2. Existing Conditions Inventory

Developing an inventory of Fort Lauderdale-Hollywood International Airport's (the Airport or FLL) physical, operational, and functional characteristics is the basis for identifying improvements to Airport elements for inclusion in the Master Plan Update. As part of this inventory, planned short-term improvements were identified for various facilities in order to establish the baseline condition for the Airport's layout. The inventory information presented in this section reflects data collected or conditions observed as of June 2016 and provides the foundation for evaluating existing facilities and understanding future facility needs at the Airport.

In 2016, the Broward County Aviation Department (BCAD) was in various implementation stages (design and construction) of a Capital Improvement Program that included the following terminal improvements among other capital projects:

- Terminal 4 Redevelopment and Expansion—Reconstruction of a 14-gate Concourse G with Federal Inspection Services (FIS) facilities.
- New Concourse A—Build a five-gate Concourse A with new Customs and FIS facilities.
- Terminal Renovation Programs—Comprising enhancements to and modifications of Terminals 1, 2, and 3.

In addition, BCAD is planning to reconfigure the taxiway system associated with the north airfield at FLL, as part of the rehabilitation of the north runway planned for 2019, Runway 10L-28R. The reconfigured taxiway system will enhance the runway exits to optimize runway occupancy times and comply with current Federal Aviation Administration (FAA) design standards. This inventory of existing conditions serves to establish a baseline condition that is reflective of the Airport's facilities and infrastructure upon completion of these ongoing projects.

The inventory is organized under the following section headings:

- General Airport Information
- Airfield and Airspace
- Airline Terminal and Gates
- Terminal Landside Facilities
- Terminal and Off-Airport Vehicle Parking Facilities
- Rental Car Facilities
- Nonterminal Roadways and Traffic Counts

- Regional Transportation System
- Fixed-Base Operator and General Aviation Facilities
- Cargo Facilities
- Airline and Airport Support Facilities
- Airport Utilities
- Airport Security Overview
- On- and Off- Airport Land Uses
- Environmental Conditions
- Sustainability Programs and Policies

2.1 General Airport Information

2.1.1 AIRPORT HISTORY

The Airport was originally established as the Merle Fogg Field on May 1, 1929. The original airport was named for a World War I aviator who moved to Fort Lauderdale in the 1920s to begin his own flying service. The airfield became Fort Lauderdale Naval Air Station (NAS) in 1942. The U.S. Navy constructed three main runways and built a control tower as a training facility during World War II. Broward County (the County) assumed control of the facility in January 1948, and, in 1953, the County formally assumed ownership of the Broward County International Airport. Three years later, Mackey Airlines would introduce FLL's first scheduled airline service.[1] In 1959, the Airport opened its first permanent terminal building, and assumed its current name. The Airport is operated by the BCAD.

Today, FLL has evolved into a large-hub commercial service airport serving both domestic and international markets. The Airport has two full-length parallel runways and four-unit passenger terminals. FLL's terminals are served with three public parking garages, including one consolidated rental car facility and a remote parking lot west of Interstate 95 (I-95). The Airport also has multiple tenants that include fixed-base operators, private/corporate aircraft storage facilities, general aviation aircraft sales and maintenance service providers, and cargo operators.

2.1.2 AIRPORT LOCATION AND SIZE

FLL is owned by the Broward County Board of County Commissioners and is operated by BCAD. The County Administrator manages all county departments, including the Airport, on a daily basis.

The Airport is located in southeastern Broward County, two miles west of the Atlantic Ocean. FLL is situated between Palm Beach International Airport, 43 miles to the north, and Miami International Airport, 27 miles to the south. The

[1] Fort Lauderdale-Hollywood International Airport, *The Past and Present*, http://www.broward.org/Airport/About/Pages/History.aspx (accessed January 26, 2016).

Airport encompasses approximately 1,718 total acres of land, as of April 2016. The following major roadways bound the Airport: Interstate-595 (I-595) to the north, the Florida East Coast (FEC) Railway and U.S. Highway 1 (U.S. 1) to the east, Interstate-95 (I-95) to the west, and Griffin Road to the south. Additional Airport property lies beyond these roadways, and includes:

- a 15-acre parcel located south of Griffin Road,
- approximately 170 acres of land located west of Interstate-95 in the Ravenswood area, which are designated for airport support facilities, and;
- Approximately 162 acres located east of U.S. Highway 1.

Exhibit 2.1-1 depicts FLL's general location and its vicinity.

2.1.3 AIRPORT ACTIVITY DATA

Approximately 274,754 aircraft operations were conducted at the Airport in Calender Year (CY) 2015, as shown in **Table 2.1-1**. CY 2015 represented the most current calender year of actual activity and operations data that was used in the development of the Master Plan Update's Airport Activity Forecasts. Approximately 78 percent of those operations were conducted by airline aircraft, and approximately 22 percent were conducted by cargo and general aviation (GA) aircraft, which includes air taxis. Military operations accounted for approximately 0.2 percent of operations in CY 2015.

Table 2.1-1: CY 2015 Aircraft Operations

OPERATOR	AIRCRAFT OPERATIONS	SHARE
Airline	215,192	78.3%
All-Cargo	4,704	1.7%
Other Air Taxi	16,723	6.1%
General Aviation	37,704	13.7%
Military	431	0.2%
Total	**274,754**	**100.0%**

NOTE: Columns may not equal to totals shown because of rounding.

SOURCES: Broward County Aviation Department, March 2016; Federal Aviation Administration, Air Traffic Activity Data System, March 2016; U.S. Department of Transportation, Form T-100, March 2016.

PREPARED BY: Ricondo & Associates, Inc., March 2016.

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SOURCES: ESRI Online Database, Florida Counties, 2015; United States Census Bureau - TIGER / Line Files, January 2015.
PREPARED BY: Ricondo & Associates, Inc., May 2016.

EXHIBIT 2.1-1

NORTH

0 Not to scale

Airport Location

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As shown in **Table 2.1-2**, there were 94 aircraft based at the Airport in 2015.

Table 2.1-2: 2015 Based Aircraft

	2015
FIXED-WING AIRCRAFT	
Single-engine Piston	12
Multi-engine Piston	22
Jet	54
TOTAL FIXED-WING AIRCRAFT	88
HELICOPTERS	6
TOTAL BASED AIRCRAFT	94

SOURCE: Federal Aviation Administration, Terminal Area Forecast, March 2016.
PREPARED BY: Ricondo & Associates, Inc., March 2016.

2.1.4 METEOROLOGICAL CONDITIONS

Wind and weather conditions influence airport operations by affecting runway use and the percentage of time aircraft can operate under certain flight rules. Historical observations of weather conditions at FLL, such as wind direction and speed, visibility, and cloud ceiling, used to evaluate the general weather conditions and runway coverage.

Weather conditions are categorized as either visual meteorological conditions (VMC) or instrument meteorological conditions (IMC). VMC occurs when the visibility is greater than or equal to three statute miles *and* the cloud ceilings are 1,000 feet above ground level (AGL) or higher. During VMC conditions, pilots operate under visual flight rules (VFR), essentially using visual means to maintain separation from other aircraft, objects, terrain, etc. IMC occurs when the prevailing visibility at the Airport is less than three statute miles *or* the cloud ceilings are less than 1,000 feet AGL. During IMC conditions, pilots operate under instrument flight rules (IFR), relying on air traffic control (ATC) to provide separation services from other aircraft and terrain. Operating under IFR conditions requires additional pilot training and aircraft certifications beyond those required for operating under VFR conditions.

To evaluate the weather conditions at FLL, meteorological data was obtained from the weather station, an automated surface observing system (ASOS), located on Airport property. Data for this station was recorded by the National Climatic Data Center (NCDC) for the 10-year period between January 1, 2006 and December 31, 2015; the data consists of 87,682 hourly observations. At FLL, VMC conditions were recorded approximately 99.2 percent of the hourly observations, while IMC conditions were recorded approximately 0.8 percent of the hourly observations.

Wind patterns have a significant effect on runway use at all airports, as aircraft typically take off and land into the wind, in order to minimize the required runway length. When the winds are not directly aligned with the runway(s), pilots calculate a crosswind component to determine if a runway is usable. The FAA Advisory Circular (AC) 150/5300-13A, *Airport Design*, recommends that runway(s) at an airport achieve at least 95 percent wind coverage and should be evaluated based on a period of at least 10 consecutive years. To evaluate the runway wind coverage at FLL, the weather information obtained from the NCDC was utilized. Both runways at FLL were evaluated together, as they are oriented in the same direction. Crosswind components of 10.5 knots, 13 knots, 16 knots, and 20 knots were evaluated to provide runway coverage percentages for all Runway Design Codes (RDC).

The resulting wind roses are depicted on **Exhibits 2.1-2** through **2.1-4**, and they show that winds at FLL are generally from the east.

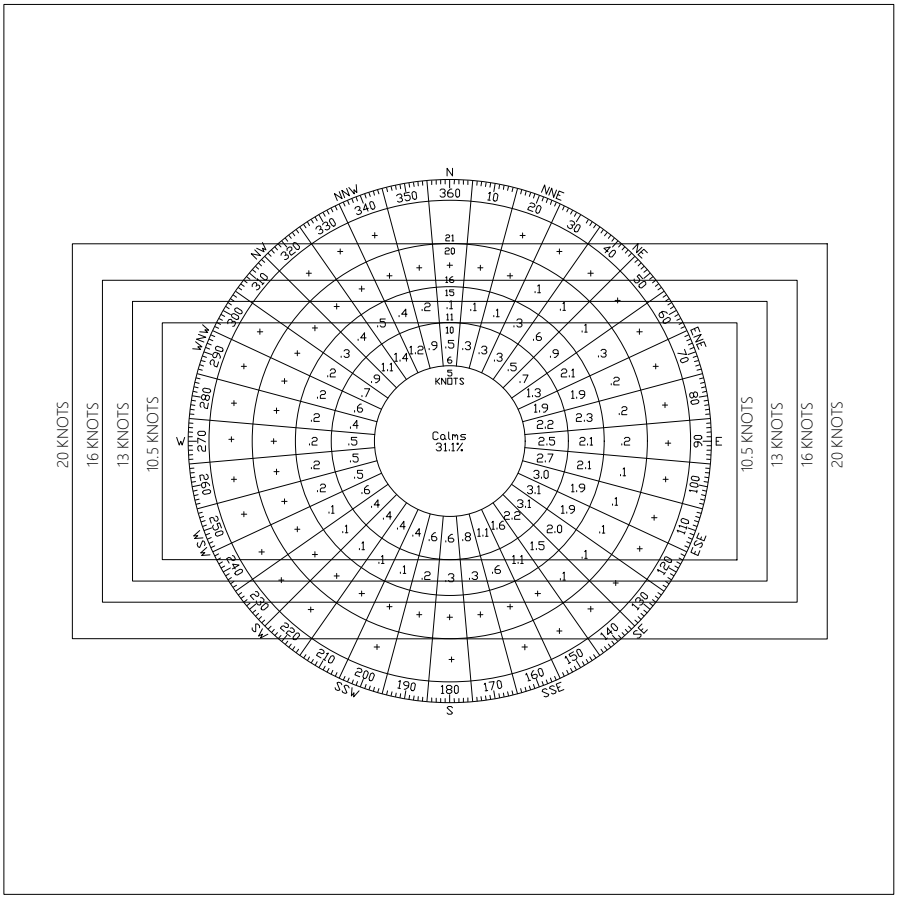
Table 2.1-3 summarizes the runway wind coverage provided by the airfield layout at FLL. The FAA recommends a runway wind coverage of 95 percent, at various crosswind components. As shown in Table 2.1-3, the combined coverage for all runways at FLL provides 95 percent wind coverage or better for all weather conditions and crosswind components, except the 10.5 knots crosswind component in IMC, with 89.7 percent. As the crosswind component increases, so does the wind coverage for the Airport's two runways, Runways 10L-28R and 10R-28L.

Table 2.1-3: Runway Wind Coverage

	ALL WEATHER	VISUAL METEOROLOGICAL CONDITIONS	INSTRUMENT METEOROLOGICAL CONDITIONS
10.5 knots	95.7%	95.7%	89.7%
13 knots	99.1%	99.1%	95.2%
16 knots	99.8%	99.8%	98.4%
20 knots	100.0%	100.0%	99.9%

SOURCE: National Climatic Data Center (NCDC) for the 10-year period between January 1, 2006 and December 31, 2015.
PREPARED BY: Ricondo & Associates, Inc., March 2016.

ALL WEATHER WIND ROSE



WIND COVERAGE TABLE

CROSSWIND COMPONENT	RUNWAY COVERAGE	
	Runways 10L/10R	Runways 28L/28R
10.5 KTS (12 mph)	81.2%	46.7%
	95.7%	
13 KTS (15 mph)	83.6%	48.0%
	99.1%	
16 KTS (18.4 mph)	84.1%	48.3%
	99.8%	
20 KTS (23 mph)	84.3%	48.4%
	100.0%	

Note: 87,682 total weather observations
KTS - Knots

SOURCE: National Climatic Data Center (NDCD) for the 10-year period between January 1, 2006 and December 31, 2015.
PREPARED BY: Ricondo & Associates, Inc., March 2016.

EXHIBIT 2.1-2

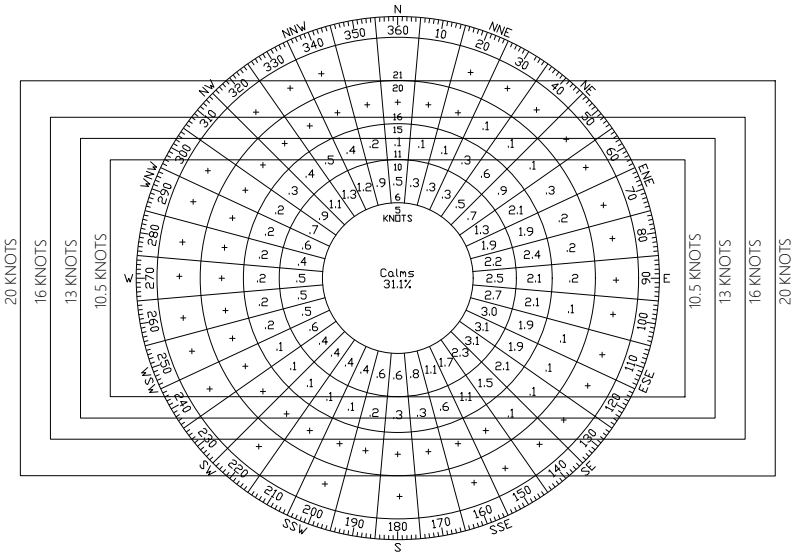
NORTH 0 N.T.S.

All Weather
Wind Rose and Runway Coverage Table

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VMC WIND ROSE



Ceiling at or above 1,000 feet and visibility greater than or equal to 3 statute miles

WIND COVERAGE TABLE

CROSSWIND COMPONENT	RUNWAY COVERAGE	
	Runways 10L/10R	Runways 28L/28R
10.5 KTS (12 mph)	81.5%	46.5%
	95.7%	
13 KTS (15 mph)	83.8%	47.8%
	99.1%	
16 KTS (18.4 mph)	84.3%	48.1%
	99.8%	
20 KTS (23 mph)	84.4%	48.2%
	100.0%	

Note: 86,990 total VMC weather observations
KTS - Knots

SOURCE: National Climatic Data Center (NDCD) for the 10-year period between January 1, 2006 and December 31, 2015.
PREPARED BY: Ricondo & Associates, Inc., March 2016.

EXHIBIT 2.1-3

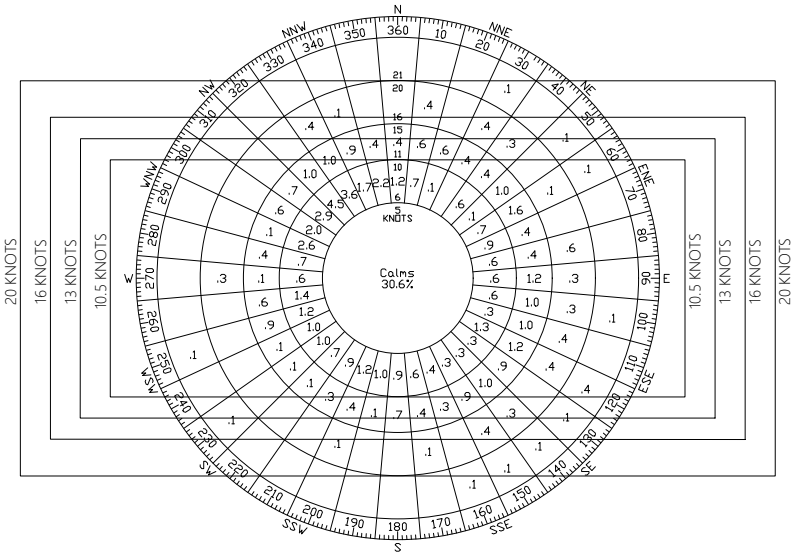
NORTH 0 N.T.S.

Visual Meteorological Conditions Wind Rose and Runway Coverage Table

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IMC WIND ROSE



Ceiling below 1,000 feet and/or visibility less than 3 statute miles

WIND COVERAGE TABLE

CROSSWIND COMPONENT	RUNWAY COVERAGE	
	Runways 10L/10R	Runways 28L/28R
10.5 KTS (12 mph)	54.3%	68.0%
	89.7%	
13 KTS (15 mph)	57.8%	71.0%
	95.2%	
16 KTS (18.4 mph)	60.1%	72.0%
	98.4%	
20 KTS (23 mph)	61.2%	72.5%
	99.9%	

Note: 690 total IMC weather observations
KTS - Knots

SOURCE: National Climatic Data Center (NDCD) for the 10-year period between January 1, 2006 and December 31, 2015.
PREPARED BY: Ricondo & Associates, Inc., March 2016.

EXHIBIT 2.1-4

NORTH 0 N.T.S.

Instrument Meteorological Conditions Wind Rose and Runway Coverage Table

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2.2 Airfield and Airspace

This section provides an overview of the airfield environment at FLL, as well as the general information pertaining to the airspace structure that accommodates aircraft operating to and from FLL.

2.2.1 AIRFIELD

The runways, taxiway network, movement and nonmovement areas, and navigational aids and lighting that support airfield operations are described in the following subsections.

2.2.1.1 Airfield Layout

The Airport has two parallel runways: Runway 10L-28R is 9,000 feet long and Runway 10R-28L is 8,000 feet long. Both runways have a width of 150 feet and are configured to accommodate Airplane Design Group (ADG) V aircraft (wingspan up to 214 feet) and Aircraft Approach Category (AAC) D aircraft (approach speed < 166 knots), resulting in a runway reference code of D-V. Therefore, both runways can accommodate aircraft as large as a B747-400.

Exhibit 2.2-1 depicts the existing airfield layout (as of February 2016). The portion of the airfield north of the passenger terminal area is referred to as the "North Airfield"; similarly, the portion of the airfield south of the terminal is referred to as the "South Airfield," while the area west of the terminal is referred to as the "Midfield."

