodplain map. Most of BDR is within the FEMA designated 100-year floodplain. The portions of BDR that are not within the 100-year floodplain are within the 500-year floodplain. Therefore, any proposed projects at BDR would be within a FEMA designated floodplain and compliance with applicable state and federal flood and stormwater management standards must be demonstrated, including adherence to Section 25-68d of the Connecticut General Statutes.



Project Name: **Sikorsky Airport Master Plan Update**	Source: FEMA 2019 Aerial Mapping Date: 2016	Date: **6/10/2019**	**Figure 5-6**
Town(s): **Stratford, Connecticut**		Map Title: **FEMA Floodplains Map**	1:12,000 0 500 1,000 1,500 2,000 Feet

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5.12 Coastal Zone Management Program

The National Oceanic and Atmospheric Administration (NOAA) regulations (15 CFR Part 930) require an analysis of any action affecting coastal areas along the Atlantic and Gulf Coasts. The CTDEEP administers the Connecticut Coastal Management Program, enacted in 1980 to protect coastal resources, including the restoration of coastal habitat, improve public access, promote harbor management, and regulate work within the tidal, coastal and navigable waters. BDR is entirely within a designated Coastal Zone; therefore, it is regulated by a Coastal Zone Management Program (CMP). Proposed projects would need to demonstrate consistency with the policies in the CMP. Projects will seek to avoid or minimize impacts and improve access.

5.13 Prime and Unique Farmland

The Farmland Protection Policy Act (FPPA) limits the conversion of significant agricultural lands to non-agricultural uses as a result of federal actions (7 USC § 4201, et seq.). The determination of whether farmlands are subject to FPPA requirements is based on soil type; the land does not have to be actively used for agriculture. Farmland subject to FPPA requirements can be pastureland, forested, or other land types, but not open water or developed urban or transportation areas. The FPPA regulates four types of farmland soils:

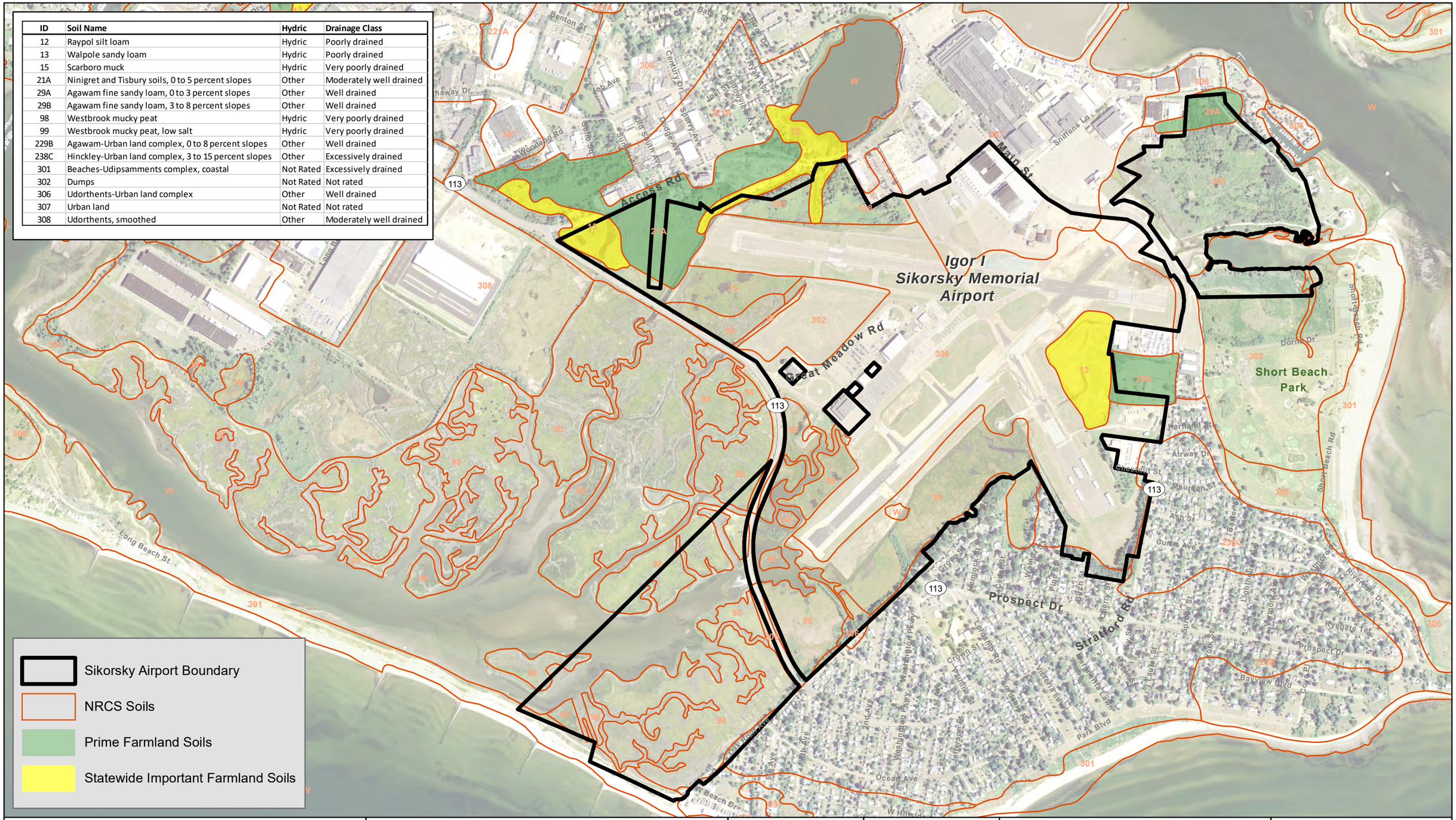
- Prime Farmland;
- Unique Farmland;
- Farmland of Statewide Importance; and,
- Farmland of Local Importance.

Prime farmland is defined by the NRCS as “land that has the best combination of physical and chemical characteristics” for agriculture. This includes land with these characteristics used for livestock or timber production but not land that is already urbanized or used for water storage. Unique farmland is defined as “land other than prime farmland that is used for production of specific high-value food and fiber crops,” with such crops defined by the Secretary of Agriculture. Farmland of statewide or local importance is farmland other than prime or unique farmland that “is used for the production of food, feed, fiber, forage or oilseed crops.”

Most of the uplands on BDR are mapped by the NRCS as Udorthents/Urban Land Complex (306), Urban Land (307), Udorthents Smoothed (308) and Dumps (302). However, the area on, and adjacent to the northwest portion of BDR and the eastern portion of the airport have been identified as prime farmland or farmland of statewide importance (see **Figure 5-7**). There is also an area on the far northeast corner of BDR that is mapped as prime farmland. The prime farmland soils are Ninigret and Tisbury soils, 0 to 5 percent slopes (21A) and Agawam fine sandy loam (29A and 29B). The statewide important farmland soils are Walpole sandy loam (13). There are no unique farmland soils or farmland of local importance on, or adjacent to, BDR property.

Prior to implementation of the airfield recommendations, a project-specific environmental analysis would be conducted to confirm the location of the improvements relative to prime farmland soils/statewide important farmland soils, quantify potential impacts, and, if appropriate, recommend mitigation measures to address adverse impacts.

ID	Soil Name	Hydric	Drainage Class
12	Raypol silt loam	Hydric	Poorly drained
13	Walpole sandy loam	Hydric	Poorly drained
15	Scarboro muck	Hydric	Very poorly drained
21A	Ninigret and Tisbury soils, 0 to 5 percent slopes	Other	Moderately well drained
29A	Agawam fine sandy loam, 0 to 3 percent slopes	Other	Well drained
29B	Agawam fine sandy loam, 3 to 8 percent slopes	Other	Well drained
98	Westbrook mucky peat	Hydric	Very poorly drained
99	Westbrook mucky peat, low salt	Hydric	Very poorly drained
229B	Agawam-Urban land complex, 0 to 8 percent slopes	Other	Well drained
238C	Hinckley-Urban land complex, 3 to 15 percent slopes	Other	Excessively drained
301	Beaches-Udipsamments complex, coastal	Not Rated	Excessively drained
302	Dumps	Not Rated	Not rated
306	Udorthents-Urban land complex	Other	Well drained
307	Urban land	Not Rated	Not rated
308	Udorthents, smoothed	Other	Moderately well drained



Project Name: **Sikorsky Airport Master Plan Update**	Source: USDA NRCS Soils 2019	Date: **6/10/2019**	**Figure 5-7**
Town(s): **Stratford, Connecticut**		Map Title: **NRCS Farmland Soils**	1:12,000 (0, 500, 1,000, 1,500, 2,000 Feet)

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5.14 Summary

Projects recommended in this airport master plan are anticipated to have some impacts on the environment, with concerns generally focused on water quality, biotic communities, threatened and endangered species, and wetlands. As noted under each of the resource-specific sections, before implementation of some of the proposed development projects, further environmental documentation would be required to document existing conditions at that time, determine impacts on each resource, and if appropriate, identity mitigation measures to address adverse impacts. Once project details are available, if appropriate under NEPA, Categorical Exclusion(s) or Environmental Assessment(s) will be prepared in accordance with FAA guidance with corresponding CEPA documentation. Based on past studies and the types of projects recommended in the master plan, it is anticipated that impacts can be successfully mitigated allowing implementation of the recommended plan.

6 Airport Development Concepts

To satisfy the facility requirements identified in **Chapter 4**, numerous concepts, site configurations, and development options were created and reviewed for the various components of the Airport. In many circumstances, multiple alternatives were identified, but eliminated early in the planning process from further consideration. The concepts deemed most reasonable to support the long-term operational sustainability of the Airport were identified and carried forward in the evaluation and are described and illustrated in this Chapter.

Separate concepts and configurations for runways, taxiways, passenger terminal facilities, and general aviation facilities are included herein. The number of potential recommendations is substantial; however, it is emphasized that although projects may be desired, they may not necessarily be financially or environmentally feasible. As such, the recommendations presented within this chapter are modified or narrowed down for incorporation in the ultimate plan. During the final recommendations of the Master Plan Study. The overall effort will refine the final strategy into actionable recommended projects for implementation in phases. Note that due to the number of figures included in this chapter, they are consolidated and included together at the end of the report.

6.1 Concept Evaluation

Regardless of timeframe or airport activity level, the overarching principles guiding the development recommendations are to provide an elevated level of airport service and promote airport sustainability (both environmental and financial), while accommodating the evolving activity of airport users and tenants. For the airfield, the recommended configuration is driven largely by Federal Aviation Administration (FAA) design standards as well as by existing infrastructure and available property. In contrast, improvements related to the hangars, passenger terminal, and support facilities have wide variability in their configuration, and are primarily driven by private funding and user/tenant needs.

During the facility requirements evaluation, it became evident that the Master Plan would not consist of all-encompassing or competing alternatives for development of the Airport. Rather, the concepts and alternatives presented consist of a series of separate improvements that are assembled into the overall strategy. As such, individual components are reviewed and recommended separately to develop the preferred improvements program.

6.2 Current Airfield Compliances and Deficiencies

The Sikorsky Memorial Airport (BDR) currently operates two runways (Runway 6-24 and Runway 11-29), with similar capabilities and constraints. Each runway was evaluated based on its operational requirements in Chapter 4, with the identified improvements provided below. For

the taxiway facilities, extensions and improved configurations are also beneficial to airport activity. As such, a set of runway and taxiway concepts were identified, illustrated, and evaluated in this chapter.

As the runways at BDR are substantially shorter than the identified runway length requirement to accommodate the critical aircraft of 5,700 feet. Therefore, this chapter does identify the potential for runway extensions; however, these extensions are not recommended due to environmental impacts, as well agreements in place between the City of Bridgeport and Town of Stratford to maintain the existing runway lengths.

6.2.1 Runway 6-24 Deficiencies

Runway 6-24 was substantially improved and reconstructed in 2016 to Airport Reference Code (ARC) D-II design standards. Larger corporate jet activity in ARC C-III now regularly use the runway creating some additional deficiencies.

- On the northeast runway end, Main Street was relocated and an EMAS bed was installed, thus the Runway Safety Area (RSA) and Object Free Area (OFA) in this location satisfy FAA design standards.
- On the southwest end of the runway, the RSA only extends 150-250 feet before reaching an open water tidal area. Further beyond the runway end Lordship Boulevard crosses through the other portion of both the RSA and OFA. The FAA has issued a formal RSA Determination for this deficiency, accepting the current condition based on the level and type of activity at BDR. Nevertheless, the master plan should consider options to improve on this non-standard condition in the long-term.
- Beyond both runway ends, the Runway Protection Zone (RPZ) is clear of all buildings and activities, with the exception of the public roads that traverse these locations.

Runway 6-24 Design Standards Needing Improvements

- ✈ Runway Safety Area (RSA) – Improvement to the southwest end of the Runway.
- ✈ Runway Object Free Area (ROFA) – Improvement to the southwest end of the Runway.

6.2.2 Runway 11-29 Deficiencies

Runway 11-29 has not received any major improvements since the original construction. The existing design standards deficiencies are substantial and listed below:

- On the east end, Main Street crosses through the RSA and OFA within 200 feet of the runway end. The RPZ does not contain any development but is traversed by Main Street.
- On the west end of the runway, the RSA only extends 325-450 feet before reaching a channeled drainage way. Further out beyond the runway end Lordship Boulevard and Access Road cross through the other portion of both the RSA and OFA.

- Beyond the east end, the RPZ includes portions of existing roads, plus approximately 4 acres of commercial development.

Runway 11-29 Design Standards Needing Improvements

- Runway Safety Area (RSA) – Improvements beyond both runway ends.
- Runway Object Free Area (ROFA) – Improvements beyond both runway ends.
- Runway Protection Zone (RPZ) – Consider acquisition or easements for commercial properties along Access Road.

6.2.3 RSA Improvement Feasibility

As described above, on the west and southwest side of the Airport, both Runways 6-24 and 11-29 terminate near coastal wetlands, which include hydrologic connections to Great Meadows Marsh and Long Island Sound. These wetlands make extending the RSAs difficult, as tidal wetlands have significant environmental value and associated protections. As part of the recent Runway 6-24 improvements, the Runway 6 end was retained as is, primarily due to the significant impact to the adjacent wetlands and waterbody.

To improve runway safety, wetland filling beyond both runway ends is desirable from an aeronautical standpoint; however, the feasibility of this action is low due to environmental sensitivity described in detail in Chapter 5. As such, a further review and comparison of the two runway ends is provided here in advance of the runway alternative development to provide an overview of the environmental conditions and the degree of impacts from potential RSA improvements. A summary is provided in Figure 6-1.

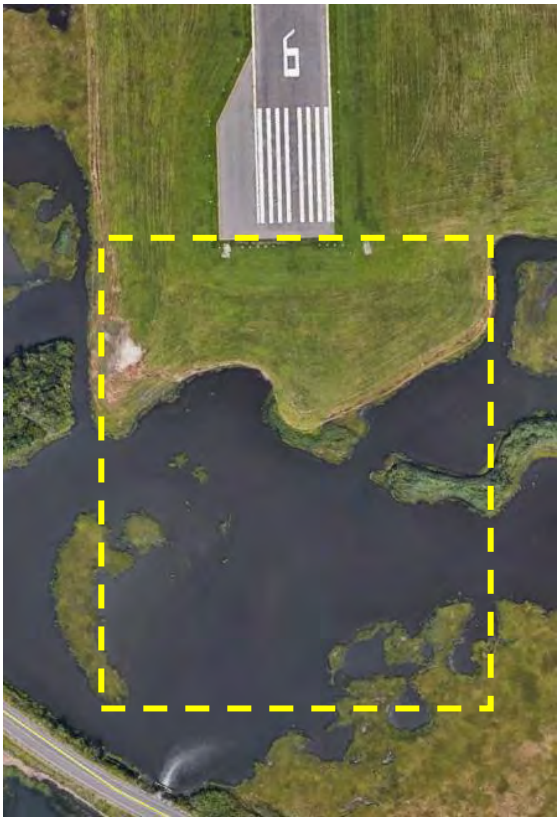
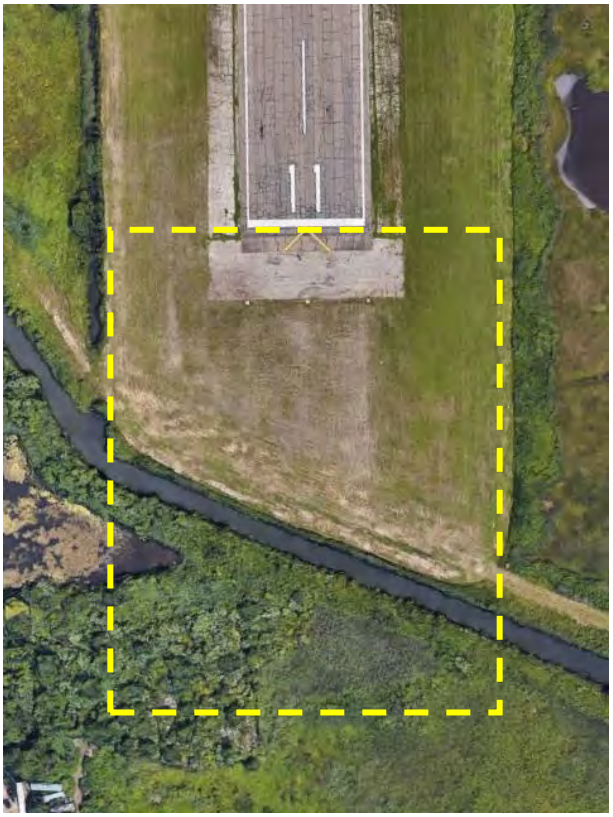
Runway 6-24

For Runway 6 to provide an RSA with a 600-foot length beyond the threshold at a 500-foot width would require nearly five (5) acres of filling within the waters of Lewis Gut. By definition, a gut is a narrow coastal channel, strait, or stream that is subject to strong tidal currents. Filling area within the gut would protect aircraft that land short of Runway 6 and could also accommodate an EMAS bed protecting Runway 29 operations that overrun the end. Based on past discussion with the Connecticut Department of Energy and Environmental Protection (CT DEEP) and experience with similar coastal projects, it is unlikely such a project would be permitted. As jet aircraft activity could be accommodated on the other runway, or alternatively at other regional airports, the justification needed for filling these wetlands is very unlikely to be satisfied, particularly due to the open water and high quality of the wetland.

If the runway improvements were limited to just the wetland filling necessary to provide an EMAS bed for Runway 29 operations, the impacts could potentially be reduced to 1.0 to 1.5 acres.

However, the fill would still involve expansion of the land mass into a tidal wetland and open water area subject to coastal wave action. Extending the land mass for even just the EMAS bed may still be infeasible.

Figure 6-1 – Runway Safety Area Comparison

RSA Shown: 600’ beyond Runway Ends (500’ wide)	
Runway 6 (Runway 26 Stop End)	Runway 11 (Runway 29 Stop End)
	
Existing runway end provides approximately 2.0 acres of RSA prior to the open water tidal basin of Lewis Gut, which is part of the Great Meadows Marsh.	Existing runway end provides approximately 4.3 acres of RSA prior to a channelized drainage way, with a mixture of upland and coastal wetlands further west.

Runway 11-29

In contrast, For Runway 11 to provide an RSA with a similar capability would require approximately 1.5 acres of wetland fill, as well as a large culvert of the drainage channel. As this location has been previously disturbed by past filling activities and channelization, the quality and value of this site is lower than Runway 6. This results in a higher potential to justify the impacts and obtain the required CTDEEP permit. If the Runway improvements were limited to

just the wetland filling and small culvert to provide an EMAS bed for Runway 29 operations, the total impact could potentially be reduced to under an acre.

Summary

This comparison and summary were considered in the development and recommendation of airfield alternatives at BDR. Conclusions:

- Any coastal wetland filling, drainage channel changes, and associated ecological impacts will require substantial justification, environmental permitting, and mitigation similar to that of the recent Main Street relocation and Runway 6-24 improvements.
- Alternatives should seek to avoid impacts where possible and reduce/minimize impacts where they cannot be avoided.
- To improve to the RSAs beyond the Runway end 6 and 11 would likely result in impacts. However, review of these sites illustrates that impacts would be greater in area and severity for Runway 6, and less for Runway 11.

Although Runway 11 RSA improvements would have less impact and greater feasibility than Runway 6, as discussed below, the protections afforded to coastal wetlands is substantial, and impact "avoidance and minimization" remain a primary goal of the runway and taxiway alternatives and recommendations. Images of the Great Meadows March are provided below

(Source: US Fish & Wildlife Service).

6.3 Airfield Development Concepts

This section identifies and evaluates potential runway and taxiway improvements that will enhance the overall safety, efficiency, reliability, and capacity of the airfield at BDR. Aircraft flows between the runway system and various functional areas (e.g., Main Apron, North Apron, and South Apron) have been considered. Runway and taxiway concepts were developed to satisfy

key goals of the master plan process, including improvement in safe and operational efficiency, which can be accomplished by meeting the following objectives:

- Adhere to FAA design standards, reducing need for Modifications of Standards (MOS).
- Accommodate existing and projected user's facility requirements.
- Reduce runway crossings (particularly in the middle third of runway) to improve safety .
- Reduce risk of pilot confusion:
    - Reducing the number of taxiways intersecting at a single location
    - Eliminating acute angle intersections
    - Avoiding wide expanses of pavement
    - Increasing visibility

Once identified, the alternatives were then evaluation qualitatively against the following considerations:

- Operational improvements and efficiency (i.e., airport user needs)
- Safety (identified by FAA design standards)
- Environmental considerations
- Community acceptance

6.3.1 Runway 6-24 Improvements Alternatives

Runway 6-24 is currently the primary runway at BDR, with a length and width of 4,677 x 100 feet and is equipped with an Instrument Landing System (ILS). The main landing runway end 24 has a Landing Distance Available (LDA) limited to 4,357 feet due to the displaced threshold and does not have adequate RSA on the stop end. Two improvement alternatives were identified for this Runway.

Runway 6-24 EMAS Bed on Southwest End (Figure 6-2)

The key non-standard condition on Runway 6-24 is the lack of adequate RSA on the west end. Similar to that provided on the east end, this alternative considers construction of an EMAS bed to arrest aircraft if they overrun the stop end of Runway 24. Figure 6-2 depicts a potential EMAS bed in this location, which would extend beyond the existing landmass into Lewis Gut. Filling a small area of the coastal waterbody and building an area to support the EMAS bed would include removal of 0.5 to 1.0 acres of the estuarine wetland and associated habitat.

To protect against short landings on Runway 6, a displaced threshold could be added of approximately 450 feet, providing an RSA of 600 for landings. The resulting project would retain the current runway length and takeoff lengths of 4,677feet. However, landing length on Runway 6 would reduce to 4,227 feet, which will be too short for many corporate jet aircraft, particularly during wet runway conditions. The benefits of this concept include adequate RSA and OFA, and essentially providing all FAA design standards.

The runway width could be retained at 100 feet, which is adequate for corporate jets up to 100,000 pounds maximum takeoff weight. Widening the runway to the original 150 foot width could be a benefit for potential airline aircraft.

Although the coastal environmental impacts of this alternative are considered significant, the safety benefits afforded through satisfying FAA design standards are worthy of consideration. The FAA has issued a formal RSA Determination for this deficiency, accepting the current condition based on the level and type of activity at BDR. As such, this alternative could be a long-term consideration.

Runway 6-24 Extension to 5,100' (Figure 6-3)

As previously discussed, a runway extension will not be recommended in the master plan due to an existing agreement with the Town of Stratford. Thus, this alternative is for illustrative purposes to identify if a runway extension is possible. At a length of under 4,700 feet, the runway is 1,000 feet below the recommended length of 5,700 feet for the Airport.

In addition to the municipal agreement and environmental impacts, Runway 6-24 has limited expansion opportunities due to the proximity of Lordship Boulevard and Main Street located beyond the runway ends. This alternative would extend the southwest end of Runway 6-24 from 4,677 feet in length, to 5,100feet, a 423 foot extension, towards Lordship Boulevard. This 5,100-foot length is considered the maximum length due to existing roadways. An EMAS bed would be installed on the southwest end, with a Runway 6 displaced threshold to satisfy FAA design standards. Additionally, the runway could be widened from 100 feet to 150 feet.

The alternative would require substantial wetland filling in Lewis Gut, with removal of up to six acres of open tidal waters, requiring a full Environmental Impact Statement (EIS), and extensive mitigation. The results of this alternative would be a runway with 5,100 feet for takeoff length,

and a landing distance of over 4,650 feet on both ends, providing added capability and safety for corporate jet aircraft. As discussed in Section 6.2, this type of impact is considered infeasible; the alternative is not considered further in this study.

6.3.2 Runway 11-29 Improvements Alternatives

Although Runway 11-29 is currently the crosswind runway for BDR, it's length and width (4,761 x 150 feet) are greater than the primary runway. Runway 29 includes a published GPS Non-Precision approach and has a displaced threshold of 364 feet for a landing distanced of 4,397 feet. As neither runway end satisfies FAA standards, several improvement alternatives have been identified to address its shortcomings.

Runway 11-29 Pavement Rehabilitation (Figure 6-4)

This limited alternative includes pavement rehabilitation to address the existing very poor condition of the runway pavement surface. This maintenance project would retain the current runway length and width, and includes:

- An asphalt mill and overlay of the western 3,300 feet length of runway
- Partial pavement reconstruction of the eastern 650 feet, without elevation changes or regrading
- No improvements are needed in the center 811 feet of runway (which was reconstructed as part of the 2016 Runway 6-24 project)

The objective of this rehabilitation project is to improve the pavement conditions of Runway 11-29, which may encourage higher usage during westerly winds. The poor condition of the pavement surface has resulted in some restrictions in jet aircraft use and regular emergency repairs. Unfortunately, with the significant level of crack filling, these repairs had diminishing returns.

This alternative enables continued use of the runway in the near-term planning period. Without grading or configuration change, it could be completed without environmental impacts, and is recommended for implementation immediately. However, as no safety improvements are included, other concepts for Runway 11-29 must also be considered.

Runway 11-29 – 150' Shift (Figure 6-5)

The purpose of this concept is to substantially improve safety over existing conditions, while avoiding environmental impacts. As shown, major improvements to the RSA and OFA are possible without filling coastal wetlands. Unfortunately, to avoid these impacts, this concept does not satisfy 100% of FAA design standards. The runway length and width are retained in their current dimensions.

To improve design standards, the concept would shift Runway 11-29 by 150 feet towards the west to improve safety for operations. Specifically, this alternative will convert 150 feet of the eastern runway end into RSA, install an EMAS bed, and constructed a 150 foot extension of the western end of the runway, also with an EMAS bed. The runway length remains unchanged, but displaced thresholds are used to provide additional RSA for landings, while providing a minimum LDA of 4,550 feet.

The LDA of 4,550 feet is a length that provides advantages during landings in wet conditions and seeks to balance the need for RSA to protecting against short landings with the need for adequate available landing distance for jet operations. This alternative could also consider greater displaced threshold distances as further displacement would provide longer RSA distances. Correspondingly, larger displacements would reduce the published landing distances available for aircraft operations.

The layout results in a substantial improvement to the RSA and ROFA over existing conditions; provides additional offset from Main Street; adds jet blast protection; and avoids wetland impacts. However, it does not completely satisfy FAA standards, as the Runway 29 EMAS bed is not long enough for 70 knot aircraft arrests, and the RSA and ROFA would have some remaining deficiencies. Nevertheless, there are major safety improvements over current conditions and the project could be implemented in the short-term without significant environmental impacts or need for an EIS.

This alternative could also be modified to include a full length EMAS bed on the west end as a second phase of improvements in the midterm (not illustrated). However, this addition would result in approximately 0.5 acres of impacts to protected areas. Specifically, a culvert of the adjacent drainage channel (approximately 220 feet in length), impacting 0.15 acres of open channel, plus grading and filling of 0.35 acres of land with a mixture of upland and wetland conditions. It may be more practicable to include this component as a later addition to the alternative. The advantage of this two-phased approach is to advance the primary improvements in the short-term and obtain significant safety improvements. This additional effort will have high costs and require stream and coastal wetland permitting which could require significant time to implement and mitigate. Success in obtaining the permits is not guaranteed.

Implementation of this alternative is anticipated to increase use of Runway 11-29 by jet aircraft, as the runway would provide greater takeoff and landing distances than Runway 6-24 and excellent pavement surface. Runway 11-29 would become the primary runway serving BDR.

Runway 11-29 – 300' Shift (Figure 6-6)

The purpose of this concept is to document a layout that addresses all FAA design standards, prioritizing airport needs and safety over other criteria such as environmental protection. As shown, this alternative provides standard RSA and OFA dimensions, and retains the current runway length and width.

In order to satisfy all FAA standards, Runway 11-29 is shifted 300 feet towards the west and provides adequate distance from Main Street. This alternative would require filling approximately three acres of coastal wetlands, plus includes adding a large culvert for the existing drainage channel located immediately west of the runway (approximately 540 feet long). Due to the need for significant environmental analysis, mitigation, and significant costs, this alternative could not be implemented in the short-term. Furthermore, it is noted that there is no guarantee that permits could be obtained due to the level of impacts. The regulatory agencies (i.e., US Army Corp of Engineers, CT DEEP, etc.) are the authority that determines if the project need and justification is satisfactory, thus successful implementation is questionable.

Runway 11-29 Extension to 5,650' (Figure 6-7)

This alternative is not recommended in the master plan but is presented to illustrate if the identified runway length of 5,700 feet is possible at BDR, regardless of impacts, property availability, and costs.

The layout illustrates a 1,039-foot extension on the west end of the runway for a total length of 5,650 feet. EMAS beds would be installed on both ends and displaced thresholds will be utilized to adhere to FAA Safety Area standards. The result of this alternative would be 5,650 feet for takeoff, an LDA of 5,050 feet for a Runway 11 approach, and 5,300 feet for a Runway 29 approach.

The alternative would require substantial wetland filling, adding a large culvert to the drainage channel, extensive mitigation, and property acquisition. The alternative is dismissed from further consideration.

Runway 11-29 Downsize to ARC B-Standards (Figure 6-8)

The purpose of this concept is to illustrate the option to reduce and limit the use of Runway 11-29 to lighter general aviation aircraft in ARC B-II. As illustrated in Chapter 2, this would include twin turboprop aircraft (e.g., Beech King Air C90), as well as some smaller corporate jets (e.g., Cessna Citation CJ2). An ARC B-II runway has RSA and OFA lengths that are only required to extend 300 feet beyond the runway ends, which can be accommodated on Runway 11-29 with modest displaced thresholds and implementation of declared distances. The runway length could remain unchanged, but the width would be narrowed to 75 feet.

The master plan evaluation has identified that reducing the capability of Runway 11-29 would have significant impacts on existing jet aircraft users that rely on both runways for takeoffs and landings. This fact was verified in early 2020 when the Airport restricted operations on Runway 11-29 to aircraft with maximum takeoff weight of 12,500 pounds due to poor pavement conditions and recent flooding. Several existing jet operators were grounded during western and northwester winds or diverted/relocated to other airports when wind conditions required their use of Runway 11-29. As such, downsizing Runway 11-29 was dismissed from further consideration.

The master plan wind analysis and facility requirement determination identified that BDR should ideally have a jet runway with ARC C-III with a length of 5,700 feet, plus a crosswind ARC B-II runway for smaller aircraft under 12,500 pounds maximum takeoff weight. The longer length of the primary runway would permit the vast majority of operations even during crosswind and wet runway conditions. However, the unique findings for BDR is that a runway extension is not feasible, and thus jet operations will remain disbursed to both runways per wind conditions. The short runway lengths at BDR prevent many jet aircraft from accepting crosswind takeoffs and landings, and results in the need for both runways, at their current length, to support these operations.

6.3.3 Taxiway Improvements Alternatives (Figure 6-9 & Figure 6-10)

BDR contains existing hangar and aircraft apron development on both sides of both runways, with additional facilities recommended to support future needs. Therefore, for safety and efficiency, BDR would ideally provide full parallel taxiways on both sides of both runways. These new and extended taxiways would be located at the standard runway to taxiway offset of 400 feet for ARC C-III, as shown in taxiway alternative Figure 6-9.

However, in all areas, these full parallel taxiways would result in coastal wetland impacts, and the associated need for permitting and mitigation, and would have significant costs for filling and extending land area into the saltwater marsh locations. These impacts are why full parallel taxiways have not been provided previously and remain a substantial impediment to implementation.

As construction of the key runway alternatives are a high priority and will result in significant safety improvements, the runways are the focus of the master plan airfield recommendations. Following a preliminary review of impacts and costs, and coordination with FAA, it was determined that full parallel taxiways will not be recommended for implementation as their feasibility at BDR is low.

Nevertheless, improved taxiways also have safety and efficiency benefits, and alternatives for incremental improvements were identified. In working with airport staff and in consideration of FAA standards, a set of modified taxiway improvements were identified as illustrated in Figure 6-10. These alternatives address several import areas listed below:

- Provide a taxiway connector to the Runway 29 end (second most used runway end).
- Provide a taxiway connector to the Runway 6 end (used heavily during IFR conditions).
- Remove excess pavement and non-standard configurations in the center of the airfield.
- Retain the existing 300-foot runway offset of Taxiways D and G .
- Relocate Taxiway A to a 400-foot runway offset (relocate from main apron).

Taxiway to Runway 29 End

Currently the only means of accessing Runway 29 for takeoff is to “back-taxi” on the runway followed by a 180 degree turn. Similarly, aircraft landing on Runway 11 that use the full length for rollout are required to back-taxi on the runway. These movements occupy the runway, prevent other aircraft from landing, and require additional pilot and air traffic controller diligence compared to runways equipped with parallel taxiways.

This alternative would eliminate the need to back-taxi to or from the Runway end 24 by providing a taxiway connector. Figure 6-10 depicts two separate options to satisfy this need. Unfortunately, the evaluation identified several key issues:

Connector from the North: this area includes a wetland and stormwater detention zone, with a direct connection to coastal area on the north side of Main Street; wetland impacts would occur. Additionally, the Runway 6 offset-localizer antenna array is located in this area and taxiing aircraft would cross through the navigational aid (navaid) critical area. When the localizer is in use, air traffic control would hold aircraft clear of this area.

Connector from the South: With the Airport's main apron located on the south side of Runway 11-29, this concept would extend Taxiway G to the east connecting to the Runway 29 end. However, nonstandard geometry and hold lines would be needed to minimize impacts to wetlands and to avoid encroaching onto the private property directly south of the proposed taxiway. Taxiway G contains a non-standard 300-foot runway-taxiway offset, which would be retained by this layout, and would require a Modification to FAA Design Standards.

In summary, both options have significant issues that would result in difficult implementation. While these options may be considered in the future, they are not currently recommended.

Taxiway to Runway 6 End

Similarly, the only means to access Runway 6 for takeoff is to "back-taxi" on the runway and conduct a 180 degree turn. Aircraft landing on Runway 24 that use the full length for the landing rollout also have to back-taxi on the runway. These movements occupy the runway; and have the same operations concerns as the other runway ends.

This alternative would prevent the need to back-taxi to or from Runway end 6 by providing a crossing taxiway in a 'figure 8' layout. Figure 6-10 depicts three separate options to satisfy this goal. Unfortunately, the review identified several key issues as outlined below.

Right Angle Crossing Taxiway: As shown, this taxiway would cross runway 6-24, and proceed to the Runway 6 end with at a 400 foot offset. The goal of this layout is to avoid wetland impact on the north side of the runway; however, the layout would still result in 0.2 to 1.0 acres for wetland fill on the south side depending on the final configuration, and may cross the localizer critical area.

45 Degree Crossing Taxiway: To avoid all wetlands an angled crossing was considered. Acute angles intersections are not prohibited but are considered less desirable as pilot visibility is reduced in the reverse direction. This layout would also require location of the 4-Box PAPI units to the left side of Runway 6.

Runway Turnaround: The last option does not eliminate the need for aircraft to back-taxi on the runway but does enable aircraft to clear the runway before takeoff and after landing rollout and provides greater flexibility for pilots and controllers to integrate runway operations.

Removal Excess Taxiway Pavement:

The midpoint of Runway 11-29 and intersection of Taxiways A, G and H create several non-standard conditions that can be rectified with pavement removal and reconfiguration. The current non-standard conditions in the location include:

- Taxiway crossings in the center third of the runway – Taxiways E and H.
- Taxiways leading directly from an apron to the runway – Taxiways E and H.
- Taxiways intersecting the runway and acute angles – Taxiways A, E and H.
- Exceeding the 3-Node concept - intersection of Taxiways A, G and H.
- Wide throated runway entrances – Taxiway A, E and H.
- Wide expanses of pavement – between Taxiway D and Runway 11-29.

Each of the above conditions are eliminated by the revised configuration illustrated on Figure 6-10. This alternative could be phased in with other runway and taxiway rehabilitation projects over time. Initially some of the excess pavement removal could be incorporated into the Runway 11-29 Pavement Rehabilitation project (Figure 6-4).

Retain Taxiways D and G at the Existing 300 foot Runway Offset

Parallel Taxiway G to the south of Runway 11-29 and parallel Taxiway D to the north both provide a runway-taxiway offset of 300 feet, which is the FAA standard for ARC C-II. However, with larger based aircraft at BDR now changing the critical aircraft to ARC C-III, these offsets are have become nonstandard.

This concept considers the option to retain the existing 300-foot offset because relocating the Taxiways to 400 feet offset would result in wetland impacts, as well as impacts to several airport facilities including:

- Removes 2.5 acres of the north apron.
- Requires relocation of an airport fuel farm.
- Eliminates outdoor storage of the airport maintenance facility.
- Requires relocation of the end (i.e., loop section) of Great Meadow Road.
- Impacts to various underground utilities and storage tanks.
- Relocation of the windsock and segmented circle.
- Impacts access to the Blue Sky and Museum Hangars (would be located in the TOFA).

To keep the 300-foot separation would require a Modification of FAA Design Standards, which are only effective for up to five years. As such, this alternative is not considered a long-term solution. Based on these considerations, in locations without wetland impacts, it is recommended that the additional taxiway offset to 400 feet be phased in over time as funding becomes available. However, it is anticipated that Modifications to Standards will be requested in the short-term.

To justify the potential Modification of Standards, a Risk Assessment was conducted using a method developed in Airport Cooperative Research Program (ACRP) Report 51[17] and is included in **Appendix C**. That assessment concluded that based on the aircraft types forecasts for use at BDR, the 300-foot offset provides a reasonable level of safety against collision risk.

Taxiway A Relocation from the Main Parking Apron

Currently, Taxiway A traverses through the Main Apron, dividing the area and limiting the space available for aircraft parking. The existing width of the apron is 325 feet, with 1/3 of the area within the aircraft movement area subject to air traffic control. The goal of this alternative is to free the apron area for use by tenants and separate taxiing aircraft from parked aircraft. The concept includes the relocation of Taxiway A to the standard location of 400 feet from the runway centerline. Development would essentially include a new Taxiway A, with the existing taxiway becoming part of the Main Apron, and outside the movement area. Benefits include:

- Aligns the new taxiway section with the northern section of Taxiway A connecting to the Runway 24 end.
- Improved intersection geometry of Taxiway A with Runway 11-29.
- Separate Taxiway A from the main apron and provide greater area for aircraft parking.
- Improved operational safety and air traffic control by separating parking and taxiing aircraft.

This taxiway relocation would result in some freshwater wetland impacts located in the infield of the airfield. These wetlands drain into coastal wetlands, which increases the resource value, and reduces the feasibility of implementation. With many benefits, this concept may be recommended for the long-term plan, although it is acknowledged that implementation may not be feasible.

6.4 Airfield Development Recommendations

Based on the environmentally sensitive nature of the Airport property and surrounding area, the airfield recommendations for BDR are modest, and limited to safety improvements that can be implemented without major impact and costs. Although several of the identified concepts would have substantial benefits to airport users, the low feasibility was a driving focus and determination. Based on permitting history at BDR, discussion with FAA, and comments received from the Study Technical Advisory Committee (TAC) and public, the following airfield projects are recommended:

- Runway 11-29 Pavement Rehabilitation (Figure 6-4) – The City's goal is to utilize state funding to conduct pavement surface repairs to Runway 11-29 to enable continued use by all aircraft. The goal is to commence this project in 2020, or as soon a possible, and maximize use of the runway by airport users.

[17] ACRP Report 51, Risk Assessment Method to support Modifications of Airfield Separation Standards. 2011.