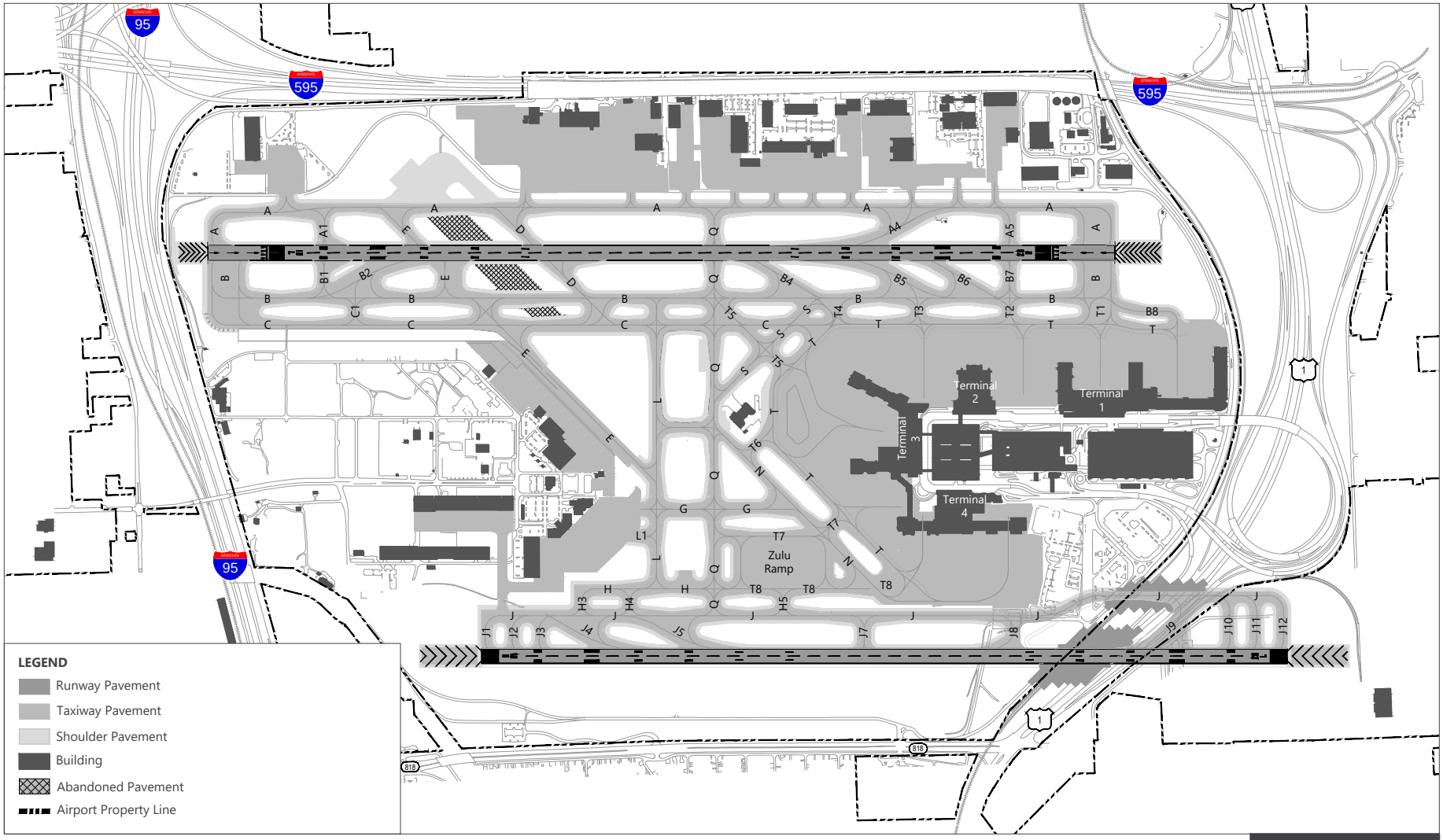
In conjunction with the preliminary engineering evaluations associated with the rehabilitation of Runway 10L-28R, BCAD initiated the FLL North Airfield Pavement Geometry Study. This study evaluated the taxiway system that supports Runway 10L-28R in order to identify and recommend potential modifications to the runway exit taxiways, parallel Taxiways A, B, C, and their associated connector taxiways, to ensure compliance with FAA design standards.

Exhibit 2.2-2 illustrates the proposed airfield modifications that were recommended by the FLL North Airfield Pavement Geometry Study. **Exhibit 2.2-3** illustrates the resulting airfield configuration, which will serve as the Master Plan Update's baseline airfield geometry. Exhibits 2.2-2 and 2.2-3 show proposed taxiway designators for the north airfield.

2.2.1.2 Airport Reference Code

The Airport Reference Code (ARC) is an alpha-numeric designation that generally classifies an airport according to its ability to accommodate certain categories of airfield operations. Assigning an ARC does not create limits on the types of operation that can occur at an airport; rather, it is used to broadly identify various planning and design parameters that will help ensure safe operations at an airport. It is typically determined based upon the AAC and ADG of the most demanding aircraft type(s) using or expected to use the airport on a regular basis (at least 500 operations a year). However, the FAA also considers local characteristics when determining an airport's ARC.

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SOURCE: Broward County Aviation Department, *Fort Lauderdale-Hollywood International Airport, Airport Layout Plan*, February 2011.
PREPARED BY: Ricondo & Associates, Inc., February 2016.

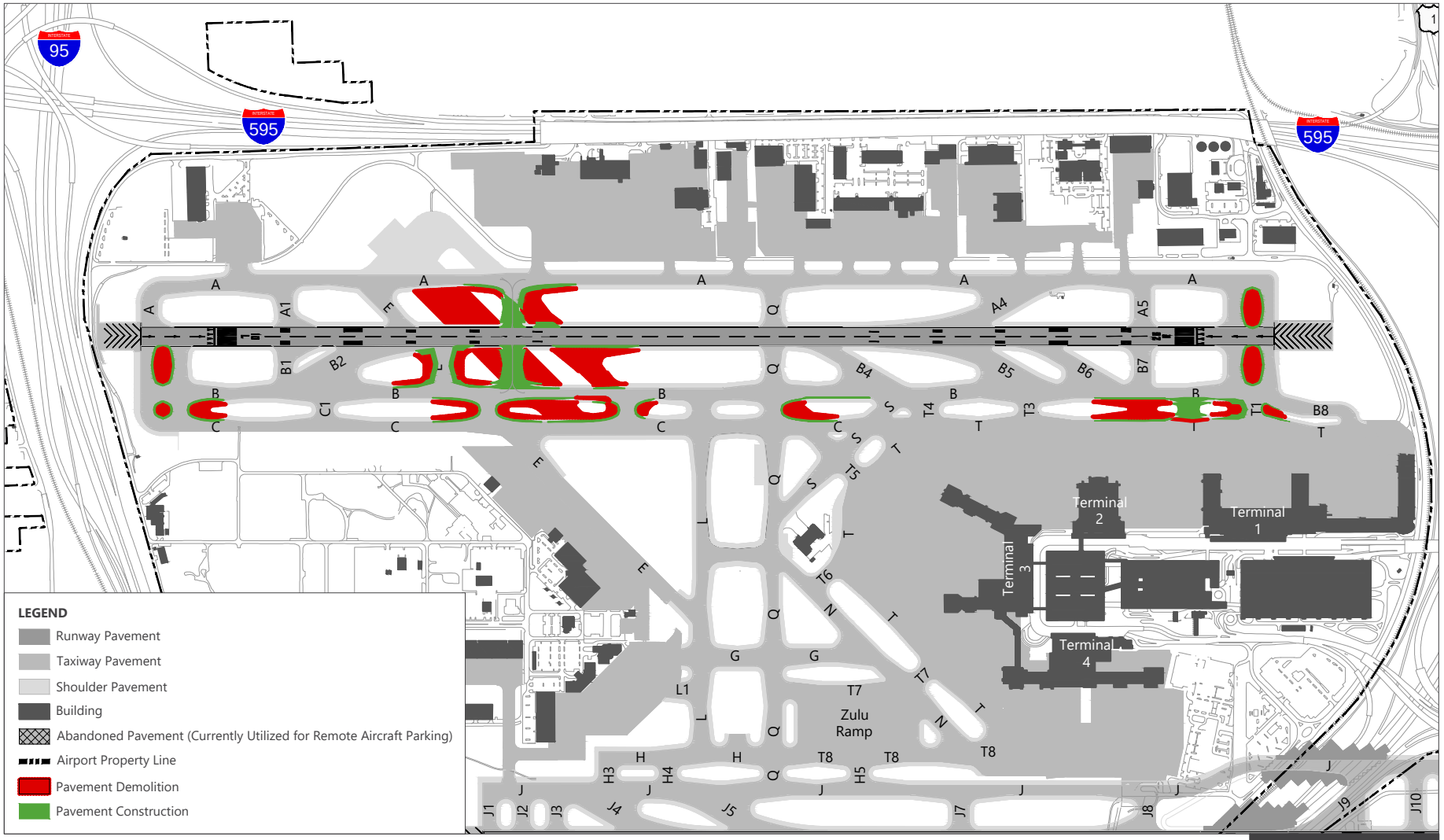
EXHIBIT 2.2-1

NORTH 0 1,500 ft.

Existing Airfield Layout (As of June 2016)

Drawing: P:\Project-Miami\BCAD\2015 Master Plan Updates\01 - FLL Tasks\I-4 Inventory\CAD\2.2-1 - Existing Airfield Layout.dwgLayout: Existing Airfield Layout Plotted: Oct 28, 2020, 04:15PM

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SOURCES: Broward County Aviation Department, *Fort Lauderdale-Hollywood International Airport Airport Layout Plan*, February 2011; Rincondo & Associates, Inc., *North Airfield Pavement Geometry and Operational Analysis,* February 2016.
PREPARED BY: Ricondo & Associates, Inc., February 2016.

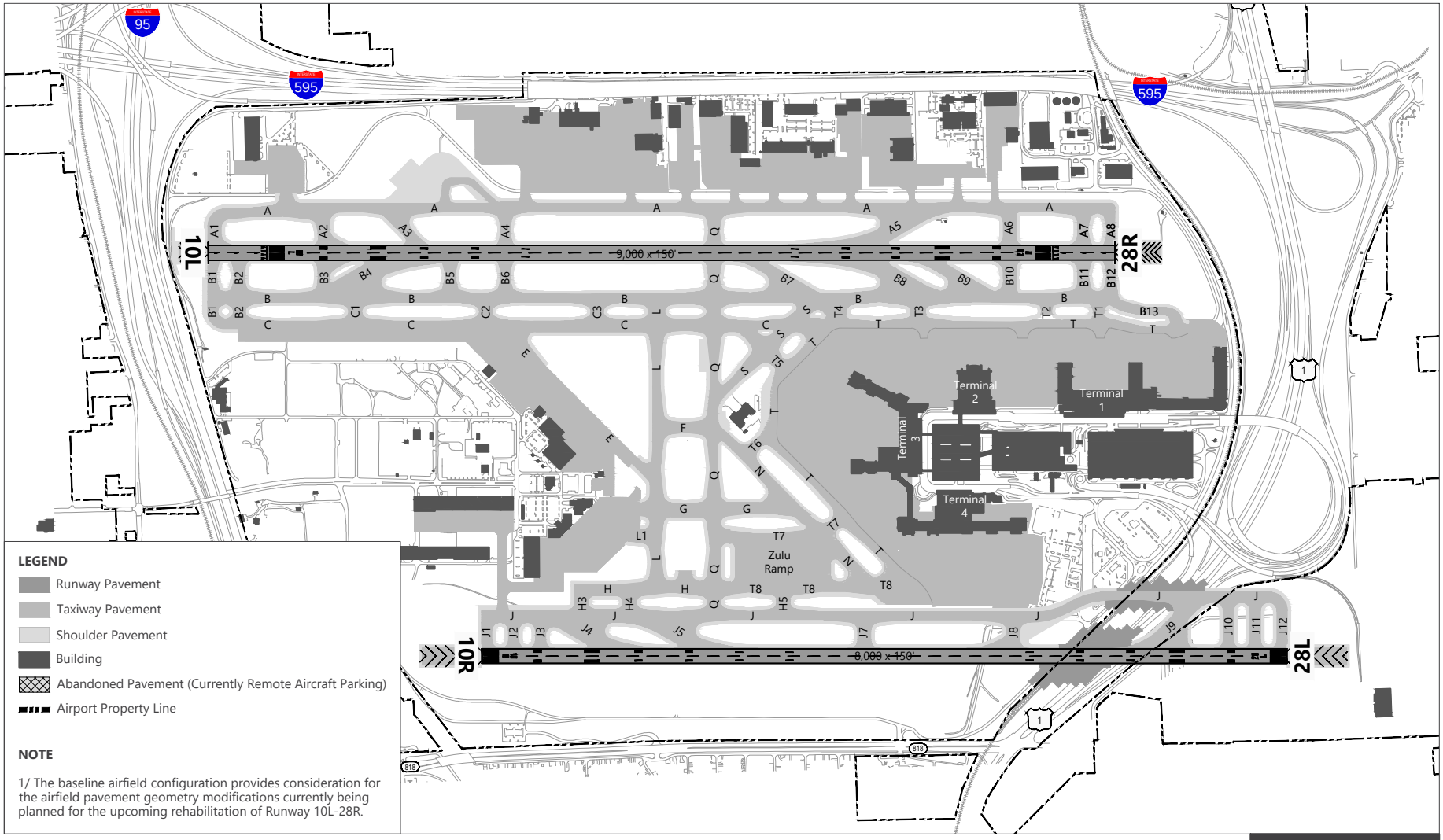
EXHIBIT 2.2-2

NORTH 0 1,200 ft.

Proposed North Airfield Layout

Drawing: P:\Project-Miami\BCAD\2015 Master Plan Updates\01 - FLL Tasks\I-4 Inventory\CAD\2.2-2 - Proposed North Airfield Layout.dwgLayout: Proposed North Airfield Layout Plotted: Oct 28, 2020, 04:35PM

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SOURCES: Broward County Aviation Department, *Fort Lauderdale-Hollywood International Airport, Airport Layout Plan*, February 2011; Ricondo & Associates, Inc., *North Airfield Geometry and Operational Analysis,* February 2016.
PREPARED BY: Ricondo & Associates, Inc., February 2016.

EXHIBIT 2.2-3

NORTH 0 1,500 ft.

Baseline Airfield Configuration

Drawing: P:\Project-Miami\BCAD\2015 Master Plan Updates\01 - FLL Tasks\I-4 Inventory\CAD\2.2-3 - Baseline Airfield Layout.dwgLayout: Baseline Airfield Layout Plotted: Oct 28, 2020, 04:18PM

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Based on the Airport Noise and Operations Monitoring System (ANOMS) at FLL for 2015 and the introduction of new air service at FLL during CY 2016, FLL's ARC is D-V. AAC D corresponds to an aircraft approach speed between 141 knots and up to, but not including, 166 knots. ADG V categorizes aircraft with a wingspan range between 171 feet and up to, but not including, 214 feet and a tail height between 60 feet and up to, but not including, 66 feet. The ARC is used for planning and design only, and it does not limit the aircraft that may be able to operate safely on the airport.

2.2.1.4 Runways

The parallel runways (10L-28R and 10R-28L) have a lateral separation of 4,005 feet (centerline to centerline). The physical characteristics of each runway, including pavement strength, are summarized in **Table 2.2-1**.

Table 2.2-1: Runway Characteristics

CHARACTERISTIC	10L-28R	10R-28L
Length (feet)	9,000	8,000
Width (feet)	150	150
Runway Design Code (feet)	D/V/4,000 – D/V/2,400	D/V/4,000 – D/V/4,000
Approach Capability	Precision	Precision
Lowest Visibility Minimums	RVR 40 – RVR 24	RVR 40
Pavement Strength (X 1,000 pounds)	Single Wheel – 100 Double Wheel – 200 Double Tandem – 468 Dual Double Tandem - 800	Single Wheel – 120 Double Wheel – 247 Double Tandem – 461 Duel Double Tandem - 987
Pavement Strength by PCN	69 F/B/W/T	74 R/B/W/T

NOTES:

RVR = Runway Visual Range;

PCN = Pavement Classification Number

F = Flexible pavement

R = Rigid pavement

B = Medium pavement subgrade

W = No tire pressure limit

T = Technical evaluation

SOURCES: Broward County Aviation Department, Fort Lauderdale-Hollywood International Airport, Airport Layout Plan, February 2011; Federal Aviation Administration (FAA), Advisory Circular 150/5300-13A (Change 1), Airport Design, February 26, 2014; FAA, Airport/Facility Directory, December 2015; FAA, Approach Plates, Valid November 12, 2015–December 10, 2015; Ricondo & Associates, Inc., December 2015.

PREPARED BY: Ricondo & Associates, Inc., December 2015.

Table 2.2-2 summarizes each runway's AAC, ADG and visibility minimum, as well as the resulting RDC. For existing infrastructure, the Approach Reference Code (APRC) and the Departure Reference Code (DPRC) describe the current operational capabilities of a runway and adjacent taxiways in which no special operating procedures are necessary. Similar to the RDC, the APRC and DPRC consist of the AAC, the ADG, and the approach visibility minimum, which is expressed in runway visual range (RVR) values in feet. **Table 2.2-3** lists the APRC and DPRC of the runways at FLL.

Table 2.2-2: Design Codes

RUNWAY	AIRCRAFT APPROACH CATEGORY	AIRPLANE DESIGN GROUP	VISIBILITY MINIMUM (FEET)	RUNWAY DESIGN CODE
10L	D	V	4,000	D/V/4,000'
28R	D	V	2,400	D/V/2,400'
10R	D	V	4,000	D/V/4,000'
28L	D	V	4,000	D/V/4,000'

SOURCES: Broward County Aviation Department, *Fort Lauderdale-Hollywood International Airport Layout Plan*, February 2011; Federal Aviation Administration, Advisory Circular 150/5300-13A (Change 1), *Airport Design*, February 26, 2014; Ricondo & Associates, Inc., December 2015.
PREPARED BY: Ricondo & Associates, Inc., December 2015.

Table 2.2-3: Approach and Departure Reference Codes

RUNWAY	APPROACH REFERENCE CODE	DEPARTURE REFERENCE CODE
10L	D/IV/4,000' D/V/4,000'	D/IV D/V
28R	D/IV/2,400' D/V/2,400'	D/IV D/V
10R	D/IV/4,000' D/V/4,000'	D/IV D/V
28L	D/IV/4,000' D/V/4,000'	D/IV D/V

SOURCES: Federal Aviation Administration, Advisory Circular 150/5300-13A (Change 1), *Airport Design*, February 26, 2014; Ricondo & Associates, Inc., December 2015.
PREPARED BY: Ricondo & Associates, Inc., December 2015.

2.2.1.5 Taxiways

The taxiway network at FLL is also illustrated on Exhibit 2.2-3. Full-length parallel taxiways run along the north and south sides of Runway 10L-28R (Taxiways A and B, respectively) and along the north side of Runway 10R-28L (Taxiway J). In combination with Taxiway B, Taxiway C serves as a partial-length dual parallel taxiway system west of the terminal area. Taxiways L and Q are cross-field taxiways that connect the north and south airfields. **Table 2.2-4** lists the characteristics of the major taxiways at FLL, including taxiway and shoulder widths.

Table 2.2-4: Taxiway Characteristics

TAXIWAY	TAXIWAY WIDTH (FEET)	TAXIWAY SHOULDER WIDTH (FEET)	TAXIWAY ADG	TOFA WIDTH (FEET)	TSA WIDTH (FEET)
A	75	35	IV	259	171
B	75	Varies 25 to 35	Varies IV to V1/	Varies 259 to 320	Varies 171 to 214
C	75	35	V	320	214
D	75	Varies 25 to 35	V	320	214
E	75	Varies 0 to 35	Varies III to V2/	Varies 186 to 320	Varies 118 to 171
G	75	35	V	320	214
H	100	35	V	320	214
J	75	35	V	320	214
L	75	35	V	320	214
N	75	25	V	320	214
Q	75	35	V	320	214
S	75	35	V	320	214
T7	75	Varies 25 to 35	V	320	214
T8	75	35	V	320	214

NOTES:

1/ Taxiway B is ADG V west of Taxiway T4 and ADG IV east of Taxiway T4.

2/ Taxiway E is ADG V north of Taxiway C and ADG III south of Taxiway C.