- Runway 11-29 – 150' Shift (Figure 6-5) – As presented above, this alternative can provide substantial safety benefit with respect to FAA design standards, will shift the runway away from Main Street, and can be implemented without wetland impacts. A potential second phase of this project to extend the western EMAS bed into environmental sensitive area is also recommended; however, there is major benefit to advancing this effort in phases so that the primary safety benefits can be obtained in the short-term.

  The improvements will result in Runway 11-29 becoming the primary runway at BDR, and address the three key goals:
  - **Safety**: Runway 11-29 can ultimately provide standard RSA and ROFA
  - **Capability**: Runway 11-29 will maintain its length and can provided greater landing distances of up to 4,450 feet.
  - **Noise**: The surrounding community is very noise sensitive. Improvements to Runway 11-29 will foster more of the existing jet operations to use to this runway, which reduces aircraft noise in the Lordship neighborhood and over the beach communities in Milford.

- Runway 6-24 EMAS Bed on Southwest End (Figure 6-2) - This alternative would certainly have environmental impacts to Lewis Gut, but should still be considered for long term planning. The priority for this concept is lower because Runway 6-24 has already been substantially improved and has an RSA determination from the FAA based on current activity. Nevertheless, an EMAS bed for Runway 24 operations would further increase airport safety and is worthy of long-term consideration.

- Incremental Taxiway Improvements – Taxiway improvements are also important to the Airport but are less critical than the runways. Again, the recommendations below are limited and primarily driven by environmental feasibility.
  - Remove excess pavement and non-standard taxiway configurations in the center of the airfield.
  - Provide a taxiway to Runway 6, which may be implemented in phases.
  - Ultimately relocated Taxiways G and D to a 400 foot Runway 11-29 offset. Retain the current 300 foot offset in the short-term with a Modification to Standards.
  - Taxiway A relocation to 400 foot offset from Runway 6-24. This alternative would have upland wetland impacts. It is including in the plan, but priority is low.

Based on these recommendations, the overall airfield improvement plan for Sikorsky Memorial Airport is presented in Figure 6-11.

6.5 Terminal Area Alternatives

A majority of developable land within the airport property has been utilized for hangar and apron facilities. Therefore, most of BDR's landside development opportunities include infill or redevelopment of existing general aviation facilities, see Figure 6-12. One key exception is an area of approximately 20 acres on the west side of the airport referred to as the west development area. That location is one of the few portions of the airport above the elevation of the 100-year floodplain. Development could include any type of aeronautical use, including potential airline passenger terminal if the airport is able to attract such service in the future.

Unlike the airfield development alternatives, the landside facilities consist primarily of hangars and apron areas that are primarily developed and funded by private aviation companies, including Fixed Base Operators, and individual aircraft owners. The Airport's role for these locations is to support such private development through lease agreements, while ensuring that each development includes a logical layout that permits additional facilities and meets FAA design criteria and offsets.

The concepts and alternatives below provide sample configurations of new hangars and reconfigurations of the various locations on the Airport. However, the actual facilities to be constructed throughout the planning period will be determined by existing and future airport tenants, under approved agreements with the Airport.

Each of the key landside locations are discussed below, including:

- East Apron Area (including Atlantic Aviation and the CASC Museum)
- North Apron (including the individual T-Hangar bays)
- South Apron
- West Development Area

6.5.1 North Apron **(Figure 6-13 through Figure 6-16)**

Several alternatives are feasible for additional development of the North Apron. The first alternative seeks to increase hangar and apron used for corporate GA activity. This could include development of large corporate hangars on a portion of the apron, with some additional apron area development to support both corporate and light general aviation activity. Figure 6-13 illustrated this concept with two additional hangars.

An existing issue at the North Apron is ground access. Currently, the access to the area is through property leased by Atlantic Aviation, and includes locations used by both vehicles and aircraft. Shown on the figure is an option to formalize the existing access route, and well as other options:

- Formalize an agreement for access through Atlantic Aviation's leased property. Consider adding a new gate and curb cut on Main Street to avoid the need to travel behind the existing Atlantic Aviation hangars.
- A second access concept would include obtaining a right-of-way through the federal property in this location (i.e., parking lot for the former Army Helicopter facility), with access to an existing driveway on Main Street.
- A final concept includes access to the west and requires constructing a new driveway to Access Road. The driveway would be approximately 1,200 feet in length and could impact freshwater wetlands.

This concept could include also include a new security fence to position the access and parking outside of the secure area of the airport. Relocation of some of the existing hangar could be required, depending on the ultimate development.

North Apron Concept – Figure 6-13	
The development of the North Apron for corporate GA usage with hangars accommodating business jets. Additionally, a new access route for vehicles is constructed to provide vehicle a formal and segregated access to the hangars and tiedowns.	
Advantages	**Disadvantages**
✈ Recaptures underutilized apron space for hangar development ✈ Retains majority of T-Hangars in current location ✈ Provides access for vehicles, improving airfield safety and efficiency ✈ Designated parking for vehicles (inside or outside of security)	✈ Relocation of some T-Hangars and Tie Down spaces ✈ Potential wetland impacts from new access route

✈ Maximizes developable space for additional airport revenue	

The second alternative seeks to maximize the area for corporate aviation and includes the relocation of the small T-Hangars and individual hangars currently in this location, Figure 6-14. Similar to the first North Apron alternative, an access route and vehicle parking lot would be constructed.

North Apron Concept – Figure 6-14	
Maximize use of the North Apron for corporate aviation development. Additionally, a new access route for vehicles is constructed to provide vehicle a formal and segregated access to the hangars and tiedowns.	
Advantages	**Disadvantages**
✈ Recaptures underutilized apron space for hangar development ✈ Provides access for vehicles, improving airfield safety and efficiency ✈ Designated parking for vehicles (inside or outside of security) ✈ Maximizes developable space for additional airport revenue	✈ Requires removal/relocation of all T-Hangar and small hangars in this location. Relocation may be difficult due to age/condition of the buildings ✈ Reduces parking area for light aircraft ✈ Potential wetland impacts from new access route

Two additional concepts are provided for the North Apron, both including acquisition of the 3.5-acre parcel of federal property, and include:

- Development of corporate aviation facilities (Figure 6-15)
- Relocation of the existing T-Hangars (Figure 6-16)

Currently it is unknown if this property would be available for acquisition by the Airport. Thus, these layout are shown for discussion purposes. There are many additional layout that could be considered, each could also include new parking and improved access to the North Apron.

6.5.2 East Apron & Atlantic Aviation (Figure 6-17 through Figure 6-18)

Several alternatives are feasible for additional development of the North Apron. The first alternative would relocate the security fence and enable the parking and access to Atlantic Aviation and the Blue-Sky Hangar to be outside security. While this concept improved access and parking, it would prevent aircraft access to the rear side of the Atlantic Aviation hangars.

The East Apron area behind the Connecticut Air and Space Center (CASC) Museum Hangar is currently underutilized. This concept also aims to recapture the apron space by relocating the T-Hangars to the East Apron. Due to the lease line of the CASC museum, an agreement would be

required for the third row of T-Hangars. Improved access and parking would be provided for T-hangar users; however, users have expressed concern regarding the need for relocate the hangars, and the potential for greater flooding in this location.

East Apron Concept – Figure 6-17	
Incorporates improved parking and access to Atlantic Aviation and the Blue-Sky hangar while further developing the unused east apron space. This alternative would relocate the T-Hangars currently in front of Atlantic Aviation's hangar to the east apron. An agreement would need to be made with the CASC Museum as the relocated T-Hangars would encroach on their lease line.	
Advantages	**Disadvantages**
✈ Retains existing structures ✈ Restricts private vehicles from driving on the apron inside security ✈ Frees space in front of Atlantic Aviation for hangar development ✈ Reuses the existing East Apron ✈ Increases vehicle parking	✈ Requires removal/relocation of all T-Hangar and small hangars. Relocation may be difficult due to age/condition of the buildings ✈ Eliminate aircraft access to and from apron space behind Atlantic Aviation, along Main Street ✈ Requires agreement with CASC

The second alternative for this area seeks to maximize the area for corporate aviation hangars and aprons, Figure 6-18. The layout removes the Blue-Sky hangar and existing restaurant to convert the area for new hangars and apron. The location of the restaurant would become aircraft apron, which also expands the area for additional small hangars. A new restaurant location is possible.

East Apron Concept – Figure 6-18	
Incorporates improved parking and access to Atlantic Aviation and the Blue-Sky hangar while further developing the unused east apron space. This alternative would relocate the T-Hangars currently in front of Atlantic Aviation's hangar to the east apron. An agreement would need to be made with the CASC Museum as the relocated T-Hangars would encroach on their lease line.	
Advantages	**Disadvantages**
✈ Expands areas for additional corporate hangars ✈ Expands areas for additional small hangars through the reuse of the East Apron ✈ Maintains access to apron behind Atlantic Aviation hangars ✈ Separates vehicle parking form apron. Parking is moved towards Main Street. Existing parking converted to Apron. ✈ Provide location for new Restaurant	✈ Requires removal of existing Blue-Sky hangar and restaurant. ✈ Atlantic Aviation parking is not adjacent to office area. ✈ High costs compared to other alternatives

6.5.3 South Apron (Figure 6-19)

The South Apron area currently consists of a privately-owned small hangars and T-Hangar development, and the Civil Air Patrol (CAP) facilities. The objective of this alternative is to further develop this area to accommodate additional light GA aircraft facilities, and also the potential relocation of the T-Hangars currently in the North Apron. Additionally, an improved access route and vehicle parking lot could be constructed for users to avoid private vehicle utilizing the South Apron to access their hangars. The CAP area could be expanded to accommodate new hangars on a separate apron connected to the South Apron via a new taxiway.

South Apron Concept (Figure 6-19)	
The South Apron development alternative includes two areas, the southern portion currently housing private small hangars, and the Civil Air Patrol (CAP) area to the north. Figure 6-19 limits the amount of new pavement by constructing additional hangars on the existing apron.	
Advantages	**Disadvantages**
✈ Maximizes usage of existing apron space ✈ Capable of accommodating relocated T-Hangars from the North Apron ✈ Provides access and parking for vehicles, improving airfield safety and efficiency ✈ Consolidated CAP facilities	✈ Increase in impervious surface ✈ Cost for new taxiway and driveway ✈ Requires new stream culvert for Taxiway Safety Area (TSA)

6.5.4 West Development Area (Figure 6-20 through Figure 6-22)

The West Development Area, adjacent to the Main Apron, is the only significant area of undeveloped land within the airport property. As the Airport retains a goal to reestablish regularly scheduled commercial service (i.e., airline service) at BDR, the first alternative for this location illustrates the construction of a 20,000 square foot passenger terminal building with a corresponding terminal apron capable of accommodating three narrowbody jets. Additionally, passenger parking would be included. Taxiway G is also shown at a standard 400 foot offset as described earlier in the chapter in the Taxiway Alternatives section.

West Development Area – Airline Service (Figure 6-20)	
Construction of a new passenger terminal complex for potential regularly scheduled commercial air service, including a passenger parking lot, terminal building, and an apron accommodating commercial C-III aircraft.	
Advantages	**Disadvantages**
✈ Supports new commercial service facilities ✈ Direct access is provided by Great Meadows Road, less than 2 miles from I-95 ✈ Located adjacent to the airport's existing parking lot ✈ Expansion potential for additional facilities ✈ Location is above the 100-year floodplain	✈ High cost of all new development ✈ Increase in impervious surface

However, if commercial service does not commence at BDR, the second alternative maximizes the West Development Area for corporate GA use, showing the construction of an apron with three large hangars. Additional vehicle parking would be included to accommodate users. The advantages and disadvantages of this option are the same as for airline service facilities.

West Development Area – Corporate GA (Figure 6-21)	
This alternative develops the West Area for corporate GA operations only.	
Advantages	**Disadvantages**
✈ Maximizes developable area for corporate use ✈ Direct access is provided by Great Meadows Road, less than 2 miles from I-95 ✈ Located adjacent to the airport's existing parking lot ✈ Expansion potential for additional facilities ✈ Location is above the 100-year floodplain	✈ High Cost of development ✈ Increase in impervious surface

Due to the size of the West Development Area, a third option could include both commercial service use and corporate GA use, Figure 6-22.

6.6 Landside Development Recommendations

Based on the environmentally sensitive nature of the airport property and surrounding area, the landside recommendations for BDR are limited to the upland areas of the airport, where existing apron and hangars are located today, and within the West Development Area. The recommendations below incorporate initial comments by the City of Bridgeport, general public, and study's Technical Advisory Committee (TAC).

Unlike the airfield development alternatives, landside facilities are primarily developed and funded by private companies, FBOs, and individual aircraft owners. While the alternatives above depict specific facility sizes and locations, the actual layout of future landside developments will be determined by existing or future tenants, with necessary approvals from the Airport and FAA. Most of the development areas are reserved for additional general aviation use; however, the recommended plan remains intentionally open for future proposals which include for the possibility for new or redeveloped facilities as depicted in Figure 6-23.

- East Apron – This location is recommended to be reserved for light general aviation facilities, including tiedowns, relocated T-hangar bays, or new small hangars. With access to Main Street and a view of Runway 29, the option of a new airport restaurant is also retained.

- Atlantic Aviation – The FBO holds a large lease area with multiple hangars along Main Street. This area is reserved for their continued lease. The Airport is also interested in supporting expansion and improvements of these facilities and would consider an expansion of the leased area in the future.

- Connecticut Air & Space Center (CASC) Museum – The CASC lease area includes the historic hangar structure as well as approximately 2.5 acres surrounding the building. This location is generally reserved for facility improvements to be conducted by the CASC. However, consideration should be given to modification of the 2.5 land lease to accommodate potential other general aviation airport tenants.

- North Apron – The recommendation for this location is to be reserved for future corporate aviation facilities, including large hangars and apron space for large corporate jets. The existing small hangars and individual T-hangar bays in this area may be retained, as ample space existing for both large and small aircraft. Nevertheless, additional small hangar development should be directed to other locations (i.e., the East and South Apron). Relocation or replacement of existing small hangars should be considered if needed for large development projects that could improve the financial viability of the Airport.

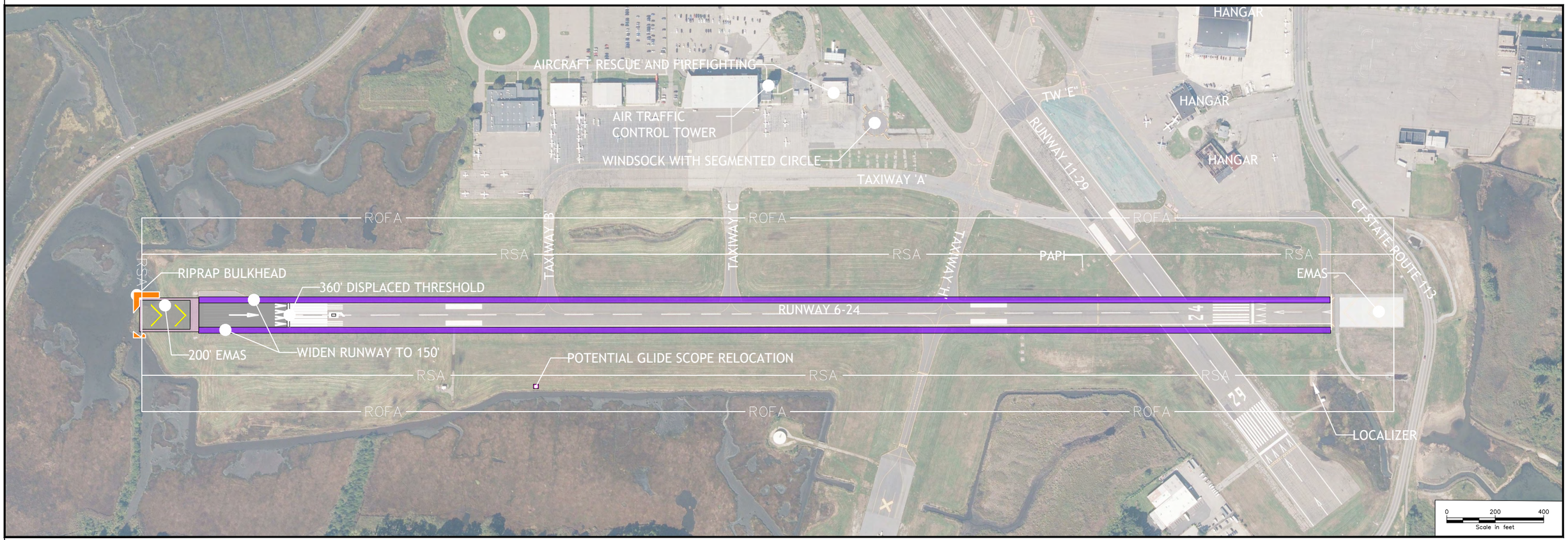
- Federal Property – The Town of Stratford is developing an overall plan for mixed use redevelopment of the former Army Helicopter facility. The small portion of this federal property that abuts the airport property was previously used as an employee parking lot. This area is recommended to provide an additional public access to the airport under an easement agreement, or potentially for full acquisition of the property by the City (if available). This 3.5-acre parcel has existing curb cuts for access to Main Street; new public access to the North Apron could be provided without traversing existing leased property.

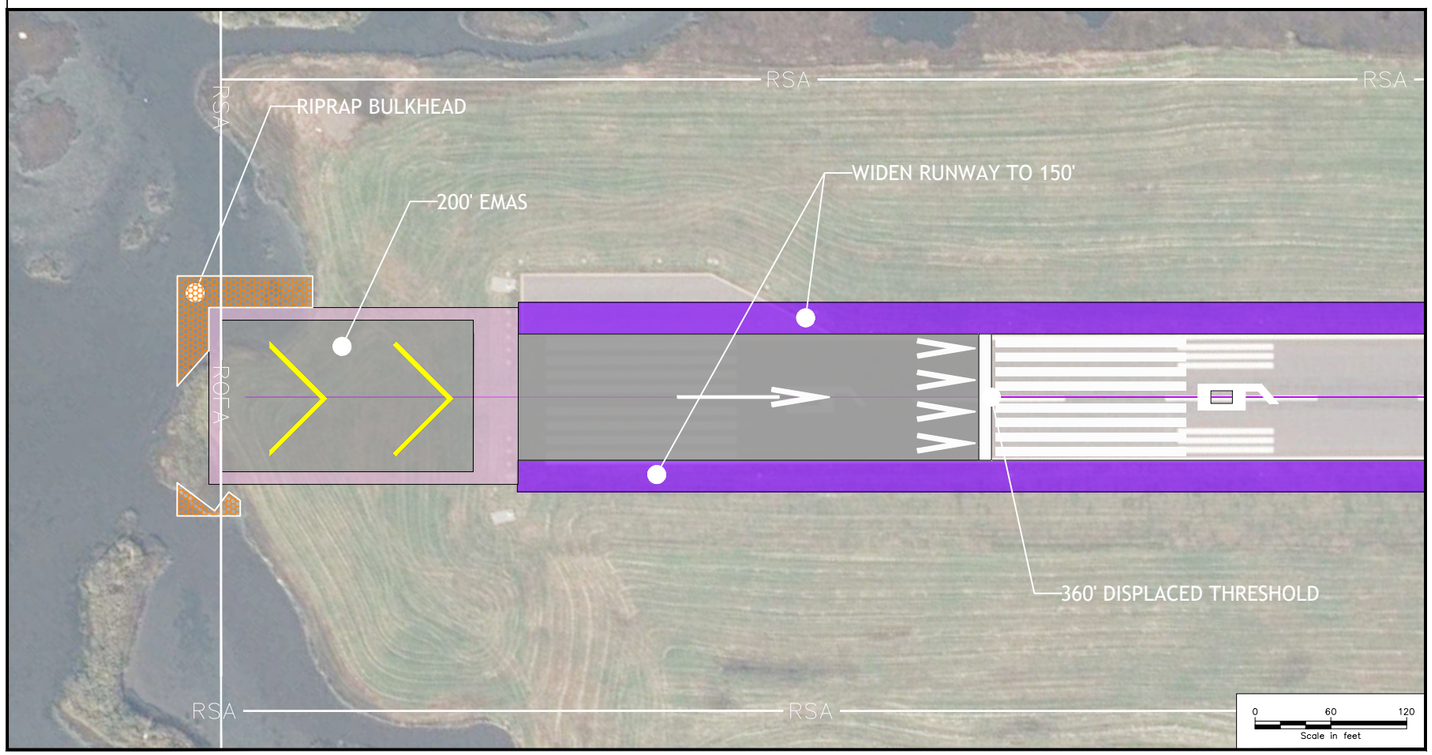
- South Apron – This location is recommended to be reserved for additional light general aviation facilities, including tiedowns, relocated T-hangar bays, or new small hangars. Future lease of this location should be flexible to allow expansion by the current lease holder, as well as additional corporate or individual tenants of the Airport. Improved ground and taxiway access would benefit all potential users.

- Main Apron – The main apron area is fully developed. However, existing tenants have discussed potential interest in replacing/expanding existing hangars in the future. Such redevelopment would be supported by the Airport.

- West Development Area – This location is recommended to be reserved for regularly scheduled commercial service (i.e., airline service) including a passenger terminal building, aircraft apron and gates, and expanded vehicle parking. Alternatively, if air service is not realized, the location would support corporate aviation.

- Former FAA Flight Service Station building – Short term reuse of the facility for offices, restaurant, etc. should be permitted. However, long term, if airline service is developed at BDR, the overall location should be reserved for expansion of associated airline services.





DECLARED DISTANCES			
RUNWAY 6		RUNWAY 24	
TORA	4,677'	TORA	4,677'
TODA	4677'	TODA	4,677'
ASDA	4,677	ASDA	4,677'
LDA	4,317'	LDA	4,357'

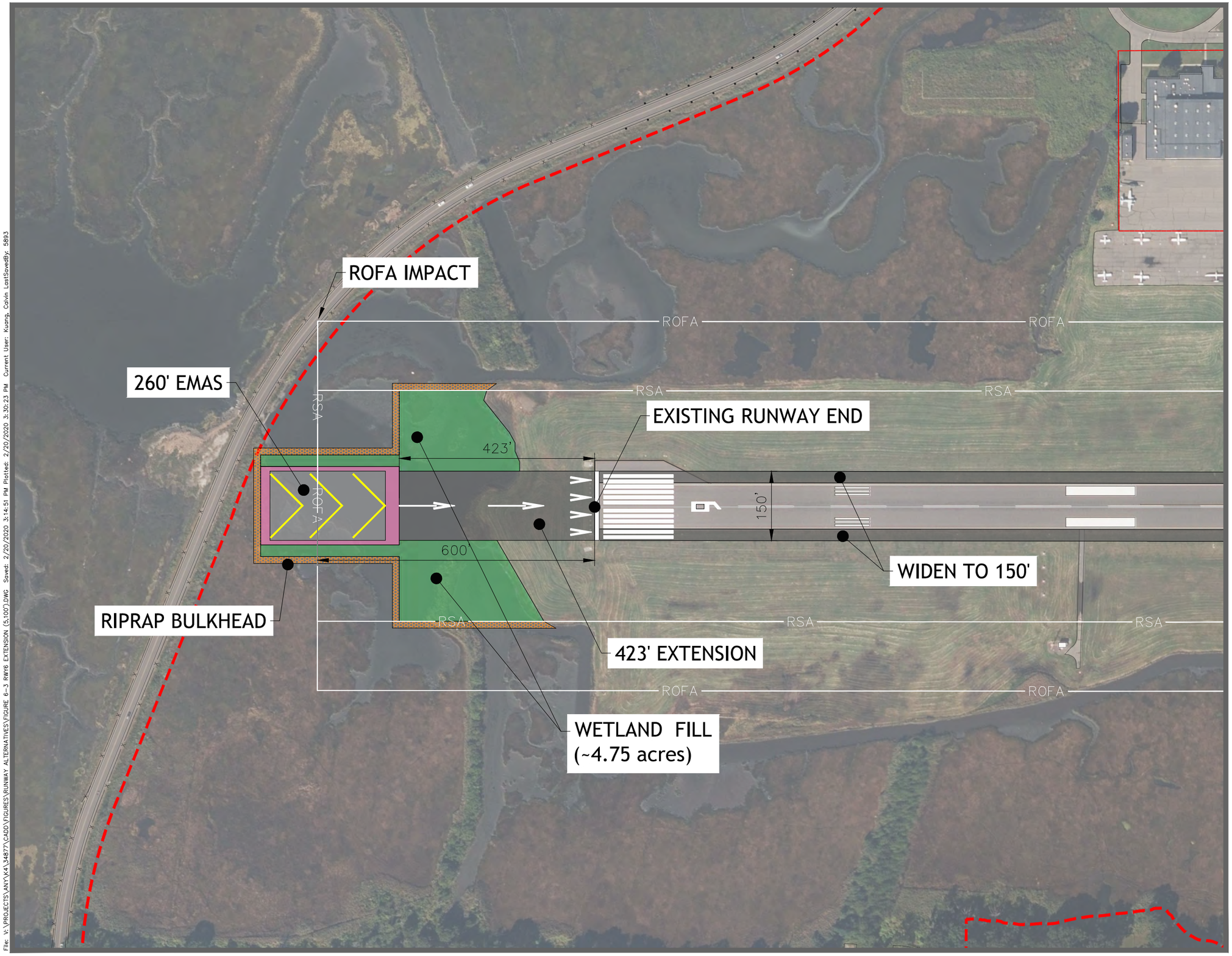
LEGEND

- EMAS BED
- RIPRAP BULKHEAD
- NEW PAVEMENT

IGOR I SIKORSKY MEMORIAL AIRPORT

MASTER PLAN UPDATE

Figure 6-2
Runway 6-24 EMAS



IGOR I SIKORSKY MEMORIAL AIRPORT

MASTER PLAN UPDATE

GRAPHIC SCALE (FEET)

0 100 200 400

- Airport Property Boundary
- Future Runway Pavement
- Future EMAS Bed
- Future EMAS Foundation
- Future Wetland Fill

DECLARED DISTANCES			
RUNWAY 6		RUNWAY 24	
TORA	5,100	TORA	5,100
TODA	5,100	TODA	5,100
ASDA	5,100	ASDA	5,100
LDA	4,677'	LDA	4,780'

Figure 6-3
Runway 6 Extension (5,100')

IGOR I SIKORSKY MEMORIAL AIRPORT

MASTER PLAN UPDATE

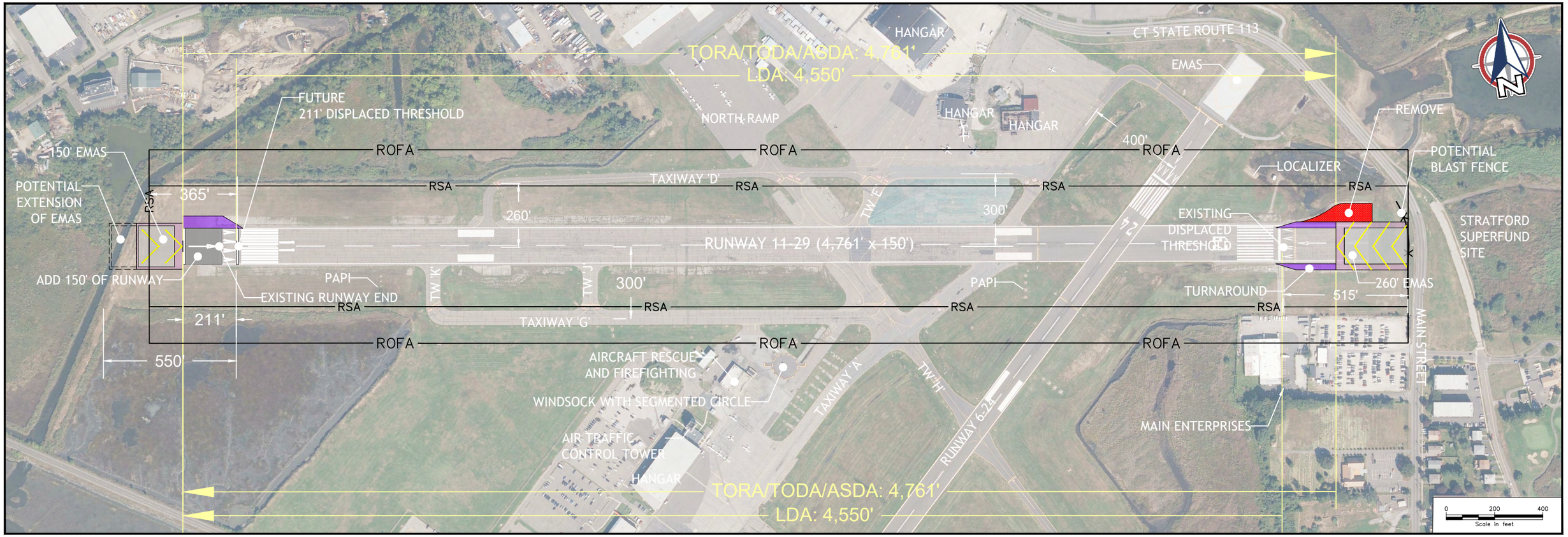
0 200 400
Scale in feet

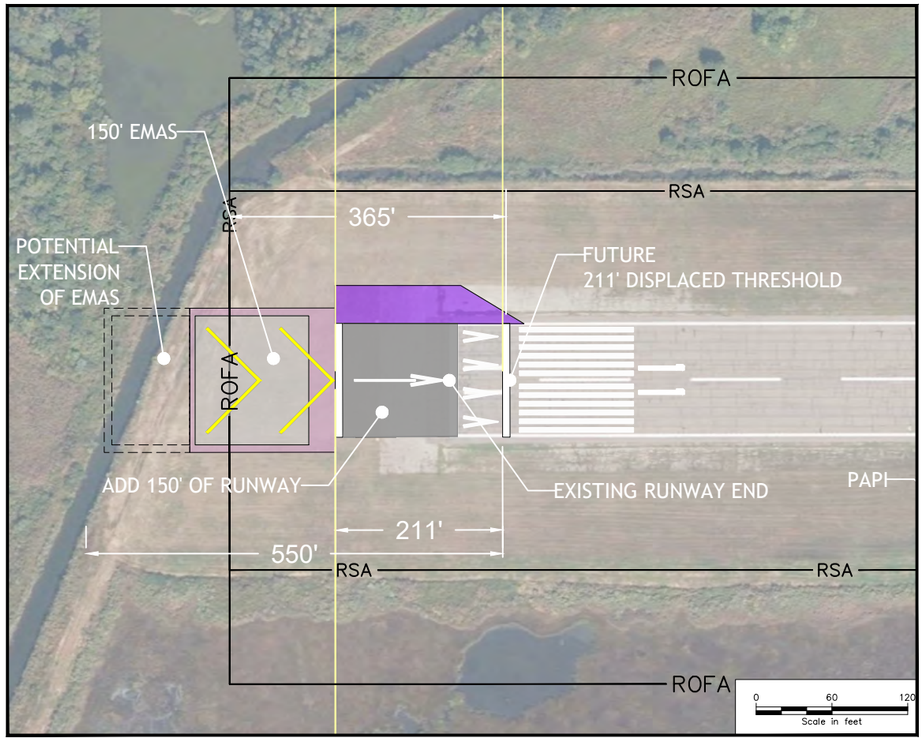
LEGEND

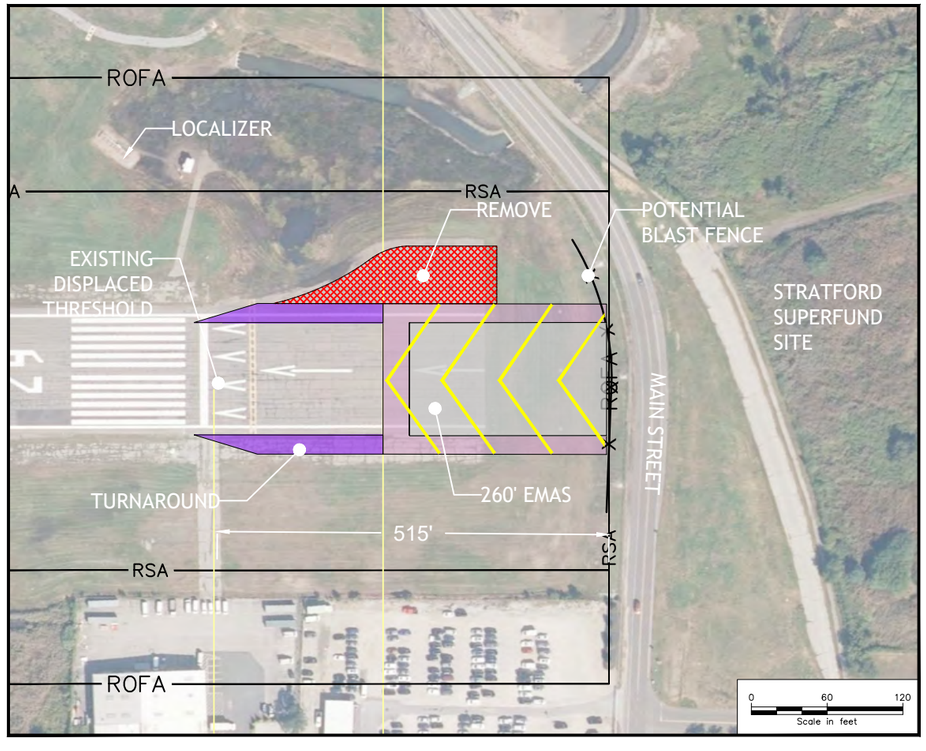
MILL AND OVERLAY - RUNWAY

BLAST FENCE

Figure 6-4
Runway 11-29 Rehabilitation







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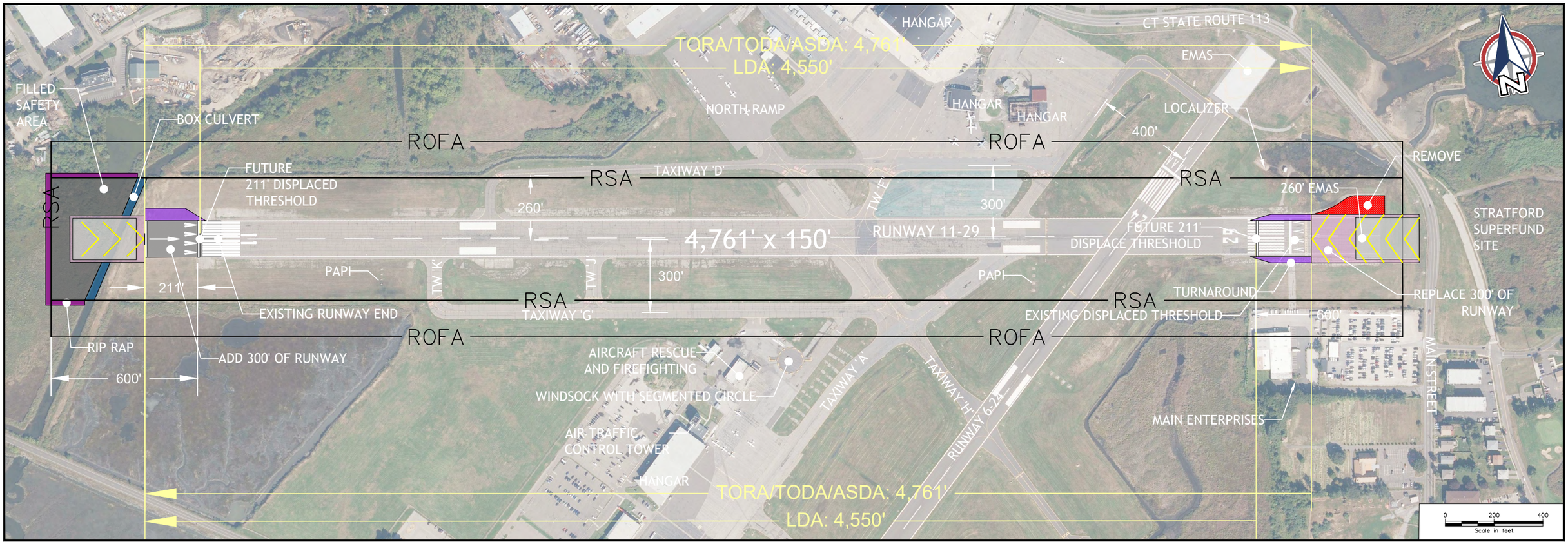
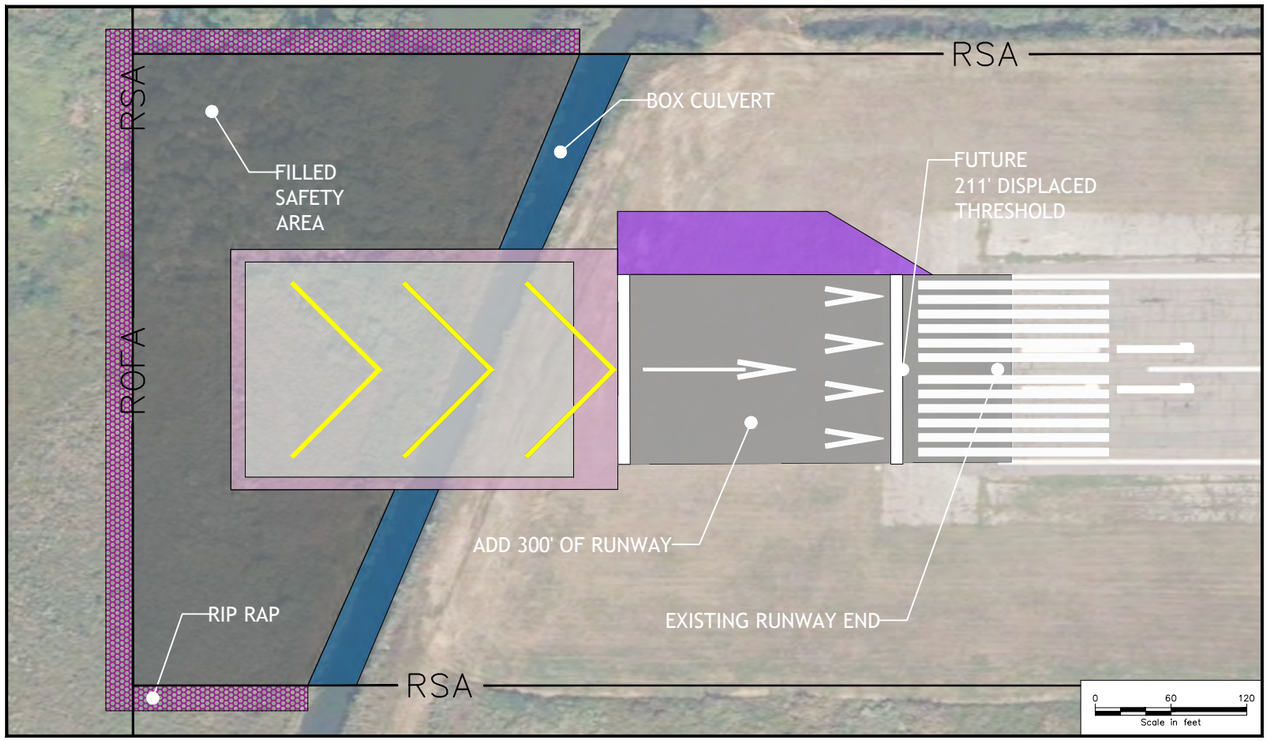
MASTER PLAN UPDATE

DECLARED DISTANCES			
RUNWAY 11		RUNWAY 29	
TORA	4,761'	TORA	4,761'
TODA	4,761'	TODA	4,761'
ASDA	4,761'	ASDA	4,761'
LDA	4,550'	LDA	4,550'

Figure 6-5
Runway 11-29 150' Shift





DECLARED DISTANCES			
RUNWAY 11		RUNWAY 29	
TORA	4,761'	TORA	4,761'
TODA	4,761'	TODA	4,761'
ASDA	4,761'	ASDA	4,761'
LDA	4,550'	LDA	4,550'

LEGEND

- NEW PAVEMENT
- EMAS BED

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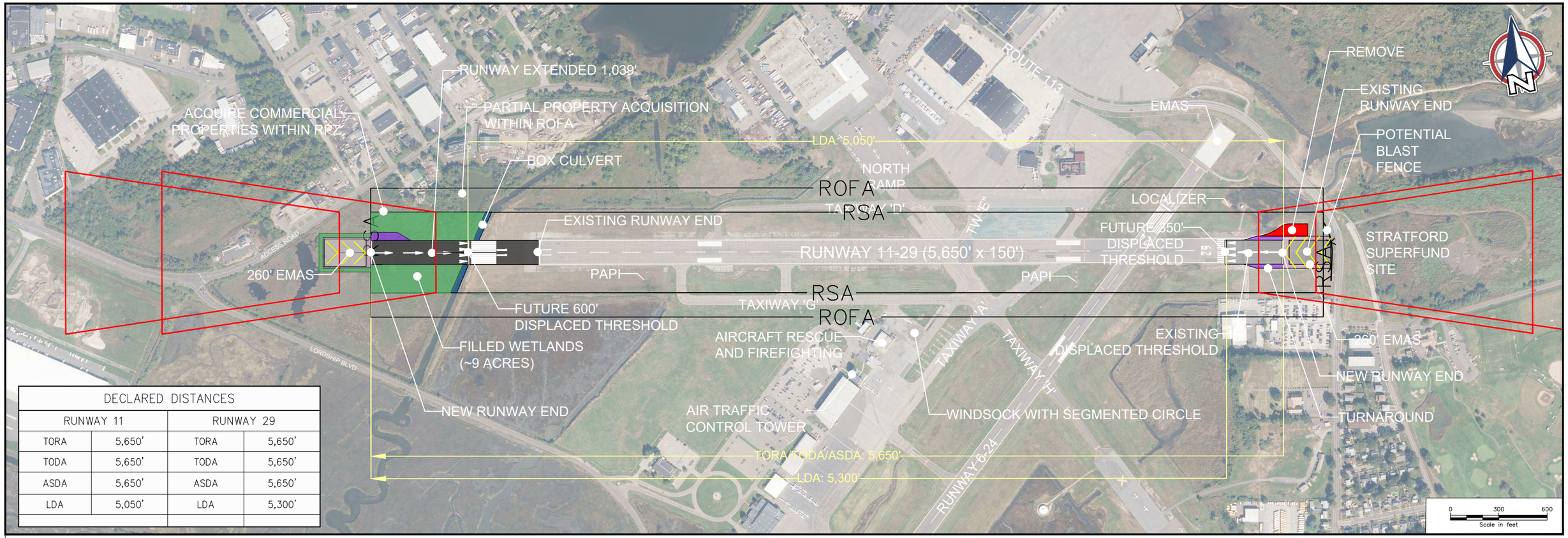
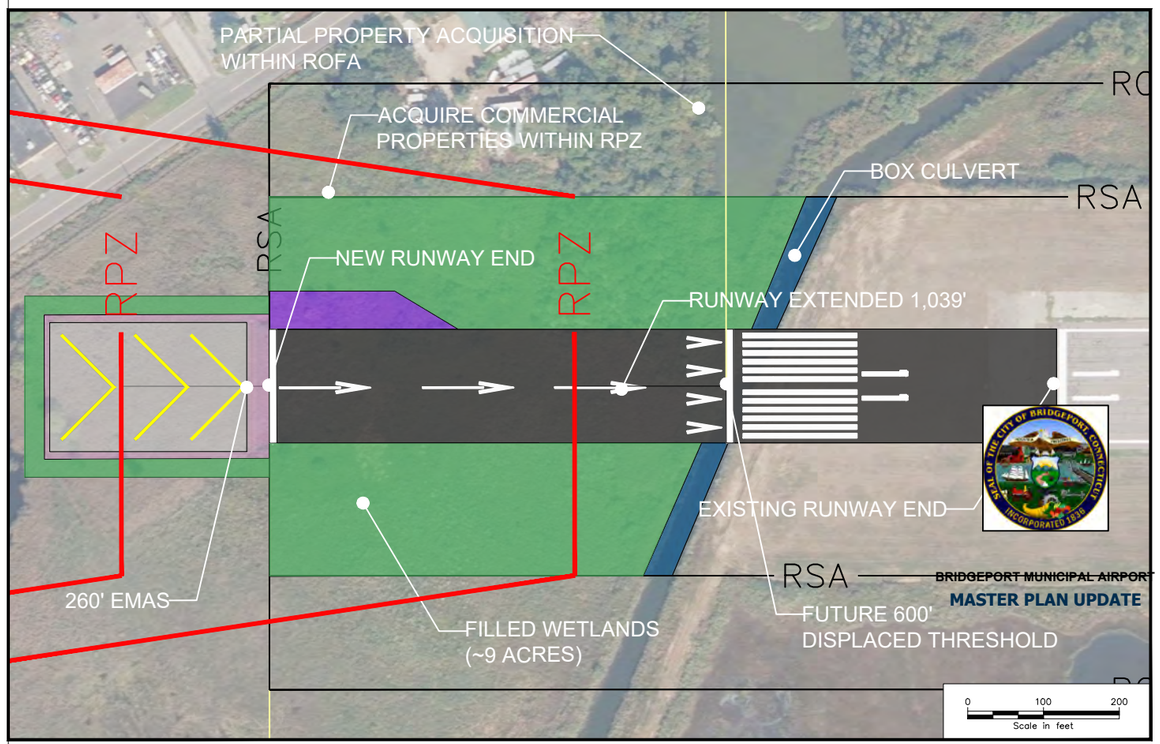
Figure 6-6
Runway 11-29 300' Shift



DECLARED DISTANCES			
RUNWAY 11		RUNWAY 29	
TORA	5,650'	TORA	5,650'
TODA	5,650'	TODA	5,650'
ASDA	5,650'	ASDA	5,650'
LDA	5,050'	LDA	5,300'



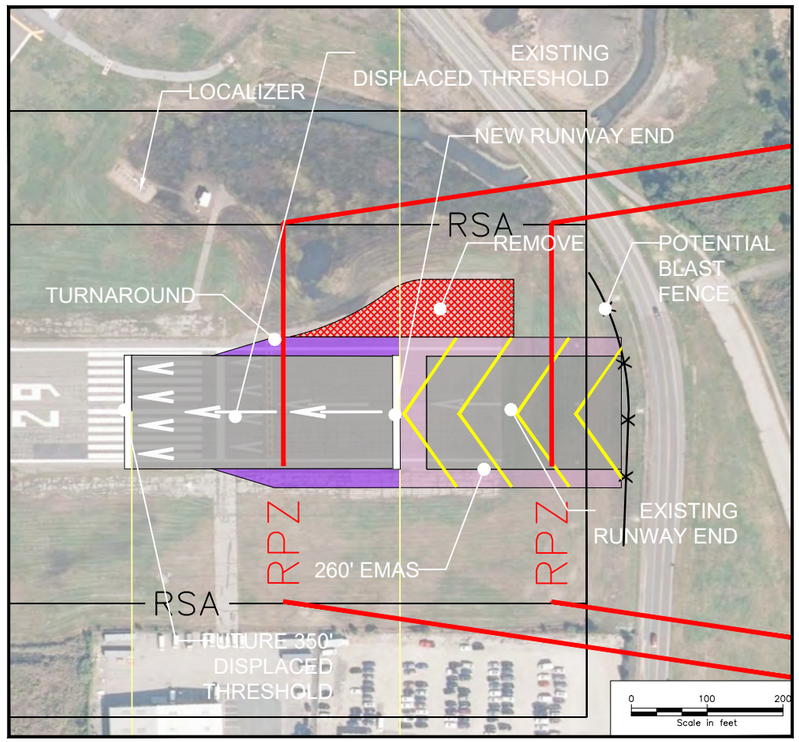


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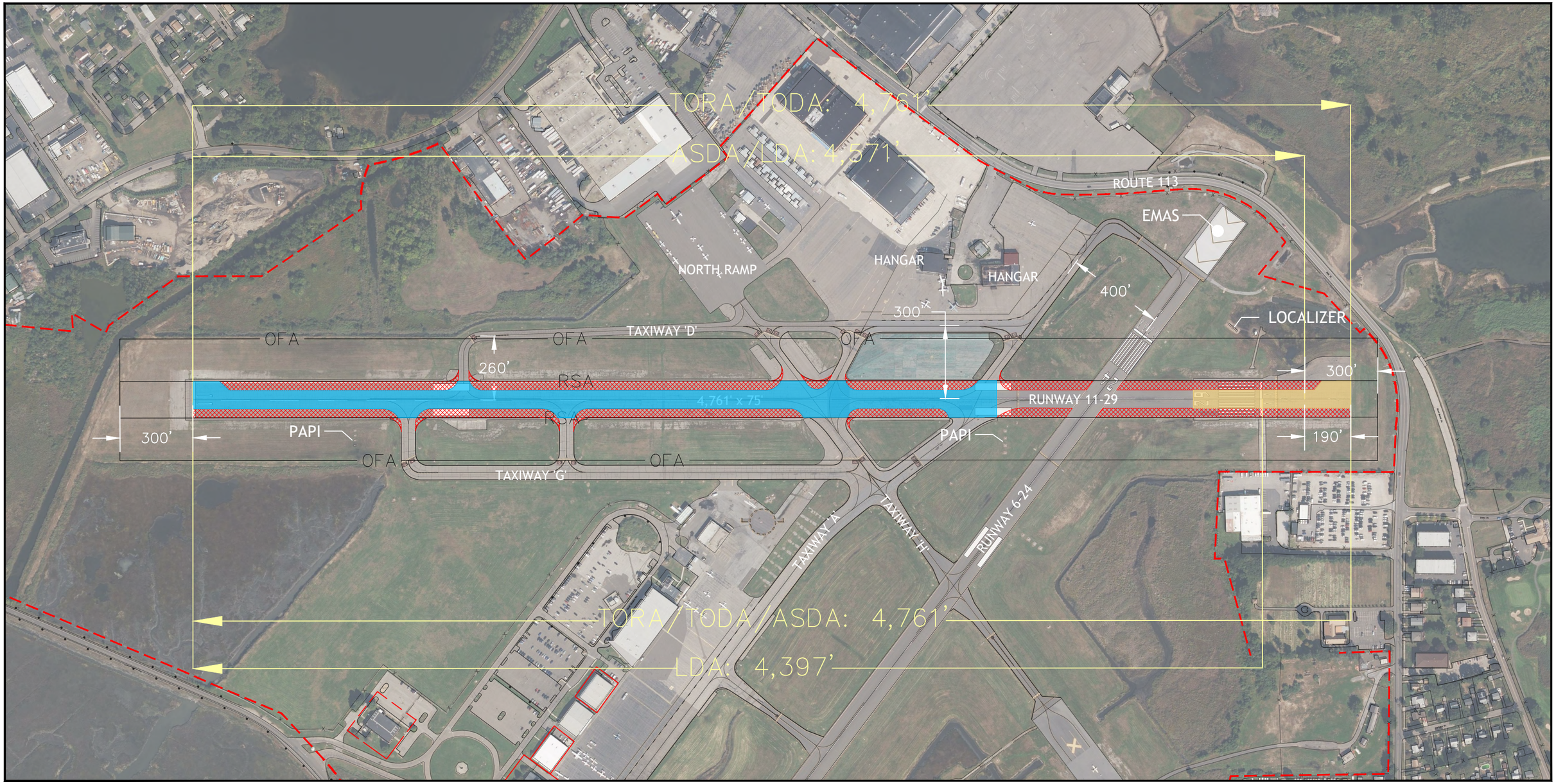
Figure 6-7
Runway 11-29 Extension



GRAPHIC SCALE (FEET)

0 200 400 800

LEGEND

- MILL AND OVERLAY - RUNWAY
- FULL DEPTH RECONSTRUCTION - RUNWAY
- PAVEMENT REMOVAL

DECLARED DISTANCES			
RUNWAY 11		RUNWAY 29	
TORA	4,761'	TORA	4,761'
TODA	4,761'	TODA	4,761'
ASDA	4,761'	ASDA	4,761'
LDA	4,571'	LDA	4,397'

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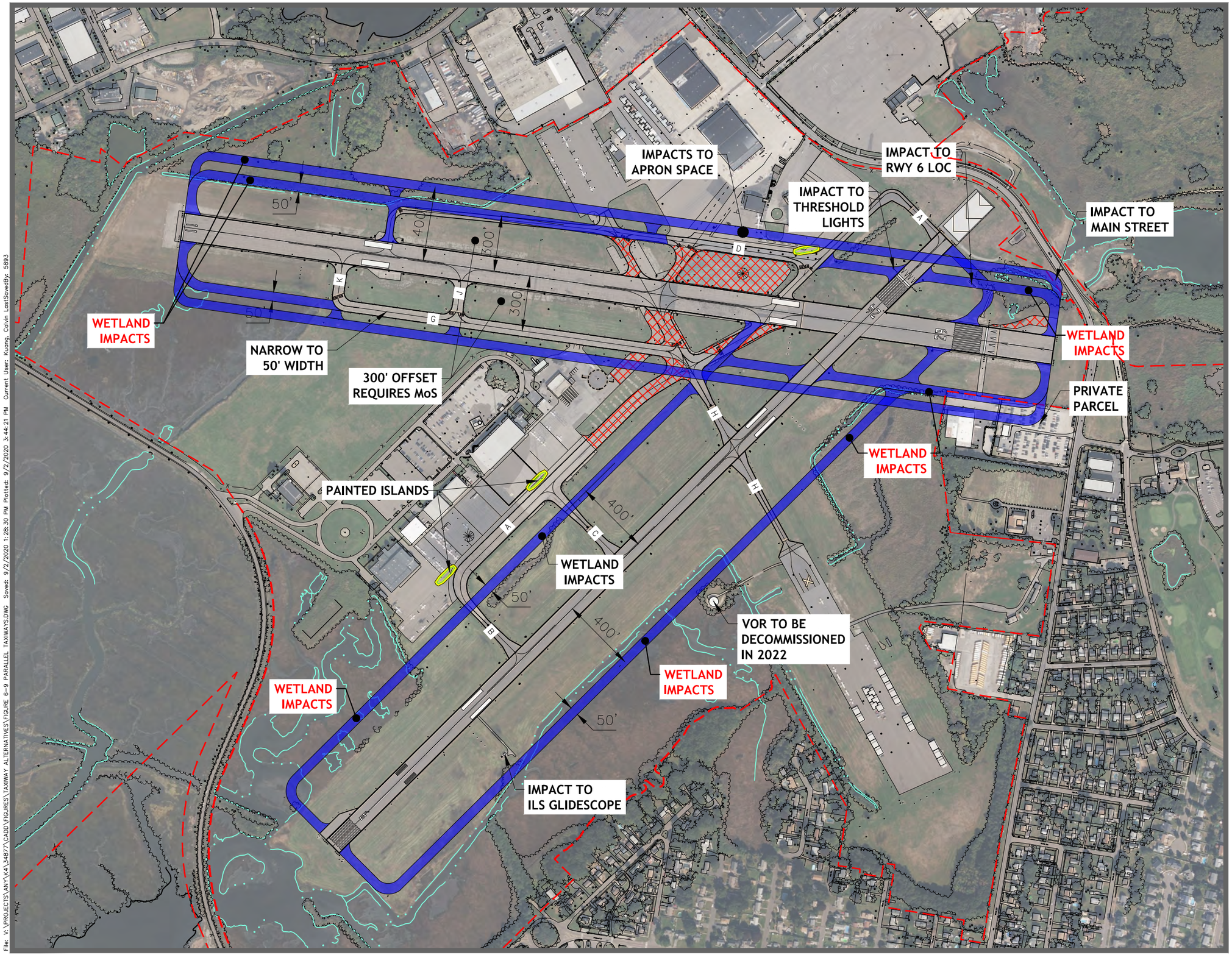
Figure 6-8
ARC B Standards



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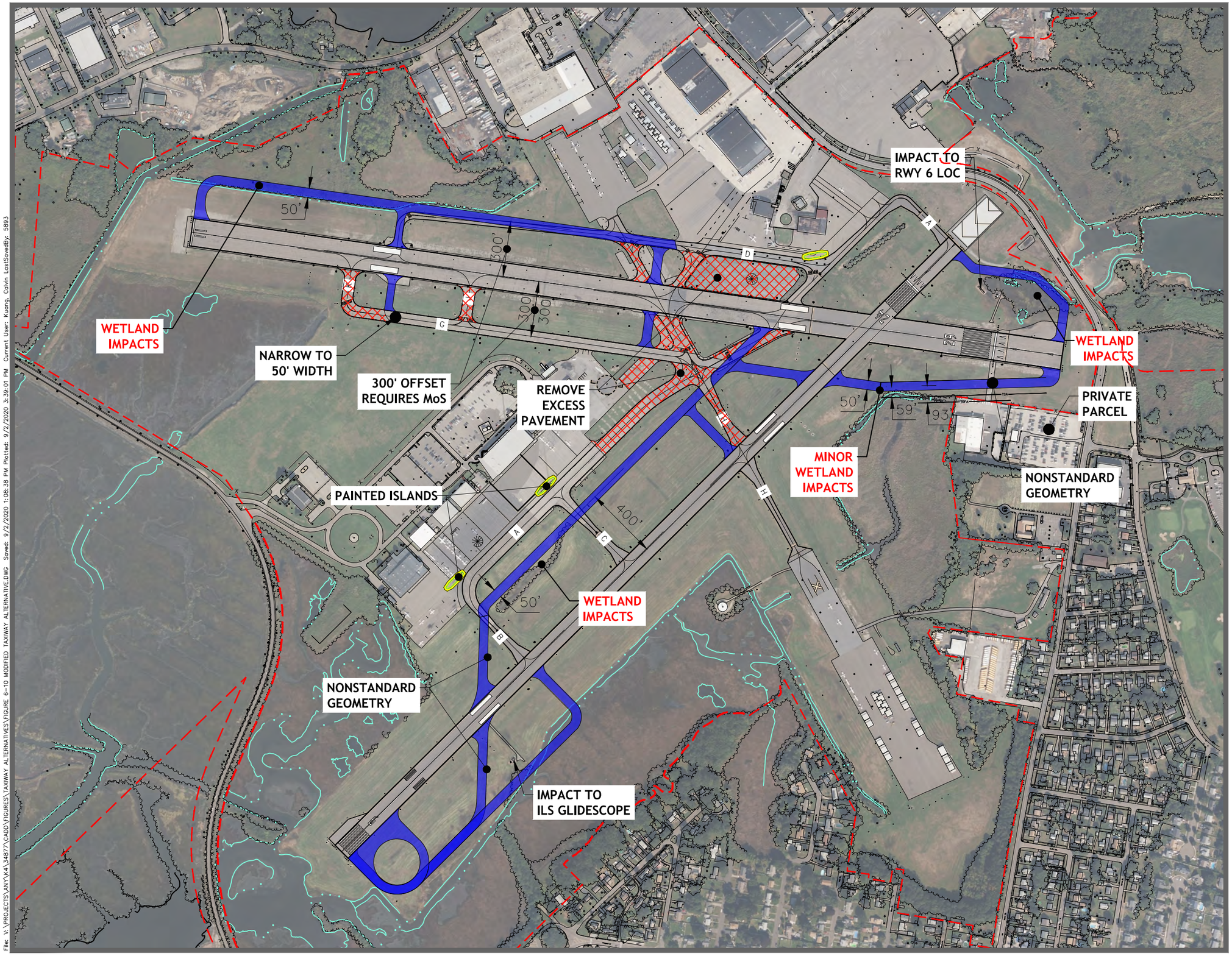
GRAPHIC SCALE (FEET)

0 250 500 1000

LEGEND

- WETLANDS
- POTENTIAL TAXIWAY PAVEMENT
- PAVEMENT REMOVAL
- PROPERTY

Figure 6-9
Full Parallel Taxiways



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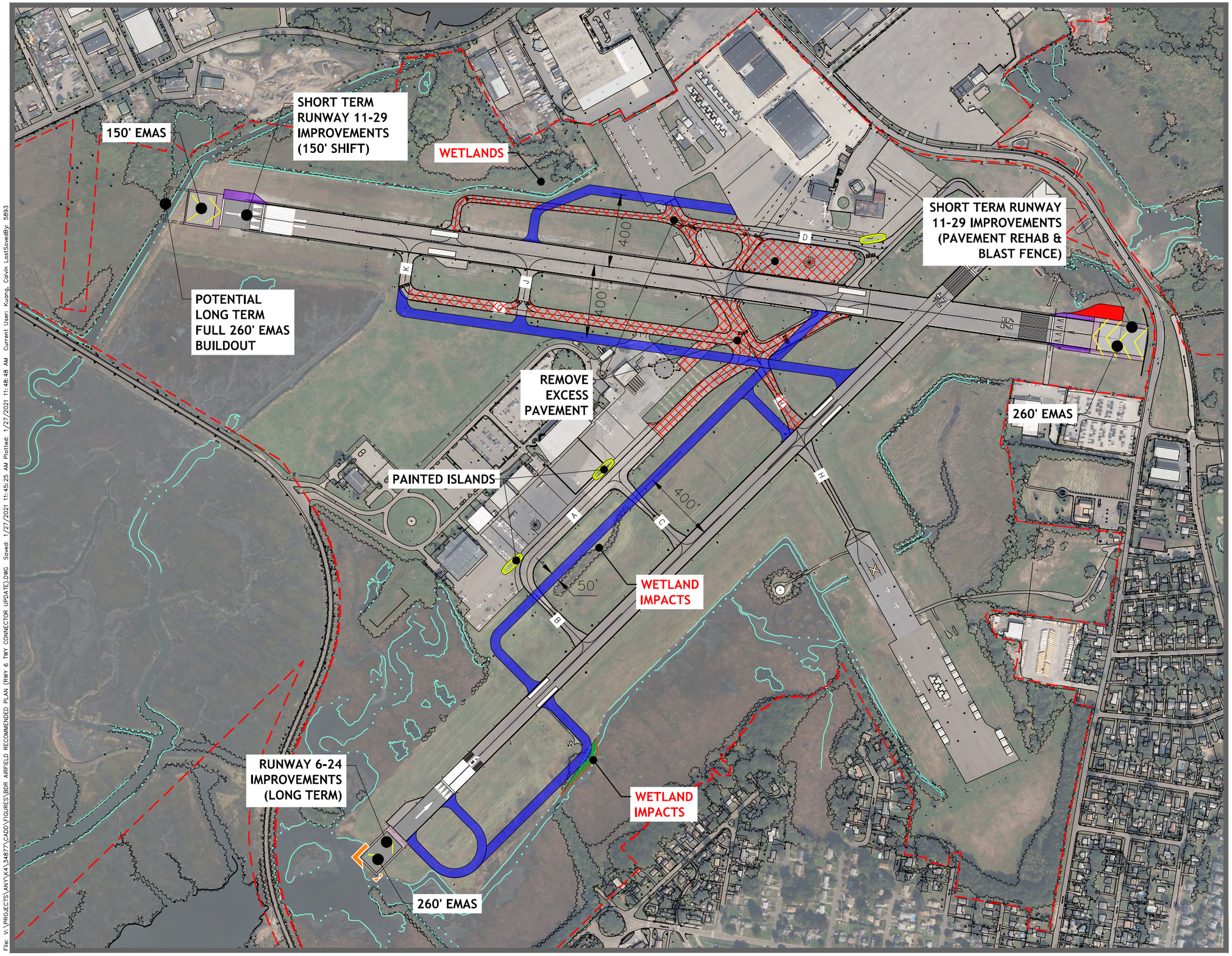
GRAPHIC SCALE (FEET)

0 250 500 1000

LEGEND

- WETLANDS
- POTENTIAL TAXIWAY PAVEMENT
- PAVEMENT REMOVAL
- PROPERTY

Figure 6-10
Modified Taxiway Alternative



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GRAPHIC SCALE (FEET)

0 250 500 1000

LEGEND

- WETLANDS
- POTENTIAL TAXIWAY PAVEMENT
- PAVEMENT REMOVAL
- PROPERTY
- NEW RUNWAY PAVEMENT
- EMAS BED

Figure 6-11
Airfield Recommendations

Federal Property

North Apron

West Development Area

East Apron/CASC Musuem

Main Apron

South Apron

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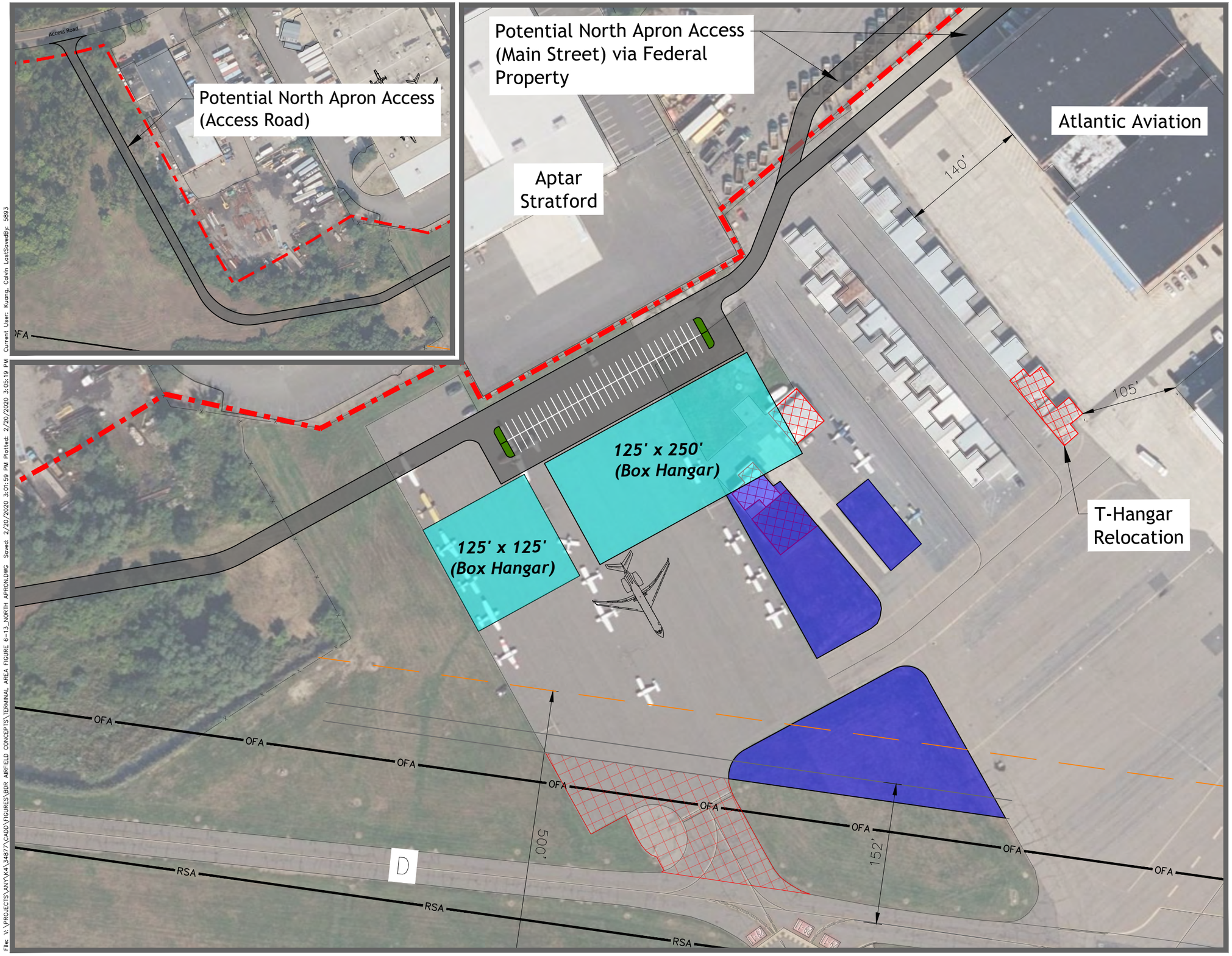
GRAPHIC SCALE (FEET)

0 50 100 200

Figure 6-12

Atlantic Aviation & East Apron



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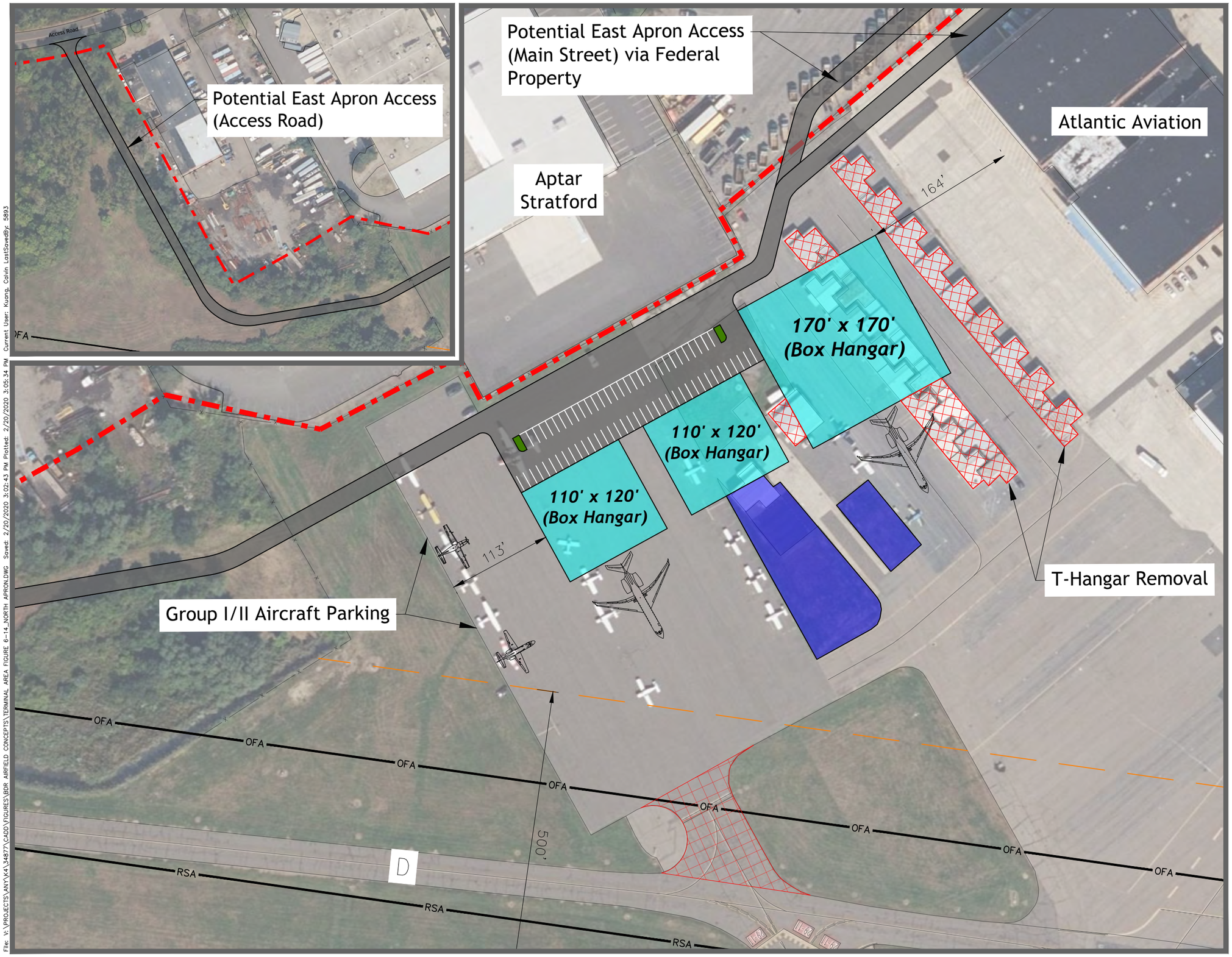
GRAPHIC SCALE (FEET)

0 50 100 200

LEGEND

- Airport Property Boundary
- Future Hangar Development
- Future Apron
- Future Vehicle Parking Area
- Pavement/Building Removal

Figure 6-13
North Apron



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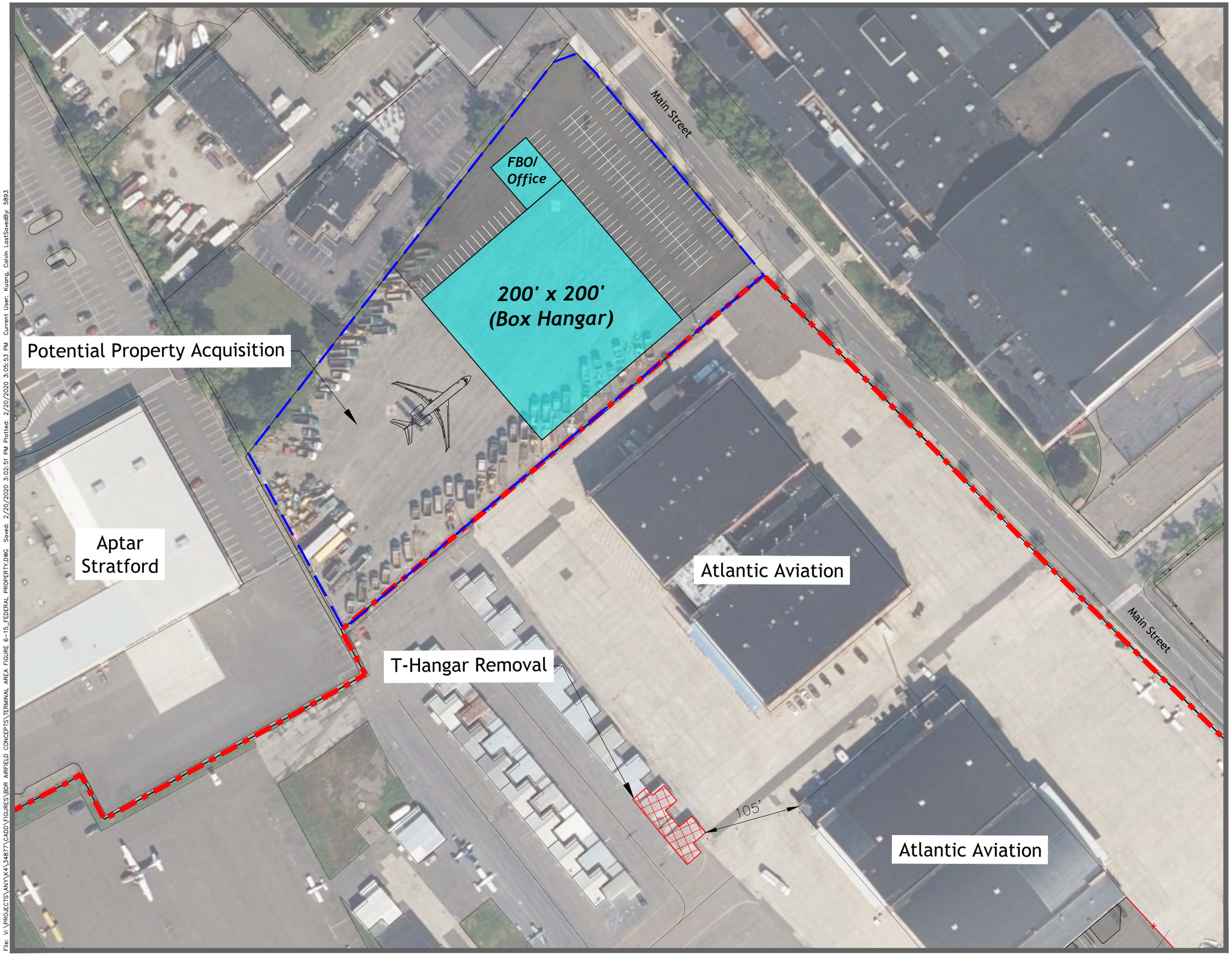
GRAPHIC SCALE (FEET)

0 50 100 200

LEGEND

- Airport Property Boundary
- Future Hangar Development
- Future Apron
- Future Vehicle Parking Area
- Pavement/Building Removal

Figure 6-14
North Apron



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MASTER PLAN UPDATE

GRAPHIC SCALE (FEET)

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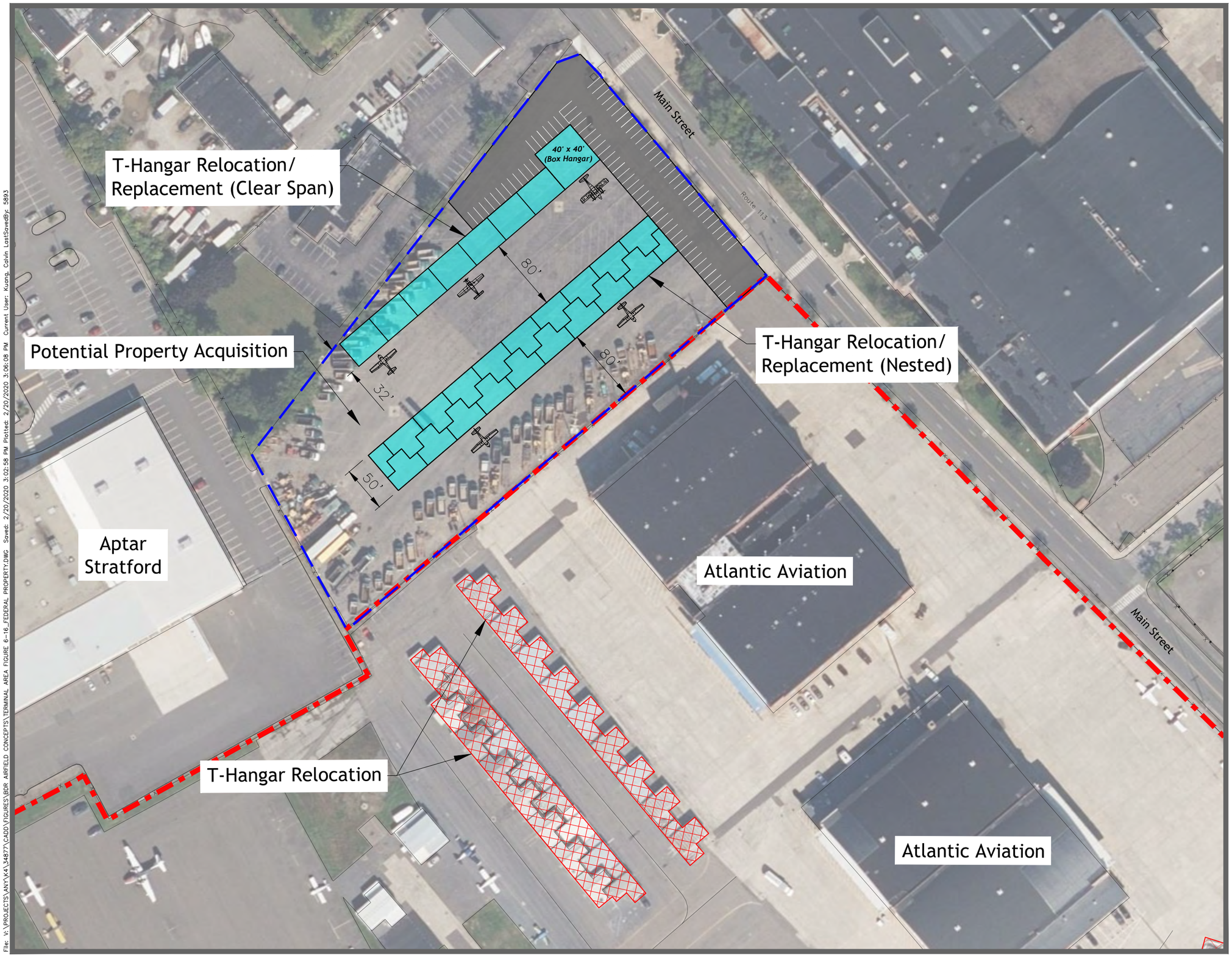
LEGEND

- Airport Property Boundary
- Potential Property Acquisition
- Future Hangar Development
- Future Vehicle Parking Area
- Pavement/Building Removal

Figure 6-15
Federal Property



IGOR I SIKORSKY MEMORIAL AIRPORT

MASTER PLAN UPDATE

GRAPHIC SCALE (FEET)