TSA – Taxiway Safety Area

TOFA – Taxiway Object Free Area

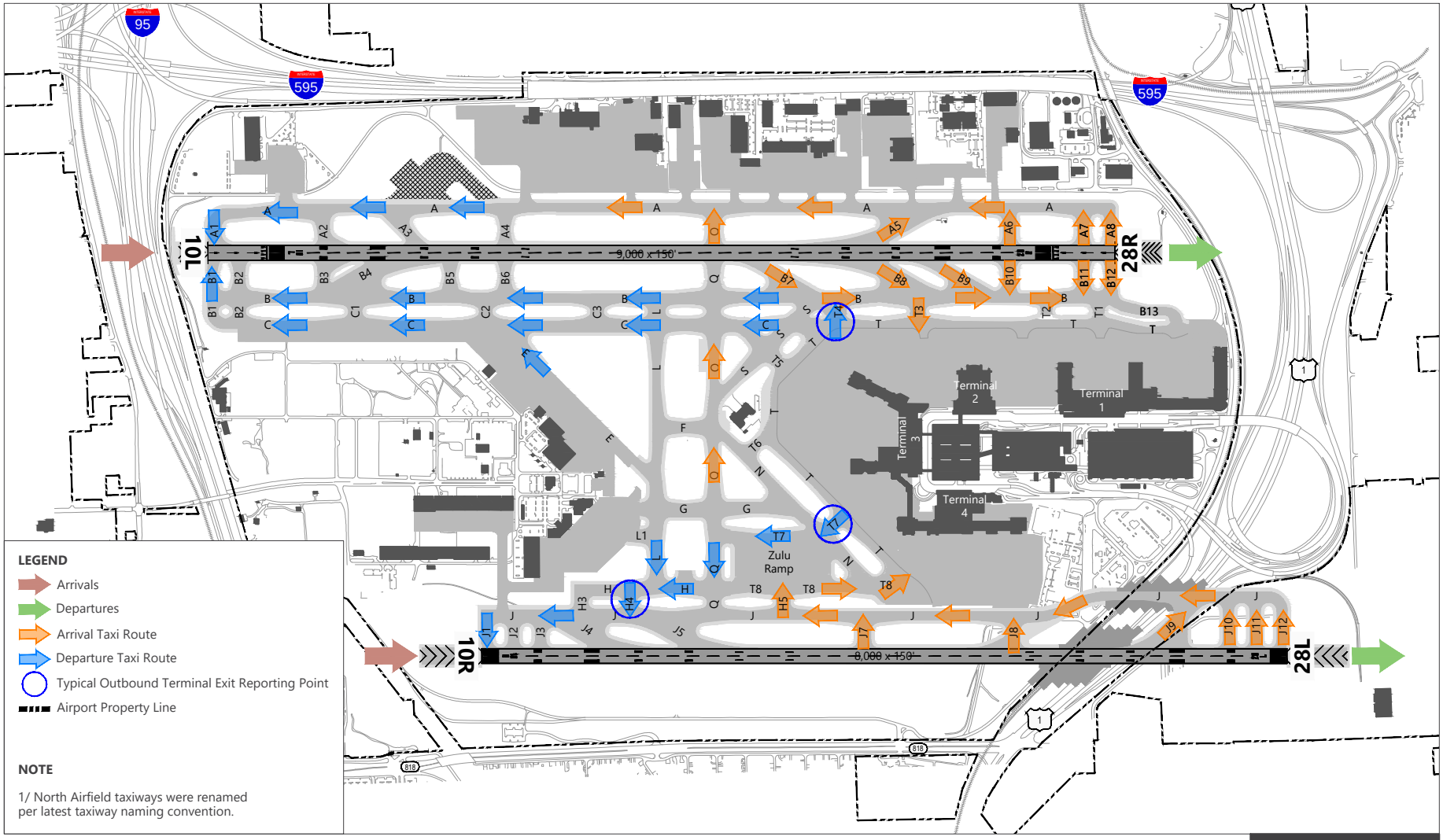
ADG – Airplane Design Group

SOURCES: Broward County Aviation Department, *Fort Lauderdale-Hollywood International Airport, Airport Layout Plan*, February 2011; Ricondo & Associates, Inc., December 2015.

PREPARED BY: Ricondo & Associates, Inc., December 2015.

Exhibits 2.2-4 and **2.2-5** depict aircraft taxi flows during the primary runway use configurations at FLL, East Flow and West Flow, respectively; terminal area exit locations are also depicted. During East Flow operations, outbound aircraft are typically routed via Taxiways T4, T7, and H4 (East Flow exit points). Taxiways T4 and T8/H5 are typically utilized for outbound taxiing during West Flow (West Flow exit points). During West Flow operations, Taxiway B is utilized to queue aircraft waiting to depart Runway 28R. Aircraft departing from the north terminal area typically enter the departure queue for Runway 28R abeam Taxilane T4. However, when the departure queue for Runway 28R extends beyond Taxiway B8 (formerly Taxiway B5), departing aircraft are diverted westbound on Taxiway C to enter the departure queue west of Taxiway L. This prevents aircraft from obstructing cross-field Taxiways L and Q. Inbound aircraft typically utilize the other taxiway entrances to the terminal apron.

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SOURCES: Broward County Aviation Department, *Fort Lauderdale-Hollywood International Airport, Airport Layout Plan*, February 2011; Ricondo & Associates, Inc., *North Airfield Geometry and Operational Analysis*, February 2016; FLL Air Traffic Control Tower Personnel, Interviewed by David Ramacorti, Directory, Ricondo & Associates, Inc., January 15, 2016..
PREPARED BY: Ricondo & Associates, Inc., February 2016.

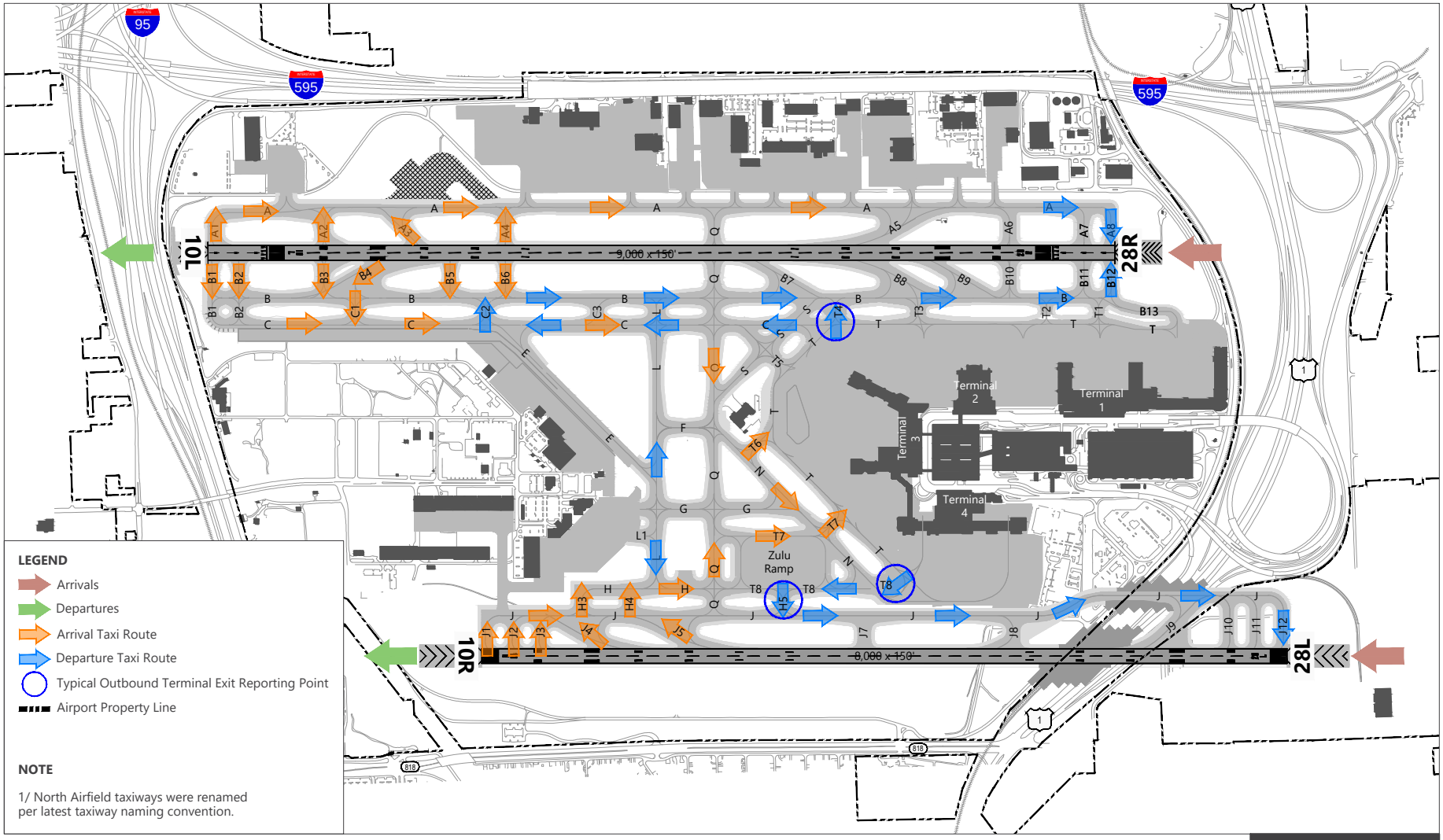
EXHIBIT 2.2-4

NORTH 0 1,500 ft.

Typical East Flow Aircraft Taxi Routes

Drawing: P:\Project-Miami\BCAD\2015 Master Plan Updates\01 - FLL Tasks\I-4 Inventory\CAD\2.2-4 - East Flow Taxi Flows.dwgLayout: East Flow Taxi Flows Plotted: Oct 28, 2020, 04:20PM

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SOURCES: Broward County Aviation Department, *Fort Lauderdale-Hollywood International Airport, Airport Layout Plan*, February 2011; Ricondo & Associates, Inc., *North Airfield Geometry and Operational Analysis*, February 2016; FLL Air Traffic Control Tower Personnel, Interviewed by David Ramacorti, Directory, Ricondo & Associates, Inc., January 15, 2016..
PREPARED BY: Ricondo & Associates, Inc., February 2016.

EXHIBIT 2.2-5

NORTH 0 1,500 ft.

Typical West Flow Aircraft Taxi Routes

Drawing: P:\Project-Miami\BCAD\2015 Master Plan Updates\01 - FLL Tasks\I-4 Inventory\CAD\2.2-5 - West Flow Taxi Flows.dwgLayout: West Flow Taxi Flows Plotted: Oct 28, 2020, 04:21PM

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2.2.1.6 Movement and Nonmovement Areas

The movement area is under the control of ATC, and includes the runways, taxiways, and other areas of an airport that are used for the taxiing, takeoff, and landing of aircraft, exclusive of loading aprons and aircraft parking areas. The movement and nonmovement areas at FLL are depicted on **Exhibit 2.2-6**.

Taxilanes T and B13 are designated as nonmovement areas within the terminal area to increase ATC personnel flexibility in moving aircraft efficiently in and out of the terminal area. The Zulu Ramp (located to the west of Terminal 4) and associated Taxilanes T7 and T8, as well as the portion of Taxiway N between these two taxilanes, are also classified as nonmovement areas. The Zulu ramp is typically utilized for remote overnight parking, but it also serves as a penalty box throughout the day when gates are unavailable. The existing general aviation and cargo aprons are also designated as nonmovement areas.

2.2.1.7 Navigational Aids

The various types of navigational aids and airport lighting systems in use at the Airport are depicted on **Exhibit 2.2-7**. The navigational aids critical areas are also depicted. As shown, each runway end is served with an instrument landing system (ILS) consisting of glide slope and localizer antennas, approach lighting systems, precision approach path indicators (PAPIs), and RVR transmitters. The Airport is also equipped with an on-site very high frequency omnidirectional range (VOR) station, which is located south of the Runway 10L end. Several wind cones are installed in the vicinity of the runway ends to provide wind direction and speed information to pilots during the landing phase. A rotating beacon, located along the northern boundary of the Airport, emits alternating white and green flashes, indicating a lighted land airport. **Table 2.2-5** lists runway lighting and marking, associated visual aids and approach lighting systems, as well as instrument approaches available for each runway end.

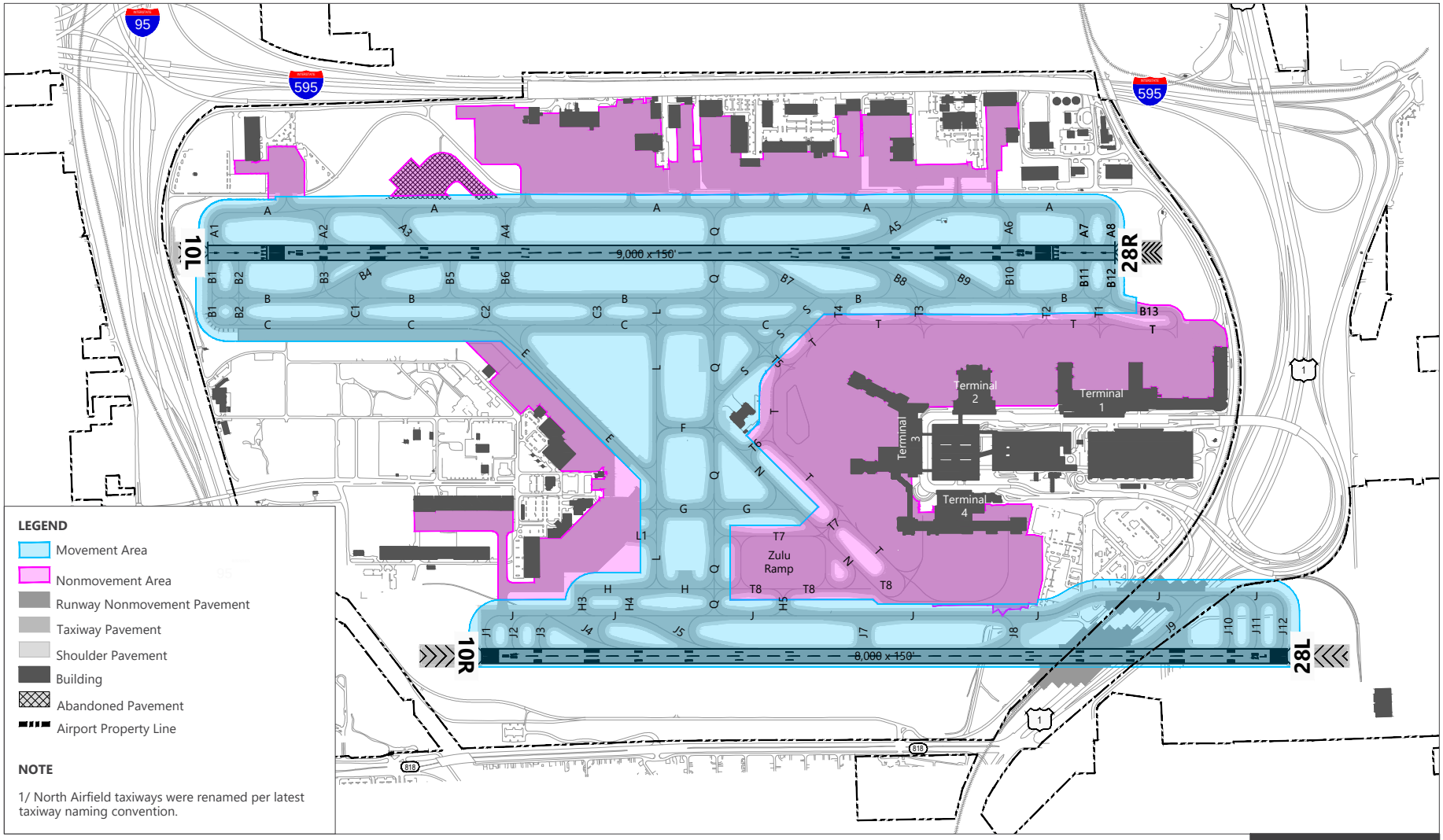
2.2.2 AIRSPACE

The structure of, and the procedures to operate in, the airspace serving the Airport influence aircraft routings to and from the Airport. This section describes the airspace structure and the procedures used by the various FAA ATC facilities serving the Airport.

2.2.2.1 Air Traffic Control

The airspace surrounding FLL is classified as Class C airspace. Class C airspace generally surrounds airports that have an operational airport traffic control tower (ATCT), are serviced by a terminal radar approach control (TRACON) and have a certain number of IFR operations or passenger enplanements. The FLL Class C airspace extends from the ground to 4,000 feet above mean sea level (MSL) in the area 5 nautical miles (NM) around the Airport, and from 1,200 feet MSL to 4,000 feet MSL out to 10 NM from the Airport, except on the south side of the Airport, where it abuts the Miami International Airport (MIA) Class B airspace.

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SOURCES: Broward County Aviation Department, *Fort Lauderdale-Hollywood International Airport, Airport Layout Plan*, February 2011; Ricondo & Associates, Inc., *North Airfield Pavement Geometry and Operational Analysis,* February 2016.
PREPARED BY: Ricondo & Associates, Inc., February 2016.

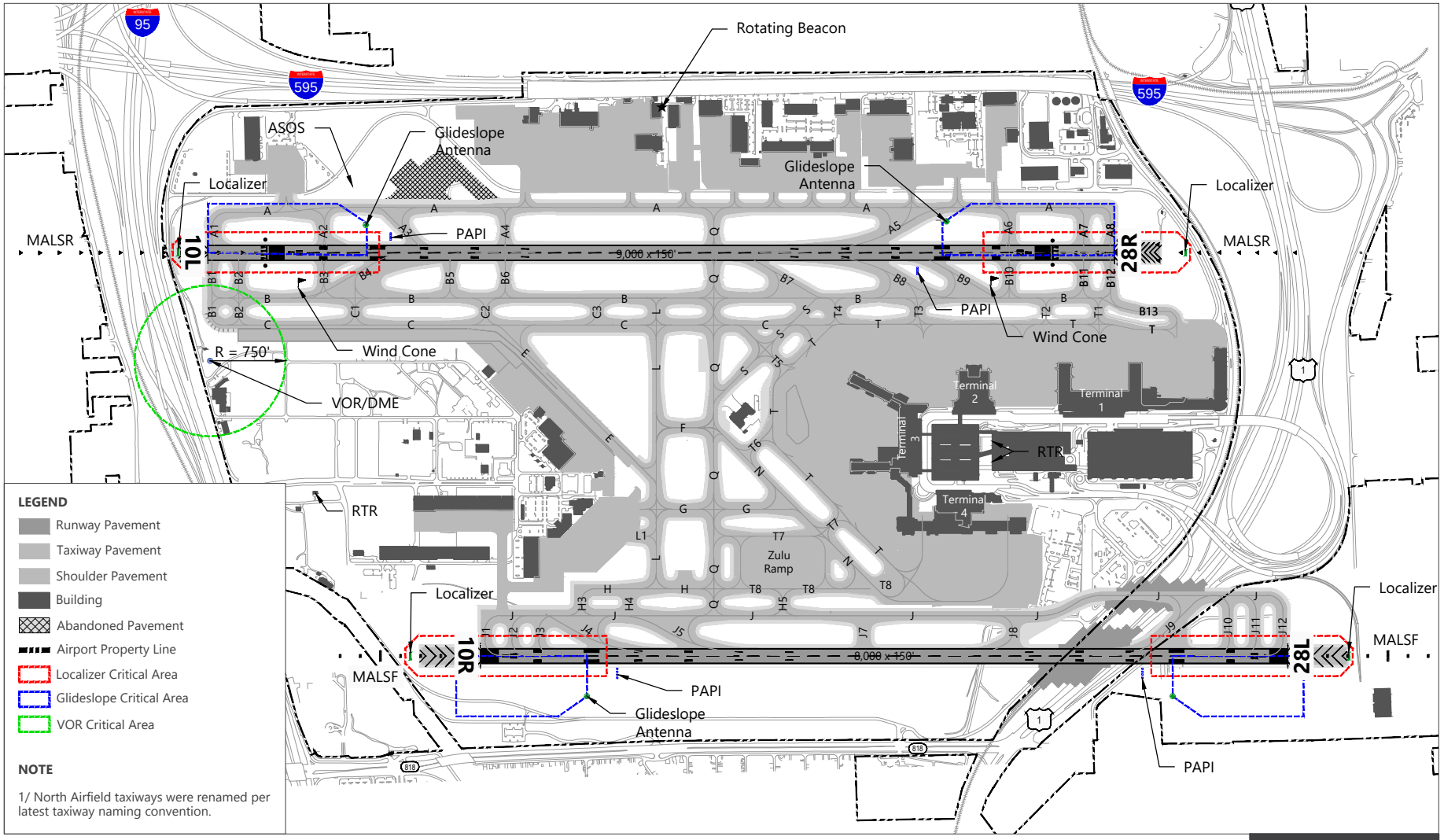
EXHIBIT 2.2-6

NORTH 0 1,500 ft.

Movement and Nonmovement Areas

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SOURCES: Broward County Aviation Department, *Fort Lauderdale-Hollywood International Airport, Airport Layout Plan*, February 2011; Ricondo & Associates, Inc., *North Airfield Pavement Geometry and Operational Analysis*, February 2016.
PREPARED BY: Ricondo & Associates, Inc., February 2016.

EXHIBIT 2.2-7

NORTH 0 1,500 ft.

Navigational Aids

Drawing: P:\Project-Miami\BCAD\2015 Master Plan Updates\01 - FLL Tasks\I-4 Inventory\CAD\2.2-7 - Navigational Aids.dwgLayout: Navigational Aids Plotted: Oct 28, 2020, 04:23PM

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Table 2.2-5: Airport Navigational Aids

	RUNWAY LIGHTS	RUNWAY MARKINGS	VISUAL APPROACH AIDS	INSTRUMENT APPROACH AIDS
RUNWAY	EXISTING	EXISTING	EXISTING	EXISTING
Runway 10L	HIRL	Precision	PAPI-4L, MALSR	ILS, LOC, GPS, RNP
Runway 28R	HIRL	Precision	PAPI-4L MALSR	ILS, LOC, GPS, RNP, VOR
Runway 10R	HIRL	Precision	PAPI-4R, MALSF	ILS, LOC, GPS
Runway 28L	HIRL	Precision	PAPI-4L, MALSF	ILS, LOC, GPS

NOTES:

GPS = Global Positioning System

HIRL = High Intensity Runway Lights

ILS = Instrument Landing System

LOC = Localizer

MALSF = Medium Intensity Approach Lighting System with Sequenced Flashing Lights

MALSR = Medium Intensity Approach Lighting System with Runway Alignment

PAPI-4L = Precision Approach Path Indicator on the Left Side of the Runway (4-box unit)

PAPI-4R = Precision Approach Path Indicator on the Right Side of the Runway (4-box unit)

RNP = Required Navigation Performance

VOR = Very High Frequency Omnidirectional Range

SOURCES: Federal Aviation Administration, *AVNIS Datasheet*, December 1, 2015; Federal Aviation Administration, Advisory Circular 150/5300-13A Change 1, *Airport Design*, February 26, 2014; Ricondo & Associates, Inc., December 2015.

PREPARED BY: Ricondo & Associates, Inc., December 2015.

Three facilities provide ATC services for the pilots of aircraft arriving at, departing from, or overflying the immediate area of the Airport.

- The FLL ATCT staff issue clearances for movements inside the Class C airspace. These clearances include authorization to land at or take off from the Airport, move on the airfield, or transit the airspace delegated to the FLL ATC.
- The Miami TRACON is collocated with the Miami International Airport (MIA) ATCT. The TRACON provides radar ATC services to pilots of aircraft arriving at and departing from the Airport, as well as to other civilian airports in the regional service area and to pilots of aircraft operating under VFR in and around the MIA Class B airspace.
- The FAA Miami Air Route Traffic Control Center (ARTCC) is located in Miami and provides ATC services to pilots of aircraft operating on IFR flight plans within controlled airspace during the enroute phase of flight. The enroute phase of flight is generally defined as the period when aircraft are operating between departure and destination terminal areas.

2.2.2.2 Runway Use

Both runways are available for arrivals and departures; however, the characteristics of the runways, such as length, width, location, and Airport noise abatement procedures define how the runways are used. The primary runway use configurations at FLL are designated as East Flow and West Flow. **Exhibit 2.2-8** depicts the configurations. Based on 2015 data, the Airport operates in East Flow approximately 72 percent of the time, and it operates in West Flow the remaining 28 percent of the time.[2] In both East and West Flows, arriving and departing aircraft are assigned a runway based on their origin/destination airport.

2.2.2.3 Airspace Arrival and Departure Routes

Exhibits 2.2-9 and **2.2-10** depict the primary airspace arrival and departure routes in East and West Flows, respectively. The associated airspace procedures are described in this section.

Arrivals

In both East and West Flows, aircraft enter the terminal airspace via four fixes: FAMIN (southwest), KUBIC (northwest), MRLIN (northeast), and DEKAL (southeast).

During East Flow operations, arrivals from FAMIN and KUBIC are typically assigned to Runway 10R, while arrivals from MRLIN and DEKAL are routed to the north of FLL for a downwind leg to arrive on Runway 10L. During West Flow operations, arrivals from FAMIN and KUBIC are routed to the north of FLL for a downwind leg to arrive on Runway 28R, while arrivals from MRLIN can arrive on either Runway 28L or 28R, while arrivals from DEKAL typically land on Runway 28L. **Table 2.2-6** lists standard published arrival and departure procedures for FLL, as well as instrument approach procedures for each runway.

Departures

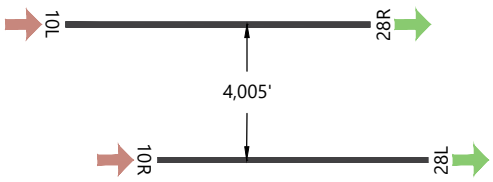
During East Flow operations, the primary departure fixes for FLL include THNDR (northwest), ARKES (north), PREDA (northeast), BEECH (east), and MNATE (south). Aircraft departing via THNDER and ARKES typically depart from Runway 10L, while aircraft departing via BEECH and MNATE typically are assigned to Runway 10R. Aircraft departing via PREDA may be assigned to either Runway 10L or 10R, depending on demand.

During West Flow operations, the primary departure fixes for FLL include THNDR (northwest), ARKES (north), PREDA (northeast), BAHMA (east jets), BEECH (east turboprops), and MNATE (south). Aircraft departing via ARKES, PREDA, or BAHMA typically depart from Runway 28R, while aircraft departing via BEECH and MNATE typically are assigned to Runway 28L. Aircraft departing via THNDR may be assigned to either Runway 28L or 28R, depending on demand.

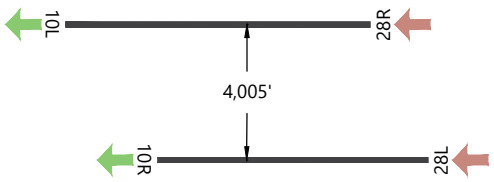
[2] Fort Lauderdale/Hollywood International Airport, *ANOMS Data*, May 2015; Ricondo & Associates, Inc., June 2015.

Visual Meteorological Conditions (VMC)

East Flow

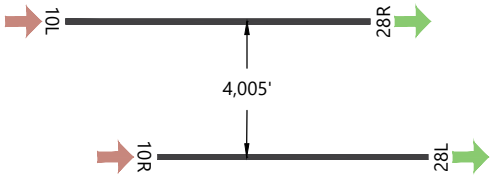


West Flow

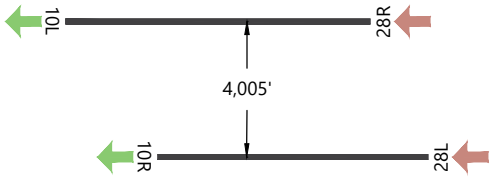


Instrument Meteorological Conditions (IMC)

East Flow



West Flow



LEGEND
- Arrivals
- Departures

SOURCES: Broward County Aviation Department, *Fort Lauderdale-Hollywood International Airport, Airport Layout Plan*, February2011;
FLL Air Traffic Control Tower Personnel, Interviewed by David Ramacorti, Director, Ricondo & Associates, Inc., January 15, 2016.
PREPARED BY: Ricondo & Associates, Inc., February 2016.

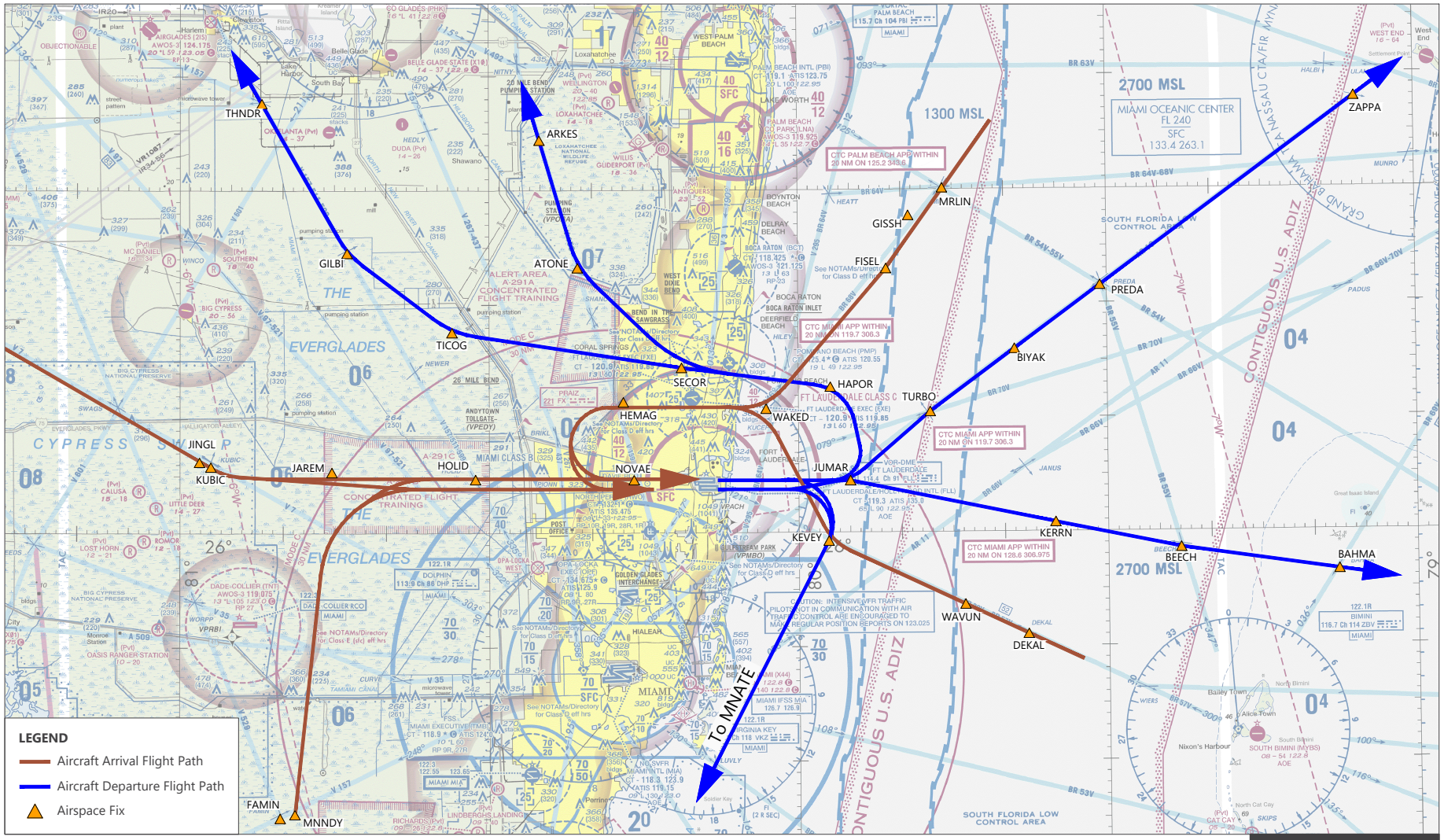
EXHIBIT 2.2-8

NORTH 0 Not to Scale

Runway Use Configurations

Drawing: P:\Project-Miami\BCAD\2015 Master Plan Updates\01 - FLL Tasks\I-4 Inventory\CAD\2.2-8 - Runway Use Configurations.dwgLayout: Runway Use Configurations Plotted: Oct 28, 2020, 04:24PM

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SOURCES: Federal Aviation Administration, *Miami Sectional Chart*, Effective August 20, 2015 Through February 4, 2016; Federal Aviation Administration, National Flight Data Center; FLL Air Traffic Control Tower Personnel, Ricondo & Associates, Inc., January 15, 2016.
PREPARED BY: Ricondo & Associates, Inc., April, 2016.

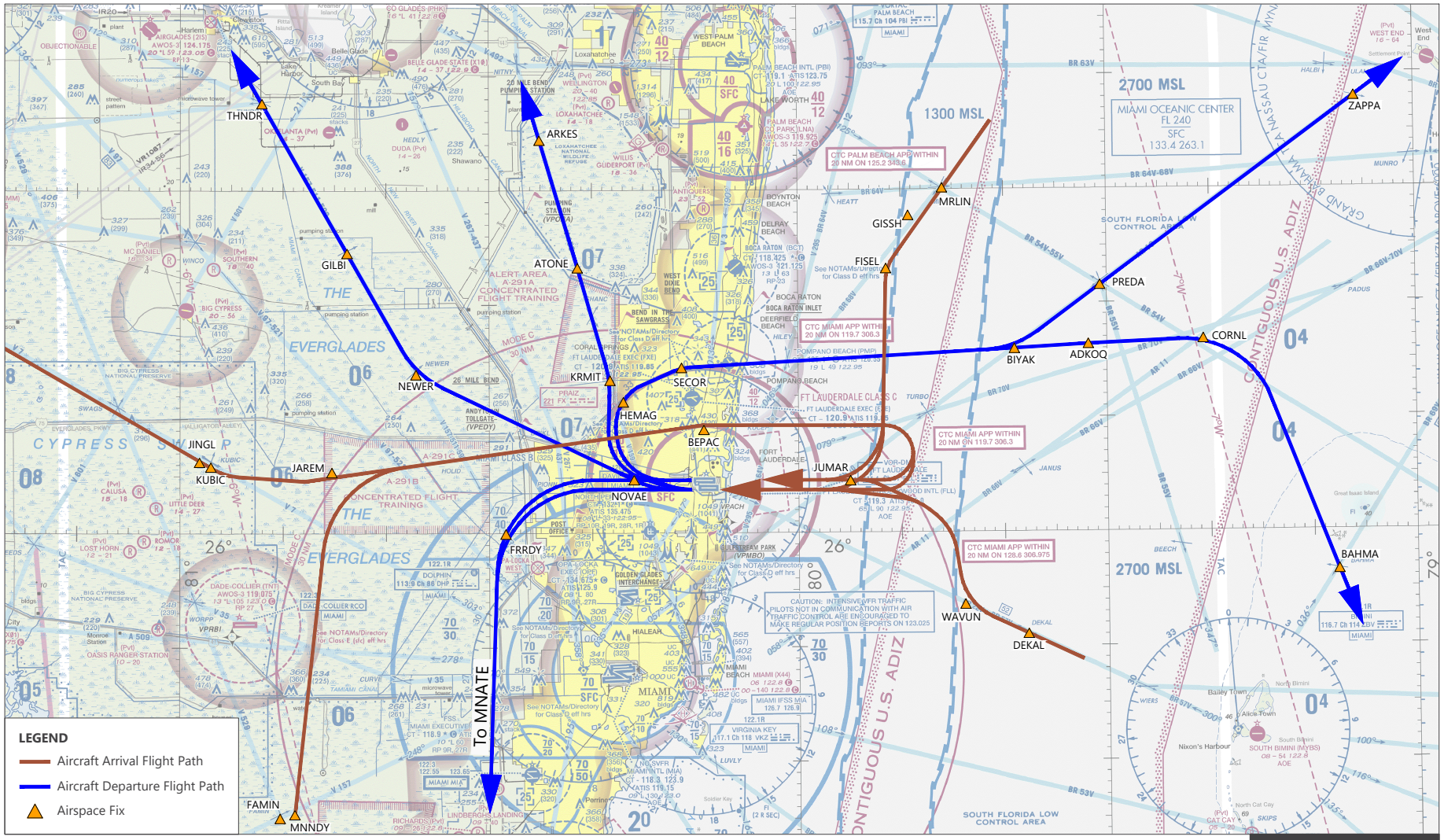
EXHIBIT 2.2-9

NORTH 0 80,000 ft.

Airspace Arrival and Departure Routes
East Flow

Drawing: P:\Project-Miami\BCAD\2015 Master Plan Updates\01 - FLL Tasks\I-4 Inventory\CAD\2.2-9_10 - Airspace Arrival and Departure Routes.dwgLayout: East Flow Plotted: Nov 2, 2020, 02:33PM

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SOURCES: Federal Aviation Administration, *Miami Sectional Chart*, Effective August 20, 2015 Through February 4, 2016; Federal Aviation Administration, National Flight Data Center; FLL Air Traffic Control Tower Personnel, Ricondo & Associates, Inc., January 15, 2016.
PREPARED BY: Ricondo & Associates, Inc., April, 2016.

EXHIBIT 2.2-10

NORTH 0 80,000 ft.

Airspace Arrival and Departure Routes
West Flow

Drawing: P:\Project-Miami\BCAD\2015 Master Plan Updates\01 - FLL Tasks\I-4 Inventory\CAD\2.2-9_10 - Airspace Arrival and Departure Routes.dwgLayout: West Flow Plotted: Nov 2, 2020, 02:34PM

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Table 2.2-6: Current Instrument Approach and Departure Procedures

DEPARTURE PROCEDURES	STANDARD TERMINAL ARRIVALS	INSTRUMENT APPROACH PROCEDURES
ARKES FOUR (RNAV) – (Runways 10L, 10R, 28L, 28R)	BLUFI THREE	ILS OR LOC Runway 10L
BAHMA FIVE (RNAV) – (Runways 28L and 28R)	CURSO THREE (RNAV)	ILS OR LOC Runway 10R
BEECH FIVE (RNAV) – (Runways 10L and 10R)	DEKAL FOUR	ILS OR LOC Runway 28L
PREDA FOUR (RNAV) – (Runways 10L, 10R, 28L, 28R)	DVALL TWO	ILS OR LOC Runway 28R
THNDR FOUR (RNAV) – (Runways 10L, 10R, 28L, 28R)	FISEL SIX (RNAV)	RNAV (RNP) Y Runway 10L
ZAPPA FOUR (RNAV) – (Runways 10L, 10R, 28L, 28R)	FORTL FIVE	RNAV (RNP) Z RW Runway Y 28R
FORT LAUDERDALE SIX – (Runways 10L, 10R, 28L, 28R)	GISSH FOUR	RNAV (GPS) Runway 10R
	JINGL FOUR (RNAV)	RNAV (GPS) Runway 28L
	WAVUN TWO (RNAV)	RNAV (GPS) Y Runway 28R
		RNAV (GPS) Z Runway 10L
		VOR Runway 28R

NOTES:

RNAV = Area Navigation

ILS = Instrument Landing System

LOC = Localizer

RNP = Required Navigation Performance

GPS = Global Positioning System

VOR = Very High Frequency Omnidirectional Range

SOURCES: Federal Aviation Administration, *Standard Instrument Departures (SIDs), Standard Terminal Arrivals (STARs), and Instrument Approach Plates for FLL*, December 10, 2015–January 7, 2016; Ricondo & Associates, Inc., December 2015.

PREPARED BY: Ricondo & Associates, Inc., December 2015.

General Constraints and Initiatives

Due to airspace constraints with MIA and Miami-Opa Locka Executive Airport (OPF), jet arrivals cannot be routed south of the Airport. Turboprop and piston aircraft, however, can operate in close proximity of and south of Runway 10R-28L.

The ongoing South Central Florida Metroplex initiative, which aims to redesign airspace and address inefficiencies, may evaluate alternate aircraft routings.

2.2.2.4 Navigational Aids/Published Instrument Procedures

Navigational aids assist aircraft operators with navigation during both VMC and IMC. Prior to the establishment of RNAV/GPS-based navigation, pilots relied solely on ground-based navigational aids. These ground-based systems consisted of VORs, nondirectional beacons (NDB), and ILSs. As part of the FAA's NextGen Program, the implementation of satellite-based global positioning system (GPS) procedures have been established.

En Route Airspace Navigation

Pilots operating under IFR typically use designated routes that are defined and published by the FAA. The FAA has designated three types of en route airspace routes: federal airways, jet routes, and RNAV routes. Below 18,000 feet above MSL, these routes primarily consist of federal airways (Victor airways) and low altitude RNAV routes (T routes). Above 18,000 feet above MSL, jet routes and high altitude RNAV routes (Q routes) are designated.

Victor airways consist of routes defined by VOR facilities. Although federal airways can also be defined by NDBs, these types of airways are not present in the vicinity of FLL. In lieu of ground-based navigational aids, RNAV routes rely on GPS satellites. **Table 2.2-7** identifies the system of Victor airways that is established by the FLL VOR; five Victor airways converge on the FLL VOR.