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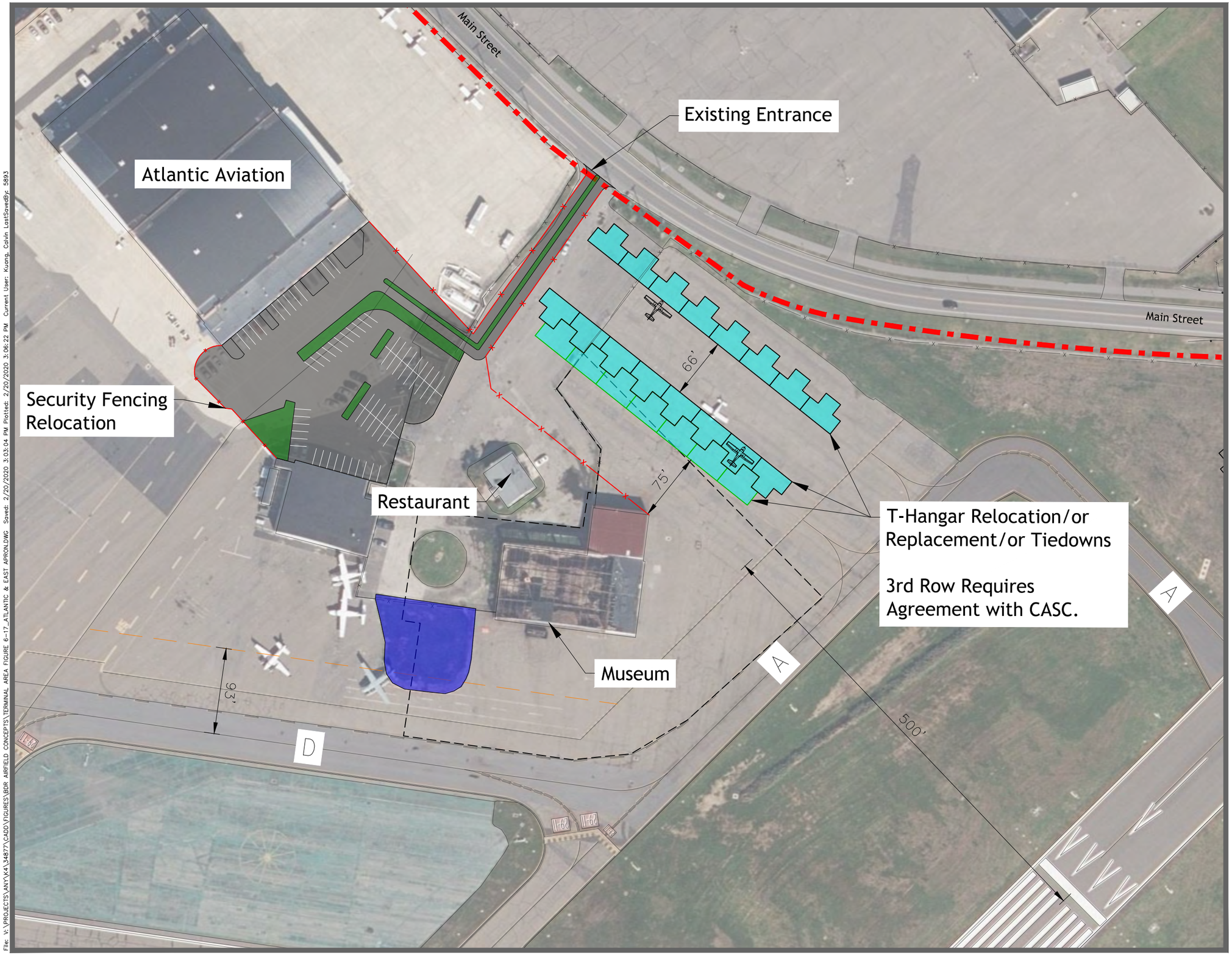
LEGEND

- Airport Property Boundary
- Potential Property Acquisition
- Future Hangar Development
- Future Vehicle Parking Area
- Pavement/Building Removal

Figure 6-16
Federal Property



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GRAPHIC SCALE (FEET)

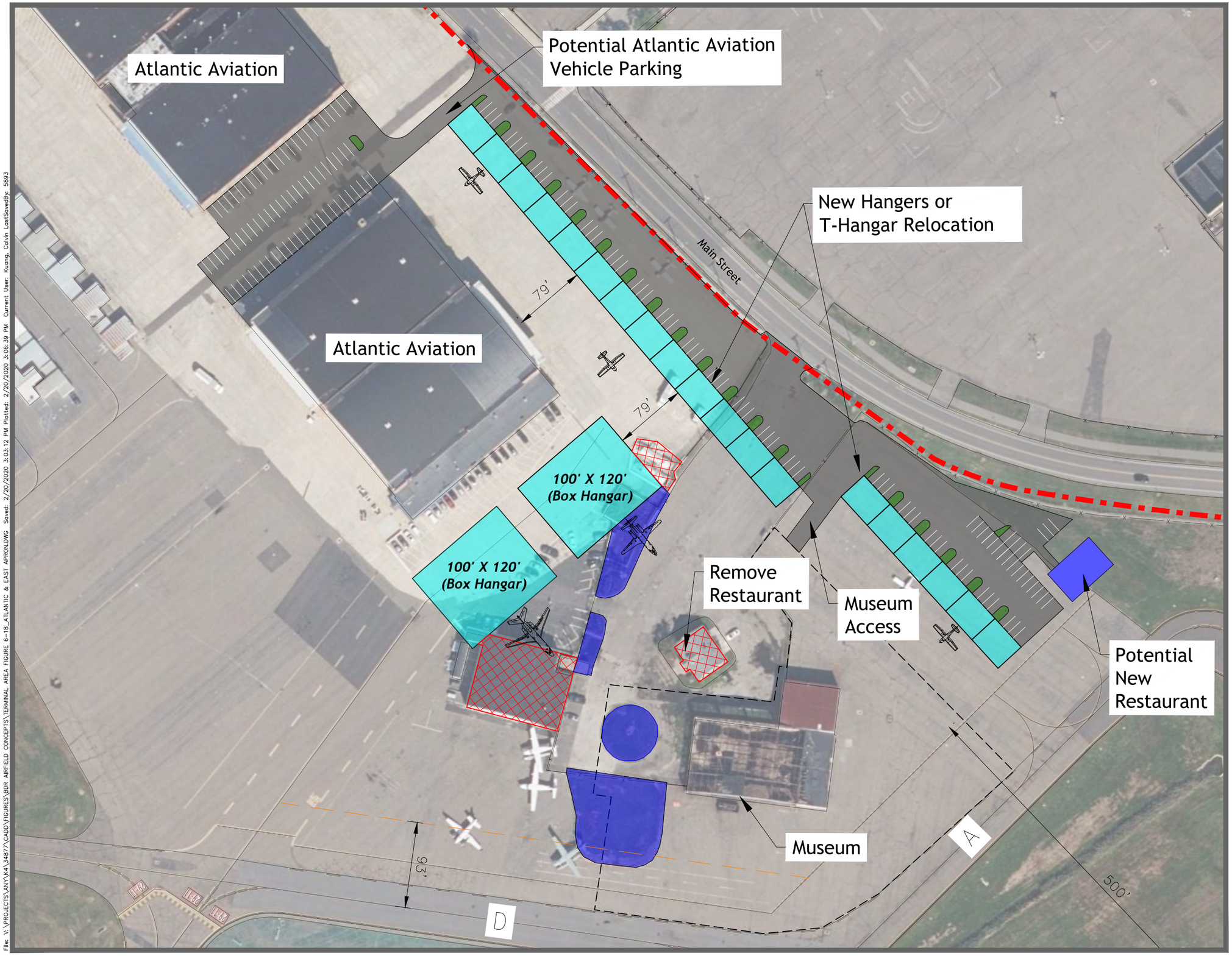
0 50 100 200

LEGEND

- Airport Property Boundary
- Future Security Fencing
- Museum Lease Boundary
- Future Hangar Development
- Future Apron
- Future Vehicle Parking Area

Figure 6-17

Atlantic Aviation & East Apron



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MASTER PLAN UPDATE

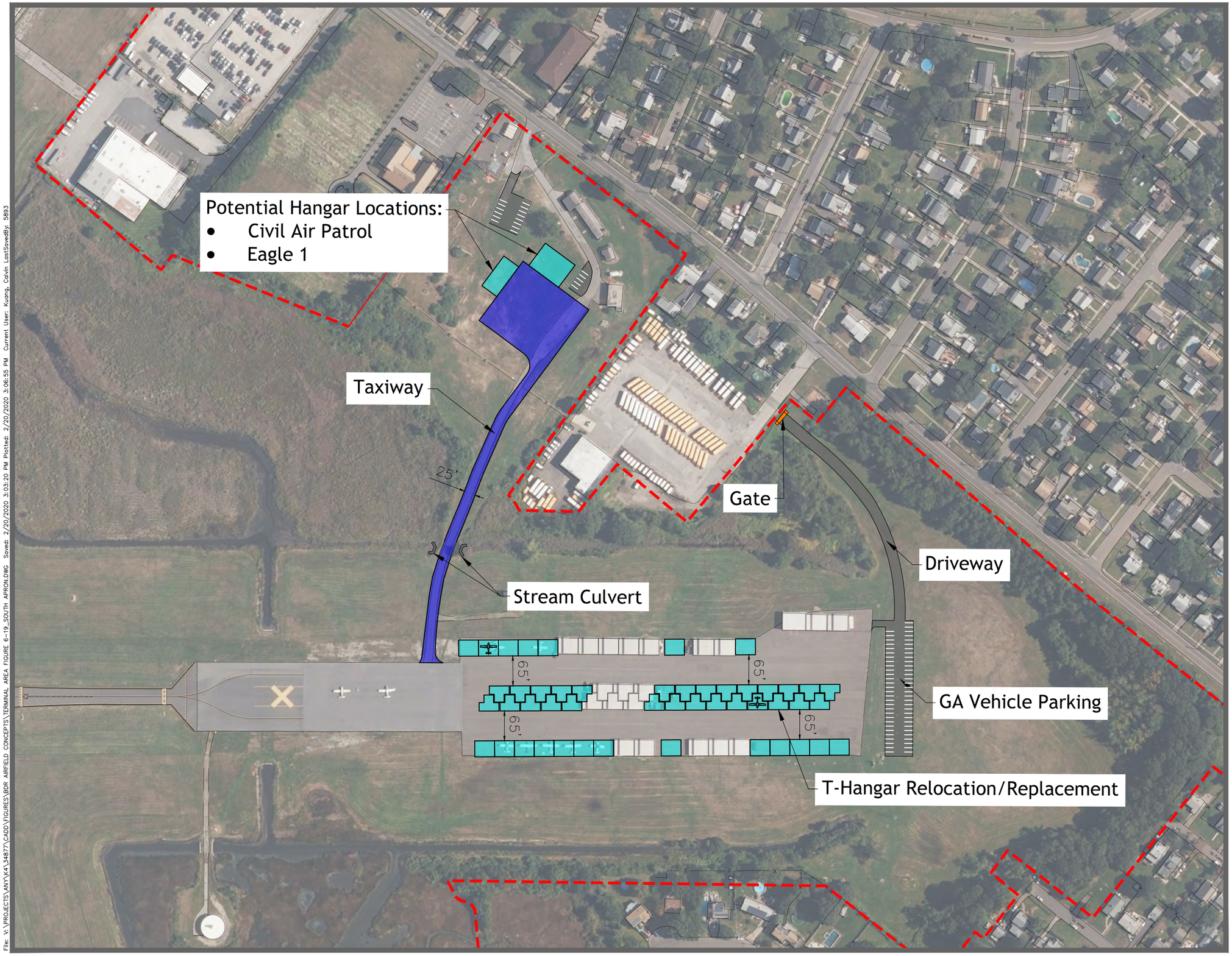
GRAPHIC SCALE (FEET)

0 50 100 200

LEGEND

- Airport Property Boundary
- Future Security Fencing
- Museum Lease Boundary
- Future Hangar Development
- Future Apron
- Future Vehicle Parking Area
- Pavement/Building Removal

Figure 6-18
Atlantic Aviation & East Apron



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MASTER PLAN UPDATE

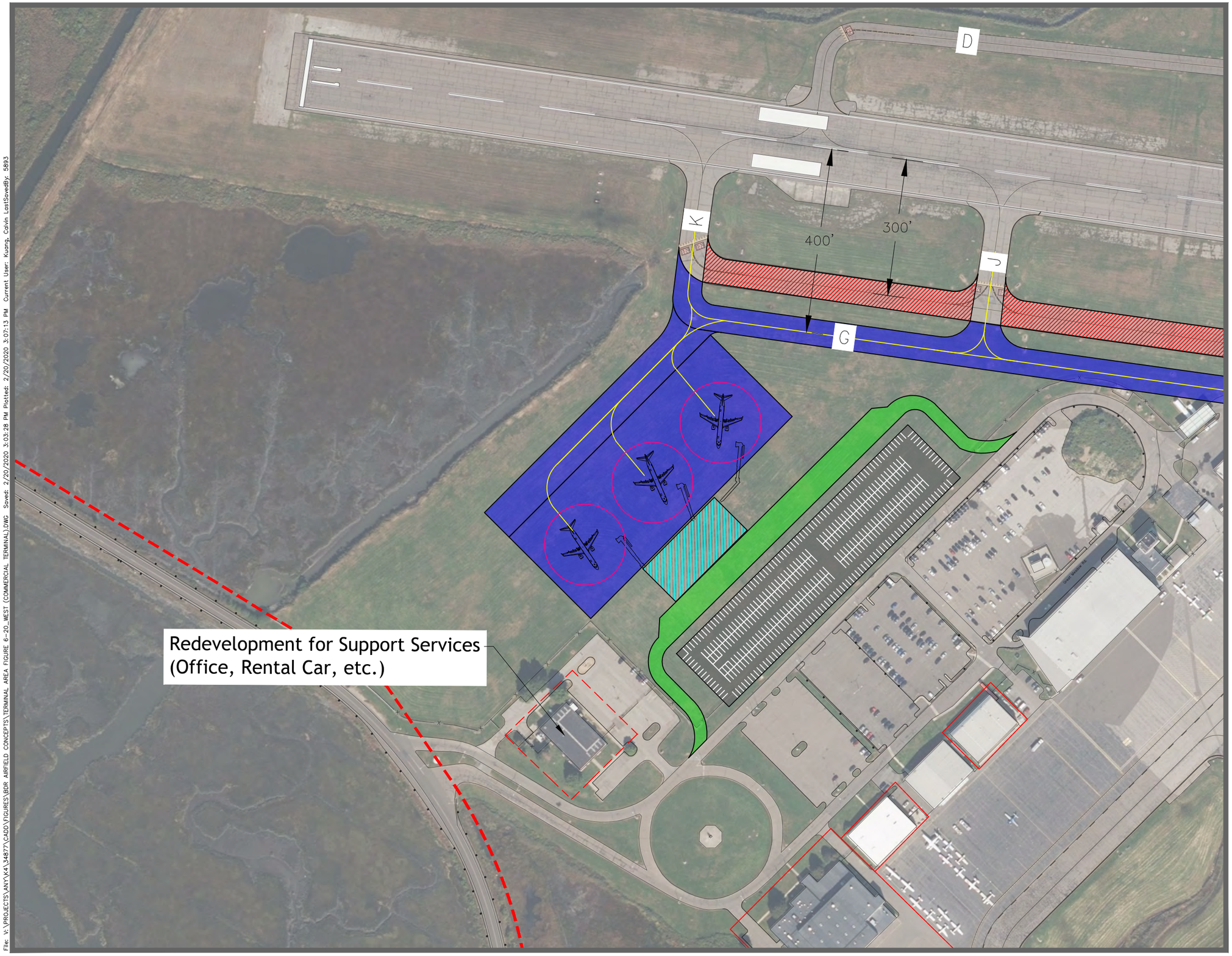
GRAPHIC SCALE (FEET)

0 100 200 400

LEGEND

- Airport Property Boundary
- Future Hangar Development
- Future Vehicle Parking Area
- Future Airfield Pavement

Figure 6-19
South Apron Area



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MASTER PLAN UPDATE

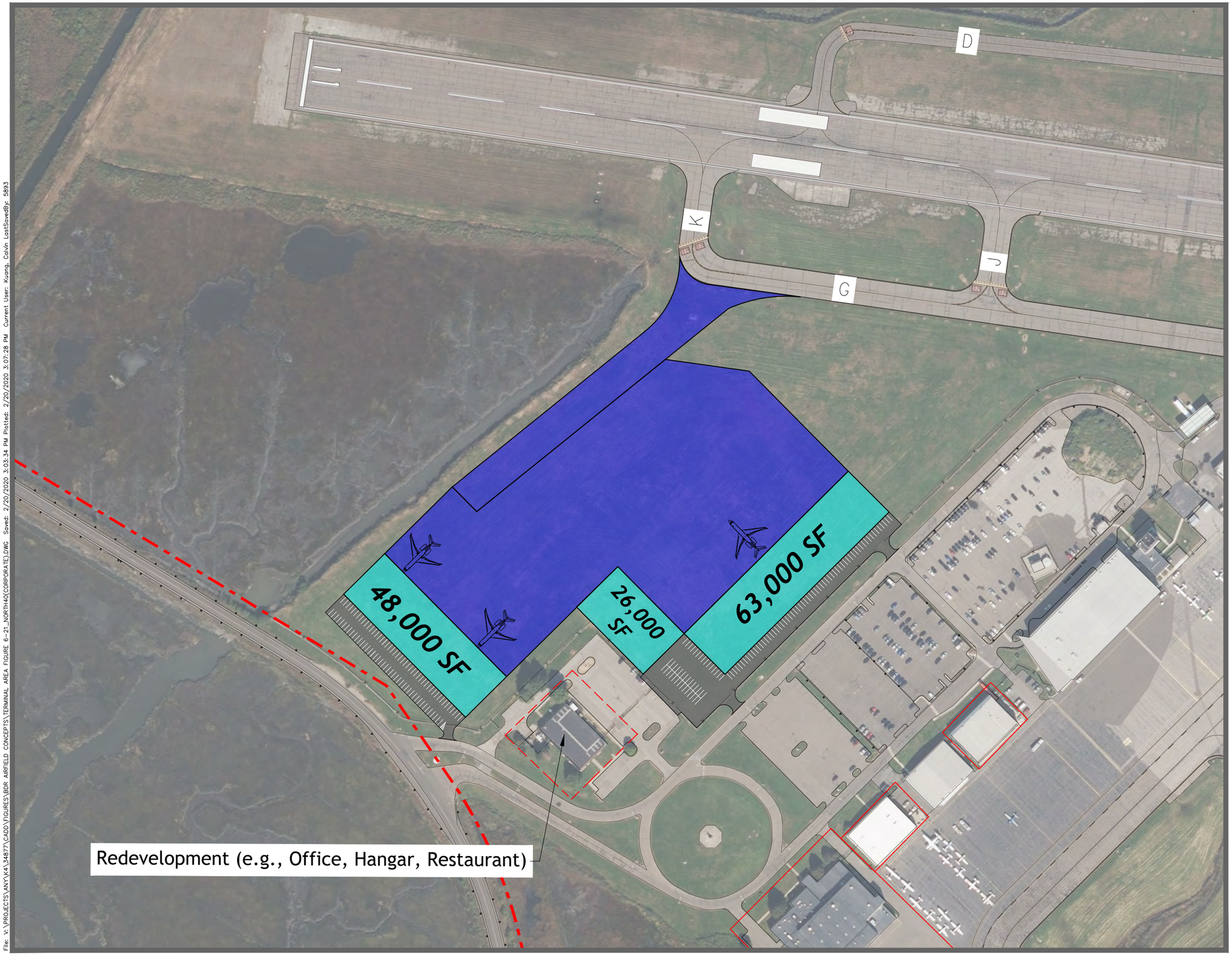
GRAPHIC SCALE (FEET)

0 100 200 400

LEGEND

- Airport Property Boundary
- Future Passenger Terminal
- Future Vehicle Parking Area
- Future Airfield Pavement
- Future Pavement Removal
- Future Terminal Curbside

Figure 6-20
West Development Area



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MASTER PLAN UPDATE

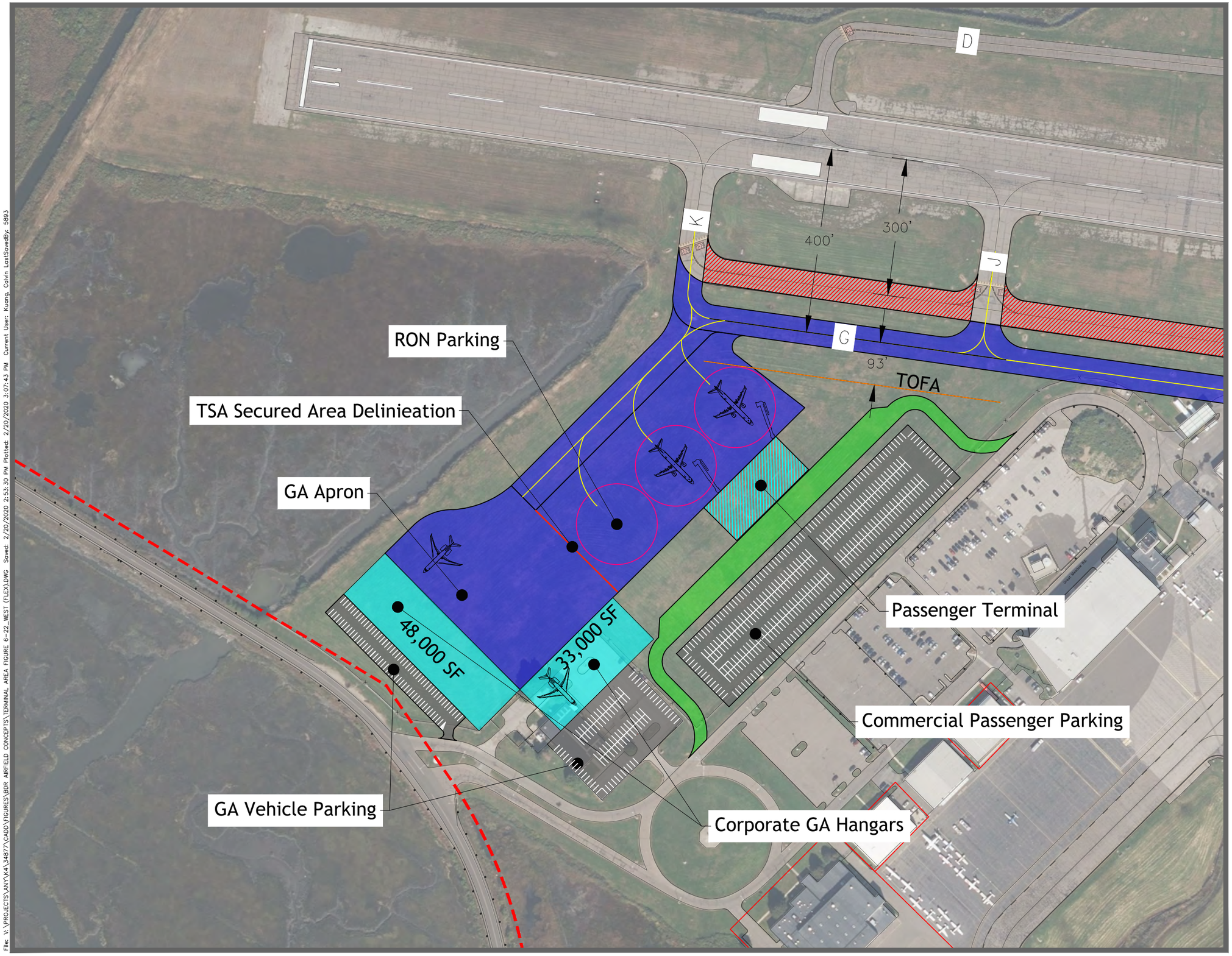
GRAPHIC SCALE (FEET)

0 100 200 400

LEGEND

- Airport Property Boundary
- Future Hangar Development
- Future Apron/Taxiway
- Future Vehicle Parking Area

Figure 6-21
West Development Area



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MASTER PLAN UPDATE

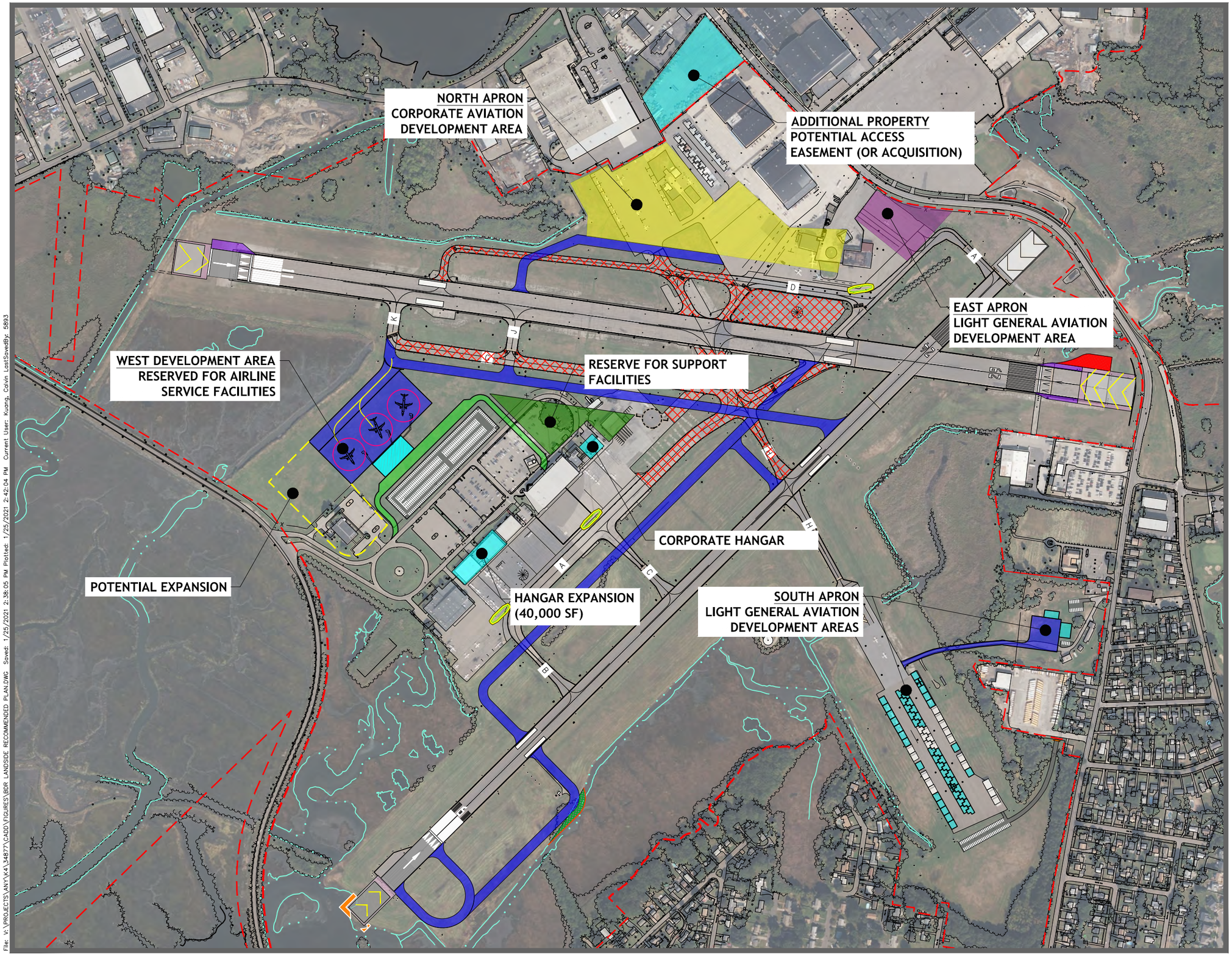
GRAPHIC SCALE (FEET)

0 100 200 400

LEGEND

- Airport Property Boundary
- Future Buildings
- Future Vehicle Parking Area
- Future Airfield Pavement
- Future Pavement Removal
- Future Terminal Curbside

Figure 6-22
West Development Area



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MASTER PLAN UPDATE

GRAPHIC SCALE (FEET)

0 250 500 1000

LEGEND

- WETLANDS
- POTENTIAL TAXIWAY PAVEMENT
- PAVEMENT REMOVAL
- PROPERTY
- NEW RUNWAY PAVEMENT
- EMAS BED

Figure 6-23
Landside Recommendations

7 Recommended Plan

This chapter presents the Airport Capital Improvement Plan (ACIP) and Airport Layout Plan (ALP) that is associated with recommended future developments at Sikorsky Memorial Airport (BDR). The ACIP provides a phasing plan for the projects proposed during the 20-year planning period. The ALP illustrates the proposed future airport layout and serves as the official development plan for the Airport.

7.1 Summary of the Recommended Plan

Chapter 6 presented development alternatives and the recommended airport development plans for BDR. The plan contains recommendations for airfield and landside development. The recommendations were depicted in Figure 6-23 and include the following:

Airfield Recommendations

- Runway 11-29 Pavement Rehabilitation (Figure 6-4) – Runway 11-29 is in poor condition. The City's goal is to utilize state economic development funding to conduct pavement surface repairs to Runway 11-29 to enable continued use by all aircraft. The goal is to commence this project in 2020, or as soon funding authorization permits, and maximize use of the runway by airport users.

- Runway 11-29 – 150' Shift (Figure 6-5) – As presented above, this alternative can provide substantial safety benefit with respect to FAA design standards. The project would eliminate 150' of runway adjacent to Main Street and add that same length on the opposite end. The result is a shift in the runway away from Main Street, which can be implemented without wetland impacts. A key safety component of this project is adding an Engineered Materials Arresting System (EMAS) at both ends of the runway in lieu of Runway Safety Area (RSA) extensions, which would not be feasible at BDR. Although this project does not eliminate all non-standard conditions, it provide a substantial safety improvement over current conditions.

  A potential second phase of this project is recommended to extend the western EMAS bed into an environmental sensitive area containing an open drainage channel. This second phase would complete the RSA improvements, but would require a large culvert of the existing channelized stream. As the required environmental permit approvals are not assured, it is prudent to defer this component into a second phase so as to not reduce the feasibility of the primary safety improvements.

  The improvements will likely shift some jet aircraft use from Runway 24 to Runway 29, which would become the primary runway at BDR, and address the three key goals:
  - **Safety**: Runway 11-29 can ultimately provide standard RSA and ROFA

- **Capability**: Runway 11-29 will maintain its length and can provided greater landing distances of up to 4,450 feet. Runway 11-29 will remain longer and wider than Runway 6-24.
- **Noise**: The surrounding community is very noise sensitive. Improvements to Runway 11-29 will foster more of the existing jet operations to use to this runway, which reduces aircraft noise in the Lordship neighborhood and over the beach communities in Milford.

This project will also include tree obstruction removal beyond both ends of Runway 11-29. As a coastal airport, large areas of tree obstructions are not present, but some removals are needed to ensure continued airspace protection for runway operations. At minimum, the removals will clear the regulated surfaces to the runway landing threshold locations; however, more comprehensive removals should be considered for departure surfaces which are generally greater in area. Some tree obstructions to the runway ends are located on Town of Stratford property, and removals would require coordination with the Town. However, all project costs and any environmental approvals would be the responsibility of the Airport.

It may also be beneficially to combine this effort with tree removals beyond Runway 24. This option could be discussed the FAA and Town, as there are cost efficiency and environmental benefits to consolidating small tree removal efforts. Nevertheless, the overall plan includes a separate Obstruction Removal project in the mid-term planning period in the event additional tree obstruction clearing becomes necessary.

Lastly, it is noted that the Runway 11-29 Shift project will require environmental review under the National Environmental Policy Act (NEPA). The review is anticipated to require an Environmental Assessment (EA) study, which is recommended in the short-term. This EA study can include other related airport projects planned over the next three to five years.

- Runway 6-24 EMAS Bed on Southwest End (Figure 6-2) - This alternative would certainly have environmental impacts to Lewis Gut, with small amount of filling within open water and coastal wetlands but should still be considered for long term planning. The priority for this concept is lower because Runway 6-24 has already been substantially improved and has an RSA determination from the FAA based on current activity. Nevertheless, an EMAS bed for Runway 24 operations would further increase airport safety and is worthy of long-term consideration to satisfy RSA standards.
- Incremental Taxiway Improvements – Taxiway improvements are also important to the

Airport but are less critical than the runways. Again, the recommendations below are limited and primarily driven by environmental feasibility and limited funding availability.

- Remove excess pavement and non-standard taxiway configurations in the center of the airfield.
- Provide a taxiway to Runway 6, which may be implemented in phases.
- Ultimately relocated Taxiways G and D to a 400-foot Runway 11-29 offset. Retain the current 300-foot offset in the short-term with a Modification to Standards.
- Taxiway A relocation to 400-foot offset from Runway 6-24 to remove the taxiway from the main aircraft apron. This alternative would have upland wetland impacts. It is including in the plan, but priority is low.

Landside Recommendations

Most landside developments are privately-funded, with a lease agreement between the airport tenant and the City of Bridgeport. Therefore, these recommendations are generalized for planning purposes.

- East Apron – This location is recommended to be reserved for light general aviation facilities, including tiedowns, relocated T-hangar bays, or new small hangars. A new airport restaurant may also be considered, as the location has access to Main Street and a view of Runway 29. It is important to note that while the majority of the airport lies within the floodplain, the East Apron area is subject to potentially greater flooding during strong storm surges.

- Atlantic Aviation – The FBO holds a large lease area with multiple hangars along Main Street. This area is reserved for their continued lease. The Airport is also interested in supporting expansion and improvements of these facilities and would consider an expansion of the leased area in the future.

- Connecticut Air & Space Center (CASC) Museum – The CASC lease area includes the historic hangar structure as well as approximately 2.5 acres surrounding the building. This location is generally reserved for facility improvements to be conducted by the CASC. However, a reduction from the existing 2.5-acre land lease to approximately 1.5 acres is also recommended to accommodate potential other general aviation airport tenants on the East Apron.

- North Apron – The recommendation for this location is to be reserved for future corporate aviation facilities, including large hangars and apron space for large corporate jets. The existing small hangars and individual T-hangar bays in this area may be retained, depending on future opportunities. Nevertheless, additional small hangar development should be directed to other locations (i.e., the East and South Apron).

- Other Property – The Town of Stratford is developing an overall plan for mixed use redevelopment of the former Army Helicopter facility. The small portion of this federal property that abuts the airport was previously used as an employee parking lot. This area is recommended to provide an additional public access to the airport under an easement agreement, or potentially for full acquisition of the property by the City (if available). This 3.5-acre parcel has existing curb cuts for access to Main Street, which could provide public ground access to the North Apron without the need to traverse the leased property of Atlantic Aviation.

- South Apron – This location is recommended for continued use for light general aviation facilities, including tiedowns, relocated T-hangar bays, or new small hangars. Future lease of this location should be flexible to allow expansion by the current lease holder, as well as additional aviation organizations or individual tenants of the Airport. Improved ground and taxiway access would benefit all potential users.

- Main Apron – The main apron area is fully developed. However, existing tenants have discussed potential interest in replacing/expanding existing hangars in the future. Such redevelopment would be supported by the Airport.

- West Development Area – This location is recommended to be reserved for regularly scheduled commercial service (i.e., airline service) including a passenger terminal building, aircraft apron and gates, and expanded vehicle parking. Alternatively, if air service is not realized, the location would support corporate aviation.

- Former FAA Flight Service Station building – Short term reuse of the facility for offices, restaurant, etc. should be permitted. However, long term, if airline service is developed at BDR, the overall location should be reserved for expansion of associated airline services.

7.2 Airport Capital Improvement Plan

The Airport Capital Improvement Plan (ACIP) lists the recommended projects and associated cost estimates for the 20-year planning period. Grant-eligible projects at BDR may receive 90 percent federal funding, with the CAA/State/City responsible for the remaining share. Federal appropriates have sometimes increased the federal share of project to 95% or 100%. However, for this plan, it is assumed that eligible projects will be funded at 90% during the planning period.

Grant-eligible capital projects include planning and environmental studies, runway and taxiway development and rehabilitation, airport lighting, security enhancements, aircraft parking aprons, obstruction removal, land acquisition, and navigational aids, as well as buildings that support firefighting and airfield maintenance equipment.

Projects that are ineligible for funding include those that generate revenue and do not directly benefit the general public, such as hangars, fuel farms, and office buildings. A private entity or developer, such as a Fixed Base Operator (FBO) or other corporation, may fund and construct these facilities, with long-term property lease from the Airport. At times, projects may obtain special funding from the state transportation budget, infrastructure bond act, or economic development funding. When such opportunities are available in the future, the City will pursue these opportunities.

In addition to the new airport developments, the airport must also continually rehabilitate existing airfield facilities (e.g., pavement rehabilitation typically occurs every 20 years). As such, the ACIP includes these additional items. Although these items are not new capital developments, the associated costs can comprise the majority of an airport's annual capital investment.

Note that the ACIP does not constitute a commitment on behalf of the City, State, or FAA to fund any of the projects. In addition, the ACIP does not imply that the projects would receive environmental approvals. Thus, the ACIP serves as a planning document that must remain flexible. The ACIP should undergo regular updates as project priorities and demands indicate. It should also be noted that the listed costs are planning level estimates and will need to be refined prior to obtaining a grant.

Table 7-1 provides the 20-year ACIP for BDR, organized into phases, base on anticipated needs. Historically, airport needs exceed the available funding. Thus, the listed projects are aspirational, but do not indicate any funding commitment.

Year	Project	Total Cost	Cost Breakdown		
			FAA	City	State
Short Term					
2021	Runway 11-29 Rehabilitation (Design & Construction)	$5,010,000	-	-	$5,010,000
2021	EA for Short Term Projects	$500,000	$450,000	$10,000	$40,000
2022	Runway 11-29 Improvements (150' Shift) - Design	$450,000	$405,000	$5,000	$40,000
2023	Runway 11-29 Improvements (150' Shift) - Construction	$4,700,000	$4,230,000	$430,000	$40,000
2023	Rehabilitate Existing Taxiway 'A' (All Sections) - Design	$300,000	$270,000	$30,000	-
2024	Rehabilitate Existing Taxiway 'A' (All Sections) - Construction	$2,300,000	$2,070,000	$190,000	$40,000
2025	Passenger Terminal (Terminal Building, Vehicle Parking & Access, Aircraft Apron)	Privately Funded	-	-	-
Mid Term					
2026	Rehabilitate Existing Taxiway 'G' (including Taxiways 'J' and 'K')	$1,961,000	$1,764,900	$156,100	$40,000
2027	Rehabilitate Existing Taxiway 'D' (Western portion up to Taxiway 'E')	$1,149,000	$1,034,100	$74,900	$40,000
2027	Easements for Runway 11 RPZ (10% of Appraised Value)	$366,000	$329,400	$13,800	$22,800
2027	Easements for Runway 29 RPZ (Raymark Site, 2019 Appraisal)	$172,000	$154,800	-	$17,200
2028	Tree Obstruction Removal	$500,000	$450,000	$10,000	$40,000
2028	Rehabilitate Great Meadow Road & Parking	$2,768,000	-	$2,768,000	-
2029	Rehabilitate Main Apron	$2,291,000	$2,061,900	$189,100	$40,000
2030	Rehabilitate East Apron	$1,445,000	$1,300,500	$104,500	$40,000
Long Term					
2031	Replace ARFF & Maintenance Building	$1,575,000	$1,417,500	$117,500	$40,000
2032	Rehabilitate North Apron	$2,444,000	$2,199,600	$204,400	$40,000
2033	Federal Property Acquisition (2019 Appraisal)	$2,132,000	$1,918,800	$173,200	$40,000

2036	Runway 6-24 Rehabilitation	$3,758,000	$3,382,200	$335,800	$40,000
2036	Runway 6-24 Safety Improvements	$1,502,000	$1,351,800	$150,200	-
Post-2036	Taxiway Connector to Runway 6 End	$1,856,000	$1,670,400	$145,600	$40,000
Post-2036	Taxiway "D" Realignment (400' offset)	$1,614,000	$1,452,600	$121,400	$40,000
Post -2036	Taxiway "G" Partial Parallel and Realignment (400' offset)	$2,792,000	$2,512,800	$239,200	$40,000
	Relocate Fuel Farm *	$250,000	$225,000	-	$25,000
	Relocation Segmented Circle *	$50,000	$45,000	-	$5,000
	Relocate ASOS *	$100,000	$90,000	-	$10,000
Post -2036	Construct Vehicle Access to South Apron	$362,000	-	$362,000	-
Post -2036	Construct South Apron Taxiway Connector	$940,000	$846,000	$54,000	$40,000
Post -2036	Taxiway "A" Partial Parallel and Realignment	$2,470,000	$2,223,000	$207,000	$40,000
Post -2036	Relocate or Reconstruction Air Traffic Control Tower	TBD	-	-	-
Grand Total		**$45,757,000**	**$33,855,300**	**$6,131,700**	**$5,770,000**

* Projects dependent on the construction of the 400' Taxiway 'G' Partial Parallel and Realignment

Source: CHA, 2020

7.3 Airport Layout Plan

The Airport Layout Plan (ALP) illustrates all public development projects identified for BDR throughout the 20-year planning horizon, and areas reserved for privately-funded developments. Upon approval by the FAA, the ALP becomes the official document to be referenced for future development at the Airport. The FAA requires that the ALP be followed regarding new airport facilities. As such, keeping the drawings accurate and up to date is a high priority. FAA policy requires that the ALP be updated as need, and typically a minimum of every five years.

Although the ALP is the only drawing that is signed by the FAA, it is part of a larger drawing set that includes the sheets listed below. Together these drawings make up the ALP Drawing Set, which is developed following FAA guidance in FAA Standard Operating Procedure (SOP) Number 2, FAA Review and Approval of ALPs and the associated detailed checklist. Similarly the master plan as a whole, the FAA guidance is provided by Advisory Circular 150/5070-4B.