Table 2.2-7: FLL VOR Airway Structure

AIRWAY DESIGNATION	RADIAL	DESTINATION STATION (VOR)
V3	013	Palm Beach (and beyond)
	217	Dolphin (and beyond)
BR 68V	046	Freeport
BR 70V	079	Freeport
BR 22V BR 57V	121	Bimini

SOURCES: Federal Aviation Administration, *Miami Sectional Chart*, August 20, 2015–February 4, 2016; Ricondo & Associates, Inc., December 2015.
PREPARED BY: Ricondo & Associates, Inc., December 2015.

2.2.2.5 Terminal Airspace Navigation

The published instrument approach procedures prescribed for IFR operations at FLL are summarized for each runway end in **Table 2.2-8**.

Table 2.2-8: Current Instrument Approach Procedures by Runway End

RUNWAY END			
10L	28R	10R	28L
ILS OR LOC RWY 10L	ILS OR LOC RWY 28R	ILS OR LOC RWY 10R	ILS OR LOC RWY 28L
RNAV (RNP) Y RWY 10L	RNAV (RNP) Z RWY 28R	RNAV (GPS) RWY 10R	RNAV (GPS) RWY 28L
RNAV (GPS) Z RWY 10L	RNAV (GPS) Y RWY 28R		
	VOR RWY 28R		

SOURCES: Federal Aviation Administration, *Approach/Departure Plates*, December 10, 2015–January 7, 2016; Ricondo & Associates, Inc., December 2015.
PREPARED BY: Ricondo & Associates, Inc., December 2015.

2.2.3 LOCAL AIRSPACE CONSTRAINTS

A voluntary noise abatement plan is in place for nighttime operations. From 10:30 p.m. to 6:00 a.m., aircraft pilots are strongly encouraged to refrain from using Runway 10R-28L. Also, due to airspace constraints with MIA and OPF airports, jet arrivals cannot be routed south of the Airport. Turboprop and piston aircraft, however, can operate in close proximity of and south of Runway 10R-28L.

2.2.3.1 Approach and Departure Procedures

During VMC, both runways are operated independently; however, during IMC, arrivals are dependent and require a 1.5 statute mile (SM) separation (stagger) between arriving aircraft.

2.2.3.2 Airspace Obstructions

An obstruction survey was performed in December 2015, in accordance with FAA AC 150/5300–16A, AC 150/5300-17C, and AC 150/5300-18B. An evaluation of the obstructions was performed in accordance with the following surfaces:

- Vertically Guided Runway Primary Surface (VGRPS)
- Vertically Guided Primary Connection Surface (VGPCS)
- Vertically Guided Approach Surface (VGAS)
- Vertically Guided Protection Surface (VGPS)
- Vertically Guided Approach Transition Surface (VGATS)
- Vertically Guided Horizontal Surface (VGHS)
- Vertically Guided Conical Surface (VGCS)

Obstructions to the Part 77[3] imaginary surfaces were identified. The obstruction data is included in **Appendix B**.

2.3 Airline Terminal and Gates

This section provides an inventory of existing terminal facilities at FLL. The inventory comprises existing terminal buildings, as well as capital improvements to existing terminals that are approved and planned, under design, or under construction as of April 2016. The inventory includes terminal layouts, floor space area tabulations, aircraft contact gate quantities and capabilities, and hardstand positions. The inventory provides a basis of comparison with future requirements for the purpose of identifying and quantifying the types and scale of terminal facilities that will require improvements to maintain the Airport's desired level of service at future planning activity levels.

[3] As defined in Title 14 Code of Federal Regulations, Part 77—Safe, Efficient Use, and Preservation of the Navigable Airspace.

2.3.1 PASSENGER TERMINAL COMPLEX

2.3.1.1 Overview

BCAD is currently expanding and modernizing the terminal and apron areas. The terminal expansion and modernization programs involve:

- Terminal 1: the construction of a new Concourse A (inclusive of international arrivals processing facilities) and the post security connection between Concourses B and C; consolidation of the security screening checkpoint, new or upgraded concessions and other terminal modernizations.
- Terminals 2 and 3 are also being modernized.
- Terminal 4: the complete demolition and rebuild of Concourse H.

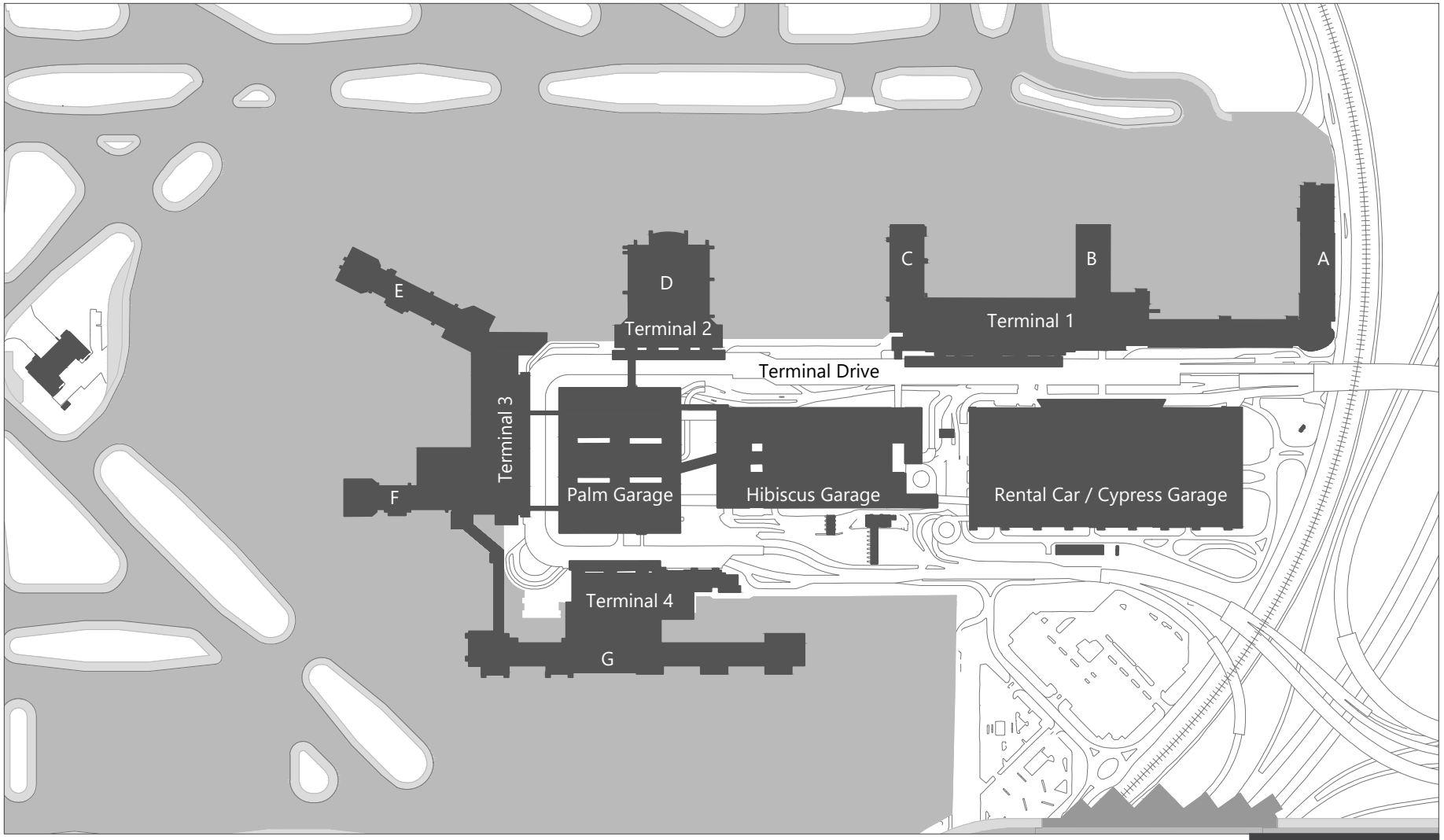
The resulting terminals, following the completion of their respective modernization programs, serve as the baseline condition for analyses as part of this Master Plan Update.

Exhibit 2.3-1 illustrates the Airport's baseline passenger terminal complex, which comprises four discrete-unit terminal buildings, aircraft parking gates, parking structures, and Terminal Drive. In total, the terminal complex comprises approximately 2.4 million square feet of building area and 66 gates (upon completion of the Terminals 1 and 4 Modernization and Expansion Programs).

Terminal Drive is a two-level, grade-separated looping roadway within the passenger terminal complex property that provides vehicular access to the terminal buildings and to the infield parking structures. The at-grade level roadway, which correlates to Floor Level 1 of the terminal buildings, is used for Arrivals; the upper-level roadway, which correlates to Floor Level 2 or 3, depending on the terminal, is used for Departures. Terminals are designated as Terminals 1, 2, 3, and 4 in the sequence that they are approached along Terminal Drive. Terminals 1 and 2 are located on the north side of the Terminal Drive loop; Terminals 3 and 4 are located on the west and south sides, respectively. **Table 2.3-1** lists the airline terminal assignments and gates used (at the time of this analysis).

2.3.1.2 Building Space Categories

Table 2.3-2 provides a listing of the floor areas within each terminal, which have been allocated to the major space categories that typically comprise a passenger terminal.



SOURCE: *Broward County Aviation Department*, Fort Lauderdale-Hollywood International Airport Site Plan, May 2010.
PREPARED BY: Ricondo & Associates, Inc., April 2016.

EXHIBIT 2.3-1

Passenger Terminal Complex
Baseline Conditions

NORTH 0 Not to Scale

Drawing: P:\Project-Miami\BCAD\2015 Master Plan Updates\01 - FLL Tasks\I-4 Inventory\CAD\2.3-1_Passenger Terminal Complex.dwgLayout: 2.3-1 Plotted: Oct 28, 2020, 04:31PM

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Table 2.3-1: Airlines by Terminal (As of March 2016)

AIRLINE	TERMINAL 1	TERMINAL 2	TERMINAL 3	TERMINAL 4	GATES USED	
					PREFERENTIAL USE	COMMON USE
Air Canada		X			D3, D4	
Air Transat			X			E8,E9
Alaska	X					C5 to C7
Allegiant	X					C5 to C7
American Airlines			X	X	E1 to E5, E7	E8, E9, H4, H6, H9
Avianca				X		H4, H6, H9
Azul			X	X		E8, E9, H4, H6, H9
Bahamasair			X			E8, E9
Cape Air			X			
Caribbean				X		H4, H6, H9
Copa				X		H4, H6, H9
Delta		X			D1, D2, D5 to D9	
Dynamic Airways			X			
Frontier	X					C5 to C7
IBC				X		
JetBlue			X	X	E6, E10, F3 to F10	E8, E9, F2, G14, H4, H6, H9
Norwegian			X	X		H4, H6, H9, E8, E9
Silver	X				C8	C5 to C7
SkyBahamas				X		H4, H6, H9
Southwest	X				B2 to B9	
Spirit			X	X	G10 to G13, H7, H8, H10	G14, H4, H6, H9
Sunwing				X		
TAME				X		H4, H6, H9
United Airlines	X				C1 to C4	C5 to C7
Virgin America	X				C9	C5 to C7
Volaris				X		H4, H6, H9
Westjet	X					C5 to C7

SOURCE: Broward County Aviation Department, *FLL Aircraft Gate Parking*, March 11, 2016.
PREPARED BY: Ricondo & Associates, Inc., April 2016.

Table 2.3-2: Terminal Space Inventory by Major Categories (in square feet) – Baseline Conditions

CATEGORY	T1	T2	T3	T4	SUBTOTAL
Airline Facilities	240,100	113,500	212,500	125,100	**691,200**
Department of Homeland Security	181,500	25,700	34,700	240,100	**482,000**
Commercial Program	93,600	37,300	82,100	49,000	**262,000**
Airport and Other Agency	5,400	8,400	5,700	91,600	**111,100**
Building Services	128,700	16,400	58,000	78,300	**281,400**
Other Common	229,400	89,300	123,400	151,200	**593,300**
Total	**878,700**	**290,600**	**516,400**	**735,300**	**2,421,000**
Number of Gates	23	9	20	14	66
Average Square Footage per Gate	**38,200**	**32,300**	**25,800**	**52,500**	**36,700**

SOURCES: Broward County Aviation Department, January 2016 (*existing terminal floor plans*); Corgan, November 23, 2015 (*Concourse A construction documents*); Corgan/ Gresham, Smith and Partners (GSP), November 2015 (*terminal modernization construction documents*); GSP, November 23, 2015 (*Terminal 2 and 3 modernization program construction documents*); PGAL/Zyscovich (PZ), July 2013, (*Terminal 4 Concourse G (west), construction documents*); PZ, July 2016, (*Terminal 4 Concourse G (east), construction documents*); ACAI Associates, Inc., March 2016 (*Terminal 4 FIS, design development documents*); Gresham, Smith and Partners (GSP), December 2014 (Terminal 4 Terrazzo Floors and Spirit BSO Relocation, Construction Documents); GSP, July 2015 (Terminal 4 CBIS, Design Criteria Package); ACAI Associates, Inc., March 2016 (field verifications).; ACAI Associates, Inc., March 2016 (field verifications).

PREPARED BY: Ricondo & Associates, Inc., April 2016.

The following section describes each of the major space categories listed in Table 2.3-2.

Airline Facilities

The areas allocated to airlines for outbound/inbound passenger and baggage processing include the following:

- **Check-In**: space used by passengers to obtain boarding passes and check baggage
- **Airline Ticket Office**: back-of-house office space used by airline personnel for administrative functions associated with the check-in process
- **Airline Office and Operations**: space on the secure side of the terminal used by airline personnel for administrative and operational functions
- **Baggage Service Office**: space used by airline personnel for address issues related to lost or late arriving baggage
- **Holdrooms**: space allocated for passengers waiting aircraft boarding or used for disembarkation; holdrooms include seating/standing area, circulation to/from the gate door, and gate processing equipment (i.e., agent desk and boarding pass reader podium)
- **Airline Club Room**: membership-based passenger lounge areas
- **Baggage Makeup**: device(s) and associated work areas for loading outbound checked bags onto baggage carts or baggage containers for delivery to the aircraft

- **Baggage Claim:** baggage claim device(s) and associated inbound baggage handling system feeds for inbound checked baggage presentation and pickup

Department of Homeland Security

- **Transportation Security Administration:** The area dedicated to the Transportation Security Administration (TSA) for screening passengers and baggage prior to aircraft boarding may include:
  - **Security Screening Checkpoint**: space to conduct security screening of passengers and their carry-on possessions before the passengers enter the sterile or secured area; includes screening equipment, queuing area, and manual search areas or rooms
  - **TSA Office**: office space dedicated to the TSA personnel for administrative and operational functions
  - **Checked Baggage Screening**: dedicated area for baggage conveyance and baggage screening rooms to conduct security screening of outbound checked bags; includes enclosed and non-enclosed rooms, explosive detection systems (EDS), checked baggage resolution area (CBRA), baggage conveyance, and right-of-ways
- **U.S. Customs and Border Protection:** The areas administered by the U.S. Customs and Border Protection (CBP) for screening passengers entering the United States from a foreign airport that does not operate a U.S. preclearance facility are located in Terminal 2 and Terminal 4 and contain:
  - **Federal Inspection Services Facility**: space dedicated for international arriving passengers and baggage for primary inspection, international baggage claim, secondary inspection, and baggage recheck
  - **CBP Office**: space dedicated to CBP personnel for administrative and operational functions

Commercial Program

The commercial area(s) leased to vendors for merchandise, retail, or food and beverage sales may include:

- **Concessions Office:** space for administrative and operational functions
- **Concessions Back-of-House Storage**: space for concessionaires to store merchandise for sale
- **Food Preparation**

Airport & Other Agencies

The areas include space for Airport staff administration and operations, as well as other spaces not leased by the airlines, such as:

- **Administration and Executive:** space used by Airport personnel for administrative and operational functions
- **Operations and Maintenance**: space used by Airport staff for functions related to maintaining building systems
- **Police**: space used by the Airport police organization for administrative and operational functions

- **Miscellaneous**: all other spaces used by Airport personnel, other agencies, or third-party contractors handling airport or airline-related operations, maintenance, or special works. The areas include office, conference room, storage, and other miscellaneous spaces

Building Services

The areas dedicated to loading docks, mechanical, electrical, plumbing, communication, life safety operations, and functions within the passenger terminal facilities. These areas are closed from passenger access.

Other Common

These areas include common spaces within terminal facilities, including:

- **Circulation:** These areas are used for secure, nonsecure, and egress circulation of passengers throughout the passenger terminal facilities.
- **Vertical Circulation:** Vertical circulation includes stairs, escalators, and elevators used for secure, nonsecure, and egress circulation of passengers and employees throughout the passenger terminal facilities.
- **Restrooms:** These areas include toilet and comfort facilities provided by the Airport under the provisions of the governing building code or the Airport's design standards
- **Unassigned:** these areas include vacant or currently unassigned spaces within the terminal facility

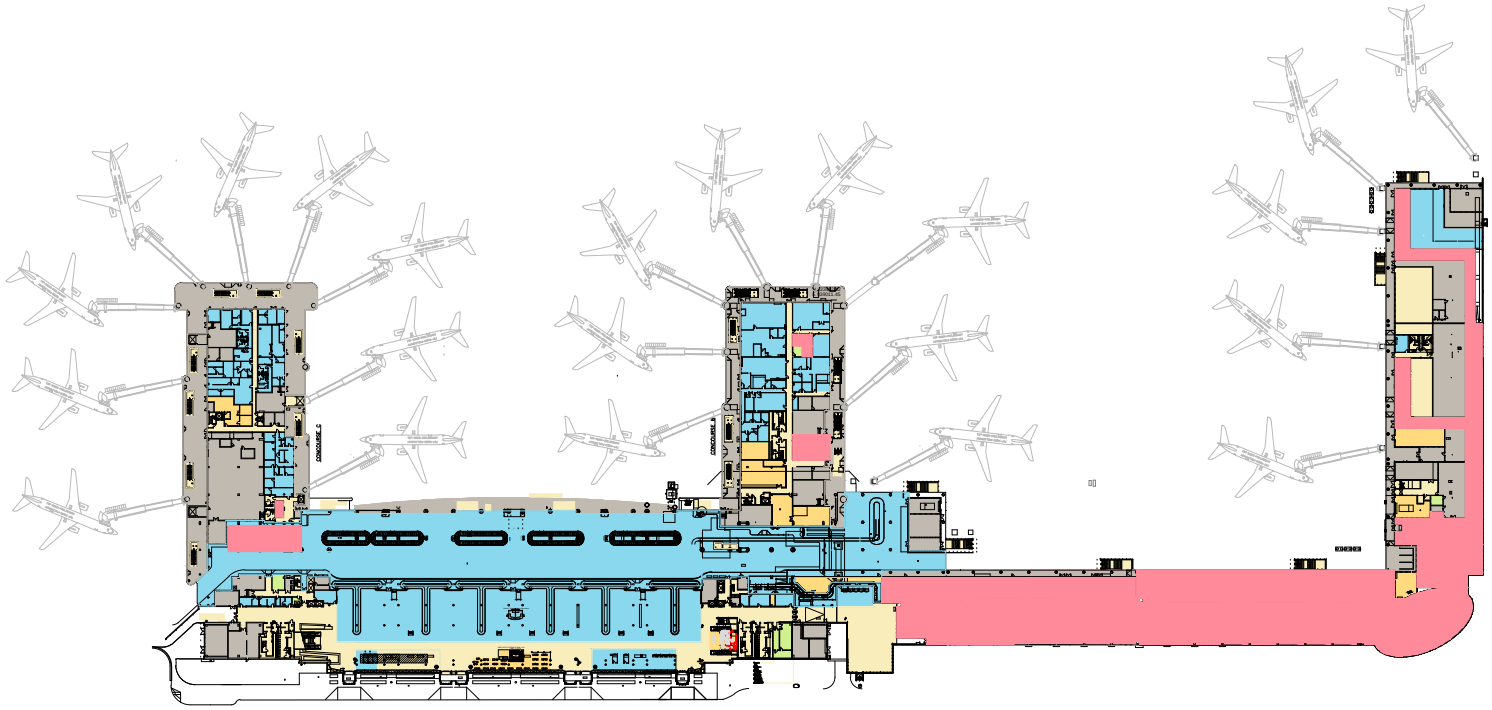
2.3.1.3 Terminal 1 Inventory

Terminal 1 opened in stages between 2001 and 2003. It has since undergone several changes and expansions to meet user needs. **Exhibits 2.3-2** through **2.3-5** illustrate the major space categories that are located on each level. **Table 2.3-3** lists and quantifies the inventory of space by major category on each level.

Table 2.3-3: Terminal 1 Space Inventory (square feet)

CATEGORY	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	SUBTOTAL
Airline Facilities	158,600	60,100	16,500	4,900	**240,100**
Department of Homeland Security	92,500	69,400	18,600	900	**181,400**
Commercial Program	15,100	54,900	23,600	0	**93,600**
Airport and Other Agency	2,000	3,400	0	0	**5,400**
Building Services	98,100	24,900	1,200	4,600	**128,800**
Other Common	54,000	116,300	48,000	11,100	**229,400**
Total	**420,300**	**329,000**	**107,900**	**21,500**	**878,700**

SOURCES: ACAI Associates, Inc., April 2016.
PREPARED BY: Ricondo & Associates, Inc., April 2016.



LEGEND

- Airline Facilities
- Department of Homeland Security / Customs and Border Protection
- Commercial Program
- Airport & Other Agencies
- Building Services
- Other Common

SOURCES: Broward County Aviation Department, January 2016 (existing terminal floor plans); Corgan, November 23, 2015 (Concourse A construction documents); Terminal Modernization, Corgan/ Gresham, Smith and Partners (GSP),November 23, 2015 (construction documents); ACAI Associates, Inc., March 2016 (field verifications).
PREPARED BY: ACAI Associates, Inc., April 2016.

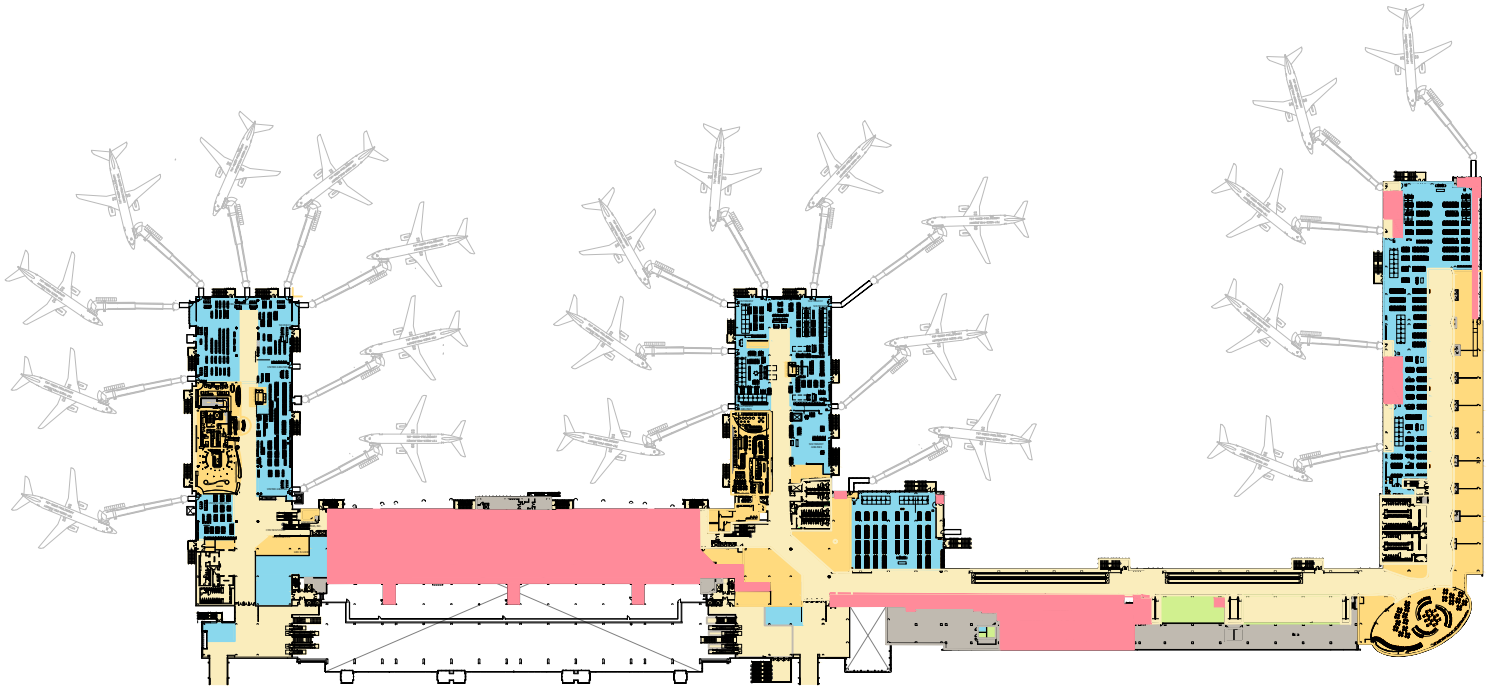
Exhibit 2.3-2

NORTH

0 250 ft.

Terminal 1 Level 1 Space Inventory

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LEGEND

- Airline Facilities
- Department of Homeland Security / Customs and Border Protection
- Commercial Program
- Airport & Other Agencies
- Building Services
- Other Common

SOURCES: Broward County Aviation Department, January, 2016 (existing terminal floor plans); Corgan, November 23, 2015 (Concourse A construction documents); Terminal Modernization, Corgan/ Gresham, Smith and Partners (GSP), November 23, 2015 (construction documents); ACAI Associates, Inc., March 2016 (field verifications).
PREPARED BY: ACAI Associates, Inc., April 2016.

Exhibit 2.3-3

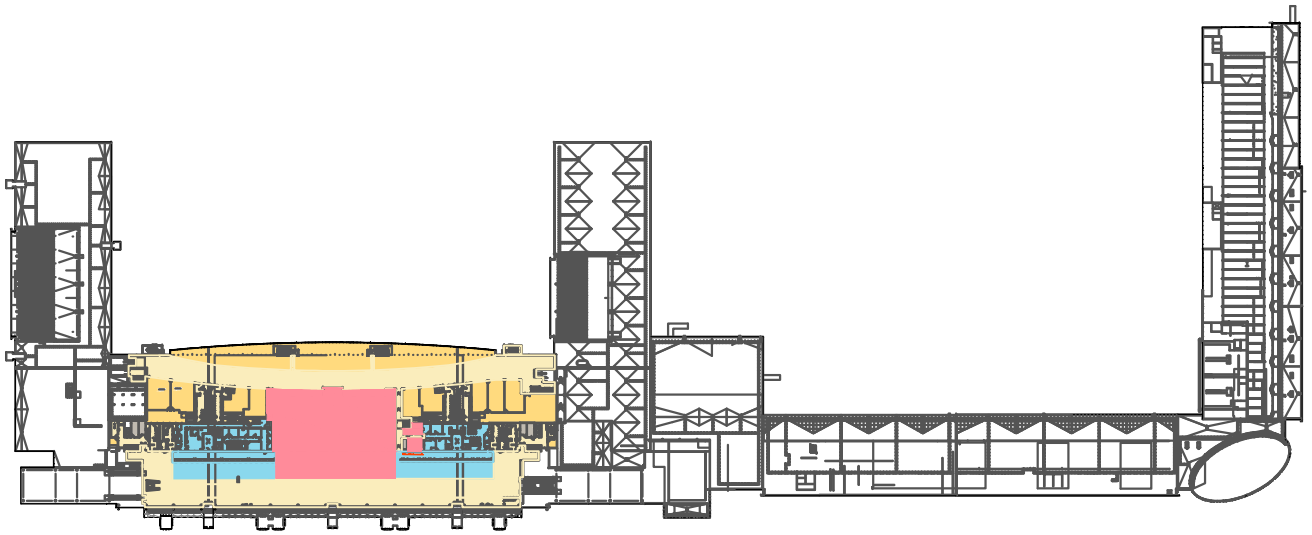
NORTH

0 250 ft.

Terminal 1 Level 2 Space Inventory

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LEGEND

- Airline Facilities
- Department of Homeland Security / Customs and Border Protection
- Commercial Program
- Airport & Other Agencies
- Building Services
- Other Common

SOURCES: Broward County Aviation Department, January, 2016 (existing terminal floor plans); Corgan, November 23, 2015 (Concourse A construction documents); Terminal Modernization, Corgan/ Gresham, Smith and Partners (GSP), November 23, 2015 (construction documents); ACAI Associates, Inc., March 2016 (field verifications).
PREPARED BY: ACAI Associates, Inc., April 2016.

Exhibit 2.3-4

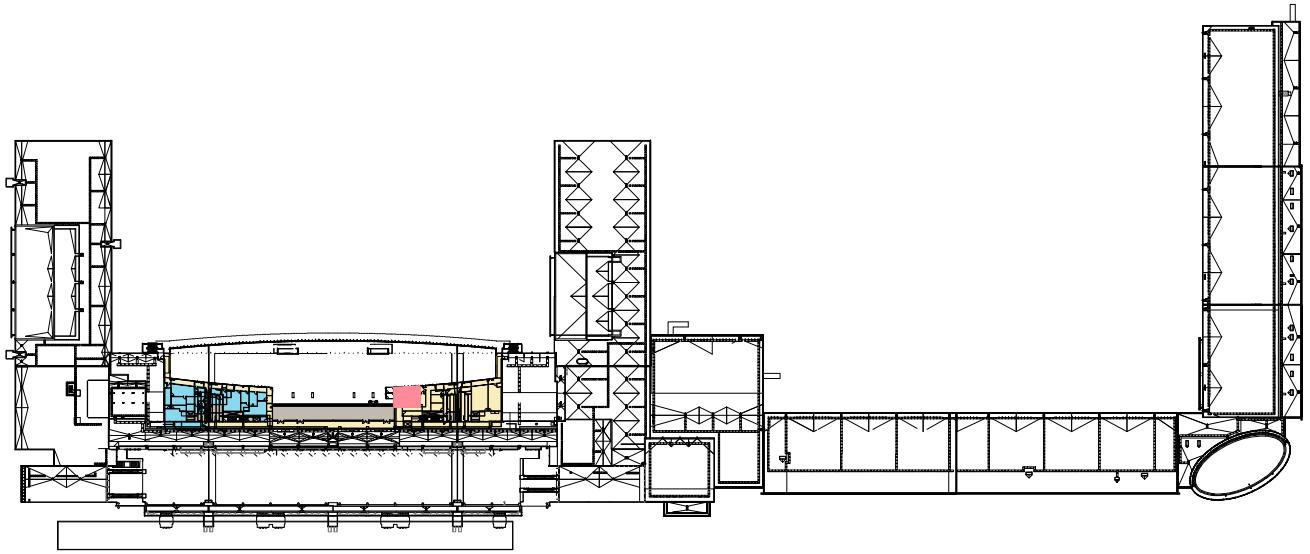
NORTH

0 250 ft.

Terminal 1 Level 3 Space Inventory

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LEGEND

- Airline Facilities
- Department of Homeland Security / Customs and Border Protection
- Commercial Program
- Airport & Other Agencies
- Building Services
- Other Common

SOURCES: Broward County Aviation Department, January, 2016 (existing terminal floor plans); Corgan, November 23, 2015 (Concourse A construction documents); Terminal Modernization, Corgan/ Gresham, Smith and Partners (GSP), November 23, 2015 (construction documents); ACAI Associates, Inc., March 2016 (field verifications).
PREPARED BY: ACAI Associates, Inc., April 2016.

Exhibit 2.3-5

NORTH

0 250 ft.

Terminal 1 Level 4 Space Inventory

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Exhibits 2.3-2 through 2.3-5 and Table 2.3-3 include capital improvements to Terminal 1 that are approved and planned, under design, or under construction, as of April 2016. These improvements to Terminal 1 include:

- New Concourse A—Five additional international swing gates, new public services, and CBP offices
- CBP Facilities for International Arrivals Processing
- Commercial Program Expansion at Concourse Level
- New Security Checkpoint, Check-in Hall, and Commercial Program at Departures Level
- New Offices at Level 4

Terminal 1 comprises approximately 878,700 square feet of total space on four levels:

- Level 1, which supports passenger arrivals, is divided into two sections: International arrivals including self-service APC kiosks, primary inspection, 3 international bag claims devices each with 200 linear feet, secondary inspection and CBP support spaces are located in the east section of the terminal. The west section of the terminal contains 6 domestic bag claim devices, each 256 linear feet, and 6 outbound baggage make-up units. Airline support offices, commercial storage, and bag operation support offices are located under Concourses B and C, while Concourse A contains the sterile circulation corridor leading passengers to CBP.
- Level 2 is the interstitial concourse level accessed from the Rental Car Center and the Hibiscus Garage via two bridges, which lead to vertical circulation cores that access Terminal Level 3, Departures Level, and Terminal Level 1, Arrivals Level.
- Level 3 comprises the Departures Level for the terminal that is served by the upper level of Terminal Drive. The airline check-in hall contains 72 bag drops, and 9 kiosk positions. The check-in hall is bifurcated by a total of 12 TSA security screen lanes.
- Level 4 contains mechanical and electrical equipment, the TSA training facility, and airport support spaces closed from passenger access.

Terminal 1 includes Concourses A, B, and C. Concourses B and C comprise a total of 18 domestic gates. Concourse A added five (5) additional international swing gates. Concourse A, located at the eastern section of the terminal, is single-loaded and is capable of supporting domestic and international flight arrivals and departures. Concourses B and C are double-loaded concourses with gates that are able to support domestic arrivals and domestic and international departures.

2.3.1.4 Terminal 2 Inventory

Terminal 2 is a domestic passenger terminal facility that opened in 1986. **Exhibits 2.3-6** through **2.3-8** illustrate the major space categories that are located on each of the three levels. **Table 2.3-4** lists and quantifies the inventory of space by major category on each level. The inventory floor plan exhibits and table include capital improvements to Terminal 2 that are approved and planned, under design, or under construction, as of April 2016. These improvements specifically include the following projects: expansion of commercial back of house and airline support; concourse expansion, remodeled public areas and security checkpoint, baggage handling system upgrade and new airline lounges.

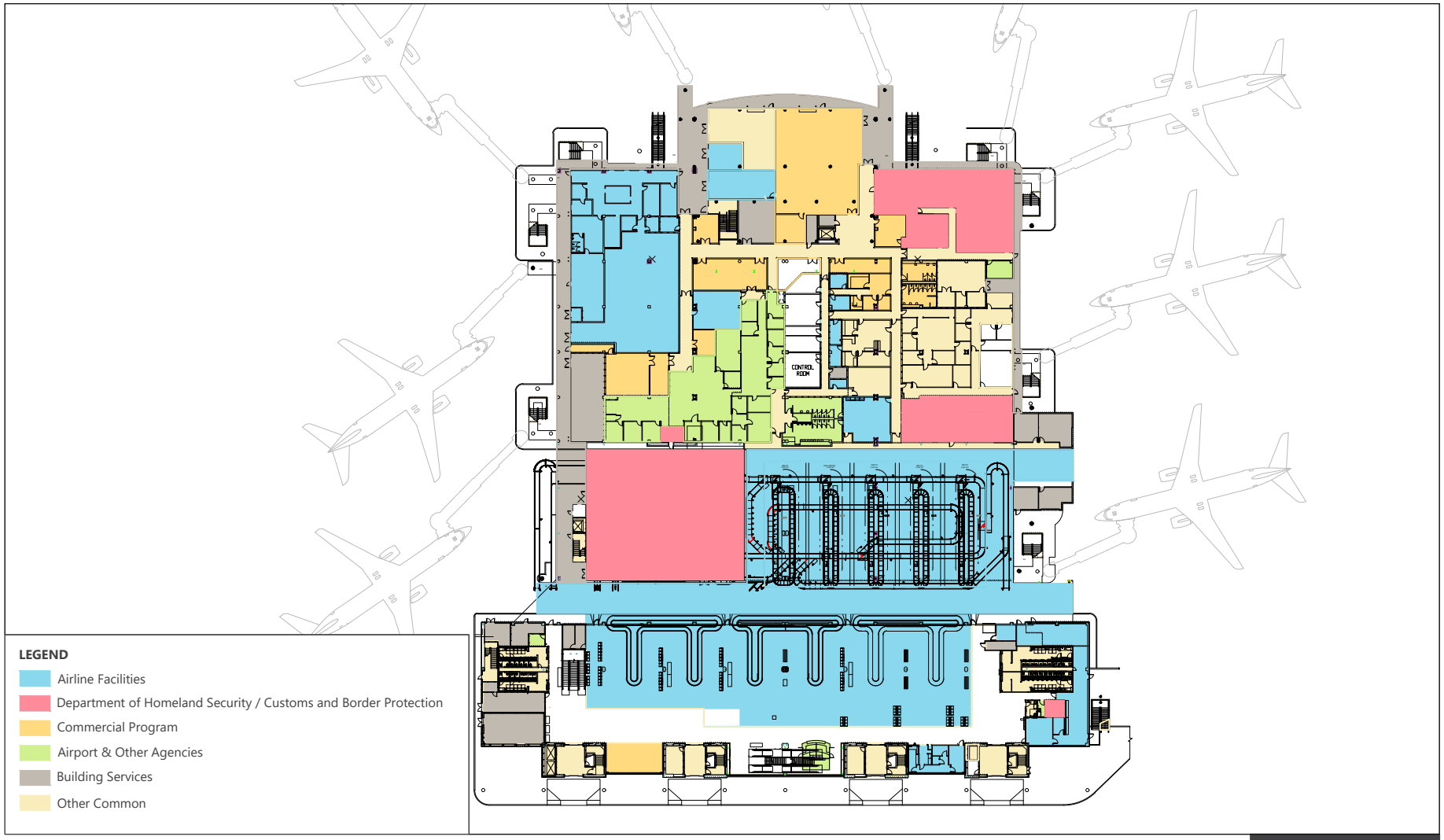
Table 2.3-4: Terminal 2 Space Inventory (square feet) as of April 2016

CATEGORY	LEVEL 1	LEVEL 2	LEVEL 3	SUBTOTAL
Airline Facilities	61,200	44,800	7,500	**113,500**
Department of Homeland Security	15,400	10,300	0	**25,700**
Commercial Program	12,500	24,800	0	**37,300**
Airport and Other Agency	7,400	900	3,800	**12,100**
Building Services	11,700	900	600	**13,200**
Other Common	29,700	59,000	100	**88,800**
Total	**137,900**	**140,700**	**12,000**	**290,600**

SOURCES: Broward County Aviation Department, January 2016 (existing terminal floor plans); Gresham, Smith and Partners, November 2015 (Terminal 2 Modernization Program construction documents); ACAI Associates, Inc., March 2016 (field verifications).
PREPARED BY: Ricondo & Associates, Inc., April 2016.

Terminal 2 comprises approximately 290,600 square feet of total space on three levels. Terminal functions are arranged on the three levels as follows:

- Level 1 supports passenger arrivals and is accessed directly from the lower roadway level of Terminal Drive. It is divided into two sections: the public area, which contains 3 domestic bag claim devices each with 290 linear feet is located on the south side of the terminal; the nonpublic areas, which have access to the ramp, include 5 outbound baggage make-up units, TSA bag screening, airport operation offices, airline supports spaces, commercial storage, and back of house.
- Level 2 supports passenger departures and is accessed directly from the upper level of Terminal Drive. It is divided into three sections: the TSA security screening checkpoint consisting of 6 lanes is located in the east section of the terminal; the west section of the terminal contains the airline check-in operations with 34 bag drops, and 36 kiosk positions and the vertical circulation core connecting the terminal floor levels. The north section of the terminal, past the security screening checkpoint, is referred to as Concourse D. Concourse D contains passenger holdrooms and a central commercial program, and it accommodates nine domestic aircraft parking gates.
- Level 3 contains the Delta Airlines Sky Club accessed from the secure concourse area.



SOURCES: Broward County Aviation Department, January, 2016 (existing terminal floor plans); Gresham, Smith and Partners, November 23, 2015 (Terminal 2 Modernization Program construction documents); ACAI Associates, Inc., March 2016 (field verifications).
PREPARED BY: ACAI Associates, Inc., April 2016.