7.3.1 Existing Airport Layout Map

This sheet illustrates the airport layout as it exists today. The drawing identifies key FAA airfield design standards (e.g., Runway Safety Areas, Object Free Areas, Runway Protection Zones, etc.) and illustrates existing landside facilities. Key information, such as runway end elevations and runway-taxiway offsets, is also illustrated on this sheet.

7.3.2 Future Airport Layout Plan

The Future Airport Layout Plan (ALP) illustrates each recommended facility for BDR. Several offices within the FAA review this drawing for consistency with airport design standards, flight procedures, surrounding airspace, and FAA funding eligibility. Approval of the Future ALP represents the acceptance of the general location of future facilities. However, prior to the development phase of each project, the Airport is required to submit the final locations, heights, and exterior finish of each proposed structure for approval. ALP approval does not represent environmental clearance under the NEPA, or compliance with permit requirements. Such approvals must be obtained prior to development, and are not part of the ALP process

7.3.3 Data Sheet

The data sheet will provide information regarding the airport including wind roses, wind coverage tables, runway data tables, etc.

7.3.4 Inner Approach Surface Plans

These sheets provide large scale details of the close-in airspace obstructions, particularly to the inner portions of each approach surface. For identified obstructions, the height, penetration,

ownership, and proposed action/disposition are indicated in associated tables. For BDR, a separate sheet is provided for each of the four runway ends. Surfaces illustrated include the FAR Part 77 Approach Surface and the FAA design standard surfaces for runway and threshold siting of Advisory Circular 150/5300-13A, Table 3-2.

7.3.5 Airspace Plan

The Airspace Plan sheets illustrate the airspace requirements associated with Federal Aviation Regulations (FAR) Part 77, *Objects Affecting Navigable Airspace*. Part 77.23 identifies a series of geometric planes (i.e., imaginary surfaces) that extend outward and upward from an airport's runways to define obstruction clearing requirements. These surfaces identify the maximum acceptable height of objects by defining three dimensional surfaces surrounding all sides of the airfield. When an object penetrates an imaginary surface, it is considered an airspace obstruction and may present a hazard to air navigation.

The height and dimensions of the imaginary surfaces are determined by the airfield elevation, design aircraft, and the type of approach to each runway end. The specific surfaces for BDR are described below.

Primary Surface: A surface longitudinally centered at the runway elevation extending 200 feet beyond each runway end. The width of the primary surface is 1,000 feet due to the precision instrument approach (i.e., Instrument Landing Surface) on Runway 6-24. The width of the primary surface for Runway 11-29 is 500 feet as the 29 end has a non-precision Instrument Approach Procedure (IAP) with a visibility minimum greater than ¾ mile (i.e., an RNAV GSP procedure).

Horizontal Surface: A horizontal plane 150 feet above the airport elevation. As the elevation of BDR is nine (9) feet above mean sea level (AMSL), the horizontal surface is situated at 159 feet AMSL. The shape of the surface is created using radial arcs of 10,000 feet, from the ends of the primary surface, connected by lines tangent to the arcs.

Conical Surface: A surface extending outward and upward from the periphery of the horizontal surface at a slope of 20 to 1, for a horizontal distance of 4,000 feet. The elevation of the outer edge of the conical surface at BDL is 359 feet AMSL.

Approach Surface: Surfaces longitudinally centered on the extended runway centerlines, extending outward and upward from the ends of the primary surface. For BDL, the dimensions and slopes of the approach surfaces are listed in Table 7-2.

Table 7-2 – FAR Part 77 Approach Surface Dimensions					
Runway End – Current		**Inner Width**	**Outer Width**	**Length**	**Slope**
Runway 6		1,000’	16,000’	50,000’	50:1 for Inner 10,000’ 40:1 for Outer 40,000’
Runway 24		1,000’	3,500’	10,000’	34:1
Runway 11	Existing	500’	1,500’	10,000’	20:1
	Future	500’	3,500’	10,000’	34:1
Runway 29		500’	3,500’	10,000’	20:1

Transitional Surface: Surfaces extending outward and upward at right angles from the sides of the primary and approach surfaces at a slope of 7 to 1. The transitional surfaces terminate at the overlying horizontal surface.

The Inner Approach Surface Plan and Profile Drawing provides greater detail regarding the close-in airspace obstructions, particularly to the inner portions of each approach surface. For each obstruction, the height, penetration, ownership, and proposed action/disposition are indicated in the associated tables.

7.3.6 Terminal Area Plan

This sheet depicts a large scaled area of the proposed terminal facilities recommended for BDR with additional detail not shown on the Future ALP sheet.

7.3.7 Land Use Plan

This sheet will depict general land use categories and identify existing and recommended uses for all areas under Airport control. The sheet illustrates the land use and activities within the Runway Protection Zones, as well as the estimated average airport noise level in the Day Night Noise Level (DNL) metric.

The DNL is an average noise level that includes the times that aircraft are taking off and landing, as well as all the times when no activity is occurring. Due to the additional annoyance of nighttime activity, flight occurring after 10 PM and before 7 AM are multiplied by a factor of 10 in the noise calculation. As such, the noise contours illustrate the average noise levels created by the airport, not the peak noise levels created by individual jet aircraft departures.

Federal regulations consider airport noise to be significant when the average noise is above a DNL of 65 decibels (dB). In the vicinity of the airport, it is clear that the population is particularly noise sensitive, as the Airport receives noise complaints from locations well below a DNL of 60 dB. Although airport average noise levels are not above the federal level for significant impact in residential areas, the Airport remains focused on runway recommendations that can further reduce noise disturbance in the surrounding communities.

7.3.8 Exhibit "A" Property Map

This sheet depicts the existing airport property boundaries and the know historical details on airport land acquisition and parcel data. All development within airport property must be approved by the FAA, and property owned by the airport any not be sold or transfer without a formal FAA approval (i.e., a Land Release).

Appendix A – Historical Data Sets

A. Airport Operations

Year	Itinerant					Local			Total Ops
	Air Carrier	Air Taxi	GA	Military	Total	Civil	Military	Total	
2009	0	2,452	26,376	518	29,346	32,009	58	32,067	61,413
2010	0	2,102	34,533	441	37,076	36,420	195	36,615	73,691
2011	0	1,666	30,978	246	32,890	31,591	152	31,743	64,633
2012	8	2,477	30,604	198	33,287	28,538	86	28,624	61,911
2013	0	2,219	29,893	100	32,212	30,677	40	30,717	62,929
2014	0	2,354	28,844	162	31,360	26,888	76	26,964	58,324
2015	2	1,828	23,474	107	25,411	17,855	44	17,899	43,310
2016	0	2,876	22,403	39	25,318	22,321	12	22,333	47,651
2017	3	3,013	20,647	107	23,770	22,122	132	22,254	46,024
2018	0	3,122	20,233	123	23,478	26,481	108	26,589	50,067

Source: FAA OPSNET, 2019

B. Historical Based Aircraft

Year	Based Aircraft
2009	211
2010	190
2011	190
2012	190
2013	190
2014	190
2015	176
2016	176
2017	149
2018	150

Source: FAA TAF, 2019

C. Historical Market Share: Based Aircraft

Year	BDR % Market Share		
	National	Regional	State
2009	0.1%	3.0%	14.8%
2010	0.1%	3.0%	14.0%
2011	0.1%	3.1%	14.3%
2012	0.1%	3.3%	15.9%
2013	0.1%	3.2%	14.9%
2014	0.1%	3.0%	14.8%
2015	0.1%	3.1%	14.7%
2016	0.1%	3.0%	14.4%
2017	0.1%	2.6%	14.2%
2018	0.1%	2.6%	14.1%
Average	**0.1%**	**3.0%**	**14.6%**

Source: CHA, FAA TAF, 2019

D. Historical Market Share: GA Operation

Year	Itinerant Operations			Local Operations		
	National	Regional	State	National	Regional	State
2009	0.08%	2.10%	13.75%	0.08%	2.02%	11.81%
2010	0.11%	2.71%	17.03%	0.10%	2.38%	14.00%
2011	0.10%	2.71%	16.25%	0.09%	2.24%	15.00%
2012	0.10%	2.69%	15.59%	0.08%	1.99%	13.49%
2013	0.10%	2.77%	16.42%	0.09%	2.29%	15.95%
2014	0.10%	2.76%	16.23%	0.08%	2.08%	13.70%
2015	0.08%	2.33%	13.95%	0.05%	1.43%	10.09%
2016	0.08%	2.44%	13.56%	0.06%	1.83%	12.90%
2017	0.07%	2.34%	13.89%	0.06%	1.90%	13.41%
2018	0.07%	2.36%	13.84%	0.07%	2.23%	15.70%
Average	**0.1%**	**2.5%**	**15.1%**	**0.1%**	**2.0%**	**13.6%**

Source: FAA TAF, 2019

General Aviation Forecasts

A. Based Aircraft Forecast Methodologies

FAA Aerospace Forecast

Period	Single Engine	Multi-Engine Piston	Turbo-Prop	Jet	Rotor-craft	Military	Total
2018	107	10	0	31	2	0	150
2019	106	10	0	32	2	0	150
2020	105	10	0	33	2	0	150
2021	104	10	0	33	2	0	149
2022	103	10	0	34	2	0	149
2023	102	10	0	35	2	0	149
2024	101	10	0	36	2	0	149
2025	100	10	0	37	2	0	149
2026	99	10	0	37	2	0	148
2027	98	10	0	38	2	0	148
2028	97	10	0	39	2	0	148
2029	96	10	0	40	2	0	148
2030	95	10	0	41	2	0	148
2031	94	10	0	42	3	0	147
2032	93	9	0	42	3	0	147
2033	92	9	0	43	3	0	147
2034	91	9	0	44	3	0	147
2035	90	9	0	45	3	0	147
2036	89	9	0	46	3	0	147
2037	89	9	0	47	3	0	148
2038	88	9	0	48	3	0	148
2039	87	9	0	49	3	0	148
AAGR 2019-2039	**-1.0%**	**-0.4%**	**0.0%**	**2.2%**	**1.8%**	**0.0%**	**-0.1%**
Growth 2019-2039	**-17.7%**	**-8.5%**	**0.0%**	**53.6%**	**42.7%**	**0.0%**	**-1.2%**

Source: FAA 2019-2039 Aerospace Forecast

TAF Growth Scenario

Year	TAF-Based Growth
2018	150
2019	154
2020	158
2021	162
2022	166
2023	170
2024	174
2025	178
2026	183
2027	188
2028	192
2029	197
2030	202
2031	207
2032	212
2033	218
2034	223
2035	229
2036	235
2037	240
2038	246
2039	253
AAGR 2019-2039	**2.5%**
Growth 2019-2039	**64.3%**

Source: FAA TAF, OPSNET, 2019

Market Share Scenario

Year	Market Share		
	National	Regional	State
2018	150	150	150
2019	151	151	152
2020	152	153	155
2021	154	154	157
2022	155	155	159
2023	156	157	163
2024	158	159	165
2025	159	160	168
2026	160	161	170
2027	161	163	173
2028	163	164	176
2029	164	166	178
2030	165	167	181
2031	166	169	183
2032	168	170	186
2033	169	171	188
2034	170	173	191
2035	172	174	193
2036	173	176	196
2037	174	178	199
2038	176	179	201
2039	177	181	204
AAGR 2019-2039	**0.8%**	**0.9%**	**1.5%**
Growth 2019-2039	**17.2%**	**19.6%**	**34.3%**

Source: FAA TAF, 2019

B. GA Operations Forecast Methodologies

Historical Growth Scenario

Year	Historical Trends		
	3-Year Time Series	5-Year Time Series	10-Year Time Series
2018	49,836	49,836	49,836
2019	50,604	48,332	48,852
2020	51,385	46,874	47,887
2021	52,177	45,460	46,941
2022	52,982	44,088	46,014
2023	53,799	42,758	45,106
2024	54,628	41,468	44,215
2025	55,470	40,216	43,342
2026	56,326	39,003	42,486
2027	57,194	37,826	41,647
2028	58,076	36,685	40,824
2029	58,972	35,578	40,018
2030	59,881	34,504	39,228
2031	60,804	33,463	38,453
2032	61,742	32,454	37,694
2033	62,694	31,474	36,949
2034	63,660	30,525	36,220
2035	64,642	29,604	35,504
2036	65,639	28,711	34,803
2037	66,651	27,844	34,116
2038	67,679	27,004	33,442
2039	68,722	26,189	32,782
AAGR 2019-2039	**1.5%**	**-3.0%**	**-2.0%**
Growth 2019-2039	**35.8%**	**-45.8%**	**-32.9%**

Source: FAA OPSNET, 2019

Operations Per Based Aircraft (OPBA) Scenario

Year	OPBA
2018	49,836
2019	50,262
2020	50,741
2021	51,228
2022	51,637
2023	52,185
2024	52,681
2025	53,151
2026	53,621
2027	54,099
2028	54,569
2029	55,048
2030	55,526
2031	55,996
2032	56,483
2033	56,970
2034	57,475
2035	57,971
2036	58,476
2037	58,998
2038	59,546
2039	60,102
AAGR 2019-2039	**0.9%**
Growth 2019-2039	**19.6%**

Source: FAA OPSNET, TAF, 2019

Market Share Scenario

Year	Market Share		
	National	Regional	State
2018	49,836	49,836	49,836
2019	50,252	49,975	49,956
2020	50,422	50,014	49,997
2021	50,598	50,053	50,038
2022	50,774	50,093	50,079
2023	50,953	50,133	50,120
2024	51,133	50,173	50,161
2025	51,316	50,213	50,203
2026	51,502	50,253	50,244
2027	51,691	50,293	50,286
2028	51,882	50,333	50,328
2029	52,076	50,374	50,370
2030	52,273	50,415	50,413
2031	52,473	50,456	50,455
2032	52,676	50,497	50,498
2033	52,882	50,538	50,540
2034	53,091	50,579	50,584
2035	53,304	50,621	50,627
2036	53,520	50,662	50,670
2037	53,740	50,704	50,714
2038	53,963	50,746	50,758
2039	54,190	50,788	50,802
AAGR 2019-2039	**0.4%**	**0.1%**	**0.1%**
Growth 2019-2039	**7.8%**	**1.6%**	**1.7%**

Source: FAA TAF, 2019

C. Critical Aircraft Type Breakdown

2016					
Critical Aircraft	Aircraft Approach Category			Aircraft Design Group	
	B	C	D	II	III
Dassault Falcon F7X	6				6
Embraer 175					
Bombardier Global 5000		110			110
Bombardier Global Express		286			286
Gulfstream V			80		80
Gulfstream VI			12		12
Bombardier Challenger 300		174		174	
Bombardier Challenger 600		44		44	
Embraer 135140/Legacy					
Embraer 135 LR					
Gulfstream G150		26		26	
Gulfstream G280		2		2	
IAI Galaxy					

Learjet 75		2		2	
Total	**6**	**644**	**92**	**248**	**494**

Source: FAA TFMSC, 2019

2017					
Critical Aircraft	**Aircraft Approach Category**			**Aircraft Design Group**	
	B	**C**	**D**	**II**	**III**
Dassault Falcon F7X	12				12
Embraer 175		4			4
Bombardier Global 5000		130			130
Bombardier Global Express		306			306
Gulfstream V			82		82
Gulfstream VI			66		66
Bombardier Challenger 300		232		232	
Bombardier Challenger 600		20		20	
Embraer 135140/Legacy		4		4	
Embraer 135 LR		2		2	
Gulfstream G150		98		98	
Gulfstream G280		78		78	
IAI Galaxy		2		2	
Learjet 75		2		2	
Total	**12**	**878**	**148**	**438**	**600**

Source: FAA TFMSC, 2019

2018					
Critical Aircraft	**Aircraft Approach Category**			**Aircraft Design Group**	
	B	**C**	**D**	**II**	**III**
Dassault Falcon F7X	16				16
Airbus A320		2			2
Bombardier Global 5000		116			116
Bombardier Global Express		210			210
Gulfstream V			78		78
Gulfstream VI			50		50
Bombardier Challenger 300		352		352	
Bombardier Challenger 600		32		32	
Embraer 135140/Legacy		92		92	
Embraer 135 LR		14		14	
Gulfstream G150		72		72	
Gulfstream G280		90		90	
IAI Galaxy					
Learjet 75		2		2	
Total	**16**	**982**	**128**	**654**	**472**

Source: FAA TFMSC, 2019

Appendix B – Financial Plan

Contents

Tables

B Financial Plan

This appendix presents the description of the airport capital program and the resulting financial projections for the Igor I Sikorsky Memorial Airport (BDR). The capital program is developed under the assumption that various demand-based indicators, such as annual operations and based aircraft grow in-line with the aviation demand forecast presented in the BDR Master Plan Chapter 3.

The outbreak of COVID-19 in early 2020 and related restrictions and measures adopted to contain the spread of the virus have had a severe negative impact on air travel. On April 14, 2020, the Federal Aviation Administration (FAA) provided the Coronavirus Aid, Relief, and Economic Security Act (CARES Act) grant amounts by airport, of which BDR received $157,000. Since BDR is a general aviation airport, for purposes of this analysis the impacts of COVID-19 are assumed to be minimal. BDR is operated by the City of Bridgeport, Connecticut (City). Capital projects are funded through the receipt of Airport Improvement Program (AIP) grants, state grants, and City funds. The City's Fiscal Year (FY) ends June 30. The FY 2019 numbers included in this appendix reflect the amounts presented in the City's June 30, 2019 Financial Statements (2019 Financial Statements), the FY 2020 numbers reflect the City's 2020 budget approved by the City in May 2019 (FY 2020 Budget), and the FY 2021 numbers reflect the City's 2021 budget approved by the City in May 2020 (FY 2021 Budget). All of the financial tables are included at the end of this appendix.

B.1 Capital Program and Funding Sources

All airports receiving federal AIP funding are required to maintain a current capital improvement program with the FAA, which identifies projects to be undertaken at an airport over a specified period of time. **Table B-1** presents the recommended Airport Capital Improvement Program (ACIP) and its corresponding cost estimates, which are based on a planning level of detail. While accurate for master planning purposes, actual project costs will likely vary from these planning estimates once project design and engineering estimates are developed. The cost estimates presented in the table are presented in 2020 dollars and inflated dollars equal to 3 percent annually reflecting the most recent five-year average of Engineering News-Record's Construction Cost Index, contingencies, design costs and construction management costs. As shown in the table, the ACIP is estimated to cost approximately $45.8 million in 2020 dollars and $64.2 million in inflated dollars. **Table B-2** presents the ACIP's estimated funding sources by year, which are described in the following subsections.

B.1.1 AIP Grants

Grants administered by the FAA through the AIP are a critical capital funding source to implement the projects recommended in the ACIP. Passenger entitlement grants are allocated to airports by a formula based on enplanements, cargo entitlement grants are allocated based on historical landed weight market share, and discretionary grants are allocated in accordance with FAA guidelines. FAA grants are subject to annual Congressional appropriation. The AIP expires periodically and federal reauthorization is required to continue. In October 2018, Congress passed a five-year reauthorization bill for the FAA — the FAA Reauthorization Act of 2018. **Table B-3** presents the AIP Grants forecasted for BDR, which are discussed further in the following subsections.

B.1.1.1 Entitlement Grants

Entitlement funds are generally distributed through grants by a formula currently based on the number of enplanements and the amount of landed weight of arriving cargo at individual airports. However, general aviation airports such as BDR receive non-primary entitlements, which are specifically for general aviation airports listed in the latest published National Plan of Integrated Airports (NPIAS). General aviation airports with needed airfield development are eligible to receive annually the lesser value of 20 percent of the five-year cost of their current NPIAS value or $150,000. Non-primary entitlement funds are available to general aviation airports in the year they are first apportioned and remain available for three fiscal years. After four years, any unused funds expire unless the airport sponsor obligates the funds under a grant or transfers the funds to another NPIAS airport. In addition, non-primary entitlement funds can be used on most airfield capital improvements, airfield pavement maintenance, and limited revenue-generating areas such as terminals, hangars, and fuel farms.

As shown on **Table B-1**, approximately $53.8 million of the ACIP is eligible to be funded with non-primary entitlement grants. As shown on **Table B-3**, BDR is estimated to receive approximately $150,000 annually in non-primary entitlement funds, which totals approximately $2.9 million from FY 2021 through FY 2039. As a result, a $50.9 million cash flow deficiency occurs in federally eligible projects in the ACIP requiring additional funding from discretionary AIP grants or state grants.

B.1.1.2 Discretionary Grants

At the beginning of each federal fiscal year, the FAA sets aside the amount of discretionary funds to cover the Letter of Intent (LOI) payment schedules. The total discretionary funds in all LOIs subject to future obligation are limited to approximately 50 percent of the forecast discretionary funds available for that purpose. The authorizing statute directs the FAA to allocate certain discretionary funding to specific airport types and set aside categories such as noise, reliever

airports, military airport program and projects relating to capacity, safety, security and noise. However, the FAA has some discretion in funding specific projects within these discretionary funding set-aside categories. The FAA approves discretionary funds for use on specific projects, after consideration of project priority and other selection criteria.

As shown on **Table B-3**, approximately $46.5 million in discretionary funds are required to fund the ACIP from FY 2021 through FY 2039. The discretionary grant amount was determined by lowering the maximum eligibility amount of $53.8 million by $2.9 million in entitlement funds and $4.5 million in federally eligible costs (or 90 percent) of Runway 11-29 rehabilitation. State grants are assumed to fund 100 percent of the Runway 11-29 rehabilitation, which is described in greater detail in the next subsection.

If BDR does not receive approval for this discretionary funding, it will need to identify alternative funding sources, delay the projects until funding sources become available, or cancel the projects.

B.1.2 State Grants

As part of BDR's effort to attract commercial service, the State of Connecticut (the State) has agreed to fund the rehabilitation of Runway 11-29 in the amount of $5.01 million. The State also administers aviation grants equal to a maximum of $40,000 annually for each municipal general aviation airport, which equates to $720,000 in additional State funds. As shown in **Table B-1**, approximately $5.7 million in State funds are assumed to fund the ACIP from FY 2021 through FY 2039.

B.1.3 City Funds

As shown in **Table B-1**, approximately $9.1 million in City funds are required to fund the remainder of the ACIP, primarily in the mid- and long-term planning periods.

B.2 Financial Feasibility

This section of the financial analysis presents the projected operating expenses and revenues resulting from the daily operation of BDR. In addition, the funding of the ACIP is layered into the projections to determine the subsidy required by the City to maintain BDR's financial solvency.

B.2.1 Operating Expenses

Operating expenses include personnel services, utilities, materials and supplies, insurance, equipment and furniture, fuel, and other operating expenses. The FY 2019 operating expenses reflect the actual expenses presented in the 2019 Financial Statements, the FY 2020 operating

expenses reflect the FY 2020 Budget, the FY 2021 operating expenses reflect the FY 2021 Budget. **Table B-4** presents operating expenses for FY 2019 through FY 2039.

As shown in the table, operating expenses were approximately $1.37 million in FY 2019 and are budgeted to increase 3.8 percent, to approximately $1.43 million in FY 2020 and another 3.3 percent to $1.47 million in FY 2021. Operating expenses are forecast to be approximately $1.6 million in FY 2025, reflecting a CAGR of 1.6 percent from FY 2021 through FY 2025. Operating expenses are projected based on a review of historical trends and the anticipated effects of inflation assumed at 1.6 percent annually, reflecting the most recent 10-year average of the Northeast Region Consumer Price Index (CPI).

B.2.2 Operating Revenues

Major sources of operating revenue at BDR are derived from hangar rentals, transient revenues, t-hangar rentals, fuel flowage fees, and other operating revenues. **Table B-5** presents BDR's operating revenues. As shown, operating revenues were approximately $869,000 in FY 2019 and are budgeted to be approximately $880,700 in FY 2020 and approximately $875,700 in FY 2021. Operating revenues are forecast to increase to approximately $933,100 in FY 2025, reflecting a CAGR of 1.6 percent from FY 2020 to FY 2025.

B.2.3 Pro Forma Cash Flow

Table B-6 presents the pro forma cash flow of BDR for the planning period, based on the projection of operating revenues and operating expenses previously discussed. As shown in the table, the City needs to subsidize BDR in an amount ranging between $505,100 in FY 2019 and $4.4 million in FY 2028. The City's overall subsidy through 2039 includes the $9.1 million shortfall in ACIP funding assumed to be funded by the City.

B.3 Financial Plan Summary

The financial projections were prepared on the basis of available information and assumptions set forth in this appendix. It is believed that such information and assumptions provide a reasonable basis for the projections to the level of detail appropriate for planning purposes. Some of the assumptions used to develop the projections may not be realized, and unanticipated events or circumstances may occur. Therefore, the actual results will vary from those projected, and such variations could be material.

The actual need for facilities is most appropriately established by airport activity levels rather than a specified date. Actual demand may be slower to develop than expected. On the other hand, high levels of demand may establish the need to accelerate the development. Although every effort has been made in this planning process to conservatively estimate when facility

development may be needed, aviation demand will dictate when facility improvements need to be delayed or accelerated.

The financial feasibility of future projects will be determined by existing and future leases, federal and state funding levels, other funding sources, and the ability to generate internal cash flow from operations at BDR. As it has in the past, this analysis assumes that the City will continue subside the operation of BDR. However, there has been interest in commercial service at BDR. As result, the next section presents the financial impacts of BDR being served by a commercial service airline.

B.4 Financial Impact of Potential Commercial Service

The City has been actively pursuing the return of scheduled airline commercial service at BDR, to increase the value of BDR to the community and to reduce or eliminate the annual operating deficit. Certain airfield improvements have been included in the ACIP to accommodate the larger aircraft associated with commercial service. This section of the financial plan provides some "high level" forecasts if BDR does attract commercial service.

B.4.1 Commercial Service Activity

Table B-7 presents the activity forecast scenario for commercial service at BDR. The assumptions used to develop these forecast include the following:

- Aircraft would be the 150 seat Airbus 220 with a maximum weight of 149,000 pounds and a 90 percent load factor.
- Flights would begin in FY 2024 at 3 daily flights, increasing to 5 daily flights in 2029, 7 daily flights in 2034, and 8 daily flights in 2039.

This translates into enplanements of approximately 147,800 in FY 2024 increasing to approximately 394,200 in FY 2039, which would classify BDR as a non-hub primary airport.

B.4.2 Potential Additional Funding Sources

Once BDR becomes a primary airport, it would be eligible for additional AIP entitlement grants per the AIP formula. In addition, once BDR has enplanements, it could apply to charge a passenger facility charge and operating revenues at BDR would potentially increase. The following subsections describe these funding sources.

B.4.2.1 Primary Airport Entitlement Grants

Primary airport entitlement funds are distributed through grants by formula based on the number of enplanements at individual airports for the most recent federal fiscal year. **Table B-8** presents these formulas based on the enplanement forecasts presented in **Table B-7**. Since BDR

would be classified as a non-hub airport, it would be entitled to receive 90 percent in federal funding for AIP-eligible projects.

As shown in **Table B-8**, approximately $36.3 million in passenger entitlement grants are forecast to be available to fund the ACIP if BDR becomes a primary airport, of which $2.9 million has already been applied, reflecting a $33.9 million increase in AIP funding.

B.4.2.2 Passenger Facility Charges (PFCs)

PFCs are authorized by Title 14 of the Code of Federal Regulations, Part 158 and are administered by the FAA. PFCs collected from qualified enplaned passengers are used to fund eligible projects. An airport operator can impose a PFC of $1, $2, $3, $4 or $4.50 per eligible, enplaned passenger. Once a PFC is imposed, it is included as part of the ticket price paid by passengers enplaning at the airport, collected by the airlines and remitted to the airport operator, less an allowance for airline processing expenses. The PFC legislation stipulates that if a medium to large hub airport institutes a PFC of $1, $2, or $3, they must forego 50 percent of their AIP entitlement funds. This increases to 75 percent if they charge a $4 or $4.50 PFC. Since BDR is forecast to be a non-hub airport, it is assumed it would not have to forego any of its annual AIP entitlement funds.

Table B-9 presents the PFC formula based on the enplanement forecasts presented in **Table B-7**. As shown in the table, approximately $18.1 million in PFCs are forecast to be available to fund the ACIP if BDR became a primary airport.

Table B-10 presents the total increase in funding to BDR of $52.0 million if it becomes a commercial service airport. This increase in funding would allow BDR to offset the need for $50.8 million in AIP discretionary, State, and City monies to fund the ACIP from FY 2024 through FY 2039.

B.4.2.3 Operating Revenues

One of the City's goals for BDR is for it to become more financially self-sufficient. While it is not the scope of this analysis to forecast additional parking, rental car, and concession revenues, it is likely that these revenue sources would increase if passenger service begins at BDR. Alternatively, if the commercial service does not begin at BDR, it is likely that additional general aviation development would occur increasing revenues. BDR has not increased general aviation rates in several years and anticipates increasing these rates in the future. Any increases in operating revenues would reduce the City's subsidy.

B.4.3 Potential Airline Payments

In addition to increased AIP entitlement grants, PFCs, and operating revenues, BDR could reasonably anticipate that any airline offering passenger service would pay typical airline rates

and charges such as terminal rentals and landing fees. This analysis assumes BDR would enter into an airline agreement with that airline to recover airport costs. As BDR does not have a passenger terminal facility (including vehicle parking and access and aircraft apron) to accommodate commercial service, this analysis assumes that these facilities would be funded by the potential airline providing the commercial service. Instead of a typical terminal rent, this analysis assumes that an airline would pay ground rent for the use of the land where the terminal would be built. A ground rental most likely would be based on the fair market value of the land, which is unknown at this time. As a result, this analysis only assumes that an airline would pay a landing fee to recover the City's annual subsidy.

Table B-11 presents a potential landing fee and airline cost per enplanement (CPE) for BDR if it becomes a commercial service airport using the following assumptions:

- The City subsidy from FY 2024 through FY 2039 has been reduced by approximately $4.3 million, which is the amount of the ACIP funded by the City that would be PFC eligible. It is assumed that if a project is 90 percent AIP eligible it would be 100 percent PFC eligible; therefore the 10 percent difference is assumed to be PFC eligible.
- BDR operating expenses and revenues have not been increased due to the new terminal facilities since it is assumed that the airline offering passenger service would fund and operate that facility.

As shown in the table, the landing fee is estimated to average $4.31 per 1,000 pounds and the CPE is estimated to average $3.78 per enplanement. The landing fee and CPE increase to a maximum of $26.89 and $19.36, respectively in FY 2028, which reflects the funding of larger capital projects prior to the increase in daily flights. It is likely that the 2028 capital projects would be phased to coincide with the increased flights, therefore, smoothing the increase in the CPE.

Table B-12 presents financial metrics for comparable airports to BDR and airports within 200 miles of BDR to provide perspective on the reasonableness of the forecast of landing fees and CPE at BDR. The comparable airports were selected because they have enplanement levels ranging between 147,800 and 394,200, reflecting BDR's forecast enplanements for FY 2024 and FY 2039. As shown on the table, the average landing fee and CPE for comparable airports is $2.13 per 1,000 pounds and $7.64 per passenger, respectively. The average landing fee and CPE for airports within 200 miles of BDR is $2.95 per 1,000 pounds and $9.46 per passenger, respectively.

As a result, BDR's forecast average landing fee is higher than the average of the airports included on **Table B-12**, however, the CPE is lower. This indicates that if a ground rental was charged thereby increasing revenues, the landing fee could be reduced and BDR's financial metrics would become comparable with the industry averages.

Table B-1 – ACIP and Funding Sources (in 000s)

Proj #	Project	Fiscal Year	Project Costs		Eligibility		Funding Sources				
							Federal				
			2020 Dollars	Inflated (a)	%	Max Eligibility	Entitle-ment	Discret-ionary	State	City	Total
Short Term (2021 - 2025)											
1	Runway 11-29 Rehabilitation (Design & Construction)	2021	$5,010.0	$5,010.0	90%	$4,509.0	$0.0	$0.0	$5,010.0	$0.0	$5,010.0
2	EA for Short Term Projects	2021	500.0	500.0	90%	450.0	150.0	300.0	40.0	10.0	500.0
3	Runway 11-29 Improvements (150' Shift) - Design	2022	450.0	450.0	90%	405.0	150.0	255.0	40.0	5.0	450.0
4	Runway 11-29 Improvements (150' Shift) - Construction	2023	4,700.0	4,700.0	90%	4,230.0	150.0	4,080.0	40.0	430.0	4,700.0
5	Rehabilitate Existing Taxiway 'A' (All Sections) - Design	2023	300.0	300.0	90%	270.0	0.0	270.0	0.0	30.0	300.0
6	Rehabilitate Existing Taxiway 'A' (All Sections) - Construction	2024	2,300.0	2,300.0	90%	2,070.0	150.0	1,920.0	40.0	190.0	2,300.0
	Total Short Term (2021 - 2025)		$13,260.0	$13,260.0		$11,934.0	$600.0	$6,825.0	$5,170.0	$665.0	$13,260.0
Mid Term (2026 - 2030)											
7	Rehabilitate Existing Taxiway 'G' (including Taxiways 'J' and 'K')	2026	$1,961.0	$2,484.1	90%	$2,235.7	$300.0	$1,935.7	$40.0	$208.4	$2,484.1
8	Rehabilitate Existing Taxiway 'D' (Western portion up to Taxiway 'E')	2027	1,149.0	1,499.2	90%	1,349.3	150.0	1,199.3	40.0	109.9	1,499.2
9	Easements for Runway 11 RPZ (10% of appraised value)	2027	366.0	477.5	90%	429.8	0.0	429.8	0.0	47.8	477.5
10	Easement for Runway 29 RPZ (Raymark Site (2019 Appraisal)	2027	172.0	224.4	90%	202.0	0.0	202.0	0.0	22.4	224.4
11	Tree Obstruction Removal	2028	500.0	672.0	90%	604.8	150.0	454.8	40.0	27.2	672.0
12	Rehabilitate Great Meadow Road & Parking	2028	2,768.0	3,720.0	0%	0.0	0.0	0.0	0.0	3,720.0	3,720.0
13	Rehabilitate Main Apron	2029	2,291.0	3,171.3	90%	2,854.2	150.0	2,704.2	40.0	277.1	3,171.3
14	Rehabilitate East Apron	2030	1,445.0	2,060.2	90%	1,854.2	150.0	1,704.2	40.0	166.0	2,060.2
	Total Mid Term (2026 - 2030)		$10,652.0	$14,308.7		$9,529.8	$900.0	$8,629.8	$200.0	$4,578.9	$14,308.7
Long Term (2031 - 2039)											
15	Replace ARFF & Maintenance Building	2031	$1,575.0	$2,312.9	90%	$2,081.6	$150.0	$1,931.6	$40.0	$191.3	$2,312.9
16	Rehabilitate North Apron	2032	2,444.0	3,696.8	90%	3,327.1	150.0	3,177.1	40.0	329.7	3,696.8
17	Federal Property Acquisition	2033	2,132.0	3,321.6	90%	2,989.4	150.0	2,839.4	40.0	292.2	3,321.6
18	Runway 6-24 Rehabilitation	2036	3,758.0	6,397.7	90%	5,757.9	450.0	5,307.9	40.0	599.8	6,397.7
19	Runway 6-24 Safety Improvements	2036	1,502.0	2,557.1	90%	2,301.4	0.0	2,301.4	0.0	255.7	2,557.1
20	Taxiway Connector to Runway 6 End	post 2036	1,856.0	3,254.5	90%	2,929.1	150.0	2,779.1	40.0	285.5	3,254.5
21	Taxiway ' D' Realignment (400' offset)	post 2036	1,614.0	2,830.2	90%	2,547.2	150.0	2,397.2	40.0	243.0	2,830.2
22	Taxiway 'G' Partial Parallel and Realignment (400' offset)	post 2036	2,792.0	4,895.8	90%	4,406.2	150.0	4,256.2	40.0	449.6	4,895.8
23	Relocate Fuel Farm	post 2036	250.0	438.4	90%	394.6	0.0	394.6	40.0	3.8	438.4
24	Relocate Segmented Circle	post 2036	50.0	87.7	90%	78.9	0.0	78.9	8.8	0.0	87.7
25	Relocate ASOS	post 2036	100.0	175.4	90%	157.9	0.0	157.9	17.5	0.0	175.4
26	Construct Vehicle Access to South Apron	post 2036	362.0	634.8	0%	0.0	0.0	0.0	0.0	634.8	634.8
27	Construct South Apron Connector Taxiway	post 2036	940.0	1,648.3	90%	1,483.5	0.0	1,483.5	13.7	151.1	1,648.3
28	Taxiway 'A' Partial Parallel and Realignment	post 2036	2,470.0	4,331.2	90%	3,898.1	0.0	3,898.1	0.0	433.1	4,331.2
	Total Long Term (2031 - 2039)		$21,845.0	$36,582.4		$32,352.8	$1,350.0	$31,002.8	$360.0	$3,869.6	$36,582.4
	Total CIP		$45,757.0	$64,151.1		$53,816.7	$2,850.0	$46,457.7	$5,730.0	$9,113.4	$64,151.1

(a) Beginning in FY 2025, project costs were inflated at 3%, which reflects the most recent five-year average of *Engineering News-Record's* Construction Cost Index.
Sources: CHA Companies and DKMG Consulting, LLC

Table B-2 – ACIP by Year (in 000s)

Fiscal Year	Project Costs			Funding Sources				
				Federal				
	2020 Dollars	Inflated (a)	Max Eligibility	Entitle-ment	Discret-ionary	State	City	Total
2020	$0	$0	$0	$0	$0	$0	$0	$0
2021	5,510	5,510	4,959	150	300	5,050	10	5,510
2022	450	450	405	150	255	40	5	450
2023	5,000	5,000	4,500	150	4,350	40	460	5,000
2024	2,300	2,300	2,070	150	1,920	40	190	2,300
2025	0	0	0	0	0	0	0	0
Total Short Term (2021 - 2025)	$13,260	$13,260	$11,934	$600	$6,825	$5,170	$665	$13,260
Total Mid Term (2026 - 2030)	$10,652	$14,309	$9,530	$900	$8,630	$200	$4,579	$14,309
Total Long Term (2031 - 2039)	$21,845	$36,582	$32,353	$1,350	$31,003	$360	$3,870	$36,582
Total	$45,757	$64,151	$53,817	$2,850	$46,458	$5,730	$9,113	$64,151

(a) Beginning in FY 2025, project costs were inflated at 3%, which reflects the most recent five-year average of Engineering News-Record's Construction Cost Index.

Table B-3 – Application of AIP Grants (in 000s)

	Source Table	Total	Short					Mid	Long
			Budget	Forecast					
			2021	2022	2023	2024	2025	2026-2030	2031-2039
Beginning balance		$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$150.0	$0.0
Plus: AIP Grants									
Entitlement - non-primary		$2,850.0	$150.0	$150.0	$150.0	$150.0	$150.0	$750.0	$1,350.0
Discretionary		$46,457.7	$300.0	$255.0	$4,350.0	$1,920.0	$0.0	$8,629.8	$31,002.8
Less: CIP funded with AIP Grants									
Entitlement	B-1	($2,850.0)	($150.0)	($150.0)	($150.0)	($150.0)	$0.0	($900.0)	($1,350.0)
Discretionary	B-1	($46,457.7)	($300.0)	($255.0)	($4,350.0)	($1,920.0)	$0.0	($8,629.8)	($31,002.8)
Ending balance		$0.0	$0.0	$0.0	$0.0	$0.0	$150.0	$0.0	$0.0

(a) In April 2020, the FAA allocated $157,000 in CARES Act funds to BDR. At this time, BDR intends on using these funds for operating expenses, and therefore, are not available as a funding source of the ACIP.

Table B-4 – Operating Expenses (in 000s)

	Actual	Short						Mid	Long
		Budget	Budget	Forecast					
	2019	2020	2021	2022	2023	2024	2025	2026-2030	2031-2039
Personnel services									
Full-time salaries	$604.5	$674.3	$675.1	$685.9	$696.9	$708.0	$719.3	$3,773.0	$7,594.0
Other personnel services	167.4	66.1	60.9	61.9	62.9	63.9	64.9	340.6	685.6
Fringe Benefits	261.2	264.0	315.8	320.9	326.0	331.2	336.5	1,765.3	3,553.0
Subtotal	$1,033.0	$1,004.3	$1,051.8	$1,068.6	$1,085.7	$1,103.1	$1,120.8	$5,878.9	$11,832.5
Operational expenses									
Utilities	$147.7	$157.4	$157.4	$160.0	$162.5	$165.1	$167.8	$879.9	$1,771.0
Materials and supplies	53.2	58.2	58.2	59.1	60.1	61.1	62.0	325.3	654.6
Insurance	19.4	22.3	22.3	22.7	23.0	23.4	23.8	124.7	251.1
Equipment and furniture	21.6	21.6	21.6	22.0	22.3	22.7	23.0	120.9	243.3
Fuel	22.0	22.5	22.5	22.9	23.2	23.6	24.0	125.8	253.1
Other	8.7	14.8	14.8	15.1	15.3	15.5	15.8	82.7	166.5
Subtotal	$272.6	$296.9	$296.9	$301.7	$306.5	$311.4	$316.4	$1,659.3	$3,339.6
Special services	$68.4	$124.6	$124.6	$126.6	$128.6	$130.6	$132.7	$695.9	$1,400.1
Total expenses	$1,374.1	$1,425.8	$1,473.3	$1,496.9	$1,520.8	$1,545.1	$1,569.8	$8,234.1	$16,572.2
% change		3.8%	3.3%	1.6%	1.6%	1.6%	1.6%		
CAGR (2021-2025)							1.6%		

Sources:
City financial records, 2018-2021
DKMG Consulting, forecast

Table B-5 – Operating Revenues (in 000s)

	Actual	Short						Mid	Long
		Budget	Budget	Forecast					
	2019	2020	2021	2022	2023	2024	2025	2026-2030	2031-2039
Hangar Rentals	$309.4	$310.0	$310.0	$315.0	$320.0	$325.1	$330.3	$1,732.6	$3,487.2
Annual Base Rent	218.8	240.0	240.0	243.8	247.7	251.7	255.7	1,341.3	2,699.8
Percent of Gross	90.3	80.0	80.0	81.3	82.6	83.9	85.2	447.1	899.9
Transient Revenue	78.9	75.0	75.0	76.2	77.4	78.7	79.9	419.2	843.7
T-Hangars	65.6	63.0	63.0	64.0	65.0	66.1	67.1	352.1	708.6
Fuel Flowage Fee	61.0	61.0	61.0	62.0	63.0	64.0	65.0	340.9	686.2
Tie Down	42.8	50.0	45.0	45.7	46.5	47.2	48.0	251.5	506.2
Operating Certificate Fee	1.2	1.2	1.2	1.2	1.2	1.3	1.3	6.7	13.3
Security Badges	0.9	0.5	0.5	0.5	0.5	0.5	0.5	2.9	5.8
Total revenues	$869.0	$880.7	$875.7	$889.7	$904.0	$918.4	$933.1	$4,894.4	$9,850.7
% change		1.3%	-0.6%	1.6%	1.6%	1.6%	1.6%		
CAGR (2021-2025)							1.6%		

Sources:
City financial records, 2018-2021
DKMG Consulting, forecast

Table B-6 – Pro Forma Cash Flow (in 000s)

Fiscal Year	Table B-5 Operating Revenues	Table B-4 Less: Operating Expenses	Table B-1 Less: City ACIP Funding	Profit/ (Loss)	City Subsidy	Breakeven
2019	$869.0	($1,374.1)	$0.0	($505.1)	$505.1	$0.0
2020	$880.7	($1,425.8)	$0.0	($545.1)	$545.1	$0.0
2021	$875.7	($1,473.3)	($10.0)	($607.6)	$607.6	$0.0
2022	$889.7	($1,496.9)	($5.0)	($612.2)	$612.2	$0.0
2023	$904.0	($1,520.8)	($460.0)	($1,076.9)	$1,076.9	$0.0
2024	$918.4	($1,545.1)	($190.0)	($816.7)	$816.7	$0.0
2025	$933.1	($1,569.8)	$0.0	($636.7)	$636.7	$0.0
2026	$948.0	($1,595.0)	($208.4)	($855.3)	$855.3	$0.0
2027	$963.2	($1,620.5)	($180.1)	($837.4)	$837.4	$0.0
2028	$978.6	($1,646.4)	($3,747.2)	($4,415.0)	$4,415.0	$0.0
2029	$994.3	($1,672.7)	($277.1)	($955.6)	$955.6	$0.0
2030	$1,010.2	($1,699.4)	($166.0)	($855.3)	$855.3	$0.0
2031	$1,026.3	($1,726.6)	($191.3)	($891.6)	$891.6	$0.0
2032	$1,042.8	($1,754.2)	($329.7)	($1,041.2)	$1,041.2	$0.0
2033	$1,059.4	($1,782.3)	($292.2)	($1,015.1)	$1,015.1	$0.0
2034	$1,076.4	($1,810.8)	$0.0	($734.5)	$734.5	$0.0
2035	$1,093.6	($1,839.8)	$0.0	($746.2)	$746.2	$0.0
2036	$1,111.1	($1,869.3)	($855.5)	($1,613.6)	$1,613.6	$0.0
post 2036	$3,441.1	($5,789.1)	($2,201.0)	($4,549.0)	$4,549.0	$0.0
Total	$21,015.6	($35,212.0)	($9,113.4)	($23,309.9)	$23,309.9	$0.0

Table B-7 – Potential Commercial Service: Activity Forecasts (in 000s)

Fiscal Year	Enplanements	% Change	Landed Weight	% Change
2021	0.0	--	0.0	--
2022	0.0	--	0.0	--
2023	0.0	--	0.0	--
2024	147.8	--	163.2	--
2025	167.5	13.3%	163.2	0.0%
2026	187.2	11.8%	163.2	0.0%
2027	207.0	10.5%	163.2	0.0%
2028	226.7	9.5%	163.2	0.0%
2029	246.4	8.7%	271.9	66.7%
2030	266.1	8.0%	271.9	0.0%
2031	285.8	7.4%	271.9	0.0%
2032	305.5	6.9%	271.9	0.0%
2033	325.2	6.5%	271.9	0.0%
2034	344.9	6.1%	380.7	40.0%
2035	354.8	2.9%	380.7	0.0%
2036	364.6	2.8%	380.7	0.0%
2037	374.5	2.7%	380.7	0.0%
2038	384.3	2.6%	380.7	0.0%
2039	394.2	2.6%	435.1	14.3%
CAGR 2024-2039	6.8%		6.8%	

Sources:
CHA Companies, enplanements
DKMG Consulting, landed weight

Table B-8 – Potential Commercial Service: Primary AIP Grants (in 000s)

	Table B-7	Primary Entitlement Calculation							Table B-1	
Fiscal Year	Enplane-ments	$7.80 on first 50,000	$5.20 on next 50,000	$2.60 on next 400,000	$0.65 on next 500,000	$0.50 on remaining	Total	Mulitplied by 2	Non-Primary Entitlements Applied to ACIP	Incr in Entitlement Funding
2021	0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$150.0	N/A
2022	0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$150.0	N/A
2023	0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$150.0	N/A
2024	147.8	$390.0	$260.0	$124.3	$0.0	$0.0	$774.3	$1,548.7	$150.0	$1,398.7
2025	167.5	$390.0	$260.0	$175.6	$0.0	$0.0	$825.6	$1,651.2	$150.0	$1,501.2
2026	187.2	$390.0	$260.0	$226.8	$0.0	$0.0	$876.8	$1,753.7	$150.0	$1,603.7
2027	207.0	$390.0	$260.0	$278.1	$0.0	$0.0	$928.1	$1,856.2	$150.0	$1,706.2
2028	226.7	$390.0	$260.0	$329.3	$0.0	$0.0	$979.3	$1,958.7	$150.0	$1,808.7
2029	246.4	$390.0	$260.0	$380.6	$0.0	$0.0	$1,030.6	$2,061.2	$150.0	$1,911.2
2030	266.1	$390.0	$260.0	$431.8	$0.0	$0.0	$1,081.8	$2,163.6	$150.0	$2,013.6
2031	285.8	$390.0	$260.0	$483.1	$0.0	$0.0	$1,133.1	$2,266.1	$150.0	$2,116.1
2032	305.5	$390.0	$260.0	$534.3	$0.0	$0.0	$1,184.3	$2,368.6	$150.0	$2,218.6
2033	325.2	$390.0	$260.0	$585.6	$0.0	$0.0	$1,235.6	$2,471.1	$150.0	$2,321.1
2034	344.9	$390.0	$260.0	$636.8	$0.0	$0.0	$1,286.8	$2,573.6	$150.0	$2,423.6
2035	354.8	$390.0	$260.0	$662.4	$0.0	$0.0	$1,312.4	$2,624.9	$150.0	$2,474.9
2036	364.6	$390.0	$260.0	$688.1	$0.0	$0.0	$1,338.1	$2,676.1	$150.0	$2,526.1
2037	374.5	$390.0	$260.0	$713.7	$0.0	$0.0	$1,363.7	$2,727.3	$150.0	$2,577.3
2038	384.3	$390.0	$260.0	$739.3	$0.0	$0.0	$1,389.3	$2,778.6	$150.0	$2,628.6
2039	394.2	$390.0	$260.0	$764.9	$0.0	$0.0	$1,414.9	$2,829.8	$150.0	$2,679.8
Total								$36,309.4	$2,850.0	$33,909.4

Table B-9 – Potential Commercial Service: Calculation of PFCs (in 000s)

Fiscal Year	Table B-7 Enplane-ments	% PFC Revenue	Net PFC Charge (a)	Potential PFC Revenues
2024	147.8	90%	$4.39	$584.1
2025	167.5	90%	$4.39	$661.9
2026	187.2	90%	$4.39	$739.8
2027	207.0	90%	$4.39	$817.7
2028	226.7	90%	$4.39	$895.6
2029	246.4	90%	$4.39	$973.4
2030	266.1	90%	$4.39	$1,051.3
2031	285.8	90%	$4.39	$1,129.2
2032	305.5	90%	$4.39	$1,207.1
2033	325.2	90%	$4.39	$1,284.9
2034	344.9	90%	$4.39	$1,362.8
2035	354.8	90%	$4.39	$1,401.7
2036	364.6	90%	$4.39	$1,440.7
2037	374.5	90%	$4.39	$1,479.6
2038	384.3	90%	$4.39	$1,518.5
2039	394.2	90%	$4.39	$1,557.5
Total				$18,105.8

(a) PFC of $4.50 less airline collection fee of $0.11.

Table B-10 – Potential Commercial Service: Funding Differences (in 000s)

Fiscal Year	Table B-8 Incr in Entitlement Funding	Table B-9 Potential PFC Revenues	Increase in Funding	Table B-1 Discret-ionary	State	City
2021	N/A	$0.0	$0.0	$300.0	$5,050.0	$10.0
2022	N/A	$0.0	$0.0	$255.0	$40.0	$5.0
2023	N/A	$0.0	$0.0	$4,350.0	$40.0	$460.0
2024	$1,398.7	$584.1	$1,982.7	$1,920.0	$40.0	$190.0
2025	$1,501.2	$661.9	$2,163.1	$0.0	$0.0	$0.0
2026	$1,603.7	$739.8	$2,343.5	$1,935.7	$40.0	$208.4
2027	$1,706.2	$817.7	$2,523.8	$1,831.0	$40.0	$180.1
2028	$1,808.7	$895.6	$2,704.2	$454.8	$40.0	$3,747.2
2029	$1,911.2	$973.4	$2,884.6	$2,704.2	$40.0	$277.1
2030	$2,013.6	$1,051.3	$3,064.9	$1,704.2	$40.0	$166.0
2031	$2,116.1	$1,129.2	$3,245.3	$1,931.6	$40.0	$191.3
2032	$2,218.6	$1,207.1	$3,425.7	$3,177.1	$40.0	$329.7
2033	$2,321.1	$1,284.9	$3,606.0	$2,839.4	$40.0	$292.2
2034	$2,423.6	$1,362.8	$3,786.4	$0.0	$0.0	$0.0
2035	$2,474.9	$1,401.7	$3,876.6	$0.0	$0.0	$0.0
2036	$2,526.1	$1,440.7	$3,966.8	$7,609.3	$40.0	$855.5
post 2036	$7,885.8	$4,555.6	$12,441.4	$15,445.4	$200.0	$2,201.0
Total	$33,909.4	$18,105.8	$52,015.1	$46,457.7	$5,730.0	$9,113.4
Less funding from 2021 through 2023				($4,905.0)	($5,130.0)	($475.0)
				$41,552.7	$600.0	$8,638.4
Total funding needed from 2024 through 2039				$50,791.1		
Amount required from City				($1,224.0)		

Table B-11 – Potential Commercial Service: Airline Payments (in 000s)

Fiscal Year	Table B-6 City Subsidy Prior to PFCs A	Table B-10 Less: PFC Eligible ACIP (a) B	Reduced City Subsidy (b) C (A-B)	Table B-7 Landed Weight D	Landing Fee E (C/D)	Table B-7 Enplanements F	CPE G (C/F)
2019	$505.1	N/A	$505.1	N/A	N/A	N/A	N/A
2020	$545.1	N/A	$545.1	N/A	N/A	N/A	N/A
2021	$607.6	N/A	$607.6	N/A	N/A	N/A	N/A
2022	$612.2	N/A	$612.2	N/A	N/A	N/A	N/A
2023	$1,076.9	N/A	$1,076.9	N/A	N/A	N/A	N/A
2024	$816.7	($190.0)	$626.7	163.2	$3.84	147.8	$4.24
2025	$636.7	$0.0	$636.7	163.2	$3.90	167.5	$3.80
2026	$855.3	($208.4)	$646.9	163.2	$3.97	187.2	$3.45
2027	$837.4	($180.1)	$657.3	163.2	$4.03	207.0	$3.18
2028	$4,415.0	($27.2)	$4,387.8	163.2	$26.89	226.7	$19.36
2029	$955.6	($277.1)	$678.4	271.9	$2.49	246.4	$2.75
2030	$855.3	($166.0)	$689.3	271.9	$2.53	266.1	$2.59
2031	$891.6	($191.3)	$700.3	271.9	$2.58	285.8	$2.45
2032	$1,041.2	($329.7)	$711.5	271.9	$2.62	305.5	$2.33
2033	$1,015.1	($292.2)	$722.9	271.9	$2.66	325.2	$2.22
2034	$734.5	$0.0	$734.5	380.7	$1.93	344.9	$2.13
2035	$746.2	$0.0	$746.2	380.7	$1.96	354.8	$2.10
2036	$1,613.6	($855.5)	$758.2	380.7	$1.99	364.6	$2.08
2037	$2,971.2	($1,566.2)	$1,405.1	380.7	$3.69	374.5	$3.75
2038	$782.6	$0.0	$782.6	380.7	$2.06	384.3	$2.04
2039	$795.1	$0.0	$795.1	435.1	$1.83	394.2	$2.02
Total	$23,309.9	($4,283.6)	$19,026.3				
Average					$4.31		$3.78
MAX					$26.89		$19.36
MIN					$1.83		$2.02
Average from Table B-12							
Similar Sized Airports					$2.13		$7.64
Airports within 200 miles of BDR					$2.95		$9.46

(a) The City subsidy has been reduced by the amount of the ACIP funded by the City that would be PFC eligible. It is assumed that if a project is 90 percent AIP eligible it would be 100 percent PFC eligible; therefore the 10 percent difference is assumed to be PFC eligible.

(b) The City subsidy could be further reduced by any increases in certain operating revenues as described in Section B.4.2.3.

Table B-12 – Potential Commercial Service: Comparable Financial Metrics

2019 (a)															
				Activity		Financial							Rates		
Airport	State	Hub Size	Airport Code	Enplane-ments	Landed Weight	Operating Revenue	Operating Expenses	AIP Grants	PFCs	Capital Expenditures	Debt Service	Unrestricted Cash & Investments	Landing Fee	CPE
Similar Sized Airports															
Fort Wayne Intl	IN	N	FWA	397,938	648,359	$15,689,989	$11,988,176	$5,108,967	$1,710,955	$14,862,190	$1,875,000	$38,533,289	$2.54	$8.07
Charlottesville-Albemarle	VA	N	CHO	378,441	454,006	$8,819,889	$6,514,736	$0	$1,581,738	$3,563,628	$738,925	$3,793,817	$2.10	$4.40
Amarillo Intl	TX	N	AMA	367,628	478,413	$10,767,205	$9,366,224	$2,713,821	$1,398,694	$7,346,267	$1,871,025	$6,464,503	$2.10	$8.64
Daytona Beach Intl	FL	N	DAB	365,730	165,859	$13,050,792	$12,570,961	$3,098,335	$1,443,479	$14,695,878	$3,610,175	$22,327,174	$1.35	$6.25
Green Bay Austin Straubel	WI	N	GRB	356,914	424,566	$9,142,559	$6,997,910	$3,537,643	$1,423,467	$150,039	$1,906,350	$11,901,855	$2.30	$6.21
Roanoke Regional	VA	N	ROA	342,574	542,356	$9,888,835	$7,984,788	$5,504,173	$1,409,273	$12,011,682	$0	$26,009,801	$2.43	$7.65
Corpus Christi Intl	TX	N	CRP	342,301	435,275	$11,333,776	$9,988,522	$6,547,378	$1,258,856	$7,058,714	$2,213,054	$9,108,571	$2.99	$10.12
Bush Field	GA	N	AGS	339,925	377,672	$16,716,924	$11,395,942	$14,470,979	$1,374,580	$17,804,207	$490,500	$14,275,673	$4.01	$7.92
Greater Peoria Regional	IL	N	PIA	335,339	487,945	$4,316,304	$4,676,030	$0	$1,473,822	$10,197,044	$8,850,014	$37,339,181	$1.35	$3.63
Mobile Regional	AL	N	MOB	319,239	365,450	$9,813,157	$7,493,391	$1,173,725	$1,207,665	$27,159,880	$982,560	$19,639,361	$2.22	$12.84
Glacier Park International	MT	N	GPI	318,211	359,547	$6,119,124	$4,460,393	$2,173,137	$1,291,222	$3,880,496	$0	$8,349,092	$1.34	$4.87
Bismarck Muni	ND	N	BIS	309,337	359,251	$6,334,668	$4,967,978	$10,704,635	$1,286,017	$49,147,199	$0	$7,298,383	$1.10	$6.83
Grand Junction Regional	CO	N	GJT	268,060	419,233	$6,863,912	$3,771,733	$6,004,320	$1,050,179	$0	$0	$0	$1.70	$7.25
Stewart Intl	NY	N	SWF	264,773	729,555	$11,267,367	$22,679,353	$3,785,033	$1,121,852	$13,907,280	$8,206,657	($3,334,605)	$1.40	$2.75
San Luis Obispo County	CA	N	SBP	259,481	324,334	$8,164,992	$4,834,465	$3,350,701	$979,089	$719,452	$880,024	$30,648,072	$1.40	$8.30
Evansville Regional	IN	N	EVV	247,940	284,858	$5,767,875	$6,037,311	$2,408,898	$994,988	$24,435,328	$0	$9,879,279	$1.57	$7.97
Melbourne Intl	FL	N	MLB	244,458	371,692	$18,684,228	$17,257,621	$8,353,825	$1,002,531	$3,337,054	$0	$18,809,270	$1.50	$5.69
Sonoma County	CA	N	STS	223,756	437,709	$6,690,485	$6,043,024	$33,000	$1,002,486	$3,547,335	$0	$0	$1.00	$1.94
Yeager	WV	N	CRW	220,649	300,453	$11,445,667	$8,818,035	$14,637,933	$908,886	$13,235,455	$8,486,424	$7,507,632	$2.85	$10.07
Tri-Cities Regional Tn/Va	TN	N	TRI	212,883	257,900	$7,268,899	$6,630,795	$5,662,468	$846,989	$9,045,531	$977,689	$2,813,068	$2.65	$11.25
Monterey Peninsula	CA	N	MRY	205,662	255,396	$9,591,851	$8,526,337	$1,826,046	$899,816	$4,513,425	$563,933	$5,161,285	$2.35	$10.25
Central Illinois Regional	IL	N	BMI	193,292	213,167	$2,559,731	$4,170,057	$909,865	$836,780	$1,041,846	$2,976,421	$4,062,441	$0.60	$1.80
Dannelly Field	AL	N	MGM	190,584	231,450	$7,146,803	$5,404,002	$105,721	$781,242	$159,409	$779,656	$0	$4.20	$12.58
Great Falls Intl	MT	N	GTF	178,645	403,650	$3,900,099	$2,366,343	$2,837,330	$735,112	$3,813,748	$1,979,507	$3,008,432	$1.37	$6.20
Fanning Field	ID	N	IDA	175,636	194,544	$2,856,318	$3,218,402	$5,195,979	$715,147	$5,130,996	$0	$267,762	$1.35	$4.29
Capital City	MI	N	LAN	171,717	578,691	$9,765,788	$9,050,618	$0	$752,455	$2,666,915	$1,050,586	$22,535,835	$2.89	$27.25
Minot Intl	ND	N	MOT	165,988	179,544	$4,806,996	$3,510,317	$86,719	$684,546	$1,318,994	$2,169,144	$0	$2.76	$8.62
Montrose County	CO	N	MTJ	159,354	203,466	$4,141,523	$2,463,725	$1,223,722	$604,294	$1,822,002	$0	$0	$3.73	$8.07
Albert J Ellis	NC	N	OAJ	157,600	212,482	$3,160,324	$2,429,734	$6,299,495	$670,332	$6,119,902	$518,780	$1,568,052	$1.84	$4.21
Lincoln Municipal Airport	NE	N	LNK	157,266	599,912	$14,748,299	$9,195,017	$1,247,236	$666,212	$3,688,803	$2,455,000	$11,571,851	$2.35	$7.76
University Park	PA	N	UNV	153,571	191,366	$7,292,859	$5,186,113	$401,184	$693,834	$798,039	$462,220	$7,808,282	$3.81	$8.27
Alexandria International	LA	N	AEX	149,236	22,801	$9,558,861	$10,195,304	$10,932,618	$481,718	$15,917,209	$428,378	$2,565,551	$1.08	$2.47
Average				255,442	359,716	$8,677,378	$7,506,042	$4,072,965	$1,040,258	$8,846,748	$1,702,251	$10,309,778	$2.13	$7.64
Airports within 200 miles of BDR															
Bradley Intl	CT	M	BDL	3,393,716	5,020	$73,393,648	$55,790,634	$1,925,974	$15,178,632	$33,140,473	$11,677,916	$96,125,062	$4.92	$9.14
Westchester County	NY	S	HPN	859,812	760,702	$49,922,404	$56,844,864	$0	$5,043,524	$14,406,976	$1,468,467	$22,454,629	$1.47	$17.95
Long Island Mac Arthur	NY	S	ISP	785,286	791,021	$16,975,231	$13,631,086	$4,560,651	$3,046,433	$17,938,132	$1,747,335	$0	$3.98	$8.00
Stewart Intl	NY	N	SWF	264,773	729,555	$11,267,367	$22,679,353	$3,785,033	$1,121,852	$13,907,280	$8,206,657	($3,334,605)	$1.40	$2.75
Tweed-New Haven (b)	CT	N	HVN	50,355	N/A	N/A	N/A	$1,000,000	$221,000	N/A	N/A	N/A	$3.00	N/A
Average				1,070,788	571,575	$37,889,663	$37,236,484	$2,254,332	$4,922,288	$19,848,215	$5,775,094	$28,811,272	$2.95	$9.46

(a) Most recent year for when data was available.

(b) FAA Form 5100-127 did not contain data for HVN. As a result, HVN enplanement and landing fee data was taken from its web site, and the PFCs were calculated as $4.39 times enplanements.

Source: FAA Form 5100-127 downloaded on May 13, 2020

Appendix C – Runway to Taxiway Offset Risk Assessment

Bridgeport / Sikorsky Memorial Airport (BDR)

Runway-Taxiway Offset Evaluation

The BDR critical aircraft has recently increased to Airplane Design Group (ADG) from II to III (e.g., Bombardier Global Express), which increases the standard **Runway Centerline to Parallel Taxiway Centerline** from 300' to 400'. It is noted that this larger 400' offset covers a wide range of Airport Reference Code (ARC) categories include C-III with visual runways, up to D-V with full precision approaches As such, this evaluation reviews whether the runway-taxiway offset could be retained at 300' for BDR with an FAA Modification of Design Standards (a 'Mod') based the FAA requirements and a risk assessment using the FAA Risk Matrix.

Currently, partial parallel Taxiways "D" and "G" serving Runway 11/29 include a 300' offset in most location. Relocating the taxiways to a 400' offset will impact several airport facilities, eliminate apron areas, and require a significant investment. If adequate safety is provided by the existing runway to taxiway offset, the Sponsor would choose to retain the taxiways in their existing locations. This evaluation is provided below.

Runway Obstacle Free Zone (ROFZ); The runway-taxiway offset must prevent any part of an aircraft on the taxiway from entering the ROFZ. The ROFZ is a volume of airspace centered above the runway centerline, with a width of 400' for large aircraft. Thus, the ROFZ encompasses a 200' area on both sides of the runways at BDR. Note that the other related design standards, Precision OFZ, Inner-Approach OFZ, Inner-Transitional OFZ are not applicable at BDR as there are no Approach Lighting Systems and runway visibility minimums are 3/4 miles and higher.

The BDR runway characteristics are listed below.

Runway Characteristics			
	ARC	IAP	Visibility
Runway 11/29	C-III	RNAV	1-mile
Runway 6/24	C-II	ILS	¾ mile

With wingspans of up to 118’ (AGD III), ½ the wingspan equals 59’. With an aircraft centered on the parallel taxiway, the wingtip remains well clear of the ROFZ, e.g., 300’ offset, minus ½ ROFZ width of 200’ = 100’. 100’ minus 59’ = 41’ wingtip clearance to the ROFA. Even with an aircraft situated along the edge of the taxiway the wingtip clearance remains over 20’. As such, a 300’ runway-taxiway offset prevents aircraft from entering the ROFZ. At BDR, the taxiway hold positions are at 250’ from centerline, which prevents the noise and fuselage from penetrating the ROFZ.

Risk Assessment: Per FAA practice, the evaluation above is not sufficient for FAA to issue a modification to design standards, and a risk assessment is required. The Risk Assessment was conducted using the FAA’s Risk Matrix and the Risk Assessment Method provided in the Airport Cooperative Research Program (ACRP), Report 51, ***Risk Assessment Method to Support Modification of Airfield Separation Standards***.

The FAA Risk Assessment Matrix is reproduced on the following page:

07/22/13 5200.11 Chg 2
Appendix C

Risk Matrix

Likelihood \ Severity	Minimal 5	Minor 4	Major 3	Hazardous 2	Catastrophic 1
Frequent A					
Probable B					
Remote C					
Extremely Remote D					
Extremely Improbable E					*

* Unacceptable with Single Point and/or Common Cause Failures

High Risk
Medium Risk
Low Risk

For a risk evaluation of the runway-taxiway offset, the Risk Severity is always considered "Catastrophic or Category 1", as an aircraft accident has the potential for loss of the aircraft and fatalities of passenger and crew. For a catastrophic severity, the FAA never considers the risk to be "Low". As shown above the severity of a catastrophic accident is considered high (i.e., unacceptable) unless the chance of accident occurrence is categorized as "Extremely Improbable".

The FAA Risk Criteria identifies "Extremely Improbable" for a specific airport facility as:

- Expected to occur less than every 100 years

The risk assessment needs to identify the probability of such and accident in any given year at BDR; therefore, the analysis is limited to determining the frequency of an accident of an aircraft operating on the runway striking an aircraft on a parallel taxiway with an offset of 300'. ACRP Report 51 provides risk plots of the probability of collision per operation, which may then be converted to frequency in terms of years. The risk assessment method evaluates three flight phases:

1. Landing approach before touchdown (airborne)
2. Landing rollout (risk of veer off the runway)
3. Takeoff (after rotation)

A summary of the risk assessment evaluation is provided below.

1. **Landing approach** is generally the risk associated with missed approaches on an ILS procedure. It is noted that this is only available on Runway 6, but that the minimums do not meet Cat I standards as an approach lighting system is not provided (Runway 6 minimums: 250' DH and ¾ visibility). Nevertheless, ACRP Report 51, Figure AA-33 was used to identify the risk of collision per operation. As shown below that risk is 1.0E-09, or 0.000000001%, or 1 in 100 Million landings, which is well below the acceptable risk per the matrix. An occurrence would be far less frequent that once every 100 years on average at BDR.

2. **Landing Rollout** has generally greater risk than approach. ACRP Report 51, Figure AA-43 is used to identify the risk of collision per operation for ADG III. As shown that risk is 1.0E-07, or 0.0000001%, or 1 in 1 Million landings. With a forecast of less than 4,000 annual Group III landings annually at BDR, a veer off accidents on landing roll out by a Group III aircraft would be expected once every 250 years (1,000,000 / 4,000 Group III landings per year = 250 years).

3. **Takeoff** risk is far below that of landing, and Report 51 states that an analysis is only needed for runways that are limited to departures. i.e., when the runway is used for both landing and takeoff, the highest risk condition is for landings. As such, the risk plot for takeoff would provide a risk level well within acceptable parameters.

In conclusion, each phase of flight identifies that the risk of an accident to an aircraft on the parallel taxiway is less than one in every 100 years. This fits the FAA classification of "Extremely Improbable", and a determination that a 300' runway-taxiway offset has a "Medium Risk" per the risk matrix. Therefore, the FAA may consider a Modification to FAA Design Standards for a 300' runway to taxiway offset at BDR. The associated risk plots are provided below.

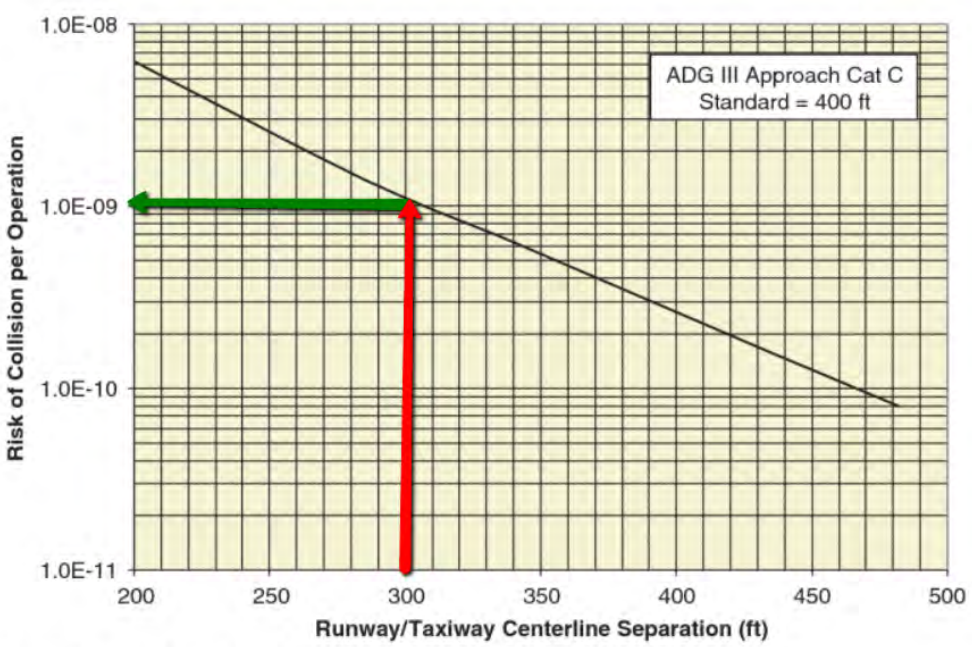

Figure AA-33. Missed approach collision risk for ADG III Cat I.

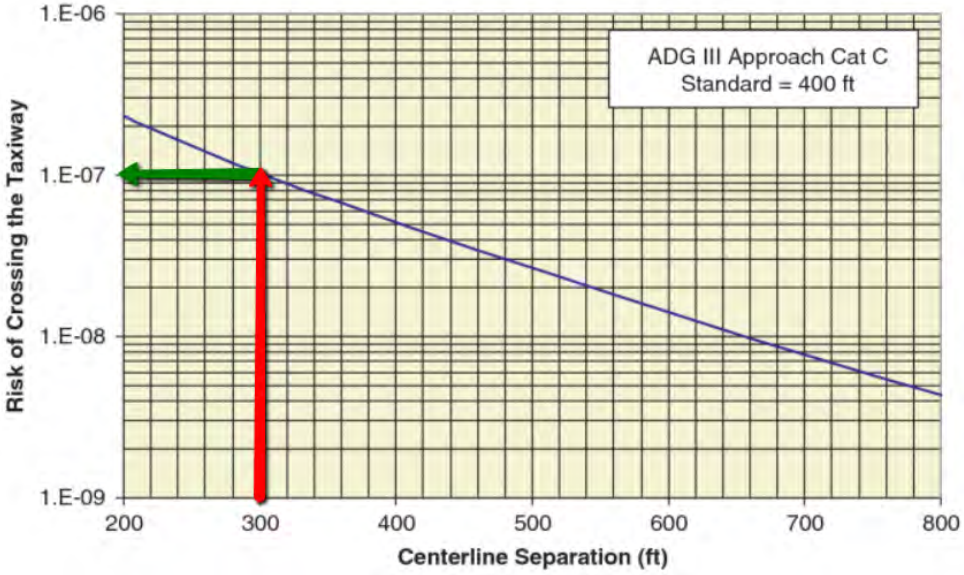

Figure AA-43. Landing veer-off collision risk for ADG III.

Appendix D – Study Comments and Responses

Master Plan Update

Igor I Sikorsky Memorial Airport

Comments and Responses

The following is a list of comments/questions received throughout the Master Plan process. This addresses written comments by Advisory Committee Members, public comments, and agency comments.

Comment	Response
Nick Y. – July 11, 2019 BDR runway 11-29 is integral to the airport. As a private pilot of a light piston aircraft, I am aware it is the preferred runway for noise abatement. Larger jet traffic creates the most noise, hence I see it as crucial that the runway not only be maintained, but also be able to accommodate jet traffic and larger propeller operations, especially if there is a chance of commercial flights out of BDR in the future.	Comment noted. The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement.
Robert C. – July 11, 2019 I'm not at all comfortable with the idea that runway 11-29 could be deemed un-needed. I have made many landings on R/W 29 in my time at Bridgeport and the one time I had an engine emergency I used runway 11 which I was very happy to have as it was aligned with my flight path. Since runway 11/29 is the longer of the two runways it seems counterproductive to remove that asset	Comment noted. The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions.

when any increase in traffic or size of traffic is likely to occur in the future.	
Alexander C. – July 11, 2019 It is very important for safety and noise abatement reasons to make sure that both runways, including runway 11-29, remain open and are left at their current length or even extended. Note that not only is there a lot of corporate jet and charter activity at the airport, but also flight schools. Forcing students into crosswind landings, or even a situation where weather conditions shift and the crosswind component exceeds an aircraft or pilot's capabilities, is a significant risk if 11-29 is closed or shortened.	Comment noted. The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions. Additionally, it is noted that the City of Bridgeport and Town of Stratford have a standing agreement not to extend the runways.
Jonathan W. – July 11, 2019 KBDR is the only airport in Southern CT and at a time when the area is struggling to retain and attract businesses, transportation infrastructure is of paramount importance. Having both 06-24 and 11-29 available is extremely important to the long term ability of the airport to attract users and revenue. Ideally, the master plan would call for the expansion of 11-29 to allow commercial service to return to KBDR at a time where all of the Fairfield County users go to NYC airports or KHPN. There is a significant un-tapped and under served market for commercial service to places like Orlando, Miami, Ft Lauderdale, Tampa, Denver, Salt Lake City and the Caribbean and other such vacation and/or	Comment noted. Potential commercial service was reviewed in the Master Plan Report. Study recommendations support the re-introduction of air service and airport property is being reserved to accommodate this potential activity

business destinations. Many people in the area work in NYC and have business related travel and would easily prefer going to KBDR over NYC airports for commercial travel. Preserving, updating and maintaining both 11-29 and 06-24 are important to allow CT to start to have a more business friendly climate to attract employers who would utilize KBDR as transportation infrastructure if it was an available option.	
Ralph R. – July 11, 2019 I am the chief pilot for RC Jet, LLC and we fly a Lear 45. We fly into KBDR often. I want to stress the importance of keeping runway 29 a primary runway. Runway 11/29 is slightly longer than 6/24. There are occasions when the temperatures are high and we need the extra length in order to accommodate the fuel necessary to complete a trip. Also, the crosswind factor is very critical. If 11/29 is designated a less important runway and becomes an "additional" runway as classified by the FAA, this would force the use of runway 6/24 in high wind conditions and either cause a cancellation in a departing flight or a diversion if flying in. This would mean landing at another airport and incurring fees and delays. Runway 11/29 is needed to make KBDR a viable destination for jet aircraft.	Comment noted. The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions. Based on all weather wind coverage , Runway 11-29 and Runway 6-24 are nearly identical. Runway 6-24 does provide slightly better wind coverage during IFR conditions, while Runway 11-29 does so for VFR conditions.
Richard A. – July 11, 2019 Considered modification or termination of Runway 29-11 at KBDR is counter-	Comment noted.

productive to the needs of the aircraft operators as well as the surrounding community. Please register my opposition to any action that would downgrade the utility of the airport based on the stated considerations. I operate an aircraft from that airport, the location and design of which is superior to other airports in the vicinity.	The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions.
Sebastian B. – July 11, 2019 The importance of runway 11-29 to the airport is paramount. This would limit the operational viability of the airfield and risk losing many jobs. Do not close 11-29!	Comment noted. The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions.
Annette M. – July 11, 2019 I have been an employee of the City of Bridgeport/Sikorsky Memorial Airport with over thirty years of service, and I fully support keeping and updating Runway 11/29 at Sikorsky Memorial Airport. Shortening or abandoning Runway 11/29, would not only hurt the tenant users/airport community but would cause a safety issue in case of an emergency, and I have witnessed many aircraft emergencies over my tenure. Airports are all about safety and the possibility of shortening or closing RW 11/29 would be a huge safety issue in my opinion. Lives over money to keep RW 11/29 funded, is what should be taken into account as the Master Plan progresses. Investors have always been interested in Sikorsky	Comment noted. The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions.

Memorial Airport over the years and the possibility of closing RW 11/29 would be a detrimental to Fairfield County and the aviation community.	
David P. – July 11, 2019 I am in total support of PRESERVING runway 11-29. I have been flying out of BDR since 1978, and it is my experience that the strongest winds at the airport are out of the northwest thus creating the necessity for this runway to remain open. Shutting this runway down would cause difficult cross wind conditions for general aviation aircraft at BDR.	Comment noted. The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions.
Aaron H. – July 11, 2019 Maintaining both 11/29 & 6/24 runways to their full capability is critical to preserving air safety as well as insuring that BDR will remain a vital economic asset to the State of Connecticut. With increasing competition for corporate investment from other states, it is critical we maintain full capability at BDR to support economic growth in Bridgeport, Fairfield Country and Connecticut. As a user of the airport for over four decades and the CEO of a company serving the aerospace industry, I know first hand how valuable airport resources are to economic growth and therefore, strongly urge the FAA and State of Connecticut to invest the resources to expand rather than diminish BDR.	Comment noted. The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions.
Lee W. – July 11, 2019	Comment noted.