EXHIBIT 2.3-6

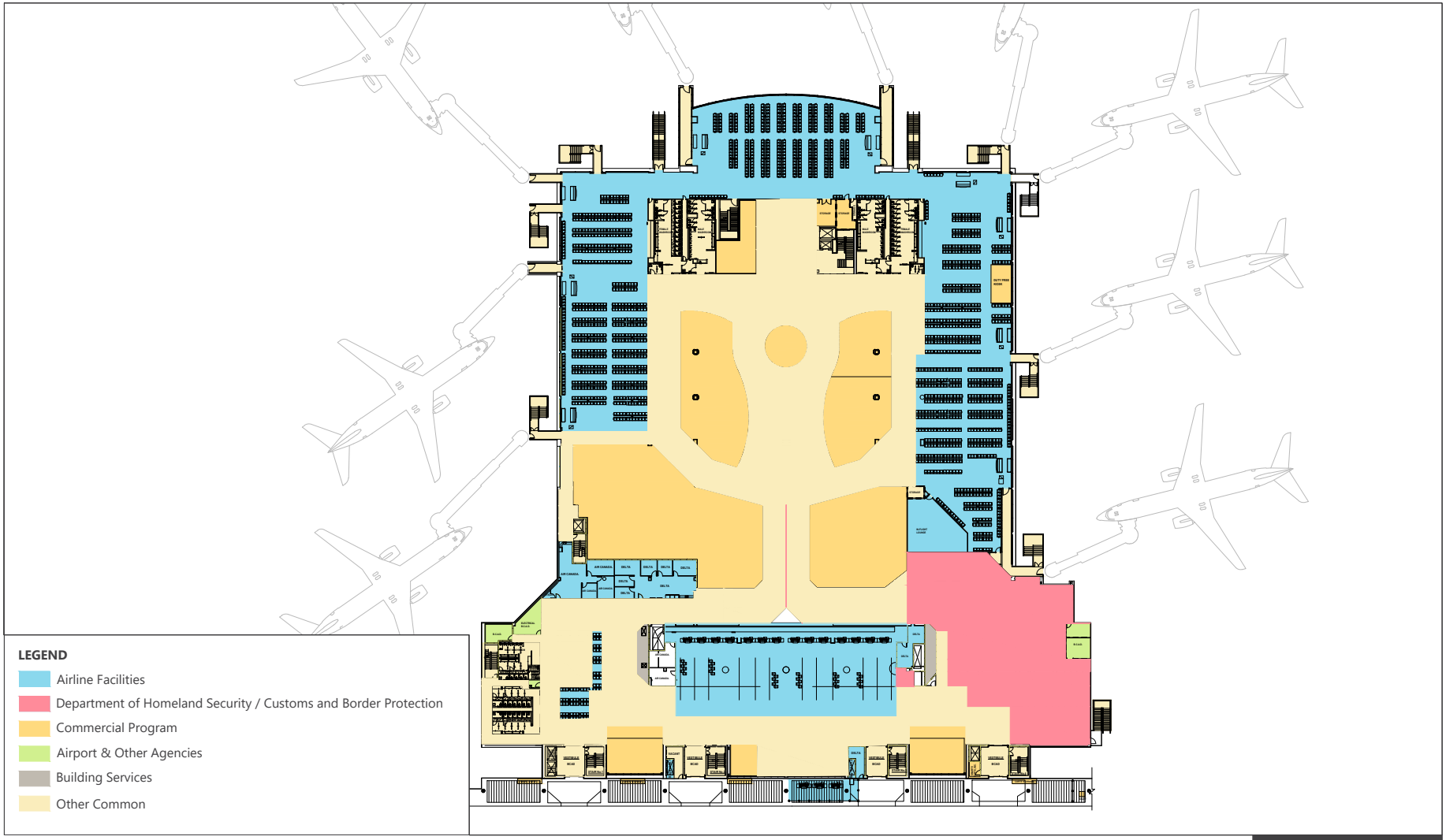
NORTH

0 100 ft.

Terminal 2 Level 1
Space Inventory

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SOURCES: Broward County Aviation Department, January, 2016 (existing terminal floor plans); Gresham, Smith and Partners, November 23, 2015 (Terminal 2 Modernization Program construction documents); ACAI Associates, Inc., March 2016 (field verifications).
PREPARED BY: ACAI Associates, Inc., April 2016.

Exhibit 2.3-7

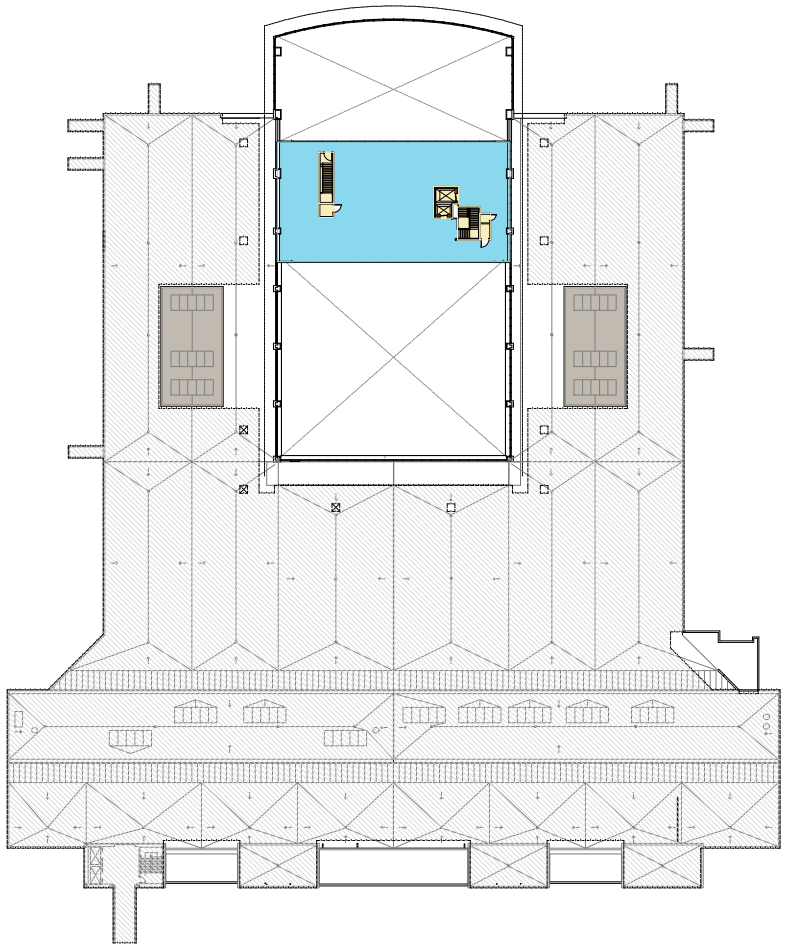
NORTH

0 100 ft.

Terminal 2 Level 2 Space Inventory

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LEGEND

- Airline Facilities
- Department of Homeland Security / Customs and Border Protection
- Commercial Program
- Airport & Other Agencies
- Building Services
- Other Common

SOURCES: Broward County Aviation Department, January, 2016 (existing terminal floor plans); Gresham, Smith and Partners, November 23, 2015 (Terminal 2 Modernization Program construction documents); ACAI Associates, Inc., March 2016 (field verifications).
PREPARED BY: ACAI Associates, Inc., April 2016.

Exhibit 2.3-8

NORTH

0 100 ft.

Terminal 2 Level 3 Space Inventory

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2.3.1.5 Terminal 3 Inventory

Terminal 3 is a domestic passenger terminal facility that is situated at the west end of the Terminal Drive loop. **Exhibit 2.3-9** and **Exhibit 2.3-10** illustrate the major space categories that are located on each of the two levels. **Table 2.3-5** lists and quantifies the inventory of space by major category on each level.

Table 2.3-5: Terminal 3 Space Inventory (square feet) as of April 2016

CATEGORY	LEVEL 1	LEVEL 2	SUBTOTAL
Airline Facilities	122,100	90,400	**212,500**
Department of Homeland Security	31,300	3,400	**34,700**
Commercial Program	20,200	61,900	**82,100**
Airport and Other Agency	5,700	0	**5,700**
Building Services	50,500	7,500	**58,000**
Other Common	32,000	91,400	**123,400**
Total	**261,800**	**254,600**	**516,400**

SOURCES: Broward County Aviation Department, January 2016 (existing terminal floor plans); Gresham, Smith and Partners, ongoing (Terminal 3 Modernization Program construction documents); ACAI Associates, Inc., March 2016 (field verifications).
PREPARED BY: Ricondo & Associates, Inc., April 2016.

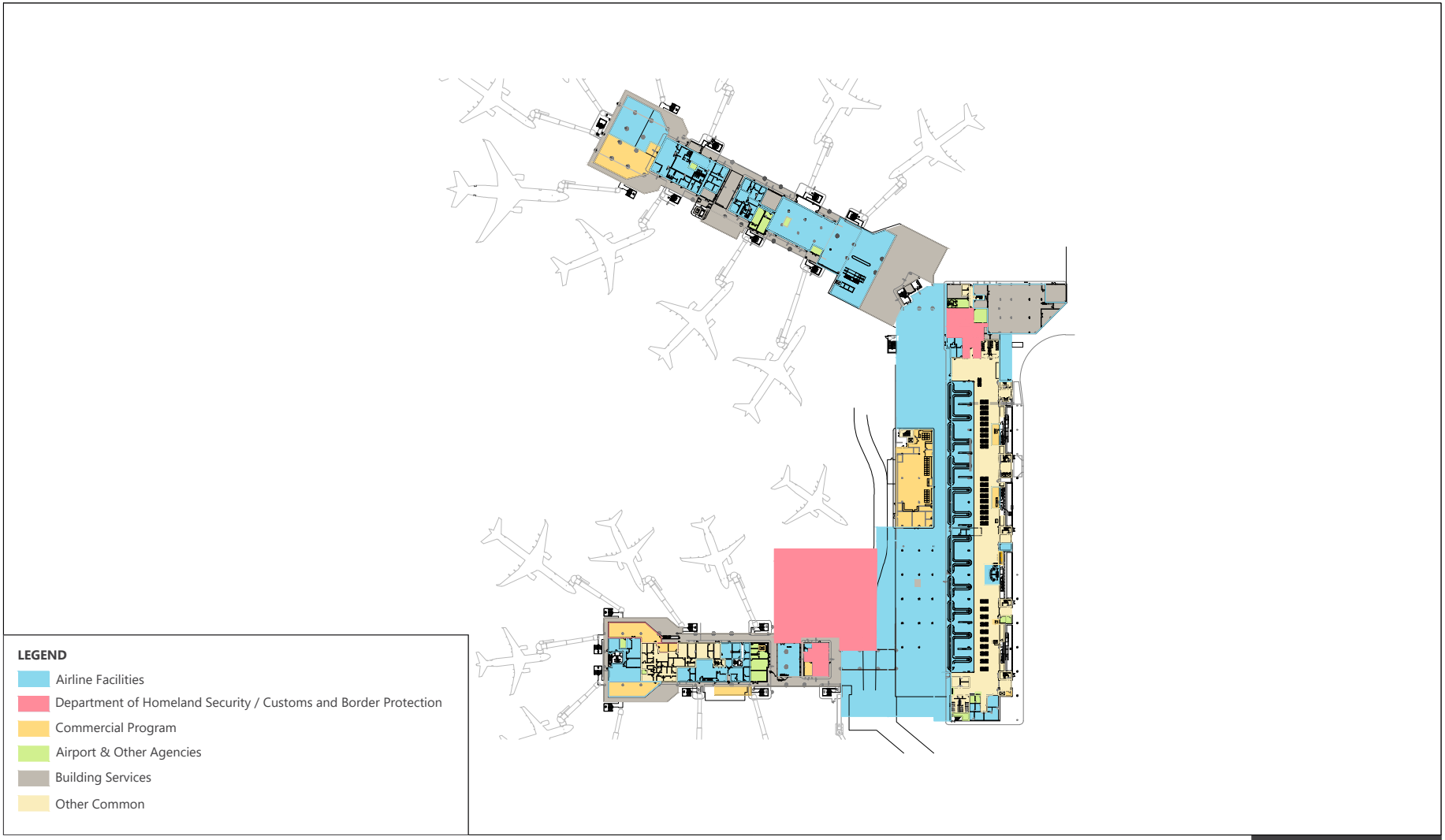
The inventory floor plan exhibits, and table include capital improvements to Terminal 3 that are approved and planned, under design, or under construction, as of April 2016. These improvements specifically include the following projects:

- Expansion of Security Checkpoints, Check-in Hall, and Airline Lounges
- Airline Holdrooms and Support
- Baggage Handling System (BHS) Upgrades
- Commercial Back of House Expansion

Terminal 3 comprises approximately 516,400 square feet of total space on two levels. There is a total of 20 aircraft parking positions arranged around two piers, referred to as Concourse E and Concourse F. Terminal functions are arranged on the two levels as follows:

- Level 1 supports passenger arrivals and is accessed directly from the lower roadway level of Terminal Drive. The terminal headhouse is divided into two sections: the bag claim hall including 7 domestic bag claim devices each with 165 linear feet is located on the entire east length of the terminal; the nonpublic west section of the terminal contains outbound baggage make-up and commercial support. Airline support, commercial storage, and an airside busing operation holdroom are located at this level of Concourse E. TSA bag screening, commercial storage, and airline support spaces are located at this level of Concourse E

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SOURCES: Broward County Aviation Department, January, 2016 (existing terminal floor plans); Gresham, Smith and Partners, November 23, 2015 (Terminal 3 Modernization Program construction documents); ACAI Associates, Inc., March 2016 (field verifications).
PREPARED BY: ACAI Associates, Inc., April 2016.

Exhibit 2.3-9

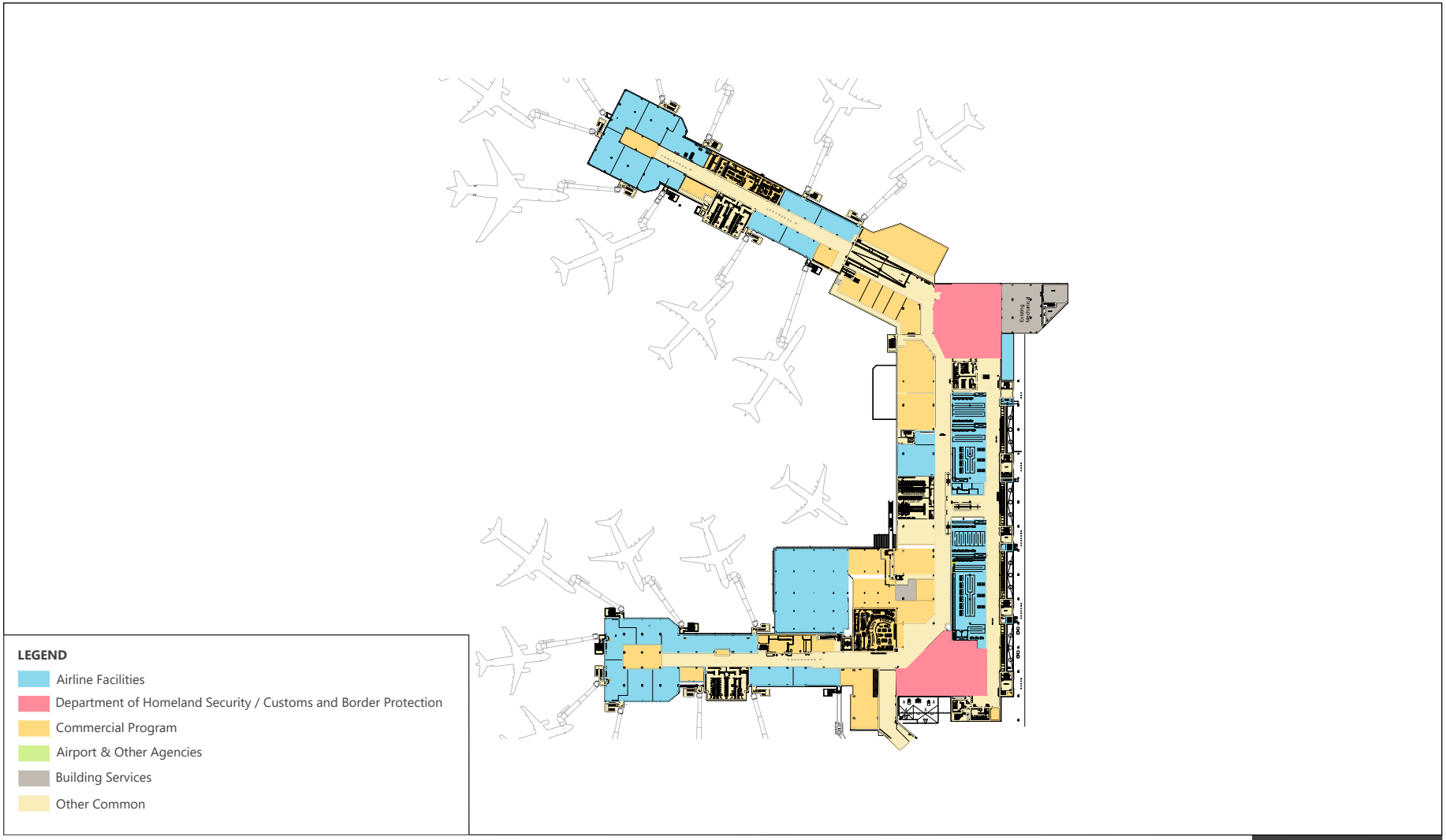
NORTH

0 250 ft.

Terminal 3 Level 1 Space Inventory

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SOURCES: Broward County Aviation Department, January, 2016 (existing terminal floor plans); Gresham, Smith and Partners, November 23, 2015 (Terminal 3 Modernization Program construction documents); ACAI Associates, Inc., March 2016 (field verifications).
PREPARED BY: ACAI Associates, Inc., April 2016.

Exhibit 2.3-10

Terminal 3 Level 2 Space Inventory

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- Level 2 comprises the departures level for the terminal that is served by the upper level of Terminal Drive. The public area of the terminal contains airline check-in facilities including 90 bag drops, and 36 kiosk positions that are flanked by TSA security screening checkpoints totaling 12 lanes. The secure side of the terminal headhouse, beyond the checkpoints, contains a large commercial program area that can be accessed from either security checkpoint. The north pier of Terminal 3 is referred to as Concourse E. It contains 10 aircraft parking gates and associated holdrooms. The south pier of Terminal 3 is referred to as Concourse F. It contains 10 aircraft parking gates and associated holdrooms, and it has an airside passenger connection to Terminal 4 via a connector bridge.

2.3.1.6 Terminal 4 Inventory

Terminal 4 is located along the south side of Terminal Drive, and it has undergone several major expansions. **Exhibits 2.3-11** through **2.3-14** illustrate the major space categories that are located on each level. **Table 2.3-6** lists and quantifies the inventory of space by major category on each level.