As a pilot based at KBDR, keeping and expanding Runway 11-29 is important to the flying safety of GA aircraft, but will if expanded provide the economic growth to the area via airlines and businesses electing to establish a presence around the airport.	The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions. Additionally, it is noted that the City of Bridgeport and Town of Stratford have a standing agreement not to extend the runways.
Bradley P. – July 11, 2019 I am the owner of a Cirrus SR22 that is parked at Volo Aviation. I read with great concern the possibility that runway 11-29 may have a limited future at BDR. Given strong coastal winds we often encounter at BDR, I can tell you with great certainty that eliminating that runway would reduce flexibility to fly and significantly reduce safety on days i choose to fly but get caught with unexpected shifting winds. I understand there may also be discussion about potential limited funding under FAA guidelines that would result in keeping 11-29 active, but shortening and reducing its width. As a pilot, length and width are huge safety cushions, particularly at coastal airports that frequently experience high and gusty winds. Any change with respect to 11-29 that compromises safety would cause me to seriously consider switching my home airport from BDR back to HPN. It seems to me that any consideration to reduce the usefulness or eliminate 11-29 all together is penny wise and pound foolish. While costs	Comment noted. The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions.

may be reduced on the margin, future revenues will likely be far more adversely impacted causing a downward spiral for BDR. Rather than making a plan to reduce services, how about we make a plan to invest in the infrastructure to not only keep existing tenants at BDR, but also attract new ones.	
Rocky G. – July 12, 2019 We have been tenants of KBDR since 1978 and have been flying a high performance twin turboprop aircraft for the past 10 years. Runway 11/29 is a critical feature to our tenancy at the airport and emphatically recommend that the level of service brought by the current airport configuration be continued for the safety of ALL users of this strategically located facility.	Comment noted. The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions.
Jeffrey T. – July 13, 2019 We have been based at KBDR for 8 years and operate a category C turbojet aircraft. We utilize 11/29 very often and would find losing use of those runways to be detrimental to our flight operation. Having flexibility and the capability to utilize all runways at KBDR allows our business tool to be of maximum productivity for our client. Without that flexibility, the efficiency generated by owning this aircraft would deteriorate while travel delays and costs would increase. Maintaining and or improving the runways at KBDR, 11/29 in this instance, is vital not only to the success	Comment noted. The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions. The Master Plan recommends standardizing all taxiways to 35’ wide per Taxiway Design Group 2 (50’ wide if commercial service returns to BDR).

of our company and flight operation, but to all operations and the community at large. The investments made in our community as a result of the business being done using private aircraft is immense and KBDR is a valuable piece of that conduit. Limiting it, losing it or degrading it would send the wrong message and substantively reduce operations and money spend in the area. Please fund 11/29 rehabilitation and continue its operational readiness. I would also ask that you please consider standardized taxiway and airport markings as well as additional LPV approaches to all runways. The approaches are needed and would be a welcomed addition to the growth KBDR is currently seeing.	Removal of surplus taxiway pavement and geometry improvements are also recommended; however, environmental conditions hinder the provision of full parallel taxiways. The Master Plan recommends adding vertically guided approaches (i.e., RNAV GPS LPV) to all runway ends (see Chapter 4.1.7).
David F. – July 13, 2019 The Sikorsky Memorial Airport FAA Master Plan has the potential to negatively affect the Airport and consequently, the economy and welfare of the region. Friends Of Sikorsky Airport (FOSA) is an organization made up of Airport users and Airport supporters. This includes an email list of over 480 active members and an additional two hundred members. We represent the Airport tenants, Airport users, and others supporting the Airport and work with the surrounding communities to insure we are the best neighbor possible while at the same time promoting the Airport's economic value to the region. Modifying, shortening, or eliminating Runway 11-29 will have significant	Comment noted. The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions. The Master Plan recommends adding vertically guided approaches (i.e., RNAV GPS LPV) to all runway ends (see Chapter 4.1.7).

detrimental impacts for the businesses operating at the Airport, transient aircraft traffic, and the surrounding community. The FAA is fully aware of the sensitivities to noise and aircraft operations and the impact on surrounding communities. Any modification to Runway 11-29, the preferred noise abatement runway, will cause concerns and bad favor with the areas of Lordship and the Milford shoreline because larger aircraft will be forced to use Runway 6-24 exclusively. Current operations strive to utilize Runway 11-29 when conditions permit and light winds allow the use of Runway 11 or 29. Runway 11-29 is the longest runway at Sikorsky Memorial Airport and certain operations require that aircraft use the longer runway. With the decommissioning of the Harbor Power Plant and removal of the 511 Foot (ASL) stack, Runway 11 could well qualify for a GPS RNAV approach to serve the Airport during low ceiling and visibility conditions. Weather conditions, specifically after the passage of a strong winter cold front, produce three to four days of strong winds that favor Runway 29. Locally, these conditions are known as “Seat belts and sunglasses weather!” With winds above 25 Knots during these times, even the large aircraft operators must utilize Runway 29. Changes to Runway 11-29 that make the runway unusable by the larger aircraft will require them to land else ware. Experience shows that after a few times having to divert because of wind conditions, they will stop	

using Sikorsky Memorial Airport. This will be a negative impact on both the Airport and the surrounding economy. A second flight school has recently started operations at the Airport. Having Runway 11-29 available allows them to operate without interruptions for strong northwest winds. The same applies to the many small and medium sized aircraft which could be forced to cancel operations if Runway 29 is not available. Friends Of Sikorsky Airport recognizes the need to preserve and improve resources that, like our Federal Highways, navigable rivers, and harbors are a resource for the American economy. Maintaining and improving Runway 11-29 is a must for the preservation of the Airport and the economy of the State and region.	
Ken S. – July 13, 2019 I have been flying out of KBDR for 22 years now. I remember when the airport had airline service and I actually used the service occasionally. It was a good feeling knowing that your dollars were staying local and the convenience factor was huge. I now work at the airport and although it doesn't have airline service it does support many corporate aircraft and a large amount of training and private aircraft. I am concerned that any loss of funding towards keeping runway 11/29 a safe well maintained runway would be detrimental to the entire airport. If runway 11/29 becomes unusable it may be the end for Sikorsky airport. It	Comment noted. The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions. The Airport (City of Bridgeport) has received an initial state grant offer allocating funds for the Rehabilitation of Runway 11-29. Terms of this potential grant are currently under review (August 2020). If approved and issued, Runway 11-29 rehabilitation could commence as early as 2021.

would impact jet traffic and small aircraft during certain times of the year. If aircraft keep having to divert, it would mean aircraft would move out a to find more suitable bases and that impact would be substantial. In order for Sikorsky airport to maintain its competitive edge over other locations we must keep it safe and maintain the runway so that Sikorsky can stay one of the most important locations in the United States. I know that any cuts in funding to runway 11/29 would mean the company that I work for would have to revisit their 5 year outlook for our business and possibly consider alternatives. The cut in funding all makes sense until an accident happens from an aircraft trying to land in a crosswind. It would be only a matter of time.	
John O. – July 14, 2019 I am commenting on and against the consideration to close KBDR runway 11-29, while I support the repositioning to allow full length use. - Having 2 available runways with 50deg variance in headings, allow use and successful takeoff and landing, when crosswind make the other runway less certain, thereby making the day to day airport operations more useful. - Noise abatement has been a large part of the community acceptance to KBDR, versus the whining and negative tones we saw in the 1980's and 1990's. only having rwy 6-24, will result in more noise complaints and negative attitudes, from those in both Lordship and Milford, due to the flight paths and distances. - Air traffic can successfully	Comment noted. The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions. The entirety of the airport is in the floodplain. A short-term solution recommended in the Master Plan is to raise the Runway 29 end by several feet in conjunction with a 150’ shift. This would reduce flooding on the runway, but does not address Main Street (which is a state road).

operate on both runways, with proper safety margins, particularly with the radar finally now available at KBDR. This works very well when operations are from combinations of smaller GA aircraft, higher speed Jet aircraft and especially when Helicopters and student training are put in the mix. - Lastly having rwy 11-29 allows traffic patterns to stay mostly away from the JSD (Sikorsky Heliport) and using only rwy 6-24, results in aircraft becoming much closer the JSD airspace and increased risk of an incident occuring. In closing I was not able to locate the reasoning anyone is considering the closing of rwy 11-29 and knowing these may alter me view. However please whatever the final answer is make a workable plan, and get some highly skilled people involved so the Main st. flooding fiasco, that still continues today, is not repeated.	
Matthew A. – July 15, 2019 Thank you for the opportunity to comment on the Airport Master Plan. I am concerned the FAA will not fund repairs and improvements to runway 11-29. As a private business owner and active general aviation pilot I use the airport on a weekly basis for work. On many occasions flying home from a business trip this runway has ensured my safe arrival. If not for this runway my confidence in keeping my plane at BDR would wane. It's the longest runway at BDR. It's the runway most used after a cold front passes through our area. If the runway were	Comment noted. The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions. The Airport (City of Bridgeport) has received an initial state grant offer allocating funds for the Rehabilitation of Runway 11-29. Terms of this potential grant are currently under review (August 2020). If approved and issued, Runway

to close I would serious consider moving my aircraft for safety reasons.	11-29 rehabilitation could commence as early as 2021.
Dave J. – July 15, 2019 I appreciate the opportunity to comment concerning repairs and improvements to Runway 29. As an aircraft co-owner of a General Aviation airplane, based at KBDR and a tenant of Atlantic Aviation, I support that Runway 11-29 be maintained, repaired and improved. Our airplane is maintained by a maintenance provider at KBDR, it is hanger tenant of Atlantic Aviation and fuel is purchased from Atlantic Aviation. For those 3 items we spend approximately $15,000.00 to $17,000.00 per year directly on the airport. I agree with the comments made by the Friends of Sikorsky Airport that: "Runway 11-29 is the longest runway at Sikorsky Memorial Airport and serves the larger aircraft using the Airport. Runway 11-29 is the preferred runway for noise abatement and enhances our ability to be a quiet and friendly neighbor to both Stratford and Milford. Runway 11-29 is the runway of choice after cold frontal passage and strong winds (over 25 Knots) from the Northwest continue for three to four days. These periods of strong northwest winds would virtually close the Airport to operations by the two Airport based flight schools and many other operations without Runway 11-29. Many larger aircraft would be forced to divert to an alternate airport. Most of the small aircraft based at the Airport would have to wait for wind conditions to improve." While a shortened	Comment noted. The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions.

or narrower runway 11-29 should not present difficulties for our airplane, the closure of Runway 11-29 would cause us to seriously consider relocating to a different airport. The cross wind issues with only Runway 6-24 available could place our airplane outside it's operational envelope - that would be a major factor in a decision to move and take our expenditures and support of on-airport businesses with us. It was good to see Airport (Manager) reaching out to the local community with the recent public meeting - I look forward to the next one!	
Steve F. – July 15, 2019 Please do not consider closing RW11-29. Despite the fact that the current government administration in Bridgepoint could care less about the airport, the future of the airport has tremendous potential to become a viable and efficient transportation system. Closing the runway reduces capacity and seriously affects flight safety especially for light general aviation aircraft weighing less than 7,500 lbs. BDR is vital to the NPIAS and users should expect the FAA, state and City of Bridgepoint to realize that closing 11/29 is short sighted thinking. Also, with the onset of light sport aircraft, several in use at the airport now, the safety risk is increased due to lower wing loading as a result of their design. These aircraft are difficult to maneuver in wind conditions above 15 knots. Students flight training in this type of aircraft is on the increase at BDR and nationally. Master plans should be	Comment noted. The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions.

written with positive forecasts for economic growth, safety and the environment as prime factors. Closing 11/29 is a big step in the wrong direction.	
Thomas H. – July 15, 2019 Runway 11-29 is the longer runway at Sikorsky Memorial Airport and serves the larger aircraft using the Airport. Runway 11-29 is the preferred runway for noise abatement and enhances our ability to be a quiet and friendly neighbor to both Stratford and Milford. Runway 11-29 is the runway of choice after cold frontal passage and strong winds (over 25 Knots) from the Northwest continue for three to four days. These periods of strong northwest winds would virtually close the Airport to operations by the two Airport based flight schools and many other operations without Runway 11-29. Many larger aircraft would be forced to divert to an alternate airport. Most of the small aircraft based at the Airport would have to wait for wind conditions to improve.	Comment noted. The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions.
Clifford F. – July 15, 2019 Concerning the closure of runway 11/29. Recalling that BDR was reduced in the past from three runways to the current two runways, this was a significant reduction in airport capability. BDR is used by commercial, corporate and private pilots all coexisting on the same field. Removal of 11/29 will increase cross wind landing and	Comment noted. The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions.

takeoffs and as a result will increase pilot workload and reduce safety margins. BDR as you are well aware is on the coast where at times the wind can blow hard. Having a runway more aligned with the wind only increase operational safety. Removal of a vital runway pair will force pilots (some in training) to make difficult approaches to touchdown and initiate high workload takeoffs.	
Jonathan W. – July 15, 2019 I am concerned that the draft master plan does not call for improving/maintaining 11-29. I know the 06-24 construction was more expensive than projected, but 11-29 is a safety issue. With the recent 2nd circuit ruling on FAA decisions pre-empting state and local statutes, the FAA does not need to give in to local pet projects which will double the cost of repairs/improvements. Since it is a safety issue, updating and repairing 11-29 should not require local permits etc because of pre-emotion for exclusive federal decisions on safety issues. Also, the Bridgeport mayor is supporting improving KBDR's infrastructure. Some safety considerations: Runway 11-29 is the longest runway at Sikorsky Memorial Airport and serves the larger aircraft using the Airport. Runway 11-29 is the preferred runway for noise abatement and enhances our ability to be a quiet and friendly neighbor to both Stratford and Milford. Runway 11-29 is the runway of choice after cold frontal passage and strong winds (over 25 Knots) from the Northwest continue for three to four days.	Comment noted. The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions. The Airport (City of Bridgeport) has received an initial state grant offer allocating funds for the Rehabilitation of Runway 11-29. Terms of this potential grant are currently under review (August 2020). If approved and issued, Runway 11-29 rehabilitation could commence as early as 2021.

These periods of strong northwest winds would virtually close the Airport to operations by the two Airport based flight schools and many other operations without Runway 11-29. Many larger aircraft would be forced to divert to an alternate airport. Most of the small aircraft based at the Airport would have to wait for wind conditions to improve.	
Brian M. – July 15, 2019 The Bridgeport Sikorsky Memorial Airport is a crucial resource for Bridgeport, the surrounding region and the State of Connecticut. Bridgeport airport warrants further development and capacity increases that will continue to enhance the safety, efficiency and effectiveness of flight operations that directly contribute to the economic vibrancy of Bridgeport. As a corporate pilot for an organization based in Bridgeport, I urge you to support efforts to develop the airport. Having access to two runways at Bridgeport, runways 11/29 and 6/24, that can support Category C and D aircraft contributes to Bridgeport's ability to accommodate and support flight operations by private and commercial operators. Flight operations by these operators provide the airport, and surrounding businesses and vendors, with an economic benefit that affects not only the immediate area of Bridgeport but adjacent communities and economies. As you look to the future and envision ways to improve the airport, please consider the upgrade and use of standardized runway and taxiway markings	Comment noted. The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions. The Master Plan recommends adding vertically guided approaches (i.e., RNAV GPS LPV) to all runway ends (see Chapter 4.1.7). It is noted that the City of Bridgeport and Town of Stratford have a standing agreement not to extend the runways.

and signage. The installation of LPV approaches on all runways would enable the airport to keep pace with current, and emerging, instrument approach technologies. Finally, runway extensions and lengthening, if possible, would position the airport to support not only current, but future operations, as the level of flight domestic and international flight activity increases across the region.	
Paul S. – July 15, 2019 Commenting in support of needed repairs for runway 11-29. This is KBDR's longest runway, it is the preferred runway for noise abatement and, it is better aligned for strong winds from the north west (cold front passage).	Comment is noted. The Airport (City of Bridgeport) has received an initial state grant offer allocating funds for the Rehabilitation of Runway 11-29. Terms of this potential grant are currently under review (August 2020). If approved and issued, Runway 11-29 rehabilitation could commence as early as 2021.
Will A. – July 15, 2019 I'm writing to voice my support for the continuation of runway 11/29 at BDR. It's a necessary runway for larger aircraft and has a long overrun area on Rwy 29. It is also the preferred runway for noise abatement, and as a former operations person at BDR I used to get noise complaints from residents frequently when a jet would land on Rwy 24 late at night. Closing runway 29 would only increase the noise complaints. During winter, the winds are generally from the northwest, and closing runway 29 would severely restrict operations at BDR.	Comment noted. The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions.

Mario P. – July 15, 2019 The following bullet points are offered as to why the airport should maintain it's current runways: -Winds often are to strong to land only on runway 24. If runway 29 is taken away as an option, we would often have to execute a missed approach or go to another location due to the wind limitations of our airplane. Bridgeport is our home airport, so executing missed approaches and going to another airport is inconvenient and costly. - Bridgeport is one of the few airports that can accommodate larger corporate aircraft in the southwest CT area, with easy access to New York. Closing one runway makes it less appealing to those users reducing economic activity in the region. - CT infrastructure is already not sufficient to meet the needs of the state. Why would we want to take away some of the infrastructure we already have? - The approach to runway 29 and departure off runway 11 immediately takes you out over the water. This reduces potential noise issues. - There is not enough hangar space at other alternative airports. Bridgeport is truly a unique and viable choice that meets our needs and needs to be supported more, not less.	Comment noted. The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions.
Chris J. – July 15, 2019 I believe it essential that KBDR continue to have a well-maintained pair of runways. Both runway 6/24, which is oriented for	Comment noted. The final Master Plan Recommendations include continued use and improvements to

prevailing breeze operations (24) and nor'easter wind and storms (6) and runway 11/29 which is oriented for use in the very strong and gusty winds for 2-3 days after passage of a cold front are critical to the ability of the wide range of aircraft found at Sikorsky Memorial to operate safely, efficiently and consistently. I know they are both essential for my use of the airport. If these two runways can not be maintained in current or better condition, the viability of the airport as we know it will cease. And that would be an incredible shame because the airport is such an important resource to Bridgeport, Stratford and all of southwestern Connecticut. Without it, or an effective version of it, many of the businesses in this area will be forced to either use less desirable alternatives or, in the extreme, relocate to areas better served. I can't stress enough how important this is to me personally as well as to the other airport users including transient aircraft and all of the businesses directly and indirectly affected	Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions.
Mike C. – July 15, 2019 I've recently heard of the possibility of neglecting runway 11/29 and not going forward with repairs. This runway is vital to the usage of the airport by light aircraft such as the one I own and base at the airport. It's important to keep this runway (the longest) open and in good condition in order to facilitate the use of the airport in all wind conditions and for all aircraft. Runway 11-29 is the runway of choice after cold frontal	Comment noted. The Airport (City of Bridgeport) has received an initial state grant offer allocating funds for the Rehabilitation of Runway 11-29. Terms of this potential grant are currently under review (August 2020). If approved and issued, Runway 11-29 rehabilitation could commence as early as 2021.

passage and strong winds (over 25 Knots) from the Northwest continue for three to four days. These periods of strong northwest winds would virtually close the Airport to operations by the two Airport based flight schools and many other operations without Runway 11-29. Many larger aircraft would be forced to divert to an alternate airport. Most of the small aircraft based at the Airport would have to wait for wind conditions to improve. Runway 11-29 is the longest runway at Sikorsky Memorial Airport and serves the larger aircraft using the Airport. Runway 11-29 is the preferred runway for noise abatement and enhances our ability to be a quiet and friendly neighbor to both Stratford and Milford.	The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions.
Richard H. – July 15, 2019 29/11 is a very very important runway! It needs to stay for many reasons. It is never a good idea to limit landing options to just one runway. As a pilot I remain whole hearted against any reduction of length or width of runway 29/11.	Comment noted. The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions.
William S. – July 15, 2019 I am a general aviation pilot, Private rating and fly out of Three Wing at least 35-40 times per year for both my architectural business and for pleasure. I am dismayed to hear that Runway 11-29 may not be favored for funding, either for maintenance or improvements. It will severely curtail my use	Comment noted. The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions.

of the airport for many reasons: 1. It is the best runway for noise abatement with the least amount of impact to those in Lordship or the Devon section of Milford. 2. I believe I use Runway 11-29 for half of my annual flights due to prevailing winds at those times and the strong winter winds coupled with a crosswind condition on 6-24 would limit my ability to use the airport. Please don't squander the resource that we have in this runway by removing its priority status and affecting us whose lives would be at risk without the alignment 11-29 provides. 3. Removing 11-29 from priority and funding status will impact the regional economy as the charter operations will not be able to benefit from this longer runway that is oriented away from neighborhoods and sensitive areas. Please reconsider the status of runway 11-29. It is essential.	The Airport (City of Bridgeport) has received an initial state grant offer allocating funds for the Rehabilitation of Runway 11-29. Terms of this potential grant are currently under review (August 2020). If approved and issued, Runway 11-29 rehabilitation could commence as early as 2021.
Jeff D. – July 15, 2019 The flexibility and safety of having 4 active runways was a major factor in the deciding factor of basing my aircraft in Bridgeport. The recent proposal to cease the maintenance of runway 11-29 is disappointing and short-sighted, as the resulting loss of aircraft will likely put additional strains on revenues. Understanding that every dollar counts, why not invest in the future of the airport versus path of conscientious neglect currently being proposed. An on field restaurant, antique aircraft and other creative events would enhance the experience of users and add to the revenues thru leases and higher	Comment noted. The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions. The Airport (City of Bridgeport) has received an initial state grant offer allocating funds for the Rehabilitation of Runway 11-29. Terms of this potential grant are currently under review (August 2020). If approved and issued, Runway

activity. The number of times I've flown to stay current, but pick a field with lunch options or other attractions is 99%. Given the coastal weather, strong and variable winds, particularly out of the NW in the winter are a major safety concern should 11-29 be closed, and will force me to reconsider the appropriate home for my aircraft, likely moving it out of state to NY.	11-29 rehabilitation could commence as early as 2021.
Jim O. – July 15, 2019 I would like to offer my unconditional support for the reconstruction and upgrade of Runway 11/29 at BDR, particularly as it would facilitate the return of commercial airline service to this airport. When such service was available in the past, I used it as often as possible for my frequent (at the time) business travel. I would gladly do so again. Even though diversions were common due to weather, the convenience of ready access to local commercial air service was tremendous. Failure to reconstruct and/or extend Runway 11/29, combined with a possible abandonment of same runway, would devastate the chances of the return of such commercial service. Such a failure would also have serious effects on existing commercial and civil operations at BDR. The airport's location on a point extending into Long Island Sound creates a natural need for an alternate crosswind to runway to 11/29, namely the recently reconstructed runway 6/24. Such a loss would be a great detriment to the larger Bridgeport economy. Regarding neighborhood issues: Noise - I have lived in	Comment noted. The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions. The Airport (City of Bridgeport) has received an initial state grant offer allocating funds for the Rehabilitation of Runway 11-29. Terms of this potential grant are currently under review (August 2020). If approved and issued, Runway 11-29 rehabilitation could commence as early as 2021.

Lordship for over 35 years. Never have I been disturbed by airport operations. Do I hear aircraft? Yes. Do I get an occasional whiff of Avgas or jet fuel? Yes. Has any of this ever disturbed my way of life? No. Environment - The local environment has co-existed with airport operations since its founding. I see no reason that this should change in the future. In short, BDR needs to return to the economic asset it has been in the past. Let's get on with it!	
Anthony R. – July 16, 2019 runway 11-29 is needed due to high winds after a front passes, also it is the prime noise abatement runway	Comment is noted.
Ben K. – July 16, 2019 As a private pilot for five years and a police officer for 20 years, I believe the closure of runway 11/29 would be a major safety issue for both new and experienced pilots. Runway 11/29 offers both an optional wind, safety and noise abatement alternative to runway 6/24. I received my private pilot license at Sikorsky Airport and without runway 11/29, I feel the width and length was a major deciding factor. Please feel free to reach out to me to explain my views in person. I have worked with several transportation companies doing studies with being an active police officer in Fairfield and would be more than happy to explain the very important reasons for keeping runway 11/29 open and active	Comment noted. The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions.

Steve S. – July 17, 2019 Keep that runway jet/turbine capable. Any reduction in airport capabilities reduces attractiveness to business which will hinder economic development and growth for the area and state.	Comment is noted.
Joseph G. – July 17, 2019 I urge those responsible for the continued operation of Runway 11/29 at KBDR to continue to provide the support necessary for continued operations on that runway. It is a viable and necessary facility to safely conduct flight operations for aircraft of any size during the varied and challenging conditions that exist during cross wind operations at KBDR 11.29	Comment noted. The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions.
Brad B. – July 17, 2019 I am the director of operations for a Hawker 800XP and we need runway 11/29. It is the longest runway at 4761 with the improvement removing the displacement it will be a useful runway. Today, at 30 degrees C, we are limited from our maximum take off weight of 28,000 to 25,400 pounds. Should we move to OXC, we can take off at maximum gross due to the longer runway. Adding 10 knots allows us to operate at 26,000 and if we use the 15 knots of wind reported today, its 26,200! Almost 1,000 lbs. That?s 10% of our fuel capacity. Put us back at runway 24 and back down to 25,500. 15	Comment noted. The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions. The recommended plan increases the Runway 29 length available for landing to 4,550 feet, but the displaced threshold cannot be eliminated due to the location of Main Street and raising terrain to the east.

knots of wind with only 100lbs of increased capacity. As for landing, we could use the improved runway and removal of the displacement. At today's temp of 30C, we need 4414 feet of runway. If use today's wind, we only need 4008 feet of runway. Runway 24 is displaced and therefore limiting, and runway 6 would be a tail wind, also limiting. I feel that the 11/29 is an important component for the Bridgeport airport and a major consideration for Connecticut's weak aviation industry. This airports value is in its ability to support general aviation turbine equipment. Take that away and the jets will move away as well.	
James D. – July 17, 2019 Flying as both an airline and corporate pilot and flight instructor over the last 40 years, I often relished the option of runway choices following cold front passage where northwest winds over 25-30 knots virtually precluded the use of Runway 6. But with Runways 11-29 no longer their original width, that option no longer applies to Air Carriers wishing to reestablish service at KBDR. Sure, one can say they can always miss and divert to New Haven (KHVN) or Westchester County {KHPN) but the economic costs involved apply to both the Air Carriers themselves and to their passengers. Limo charges and crew repositioning expenses can go logo-rhythmic very quickly. It's time to restore KBDR to an airport fully credentialed to handle Part 121 operations. The City and it's citizen road warriors deserve nothing less.	Comment noted. The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions.

Matthew S. – July 22, 2019 The ability to use either runway 11-29 or 6-24 is essential to safe operation on windy days. Please keep 11-29 available for use.	Comment noted. The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions.
Peter H. – September 8, 2019 Does the city of Bridgeport own the land on which Sikorsky airport exists?	Yes, the City of Bridgeport owns the Airport Property.
Greg C. – November 24, 2019 Community Access. Three examples: Increased pedestrian and visitor access to the Air & Space Museum as represented by Curtiss Hanger restoration. Increase footprint of the CAS to enable permanent display of airships, and also temporary exhibits i.e. visiting airships 2nd, the Civil Air Patrol. Assure this training facility has viable footprint to conduct its youth programs and accomplish its mission. Third, maybe the Windsock needs to be re-located, but please consider re-locating so similar venue remains available to the public.	The Master Plan accommodates tenant improvements, including: • The CT Air & Space Museum • The Civil Air Patrol facility • Improvement or relocation of the Restaurant However, the airport is not permitted to fund tenant improvements.
David F. – November 25, 2019 Friends Of Sikorsky Airport works very hard to support, represent, and promote the Airport. In this regard, I would like to make several comments about the Airport Master Plan process:	The responses below are limited to those directly related to the master plan study. <u>Meetings & Comments</u>: As of November 25, 2019, three of the five Technical Advisory Committee (TAC) meetings, and two of the

I for one do not feel that, as a member of the Technical Advisory Committee, I have been included in the planning process except for one short meeting that mostly concerned the North Ramp T-Hangars. Technical Advisory Committee members hear about "Airport plans" at a meeting two hours before the public meetings. Our comments don't seem to be welcome and there is no discussion! My additional comments include: The Control Tower cannot see a large section of Taxiway Alpha and an FBO. **The FAA was alerted to this before it became an obstruction! They did nothing!** We hear that the Fuel Farm next to Taxiway Golf is within an area that impacts the clear area for Runway 11-29. **The FAA was alerted to this obstruction before it was built. They did nothing!** The clear area for Runway 24 has an obstruction that the FAA was aware of long before the Airport gave the tenant a 99-year lease. **The FAA did nothing!** Runway 11-29 is the longest runway at Sikorsky Memorial Airport. It is also the preferred runway for noise abatement. Any reconstruction must not reduce the length of this runway. For Sikorsky Memorial Airport to continue to have an economic impact on the region, the Airport must maintain the current runway length with access provided to all aircraft that use the Airport.	three public meetings had been held. All TAC Members were notified and invited to each meetings. While the Airport requested comments by a certain dates so that they may be considered in a timely manner, all comments were accepted, reviewed, and considered throughout the entire master plan process for incorporation into the recommended plan. Obstructions and Tower line-of-site: The master plan effort included a new airport obstruction analysis, with recommendations included in the final plan. Each development recommendation also included a tower line-of-site review to ensure that future facilities would not impact the controllers view of the airfield. Runway 11-29: The final Master Plan Recommendations include continued use and improvements to Runway 11-29, including upgrades to FAA design standards and rehabilitations of the runway pavement at its current dimensions. T-Hangars: The existing T-hangars are designed with the ability for relocation. The currently layout may be able to remain indefinitely; however, the Airport's goal is to foster more permanent hangar development on the North Airport, which may include facilities for both large corporate and small general aviation (GA) aircraft. The current T-hangar layout includes a few locations with inadequate taxilane clearance and an inefficient layout of the westernmost hangars. The Recommended Plan intentionally retains flexibility for the ultimate

The Airport manager's email to an airplane owner interested in a North Ramp T-Hangar included the following: **"However, these t-hangars are located on property that is on a month to month lease with the airport. It is possible that area may be relocated and t-hangar owners would have to relocate at their own expense if they can be accommodated at all."** **On November 12, 2019, the Airport sent a letter to North Ramp T-Hangar owners saying that all sales of the existing T-Hangars are suspended but any owner is free to rent or remove their T-Hangar at their own expense!** Access to the North Ramp and North Ramp T-Hangars is through the controlled gate at Atlantic Aviation. Airport management indicates this is a significant problem. There was a time when there was a separate North Ramp gate on Main Street that was removed by the Airport, the folks at Atlantic Aviation have no problems with the access arrangement, and there is easily a location to re-install a gate on Main Street. The Airport, the Airport Master Plan, and the FAA have an obligation to respect and accommodate all tenants. Progress and growth at Sikorsky Memorial Airport is expected and welcomed by the users, but not if it deprives some airport users of current and future access to the Airport.	development of the North Apron to maximize opportunities during the next 20 years. Future development could involve the need to relocate some smaller T-hangars, which may be accommodated on the East and South Ramp, or even in other configurations on the North Ramp. Any such relocations would be on a case by case basis, as needed, in coordination with the owners. The Master Plan recommends an additional access route to the T-Hangar area that is not dependent on traversing other leased areas. The goal of this recommendation is to improve access to the T-Hangars, provide separation between vehicles and aircraft, and improve security.

Paul L. – November 27, 2019

Thank you for the opportunity to comment on the PowerPoint presentation first made available at the public hearing on Wednesday evening, November 20, 2019. The undersigned represents N759ZD, LLC, a North Ramp T Hangar owner. I am also the Managing Member of N759ZD, LLC. I preface the comments below by stating that I am an active member of the airport community and that I am interested in the overall success of BDR. I support doing my part, any reasonable inconvenience included, to advance the interests of the airport community. The comments below stem from "Draft Working Paper 2" published in advance of the November 20, 2019 public meeting, the Powerpoint presentation circulated at that meeting, the public comments made by the presenter, and the November 12, 2019 memo that was included with a monthly hangar bill which arrived on November 20, 2019.

1. **Lack of Notice.** The master planning process to date has been circumspect due to a lack of notice and opportunity to be heard with respect to T Hangar owners and tenants. The City of Bridgeport and Airport management failed to provide the T Hangar owners with notice of meetings to discuss the Master Plan including the meeting held on November 20th. This is unacceptable since the City possesses the addresses and demonstrated ability to communicate with each individual T Hangar owner when it suits the City's interest.

2. **Failure to Consider Technical Advisory Committee's Input.** The Technical Advisory Committee had no input into what was presented at the November 20th meeting.

The responses below follow the numbering used in the comment:

1. **Lack of Notice.** All master planning meetings were posted on the study website in advance, and advertised in two local periodicals. Additionally, all persons that signed up to be on the study mailing list or submitted a comment online were sent meeting notifications via email. All members of the Technical Advisory Committee (TAC) were notified of all study meetings. FAA requires at least one public meeting for a master plan; for this study the City held three public meetings.

2. **Failure to Consider Technical Advisory Committee's Input.** Note that the review periods for the Technical Advisory Committee and public followed each meeting and included a minimum of 30 days. Additionally, comments are continuously collected throughout the study, and considered in the development of the final recommended plan (before decisions were made). All comment received before and after the November 20 meeting have been considered.

3. **Failure to Provide Time for Meaningful Public Comment.** See response No. 2 above.

4. **Substantive concerns; reservation of rights.** A wide range of concepts were developed to illustrate for review and comment by tenants and the public. Comments from T Hangar owners have been incorporated into the recommended plan.

The additional components of Comment 4 include legal and regulatory statements regarding property rights, potential claims, and liability. A response was provided separately by the City of Bridgeport, and is attached.

Specifically, the public hearing took place immediately following the Technical Advisory Committee meeting, clearly demonstrating that the 64 slide PowerPoint was prepared prior to the Technical Advisory Committee meeting. The integrity of any public process demands that an advisory body have an opportunity to present views before decisions are made. That did not occur on November 20th, and the views of that body were neither heard nor considered. 3. **Failure to Provide Time for Meaningful Public Comment.** The master plan process is described as a two-year process. It is highly circumspect that the public comment period on what was presented for the first time in the November 20, 2019 PowerPoint slides is limited to a total of five business days during a holiday period. The time provided is inadequate for consideration of 11 alternative scenarios and to provide meaningful comments on each. At the very least, the 11 alternative options and the PowerPoint presentation should have been published well in advance of the public hearing. Alternatively, a longer comment period following the meeting should have been provided. I strongly urge that the process going forward provide for timelines that allow a reasonable time for comment from all airport constituencies. 4. **Substantive concerns; reservation of rights.** The Powerpoint slides presented for the first time on Wednesday evening, November 20, 2019 show some 11 alternative scenarios described as "concepts". These concepts were developed without any input from either the Technical Advisory Committee or from T Hangar owners. Additional oral comments were made by the presenter indicating that the T Hangars would need to be moved because the North Ramp will be reserved for corporate aircraft storage. Other statements were made by the presenter that the T Hangars could not remain on the North Ramp because access to them involves crossing another tenant's leasehold. These statements cause serious concerns, each of which is discussed in detail below.	

Each of the 11 concepts contemplate removal and relocation of the North Ramp T Hangars. No consideration of any kind has been provided anywhere describing the reasoning behind the stated decisions to eliminate T Hangars on the North Ramp and why not a single alternative to moving the T Hangars was even considered. Oral statements by the presenter at the meeting made clear that moving the T Hangars is a foregone conclusion. In particular, the presenter stated that the North Ramp under any circumstance would be reserved for corporate aircraft storage and further that the T Hangars needed to be moved because access requires crossing another tenant's leasehold. Removing and/or relocating the T Hangars presently located on the North Ramp is problematic for the following reasons: **A. The T Hangars are real estate owned by the individual T Hangar owners.** The Connecticut Supreme Court determined that the T Hangars located on the North Ramp are classified as real estate and subject to taxation as real estate rather than personal property. *See* Town of Stratford v. Jacobelli, 120 A.3d 500 (Conn. 2015). Following that decision, the Town of Stratford issued a root deed for this newly constituted real estate. The City of Bridgeport did not intervene in the litigation between T Hangar owners and the Town of Stratford, notwithstanding its notice of same. Thus, the City waived its right to contest that the T Hangars located on the North Ramp are real property, owned by individuals or entities such as the undersigned. Any responsible planning document needs to consider T Hangar real estate rights that include deeds claimed simultaneously by both the City and Town, this in addition to the ownership rights of T Hangar owners themselves. **B. Eminent Domain and a Governmental Taking of Real Property**. Given the deeded ownership of this real property, any taking of that property interest by the City as proposed in the November 12, 2019 memo must as a matter of law follow an eminent domain process to	

compensate such owners for the fair market value of their property. **C. Flooding.** Oral Comments made by the presenter indicated that flooding was not considered as part of the available options. In short, the East Ramp is considered by the contractor as viable space to park aircraft. Such conclusion is belied by the fact that the East Ramp is subject to frequent and extensive flooding. Knowingly relocating T Hangars to a location known for frequent and extensive flooding places the City in the position of unnecessarily assuming risk for property damage claims at the first instance of flooding. Accordingly, it is an entirely unsuitable location for the T Hangars. **D. Insurance coverage concerns.** Moving the T Hangars to a location known for frequently flooding may impact the continuing insurability of the T Hangars and the aircraft stored within them. This should be carefully considered and studied before a decision is made to relocate the T Hangars from the North Ramp. **E. Potential Grant Assurance Violation.** The City's conduct to date exposes it to claims of Grant Assurance 22 [nondiscrimination] and 23 [exclusive rights] violations. Relocating the T Hangars to a location known for flooding to make room for corporate aircraft storage favors one type of tenant over another and may actually be construed as granting an exclusive right. **F. Capability of T Hangars to be moved.** This issue needs to be studied and considered to determine whether it is even possible to move the existing structures, no less evaluating the cost of doing so and options for funding such moves. Ignoring that issue in the planning process is inappropriate and irresponsible, particularly since the City's November 12, 2019 memo makes clear that it expects T Hangars to be moved at owners' sole cost and expense, and neither Airport Master Plan Draft Working Paper 1, Airport Master Plan Draft Working	

Paper 2 nor the November 20, 2019 PowerPoint address funding in any way. In conclusion, I appreciate the opportunity to present these comments and trust that they will be considered and addressed in a meaningful and appropriate manner. I further reiterate that the undersigned is willing to work with the City as part of this process for the good of all concerned if the financial burden of doing so is not placed on the undersigned.	
David F. – January 27, 2020 Where on the web site are the comments that people make regarding the Airport Master Plan? Many people submitted comments and we should be able to see them...	All written master plan comments have now been posted on the website with the Draft Master Plan report. See study materials tab. **http://planbdrairport.com/content/documents/**
Greg C. – May 28, 2020 1. could not locate #3 or #4 in inventory of "study materials. 2. curious re New Haven Tweed, state of their "plan" in relation to their neighborhood's preferences. 3. New planes are supposed to be quieter, has this been "proven" in regards to expected noise levels of increased commercial use of Sikorsky? 4. Retaining public access to airport grounds, especially: footprint of the air museum, onsite restaurants outside TSA restricted areas?	The responses below follow the numbering used in the comment: 1. Figures 2-3 and 2-4 have been added to Working Paper 1 and reposted to the website. 2. We do not have that information on Tweed-New Haven Airport. 3. Yes. FAA tests and documents the aircraft noise levels as part of the certification process. Current aircraft noise certification regulations (referred to as 'Stage 3') require modern aircraft to produce substantially less noise than older aircraft (referred to as Stage 1 and 2). Noise levels are measured by FAA during takeoff and landing as part of the certification process. 4. The master plan includes retaining and/or improving access to all airport facilities.

Paul L. – June 30, 2020 As I review the entirety of the latest documents posted on the Master Plan web site, the harmful, discriminatory and predecisional nature of the plan is clear with respect to current North Apron T Hangars. The posted documents recommend that the North Apron be reserved for future "corporate aviation facilities", and that "[R]elocation of small hangars should be considered". East Apron recommendations include "Reserve for light general aviation facilities" to include "relocated T Hangars" and "new small hangars." As noted during the last public meeting, the master plan contractor's oral comments were clear that the East Apron is not suitable for what was termed "corporate aircraft" due to significant and repeated flooding. Nonetheless, that same flooded location is deemed by the contractor and airport as suitable for aircraft that include light general aviation aircraft. There is no suggestion of addressing the East Apron flooding problem through grading or any other means, meaning that the airport and its contractor desire to force such airport users away from BDR both economically and by damaging their aircraft. Flooding is incompatible with any aircraft. An admission by the contractor and airport that flooding is incompatible with one category of aircraft is an admission that it is incompatible with all aircraft types. The master plan contractor should be aware, and the airport should be mindful, that FAA grant funding precludes	The City of Bridgeport disagrees with the premise that the master plan recommendations are discriminatory to T-hangar owners or light aircraft users. The goal of the master plan is to balance the needs of all users, as expressed with the following points: • Per comments from T-hangar owners and users, the master plan was refined, and does not include relocation of existing hangars (except for minor design standard issues). Rather, it is future hangar development that is recommended for larger corporate facilities. In addition to the East Apron, both the south apron and main apron are recommended for light aircraft tie-downs and T-hangars. • In contrast, the North Apron is the only location reserved for future corporate aviation development. • The reason that locations with greater flood susceptibility are better suited for light aircraft facilities is due to their greater resiliency. Small hangars are typically all metal structures, without insulation, mechanical systems, rest rooms, offices, etc. In comparison, larger hangars include all of these building systems, which are less resilient to flooding. • Sea level rise is impacting coastal airport everywhere. At BDR, flooding is not limited to the East Apron, as every aircraft parking apron on the Airport is within the FEMA designated floodplain and has a risk of tropical storm surge. Unfortunately, the most effective damage preventative measure

discriminating against one type, kind or class of aircraft in favor of another - which is exactly what these oral and written representations on behalf of the airport achieve. Such an approach is not only harmful to T Hangar owners and those whose aircraft would be directed to a tie down area that routinely floods, but this recommendation also threatens federal funding for BDR. The master plan's current recommendations to locate any aircraft on the East Apron should be stricken.	is periodic aircraft relocation beyond the storm path in advance of forecast flood events. It is understood that this is a costly measure and may not be feasible. In the long-term, the Airport hopes to develop the "West Development Area" for commercial activity and GA use. This area is slightly above the floodplain elevation. In the short-term, airport tenants may propose hangar or apron improvements, with grading improvements that may reduce the incidence of localized flooding. Unfortunately, the City does not fund tenant facilities, thus financial feasibility is certainly a potential impediment. Also see response to the comment submitted on November 25, 2019 (above). • Future improvements to Runway 11-29 will include a hydrologic evaluation of the area, which may include the east apron. Unfortunately, it is anticipated that grading or other flood mitigation measures at BDR will most likely be limited to runways (and roads).
David F. – October 19, 2020 Runway 11-29 has been neglected for many years. Pavement is in need of rehabilitation and additional work to support the mission of the Airport. Not only is Runway 11-29 the longest runway serving the Airport, it is, as well, the preferred runway when it comes to flying quietly and being a good neighbor to the surrounding communities. It is also the preferred runway when strong winds, after cold front passage, come from the Northwest. If Runway 29 is not available during strong Northwest winds, smaller	The Airport (City of Bridgeport) has received an initial state grant offer allocating funds for the Rehabilitation of Runway 11-29. Terms of this potential grant are currently under review (August 2020). If approved and issued, Runway 11-29 rehabilitation could commence as early as 2021. The 150-foot shift of Runway 11-29 is the preferred alternative for the Airport and is included in the Airport Layout Plan as well as the Airport Capital Improvement Program.

aircraft are often unable to fly. The future of the Airport depends on Runway 11-29 continuing to serve both large and small aircraft. The rehabilitation of Runway 11-29 should be at the top of the Airport needs list! Funding for this runway needs to be included in the FAA Airport Improvement Program. A viable Runway 11-29 improves the usefulness of the Airport for all users. The well thought out proposed 150' shift of the approach end of Runway 29 towards the departure end of the runway has significant merit and should be included in the plans for Airport improvements as a top priority. Moving the approach end of Runway 29 farther away from Main Street and Lordship improves safety and reduces noise for the Lordship area. Additionally, this plan increases available landing distance for the runway and provides demonstrated improvements in safety. The impact on the environment is minimal, if there is any measurable impact at all. Friends Of Sikorsky Airport strongly encourages the Airport Master Plan, the FAA, and all those involved to support this Airport improvement. The North Apron (North Ramp) is currently used for Aircraft tiedowns and T-Hangars. Plans for development of the North Ramp include different possible proposals which could impact the current	The final Master Plan Recommendations include multiple locations for new T-Hangars. Relocation of existing hangars remains a possibility in the future, but no formal requirement is included in the master plan.

tenants who have been on the North Ramp since before the mid 1980's. Development in this area must include adequate accommodations for the long-standing tenants and users of the Airport.	
Paul L. – October 26, 2020 I reviewed the comments posted by the Friends of Sikorsky Airport (FOSA) and adopt those comments as my own. In addition, I supplement those comments re sections 6.5.1 and 6.5.2 of the Master Plan draft to indicate that the Figure 6-17 T Hangar relocation depiction is in the middle of a common and frequent flood location, and that that location (east apron) is inappropriate for consideration as a result. The study drafter's response to prior comments on that issue makes an unsupported assumption that flooding risk in the existing north apron area is identical to that of the east apron area. That is an invalid assumption. In short, the proposed east apron option suggests that north apron T Hangar owners would be forced to incur the cost of relocating their structures to the east ramp location where multiple flooding events occur each year while the existing north apron location sustains an actual, meaningful flooding event approximately once every 10 years. Moreover, the notion that T Hangar owners are available to move aircraft on short notice whenever a routine	It is the responsibility of the Master Plan to evaluate all potential development sites in order to include them in the Airport Layout Plan, allowing the Airport to receive FAA funding for development projects. The final Master Plan Recommendations include multiple locations for new T-Hangars. Relocation of existing hangars remains a possibility in the future, but no formal requirement is included in the master plan. The final master plan and Airport Layout Plan (ALP) has revised the recommendation to provide greater flexibility for T-hangars and other future facilities. Additionally, the master plan alternatives are not engineering designs and as such, there is a potential that flooding could be partly mitigated with grading should the airport or tenants choose to pursue an east apron development project.

heavy rain occurs is impractical, and further forces discriminatory insurance rates on those aircraft owners due to knowingly increasing the risk of hull losses due to flooding. I urge the planners to remove use of the east apron as an option.	
Chris J. – October 26, 2020 Many of the runway and taxiway improvements presented in the Master Plan seem useful though maintaining the existing runways and taxiways seems most important. To the extent that the suggested improvements can be made cost effectively, then they should. But changing the fundamental focus of the airport seems to be a large undertaking that, in the current environment of airline contraction, seems unwarranted and, as presented, may have harmful side effects. As a General Aviation user/owner, it seems very apparent that one of the most significant user groups of the airport, the owners of piston and small turboprop aircraft, are only being considered as an inconvenience and an afterthought. I don't understand why this would be as we represent a LARGE portion of the use of the airport. I am still somewhat shocked that airport management thinks it acceptable to consider termination of North Ramp hangar leases and forcing relocation of those hangars and aircraft to the East ramp - where I have with my own eyes seen much more flooding than on the North Ramp, which itself had flooding in both recent major storms Sandy and Irene. In addition, I expect that many or most of the	The master plan alternatives are not full engineering designs and as such, there is a potential that flooding could be partly mitigated with grading should the airport choose to pursue an east apron development project. Figures 6-13 and 6-14 both depict alternatives that would retain nearly all of the existing T-Hangars on the North Apron. The final Master Plan Recommendations include multiple locations for new T-Hangars. Relocation of existing hangars remains a possibility in the future, but no formal requirement is included in the master plan. The final master plan and Airport Layout Plan (ALP) has revised the recommendation to provide greater flexibility for T-hangars and other future facilities. The master plan retains the ‘goal’ for airline service as a potential benefit to the community and as an additional source of revenue. Airline consolidation has occurred. However, as a long range plan the Airport intends to retain the option in the event that trends in air service change in the future.

T-hangars, if they were required to relocate, would actually not survive the move without major and expensive reconstruction. I am CERTAIN that a solution can be found that maintains most if not all of the existing North Ramp T-hangars and most of the North Ramp tie downs yet still can accommodate some additional corporate space and provide good access to the runways for it. Also, with the obvious lack of airline interest in BDR it would seem that there is additional space available on the west side of the airport north of the Tower and existing parking lots. Would seem the most appropriate place for future development. But please let me stress this point, it is important for airports such as BDR to maintain a full complement of aviation services, businesses and users and it is incumbent on the airport to consider and value the existing users before courting possible new users that may or may not actually materialize and may disappear even faster. Your existing users have been here, day in and day out, over a very long period of time. I have been flying based at Bridgeport personally for over thirty years and in that time have supported a number of businesses on the field in addition to paying the land lease for my T-hangar and property taxes to the Town of Stratford. And I am no exception, most of my hangar neighbors have similar stories. Please let's make this airport better for all of the user groups, not one or two at the expense of the others.	Note that the predominance of light aircraft use at BDR has contributed to the airport's annual operating deficit and subside required by the City.

Robert T. – October 27, 2020 The master plan is generally well done and detailed. This is a great GA airport. The two runways are very beneficial in various wind conditions. Being a North Ramp T-Hangar owner and aircraft operator, I do have concern on the lack of clear guidance regarding this area. The plan seems to favor the possibility of a large tenant and seems to leave loyal tenants of the T-Hangars without clear understanding of when or if a long term lease agreement can be reached. It makes it difficult to plan repairs and improvements to the hangars because it is not clear if or when the airport might decide to uproot these hangars. It would be nice to see a recommendation that would give North T hangar tenants some confidence that their investment at the airport is worthwhile.	The master plan aims to provide all potential development alternatives for the airport to consider. The recommended plan is purposely left open-ended (with areas of potential development called out, rather than site layout plans) in order to provide the airport with development flexibility.
Frank S. – October 30, 2020 Laurel Beach is a 120 year old homeowners association of over 230 households situated east of Sikorsky Airport on Long Island Sound and bordering the Housatonic River to Milford Point. As a close neighbor we are in the path of both in and outbound traffic to the airport and would seek to register and address our concerns regarding noise and environmental effects on our community to your committee during the ongoing planning process. Of chief concern is the increase in traffic occasioned by the new configuration and the size and capacity of the aircraft it will service. More specifically	The Part 150 noise study is now available to the public for review at planBDRairport.com. The master plan recommendations are intended to foster use of Runway 11-29 (over Runway 6-24), with more landings from the east over Long Island Sound. The findings in the report indicate an overall decrease in noise exposure due to the phase-out of older noisier jet aircraft, and generally stable levels of airport activity. Overall, the airport is expected to have little change in its noise exposure footprint with the 60 DNL

are the overflights of our neighborhood by arriving jet aircraft utilizing runway 6-24. The instrument GPS approach to 24 shows an altitude of 640 feet at 1.6 miles from the runway threshold which corresponds to the western edge of our neighborhood, and we have routinely observed arriving jet traffic overflying our neighborhood at similarly low altitudes. We understand that the committee will be convening a separate FAA granted Part 150 study to address noise issues and new models to consider noise mitigation and the effects of the airport plan on local neighborhoods. We would ask to be included in any meetings and relevant correspondence for that group. We also want to acknowledge and thank Airport Manager Michelle Muoio for her responsiveness and cooperation with periodic questions and complaints on daily airport activity and assistance with the proceedings of the committee.	ending at the bank of the Housatonic River on the Town of Stratford.
Paul L. – January 4, 2021 As the Commission considers the Master Plan now before it for a vote, I note that the two options for North Apron light general aviation starkly differ. Specifically, Figure 6-14 displays removal of all north apron T Hangars. Figure 6-13 displays removal of three T Hangars. Section 6.5.1 provides a narrative to accompany Figures 6-13 and 6-14. The disadvantages identified include reduced parking on the airport for light aircraft. The Master Plan does not in any mention that T Hangar owners have a meaningful financial investment in both the	The final Master Plan Recommendations include multiple locations for new T-Hangars. Relocation of existing hangars remains a possibility in the future, but no formal requirement is included in the master plan. The final master plan and Airport Layout Plan (ALP) has revised the recommendation to provide greater flexibility for T-hangars and other future facilities. Unfortunately, the City does not fund tenant facilities, thus financial feasibility is certainly a potential impediment.

structures that they own, and their ability to base their aircraft at BDR. Further, it does not contemplate that light general aviation aircraft are often used for business purposes just like jet aircraft which are clearly the focus of the Master Plan. Development Concepts 6-25 (pdf p. 125) states that "Relocation or replacement of existing small hangars should be considered if needed for large development projects that could improve the financial viability of the Airport." No consideration has been given to the considerable financial harm that would result to individual T Hangar owners should the Airport decided to relocate or remove any T Hangar. In short, knowingly and intentionally causing financial harm to any T Hangar owner, especially wholly and completely wiping out that owner's investment in the structure, is improper. Moreover, the Airport must consider the overall economic impact to the City, Town of Stratford, and the maintenance and service businesses on the airport should the hangar owners, most of whom are local residents, be displaced and forced to move their aircraft elsewhere. Based on the above, I respectfully ask that that any motion by the Commission to support the Master Plan include a requirement to (1) mitigate financial harm to existing light general aviation aircraft users, tenants and hangar owners, and (2) to maintain access to the Airport for each of those users consistent with the Airport's	

federal funding obligations and FAA grant assurances.	
Alex G. – January 4, 2021 The National Business Aviation Association (NBAA) is pleased to provide feedback on the Igor I. Sikorsky Memorial Airport (BDR) Master Plan. NBAA represents the interests of over 11,000 member companies that rely on general aviation (GA) aircraft to help make their businesses more efficient, productive and successful. Those members include numerous tenants and users of the Sikorsky Memorial Airport who operate a wide spectrum of aircraft, from piston single- and twin-engine aircraft to turboprops, jets and rotorcraft. NBAA and its members continue to be strongly interested in the airport's future accessibility and viability and offer our input and partnership in this project to help support a successful outcome. We recognize the city's efforts to improve safety by making changes to runway 11-29, installing EMAS for runway 6-24 and in making various airfield geometry and lighting upgrades necessary to maintain the airfield in accordance with current FAA design standards. NBAA advocates for the entire spectrum of general aviation aircraft that rely on BDR and contribute to its success. We recognize the potential for revenue growth that future corporate aviation facilities on the North Apron could bring to the airport, and welcome increased capacity for that group of operators. However, we also are	The final Master Plan Recommendations include multiple locations for new T-Hangars. Relocation of existing hangars remains a possibility in the future, but no formal requirement is included in the master plan. The final master plan and Airport Layout Plan (ALP) has revised the recommendation to provide greater flexibility for T-hangars and other future facilities.

concerned that those changes are proposed in the Master Plan without an accompanying blueprint to fully relocate affected T-hangar tenants to an area on the airfield that is designed and built to appropriately accommodate them – and to consider the financial impacts to their current and future hangar investment – if such a transition occurs. In closing, we applaud the city's leadership for recognizing the benefits general aviation facilities contribute to securing a robust, sustainable future for Sikorsky Memorial Airport and the safety efforts the city is planning to undertake. We believe a successful Master Plan envisions positive change for all types of aviation activities. We ask that the city give strong consideration to find ways in the Master Plan to accommodate relocation for North Apron T-hangar tenants and to maintain capacity for light general aviation users along with the growth for corporate aviation and safety enhancements being planned. We look forward to jointly working with the City of Bridgeport City Council, the Airport Commission, Sikorsky Memorial Airport staff, general aviation users and tenants and the greater community to ensure that all users can benefit from our collective efforts as part of the Master Plan program.	
David F. – January 5, 2021 The Sikorsky Memorial Airport Master Plan has some strong and valuable proposals that make realistic improvements to the Airport. There is also concern for Airport Tenants.	The final Master Plan Recommendations include multiple locations for new T-Hangars. Relocation of existing hangars remains a possibility in the future, but no formal requirement is included in the master plan. The final master plan and Airport Layout Plan (ALP)

(6.3.2) The plan that shifts a small section of Runway 29 towards the West would improve the usability of Runway 29 with minimal or no impact on the environment and a significant improvement in safety. This plan should be supported by all! (6.5.1) The part of the Airport Master Plan that suggests moving or eliminating light aircraft T-Hangars and North Ramp light aircraft parking is not in the interest of the aircraft owners and T-Hangar owners as well as the Airport, the City of Bridgeport, and the Town of Stratford. The light General Aviation aircraft located in North Ramp T-Hangars and on the North Ramp are an integral part of the Airport: The Airport benefits from these aircraft through space rental fees, AUA fees, and fuel flowage fees. They also help to keep the Air Traffic Control Tower traffic count up to a level that sustains a Control Tower for the Airport. The Town of Stratford benefits from property taxes on T-Hangars and State aircraft registration fees that the Town collects. The Fixed Based Operators on the Airport benefit by providing services such as fuel sales and aircraft maintenance. These operators pay the Airport the AUA and fuel flowage fees. The T-Hangars have been on and part of the Airport since before 1982. They have and continue to provide a significant benefit and revenue stream to both the Airport,	has revised the recommendation to provide greater flexibility for T-hangars and other future facilities. Additionally, the master plan alternatives are not engineering designs and as such, there is a potential that flooding could be partly mitigated with grading should the airport or tenants choose to pursue an apron development project.

Stratford, and the Fixed Base Operators. Many light aircraft are used for business purposes and as such they are an economic engine for Bridgeport and the region. Moving these aircraft and T-Hangars to a location that the Airport Master Plan identifies as unfit for corporate aircraft because of environmental concerns (flooding) is not a viable option! Eliminating them from the Airport, as has been suggested, is also not a viable or economic option.	

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30 October 2020

Airport Director Michelle Muoio
Sikorsky Memorial Airport
1000 Great Meadow Road
Stratford, CT 06615

TRANSMITTED BY ELECTRONIC SUBMISSION
Michelle.Muoio@Bridgeportct.gov

Re: Airport Masterplan Update

Dear Mrs. Muoio,

As you are aware, the proposed master plan calls for various development options on the North Ramp (apron). AOPA wishes to reiterate the importance of ensuring that light general aviation (GA) and hangar tenants are not arbitrarily displaced to areas that that are not environmentally suitable. While the pandemic has shown that segments of the aviation industry are susceptible to swings in activity, light GA has proven remarkably suited to thrive as an acceptable "*socially-distant"* activity. As operations are up 20 percent at the nation's 77 busiest GA airports compared with the same time last year, fuel sales are up as well with the increased activity. In fact, most days there are more Cessna 172s in the air than Boeing 737s which reinforces the importance of maintaining this segment as an economic anchor for the airport.

As identified in the Airport Master Plan, Runway 11 – 29 requires significant repair work. AOPA supports all proposals that serve to increase or at least maintain the current usable runway length. To that end, AOPA favors options that serve to enhance safety while also increasing utility, particularly for this runway that has long been challenged by various environmental factors.

In closing, I would like to recognize BDR for having accepted AOPA recommendations via the implementation of new procedures to permit tenant driving privileges for North Ramp tenants. This action serves to enhance the utility of the airport while maintaining the vitally important segment that is light GA!

If you have questions or require additional information, please contact me directly at 301-695-2090 or sean.collins@aopa.org.

Sincerely,

Sean M. Collins, AOPA
Eastern Regional Manager

Town of Stratford Comments

Sikorsky Memorial Airport Master Plan
Town of Stratford Comments & Reponses
October 30, 2020

Airport Comment response are provided below in blue text.

General Response: please note that the master plan is a long-range general planning document following the requirements of the FAA. The plan considers environmental issues but is not an environmental study. It is FAA policy to prepare periodic airport master plans, that are thereafter followed by detailed environmental studies, designs, and associated permits for projects that are contained in the master plan which are then advanced by the Airport supported by the FAA. Many of the comments and questions of the Town of Stratford will not be addressed until subsequent studies are warranted closer to potential implementation.

CONSERVATION COMMISSION
Provided herein are comments from the Conservation Commission, Inland Wetlands Commission, and the Conservation Division office; as they relate to the September 2020 draft of the Sikorsky Airport Master Plan:

1. The plan is touted as a ten-year planning exercise. As we have already begun to feel the effects of climate change today, how is this not addressed once in this plan? The airport is essentially at sea-level, being that the entirety of it consists of imported fill materials over a tidal saltwater marsh. On Page 6-12, a note is made that Runway 11-29 has been closed to traffic in the past due to flooding. How will the airport address the effects of climate change, such as impacts due to severe weather and sea level rise?

   Climate change and sea level rise are affecting costal airports everywhere. FAA funded airport environmental studies have recently added climate change as an evaluation category. As such, an upcoming Environmental Assessment (EA) for improvement to Runway 11-29 will provide an opportunity to evaluate this subject, as will other future environmental studies for the implementation of airport projects. This master plan study followed FAA guidelines for airport facility planning, which considers environmental concerns (see Chapter 5), but did not include a component on climate change in the FAA approved scope.

   Nevertheless, project recommendations in the master plan do consider resiliency to the impacts of sea level rise. For example, the recommended Runway 11-29 improvements include raising the west end of the runway a few feet and shifting it slightly away from Main Street. The environmental evaluation will include a review of flooding impact with an effort to improve upon current conditions to the extent feasible. The master plan includes other recommendations intended to mitigate flooding and improve resiliency. For example:

- Construction of future hangars are mostly planned for existing paved areas of the airport to prevent increasing impervious area and stormwater volume.
- Removal of several areas of surplus/unused pavement are recommended.
- Within high flood prone areas, limit development to facilities without office space, mechanical systems, etc. (e.g., cold storage metal buildings with greater flood resiliency).
- Future passenger terminal facilities (if warranted) would be located in the limited area of the Airport above the 100-year floodplain.

2. Although the need for economic development through airport improvements such as increased runway lengths to accommodate a larger variety of aircraft is appreciated, activity resulting in any filling of our tidal saltwater marshes cannot be tolerated.

   The master plan recommendations do not include any increase in runway length to avoid filling saltwater marshes and other environmental impacts, as well as to adhere to the agreement between the Town of Stratford and City of Bridgeport.

3. The wetland complex – upon which the airport was constructed via the placement of imported fill materials – is part of the largest unditched tidal marsh in the state of Connecticut. It is home to numerous federal and state-listed endangered and threatened species, including a lengthy list of migratory bird species that utilize this critical resource during their life history. The Connecticut Audubon Society has designated this marsh as an Important Bird Area (IBA), with over 160 avian species identified during surveys. How does the airport currently manage its impacts on listed species? How will future plans impact listed species?

   Development/improvement projects at the Airport are subject to NEPA and CEPA. Following these regulatory environmental policies is required and will continue. In the short-term, the City hopes to commence an environmental study for the recommended improvements to Runway 11-29, which will include a review of impacts to the IBA, as part of a federal Environmental Assessment and state Environmental Impact Evaluation (EA/EIE) document. Following the planning effort, all substantive projects are subject to environmental review (i.e., NEPA/CEPA), and thereafter design and permitting. Successful completion of this process is required prior to construction.

4. The tidal saltmarsh proves critical in aiding to mitigate the effects of climate change and sea level rise on the southern portions of Stratford. This wetland complex serves to attenuate wave action and provide flood storage capacity for the surrounding communities. How does this master plan align with the Town of Stratford's Coastal Resiliency Plan?

   The master plan recommendations avoiding impacts to the tidal saltmarsh. Similar to the Town's Coastal Resiliency Plan, the airport master plan includes recommendations that improve resiliency (see response 1 above).

5. How does the airport intend to manage stormwater generated through potential proposed improvement projects? Underground storage appears limited due to the elevation (i.e., at sea

level), while it also appears that above-grade water retention is not feasible due to the potential to attract more wildlife to the airport.

a. How does the airport currently manage its stormwater runoff?
b. How will the airport comply with the provisions of the Municipal Separate Storm Sewer (MS4) Permit in this master plan?

a. The Airport currently follows an approved stormwater pollution prevention plan. Periodic water sampling is conducted per the plan. A specialized environmental consultant is retained to ensure continued program compliance. The master plan recommendations include a net reduction in impervious area within the floodplain areas. New structures are planned within currently paved areas. For airfield areas, surplus pavement removal will exceed the proposed pavement replacement.

b. The master plan is a guidance document that identifies potential future airport projects and priorities following the requirements of the FAA. Compliance with MS4, other permits, and approvals are addressed at the project implementation level. Specifically, during the engineering design process, stormwater must be adequately accommodated in compliance with MS4 and other applicable regulations.

6. How does the airport intend to address growing concerns regarding the presence of PFAS in firefighting foam, and its impact on the tidal saltmarsh which encompasses the airport? In addition to fuel or any other contaminants that would be involved in runoff to the marsh.

The airport must continue to comply with FAA regulations, which still require the use of agents containing PFAS chemicals in certain emergency responses. CTDEEP is a key player in the airport's emergency response plan and their guidance would be followed in an actual emergency event. The Airport does not regularly express agent and uses a qualified service provider, such as Clean Harbors, to collect and contain any potential agent in when testing certain systems. A specialized, internal testing system is on order for the recently procured fire truck that allows testing without expressing agent outside the system.

Airport fuel storage facilities and equipment comply with applicable standards. There are approved procedures in place to addressing potential fuel spills.

7. There are many comments made throughout the body of the text regarding proposed runway improvements to Runway 11-29, which would allow this to become the main runway for the airport. These comments indicate that this would provide a positive outcome in noise reduction for residents, as it would push the activity toward the Frash Pond neighborhood rather than the Lordship neighborhood. How would this shift in noise and activity affect the Environmental Justice Community designated by CT DEEP and present within the vicinity of Frash Pond? Per the CT DEEP's Environmental Equity Policy, 1993, "no segment of the population should, because of racial or economic makeup, bear a disproportionate share of the risks and consequences of environmental pollution or be denied equal access to environmental benefits." Further, it is stated on Page 5-9 that no Environmental Justice Communities are present within the immediate vicinity of the airport. How was this conclusion determined?

The Updated Noise and Land Use Study, associated with the Master Plan, identified that no residential areas are subject to noise levels that exceed the federal criteria for significance, either currently or with Runway 11-29 as the primary runway. The 'significant impact' level is an average noise level of 65 dB, based on the Day-Night Noise Level (DNL). All residential areas are below a DNL of 60 dB. As no residential locations experience 'significant' noise exposure or impacts per the required federal criteria, there are no significant impacts to Environmental Justice (EJ) Communities, or to other residential area due to noise. However, the report (Page 5-9) will be revised to identify the nearby Frash Pond community as subject to EJ per the Town of Stratford, and why significant impacts are not anticipated.

Nevertheless, it is understood that noise disturbance still occurs as determined by public comments, regardless of whether noise is below federal significance levels. The goal to support more of the Airport's operations on Runway 11-29 provides two anticipated benefits:

1. Use of Runway 11-29 increases the distance between runway operations and homes. While neither the Lordship nor Frash Pond neighborhoods are beyond the ends of a runway, there are substantially more houses in proximity to Runway 6-24 vs Runway 11-29. For example, within 1,500 feet of the Runway 6-24 centerline, there are over 100 homes in the Lordship neighborhood. In comparison, only 20 homes in the Frash Pond neighborhood are within 1,500 feet of the centerline of Runway 11-29. Currently, more airport operation occurs on Runway 6-24; the recommended improvements to Runway 11-29 may better balance the runway use.
2. The approach to Runway 29 extends out over Long Island Sound. The approach to Runway 24 extends over the Breakers Lane community and Milford Point where noise complaint has been reported.

8. More input is needed from the public sector especially those surrounding the airport proper.

The amount of public comment has been modest throughout the study. The Study has included more public outreach opportunities than required by the FAA, included hosting three public meetings, and providing a public website for study information and submission of comments.

ZONING COMMISSION

At a public meeting on October 28, 2020 the Stratford Zoning Commission discussed the proposed Draft Airport Master Plan Report that is currently seeking public comment. Many of the comments listed below have already been communicated to your planning consultant early on in the outreach phases. The Commission made the following comments for consideration in the Master Plan:

1. The Zoning Commission agrees with the recommendations and concerns offered by the Planning Commission and Zoning Board of Appeals on this matter.

   Note that comment responses to the Planning Commission and Zoning Board of Appeals are provided below.
2. In general, the Plan does little to consider how any proposed airport improvements will impact residents, infrastructure, natural resources and planning efforts currently underway in Stratford.

Agreed, the master plan is a long-range development plan for the Airport that is prepared in advance of the required NEPA and CEPA documents. Although, the FAA practice is to conduct these documents sequentially, the master plan does provide a detailed environmental chapter that summarized resources and areas of concerns. Based on the information in that chapter, the master plan recommendations focus on limiting potential future impacts. For example, recommendations include:

- Focus on most development/redevelopment in existing paved areas;
- Avoidance of tidal wetland areas;
- Includes removal of several areas of surplus/unused pavement;
- Focuses on airfield safety projects (no expansion of airfield);
- Inclusion of projects that may reduce noise exposure to residents; and
- Future passenger terminal facilities (if warranted) would be located in the limited area of the Airport above the floodplain.

3. Section 2.4.2.3 regarding Noise Abatement mentions the acceptable decibel levels for aircraft currently at the airport is 82 dBA. The Plan should better explain details on the decibel level of the current aircraft that are allowed at BDR. How loud are Bombardier Global Express and Gulfstream 500 (Future Critical Aircraft) during take-off and landing relative to 82 dBA?

   Section 2.4.2.3 will be expanded to reference the Airport Noise Abatement policy on the City of Bridgeport's website, and FAA Advisory Circular 36-3H, Estimated Airplane Noise Levels. In general, older corporate jets regardless of size, often had takeoff noise levels over 82 dB. Per FAA aircraft certification standards, all modern/current production jets have takeoff noise levels below that level as measured from a fixed location during the certification process.

   - The Bombardier Global Express takeoff noise level is 75 dB
   - The Gulfstream V/500/550 takeoff noise level is 68 dB, however, older Gulfstream aircraft (Gulfstream II/III) had takeoff noise levels of 80-85 dB.

4. Section 5.5.1 discusses Surface Water. Impacts on surface water are not included in this Plan

   Response to **Comments 4-10**. Agreed. Also see response to Comment 2 above. A key reason that FAA defers the detailed environmental review process until after the master plan, is to ensure that project details are expanded and evaluated based on specific design conditions that are not available during the general planning process. Note that the FAA approval of the Master Plan and Airport Layout Plan (ALP) will be specifically conditioned for general planning purposes, and remain subject to NEPA, state, and applicable local regulations prior to implementation.

5. Section 5.5.2. discusses Groundwater. Impacts on groundwater are not included in this Plan
6. Section 5.5.3 discusses Stormwater and acknowledges that additional paving will require additional drainage, but no specific details are provided.
7. Section 5.8.2 discusses Biotic Communities and mentions that should development occur, a more detailed environmental analysis would be conducted to assess potential impacts. This Plan offers no specific details.
8. Section 5.9 discusses Threatened and Endangered Species and mentions that a more detailed environmental analysis would be conducted and if appropriate mitigation efforts to address adverse impacts would be pursued, but no specifics are provided.

9. Section 5.12 discusses Coastal Zone Management and indicates that BDR is entirely within a designated Coastal Zone and is therefore, regulated by a Coastal Zone Management Program, but offers nothing specific about the details of the program.
10. Issues of noise, water runoff, stormwater and coastal water management, and environmental impacts (endangered and threatened plants and animals) are always major concerns when residents discuss Sikorsky Airport. While acknowledging that an airport improvement project would impact all of these items, this Plan does little to address those concerns.
11. The plan should consider including an aviation trade school on site.

    Currently the airport includes the Stratford School for Aviation Maintenance Technicians (an extension of the Bristol Technical Education Center) and primary and advanced pilot training provided by Three Wing Aviation. The Airport would consider additional aviation education and trade school opportunities.

PLANNING COMMISSION:
At a Special Meeting held October 26, 2020 the Planning Commission offered the following recommendations regarding the Sikorsky Airport Master Plan Update.

1. The Commission members unanimously agreed that the recommendations offered by Board of Zoning Appeals on this matter (shown below in italics) echoes their concerns as well.

   Note that comment responses to the Board of Zoning Appeals are provide below.

2. The Environmental Justice section within the Plan should be revised since it is stated incorrectly on **Page 5-9, Section 5.3.2** of the document that there are "no minority or low-income environmental justice populations existing in the immediate vicinity of BDR". Stratford's Opportunity Zone Census Tract i.e., Census Tract 804 is located immediately north of the airport (on the other side of Access Road) and has a minority population concentration of 65.7% and a median household income of $ 54,643.

   This section of the report will be updated. See Conservation Commission response 7, above.

3. There is a Town-owned property to the northwest corner of airport site (MBLU 40/5 14/ 7/ /), where the proposed runway 11-29 expansion is proposed. The Planning Commission would like to know if this parcel will be taken by the airport. Also, wetlands exist at this location. The Planning Commission would like to know how the impacts to wetlands will be mitigated here.

   Please note that expansion of Runway 11-29 was evaluated but was not included or recommended in the master plan. Rather, the plan includes shifting the runway 150 feet away from Main Street and avoids direct impacts (grading/filling) in wetlands by adding an Engineered Materials Arresting System (EMAS) bed. Indirect impacts to wetlands would be identified and addressed during the NEPA/CEPA process, including any mitigation. The project does not require acquisition of the Town property; however, voluntary acquisition of that parcel is recommended and would be eligible for FAA funding.

4. There was a "no expansion of the property" contract signed between Stratford and Bridgeport for the airport property. The Planning Commission needs further clarification on the status of this agreement.

   Based on that municipal agreement that is still currently in place, the Master Plan avoided recommendations for runway extensions, and limited the airfield improvements to FAA design standards and associate safety improvements.

5. There is no discussion on historical flooding events on the property and the amount of losses/flood claims incurred within the Plan Update document. Since this property will be heavily flooded in a potential sea level rise scenario (as discussed in the Town's Coastal Resiliency Plan), the Commission members request this information as well as information on how potential flooding impacts will be mitigated on this property. Commission members strongly encourage the Airport Master Planning Team to review the Town's Coastal Resiliency Plan (officially adopted 2017) and explain within the document as to how some of the proposed coastal flooding mitigation recommendations would be addressed on/near the Sikorsky Airport.

   The master plan scope approved by the FAA does not include a historical flooding evaluation or resiliency analysis. However, such a study could be pursued separately. As noted above, flooding and coastal resiliency are built into the master plan recommendations. See Conservation Commission responses 1, 4 & 5 above. Note that airport development and permitting are subject to all applicable regulations and must be addressed during the detailed design and permitting process as projects are implemented.

6. All drainage connecting to the Town's sewer system must comply with the Town's Municipal Stormwater (MS4) Permit requirements.

   Agreed. The first project that may have MS4 requirements would likely be the Runway 11-29 pavement rehabilitation project (in-kind surface rehabilitation, not including the runway shift or EMAS). The design of this project could commence in 2021.

7. Commission members are interested in knowing how the proposal would impact traffic on local roadways nearby and the Town's economy.

   The master plan does not change the access locations to the Airport. One exception could be the use of an additional existing curb cut on Main Street to distribute access at Atlantic Aviation to a second driveway location. A significant increase in traffic is not anticipated, with the possible exception of the re-introduction of airline service if successful in the future. For airline service, airport access would remain from Lordship Boulevard, and primarily along the 1.5-mile section between Interstate 95 to Great Meadows Road. The return of airline service would require a new passenger terminal building and environmental study that includes a traffic evaluation. Note that for small market air service, typically only one flight would occur in any given period of the day, which spreads the vehicle traffic to the airport throughout the day (as compare to a morning and evening peak period).

8. In general, the Commission members are concerned that almost 70% of the Master Plan process has taken place without significant involvement of residents in the planning process. Revising

the Environmental Justice section in the Plan, as suggested, could perhaps encourage more broader public participation in the planning process.

We are not sure what is meant by the comment on 70% of the process. The master plan process included three public meetings and five advisory committee meetings with Town involvement. Two of the three public meetings were held in the Town of Stratford, with the final meeting held virtually (due to COVID19 restrictions). These meetings commenced early in the planning process in Spring of 2019 and continued through October of 2020.

A project website was established at the commencement of the study and remains available for review of documents. Throughout the process, members of the public submitted written comments to the study team through the website. At all eight formal study meetings, attendees were encouraged to visit the website and submit comments electronically. Persons requesting to be added to the study mailing list and all persons submitting comments were provide with an email notification of future public meeting. Additionally, all meetings were listed on the study website and advertised in two local newspapers. During the study process, approximately 60 written comments were received through October 31, 2020.

As stated above, it is emphasized that the master plan is a general planning document, and that environmental evaluation for specific projects have not yet commenced. Formal environmental studies will include addition public outreach and will address environmental impacts in detail.

ECONOMIC & COMMUNITY DEVELOPMENT COMMISSION
Feedback to Draft of Sikorsky Memorial Airport Master Plan
October 13, 2020

1. The Commission members were concerned that the public informational sessions have not been well publicized, and the majority of the plan has been completed without involvement from residents.

   Please see response above to Planning Commission comment 8 above.

2. There is concern that possible expansion of Runway 16 will have a direct negative impact on development of nearby properties, specifically on the SAEP

   Please see Planning Commission comment 4 above. The master plan does not recommend a runway extension.

3. It could impact what, if any, development can take place

   The master plan only recommends two locations for potential easements acquisitions to prevent certain future developments. As shown on the Airport Layout Plan (ALP), a six-acre commercial area along Access Road, beyond the west end of Runway 11, is recommended for an 'avigation easement' to prevent additional commercial develop and to restrict the height of structures. Second, to the west of Runway 29 within the area of Town property containing the hazardous material landfill and undeveloped portion of Short Beach Park, an 'avigation

easement' is recommended to limit future uses to low density or passive recreation. These two locations immediately beyond a runway end include an FAA designated area called the Runway Protection Zone (RPZ). Concentrations of persons are not recommended within the RPZ for safety purposes. The recommended easement would prevent additional development considered incompatible within an RPZ.

4. Would affect building heights (30' to 50' high is the "sweet spot" in today's industrial real estate market)

   Beyond the locations within the RPZs and the two recommended avigation easements (see response to comment 3 above), building height of 50' or less would not be of concern for the Airport.

5. Mr. Vidal recollected that during the Harkins' administration, the Town made a concession to Bridgeport when Main Street was rerouted. In return, Bridgeport agreed that the runways would not be expanded in the future. The Commission requested further information on the contract.

   Please see Planning Commission comment 4, above. The master plan does not recommend a runway extension.

6. There is also a concern that expansion of Runway 16 and/or a return to passenger service will have a negative impact on the environment and wildlife.

   The return of passenger service and associated development (if feasible in the future) would require a formal environmental study following NEPA and CEPA. The planned location for such facilities is illustrated on the ALP in the location north of the main parking lot. This area is above the floodplain and consists of a maintained grass field. Completion of the environmental study would be required prior to the return of passenger service.

7. The Commission noted that the Opportunity Zone Census Tract 804 abuts the airport and does have a significant concentration of low-income residents.

   Agreed. The report will be refined based on this comment. Based on the master plan recommendations, significant impact to this population are not anticipated, including consideration of future noise, traffic, air quality, and land use.

8. The Commission expressed concern on how traffic would impact local roads and the economy in the area.

   Please see response to Planning Commission comment 7, above.

ZONING BOARD OF APPEALS

At a public hearing on October 6, 2020 the Stratford Zoning Board of Appeals discussed the proposed Draft Airport Master Plan Report that is currently seeking public comment. Many of the comments listed below have already been communicated to your planning consultant early on in the outreach phases. The Board made the following comments for consideration in the Master Plan:

Response to **Comments 1-4**. See response to Conservation Commission comment 1 above. Additionally, note that the master plan is a planning document that will be later followed by environmental studies for project that are pursued by the Airport.

1. The Plan does not consider coastal resilience efforts undertaken by the Town of Stratford to improve coastal resiliency in the area.
2. The Plan does not consider coastal roadway protection and improving access to and from the site in weather related events.

   Correct. The Airport does not own or operate the roadways to the Airport (other than Great Meadow Road on airport property). The master plan does not alter road access to the Airport or recommend any changes. It is noted that, except as related to an approved airport project, the FAA prohibits use of Airport or FAA funds for off-airport roadway improvements.

3. The Plan does not discuss flood mitigation and drainage concerns that are currently present at the site.

   See response to Planning Commission comment 6, above.

4. The Plan does not consider the potential impacts of sea level rise at the site.
5. The Plan does not consider the activity of migratory bird populations at Stewart B. McKinney National Wildlife Refuge.

   Proposed improvements to the Airport do not substantially alter runways or activity levels. Significant impacts to wildlife and migratory birds are not anticipated beyond current conditions. Nevertheless, airfield projects that require environmental review under NEPA and CEPA will be required to evaluate this impact, as well as other environmental concerns.

6. The Plan does not discuss impacts of runway/airport expansion on the local and regional transportation network.

   See response to Planning Commission comment 7, above.

7. The Plan does not discuss anticipated infrastructure/roadway costs to the Town of Stratford.

   See response to Zoning Board of Appeals comment 2.

8. The Plan does not consider how it can contribute to the Town's greenway network currently under planning and design, and how the airport might be a partner in its expansion.

   Areas of the airport property outside of the Security Fence could potentially be used to contribute to the greenway network with some restrictions. For example, the property northeast of the Airport (northeast of Main Street) could be open for public use for trails, as long as no rest facilities that would promote a concentration of people within the RPZ; however, trails through the RPZ may be permissible. The FAA would prohibit the Airport from funding the trails per restrictions on use of Airport revenue.

9. The Plan does not discuss the economic development impacts to be anticipated by the Town of Stratford.

   The master plan does include a financial planning component for the City of Bridgeport, particularly to review anticipated annual operating deficits, and the potential for reductions in the deficit. However, the scope of services did not include a more comprehensive study of economic impacts.

10. The Plan has taken an "island planning approach", giving little to no consideration of any planning initiative outside the confines of the airport. A more comprehensive approach should be taken to promote a more equitable planning effort.

    Agreed. The FAA funded and approved scope of work is limited in nature to facility planning for the Airport.

11. More detail should be given regarding how potential aircraft volume increases might impact the quality of life in the area, air quality, local flora and fauna and other environmental resources.

    The existing planning study was limited to a general Environmental Overview chapter, as well as an airport noise analysis following FAA required procedures. The Overview is included as Chapter 5 of the master plan. The noise study findings were presented at the final Advisory and Public Meetings and will soon be released on the study website as a standalone draft report. Email notices will be issued once the draft noise report is available for review.

    Also see responses to the Conservation Commission comments regarding future environmental studies for project implementation.