Table 2.3-6: Terminal 4 Space Inventory (square feet) as of April 2016

CATEGORY	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	SUBTOTAL
Airline Facilities	63,700	57,800	3,600	0	**125,100**
Department of Homeland Security	135,700	60,600	43,800	0	**240,100**
Commercial Program	16,000	28,100	4,900	0	**49,000**
Airport and Other Agency	17,700	0	36,300	37,400	**91,400**
Building Services	63,400	6,300	6,100	2,600	**78,400**
Other Common	29,600	112,100	7,900	1,700	**151,300**
Total	**326,100**	**264,900**	**102,600**	**41,700**	**735,300**

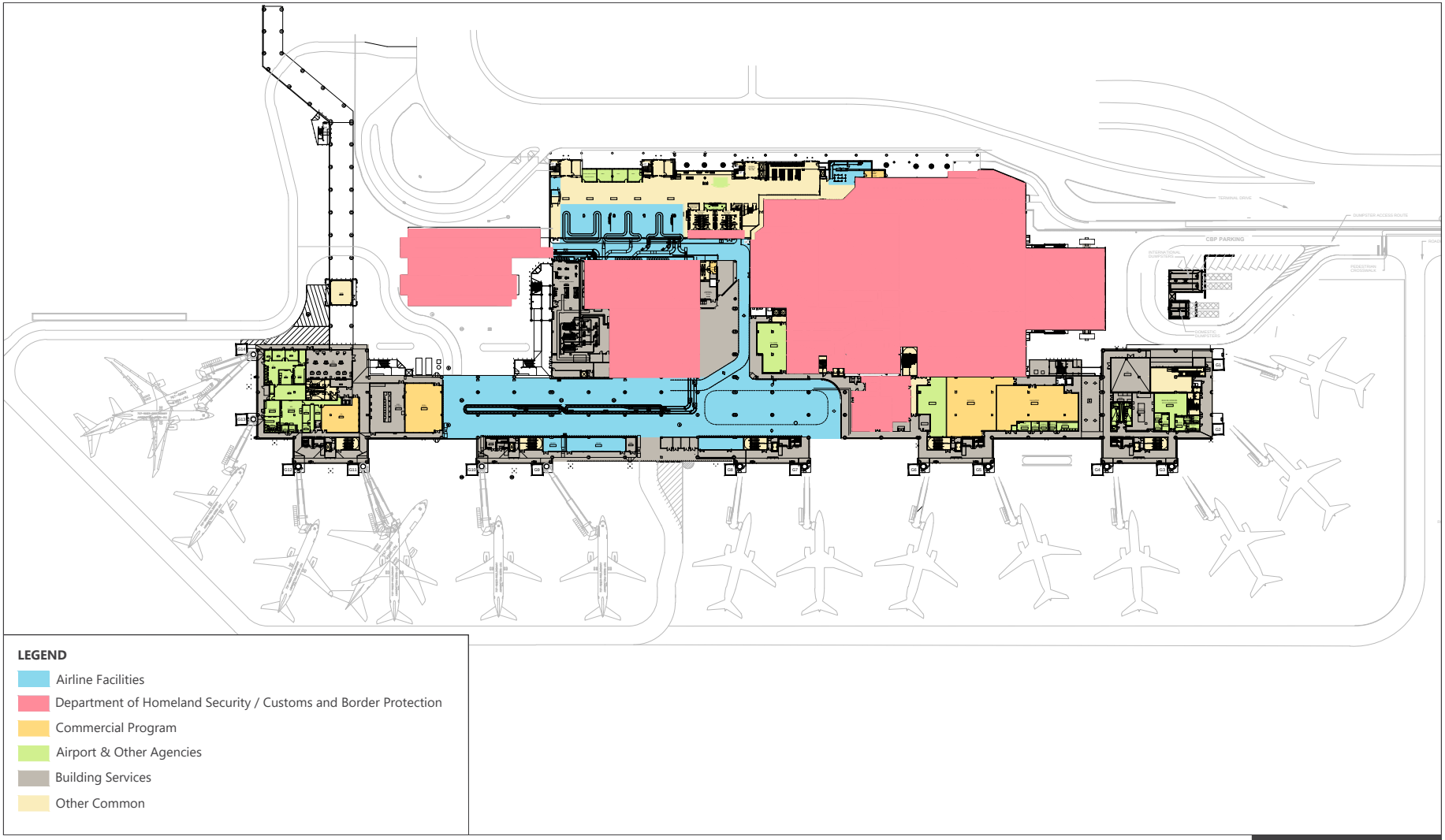
SOURCES: PGAL/Zyscovich (PZ), July 2013 (Terminal 4 Concourse G (West) construction documents); PZ, July 2015 (Terminal 4 Concourse G (East) construction documents); ACAI Associates, Inc., March 2016 (Terminal 4 FIS design development documents); Gresham, Smith and Partners (GSP), December 2014 (Terminal 4 Terrazzo Floors and Spirit BSO Relocation, Construction Documents); GSP, July 2015 (Terminal 4 CBIS, Design Criteria Package); ACAI Associates, Inc., March 2016 (field verifications).

PREPARED BY: Ricondo & Associates, Inc., April 2016.

The inventory floor plan exhibits and table include capital improvements to Terminal 4 that are approved and planned, under design, or under construction, as of April 2016. These improvements specifically include the following projects:

- Terminal Modernization
- Concourse G Expansion—Four additional gates
- New International Bag Hall and BHS Upgrades
- FIS Renovation Including Primary and Secondary Processing
- New Offices at Levels 3 and 4
- Connector Bridge to Terminal 3

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SOURCES: PGAL/Zyscovich (PZ), July 2013 (Terminal 4 Concourse G (West) Construction Documents); PZ, July 2015 (Terminal 4 Concourse G (East) construction documents); ACAI Associates, Inc., March 2016 (Terminal 4 FIS design development documents); Gresham, Smith and Partners (GSP), December 2014 (Terminal 4 Enabling Projects, construction documents); GSP, Date July 2015 (Terminal 4 Enabling Projects); ACAI Associates, Inc., March 2016 (field verifications).
PREPARED BY: ACAI Associates, Inc., April 2016.

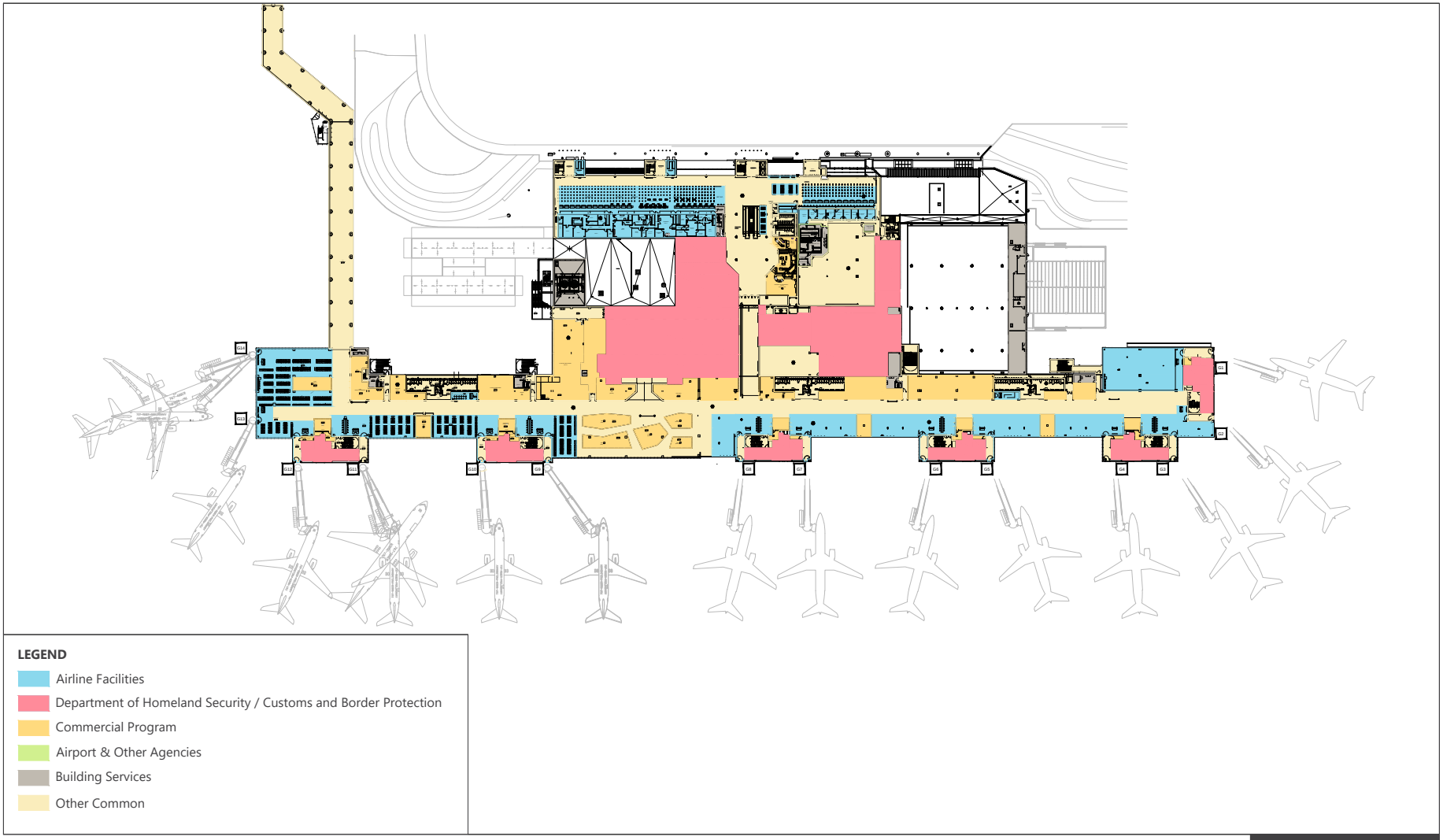
Exhibit 2.3-11

NORTH 0 200 ft.

Terminal 4 Level 1 Space Inventory

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SOURCES: PGAL/Zyscovich (PZ), July 2013 (Terminal 4 Concourse G (West) Construction Documents); PZ, July 2015 (Terminal 4 Concourse G (East) construction documents); ACAI Associates, Inc., March 2016 (Terminal 4 FIS design development documents); Gresham, Smith and Partners (GSP), December 2014 (Terminal 4 Enabling Projects, construction documents); GSP, Date July 2015 (Terminal 4 Enabling Projects); ACAI Associates, Inc., March 2016 (field verifications).
PREPARED BY: ACAI Associates, Inc., April 2016.

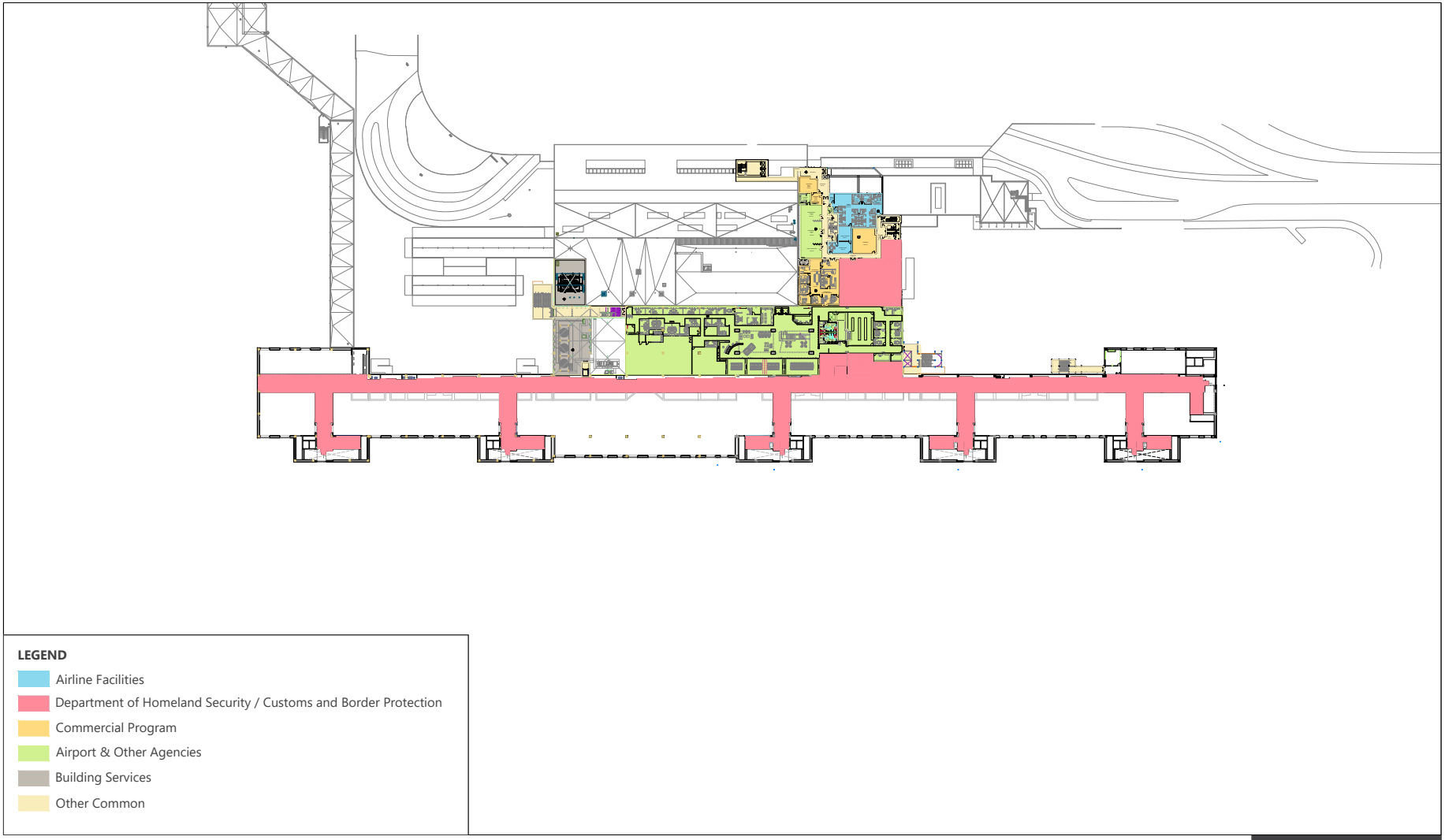
Exhibit 2.3-12

NORTH 0 200 ft.

Terminal 4 Level 2 Space Inventory

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SOURCES: PGAL/Zyscovich (PZ), July 2013 (Terminal 4 Concourse G (West) Construction Documents); PZ, July 2015 (Terminal 4 Concourse G (East) construction documents); ACAI Associates, Inc., March 2016 (Terminal 4 FIS design development documents); Gresham, Smith and Partners (GSP), December 2014 (Terminal 4 Enabling Projects, construction documents); GSP, Date July 2015 (Terminal 4 Enabling Projects); ACAI Associates, Inc., March 2016 (field verifications).
PREPARED BY: ACAI Associates, Inc., April 2016.

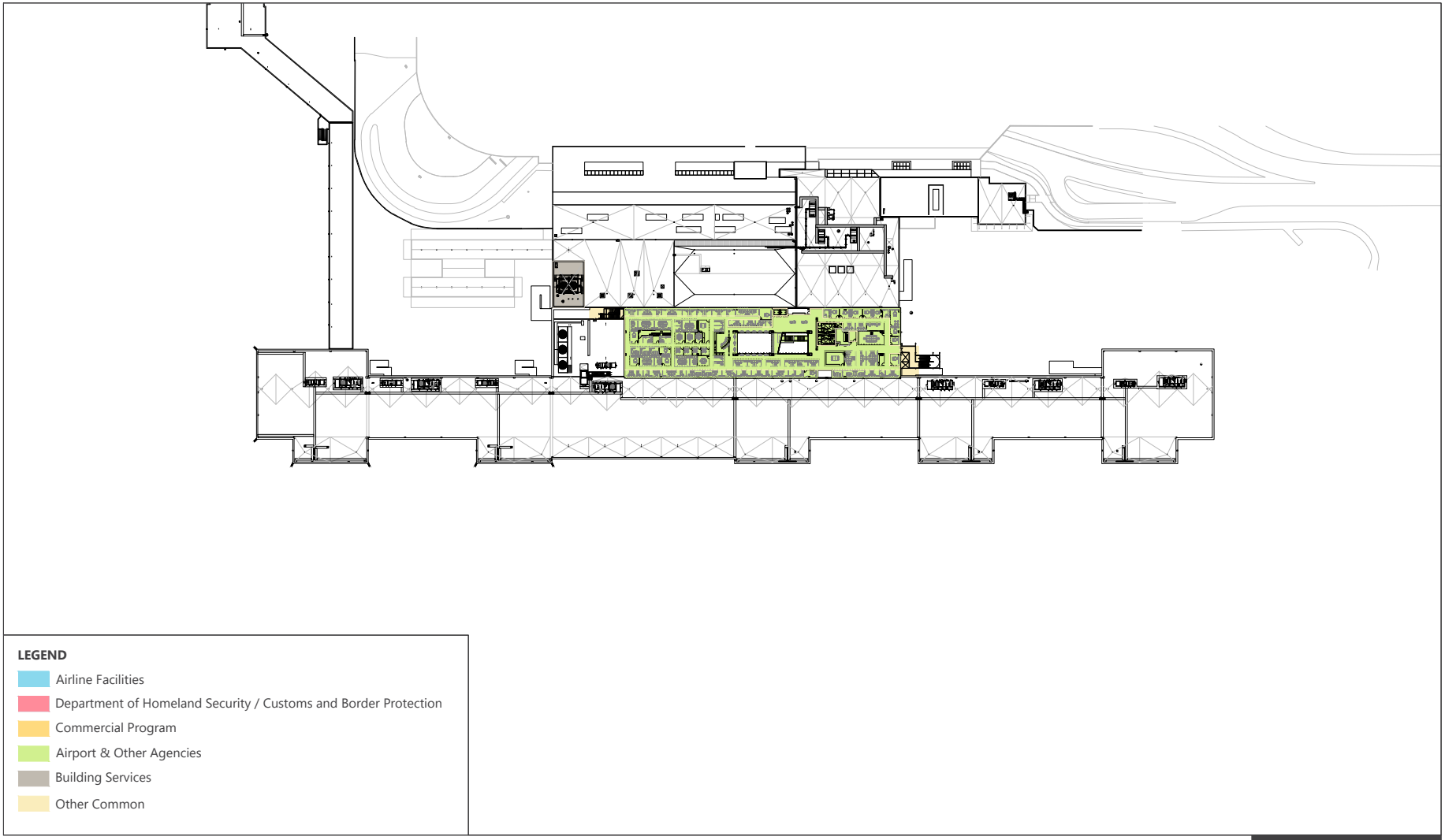
Exhibit 2.3-13

NORTH 0 200 ft.

Terminal 4 Level 3 Space Inventory

Drawing: P:\Project-Miami\BCAD\2015 Master Plan Updates\01 - FLL Tasks\I-4 Inventory\CAD\2.3-13_T4_Level 3.dwgLayout: 3 Plotted: Oct 28, 2020, 05:00PM

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SOURCES: PGAL/Zyscovich (PZ), July 2013 (Terminal 4 Concourse G (West) Construction Documents); PZ, July 2015 (Terminal 4 Concourse G (East) construction documents); ACAI Associates, Inc., March 2016 (Terminal 4 FIS design development documents); Gresham, Smith and Partners (GSP), December 2014 (Terminal 4 Enabling Projects, construction documents); GSP, Date July 2015 (Terminal 4 Enabling Projects); ACAI Associates, Inc., March 2016 (field verifications).
PREPARED BY: ACAI Associates, Inc., April 2016.

Exhibit 2.3-14

NORTH 0 200 ft.

Terminal 4 Level 4 Space Inventory

Drawing: P:\Project-Miami\BCAD\2015 Master Plan Updates\01 - FLL Tasks\I-4 Inventory\CAD\2.3-14_T4_Level 4.dwgLayout: 04 Plotted: Oct 28, 2020, 05:01PM

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Terminal 4 comprises approximately 735,300 square feet of total space on four levels. As part of improvements to Terminal 4, Concourse H was reconfigured and renamed as Concourse G. Concourse G is attached to Terminal 4 and provides a total 14 aircraft parking gates, including 12 gates capable of supporting international service. Terminal functions are arranged on the four levels as follows:

- Level 1 supports passenger arrivals and is accessed directly from the lower roadway level of Terminal Drive. It is divided into three sections: expanded CBP spaces are located in the east section of the terminal accommodating building addition to house a new baggage claim hall around 4 sloped-plate carousels, each with 245 linear feet; the west section of the terminal contains 3 domestic bag claim devices, each with 160 linear feet, TSA bag screening, building services and utilities; the central section contains 4 outbound baggage make-up units, bag support offices, and airport support offices. The ramp level of Concourse G contains commercial storage at the west side, and the airside busing operation holdroom is located in the east section.
- Level 2 comprises the Departures Level for the terminal that is served by the upper level of Terminal Drive. The nonsecure public area contains passenger check-in and the TSA security screening checkpoint. The passenger check-in contains 76 bag drops, and 16 kiosk positions. The TSA security screening checkpoint contains 10 lanes. Secure public areas of Concourse G beyond the checkpoint contain commercial program and holdrooms.
- Level 3 contains CBP support office spaces, administrative and executive airport offices, as well as commercial storage and back of house on the north side of the terminal. An international arrivals sterile corridor system, which runs along the south face of Concourse G at this level, connects the Concourse G international aircraft parking gates to the CBP on Level 1.
- Level 4 contains airport administration and executive office spaces, restricted from public access.

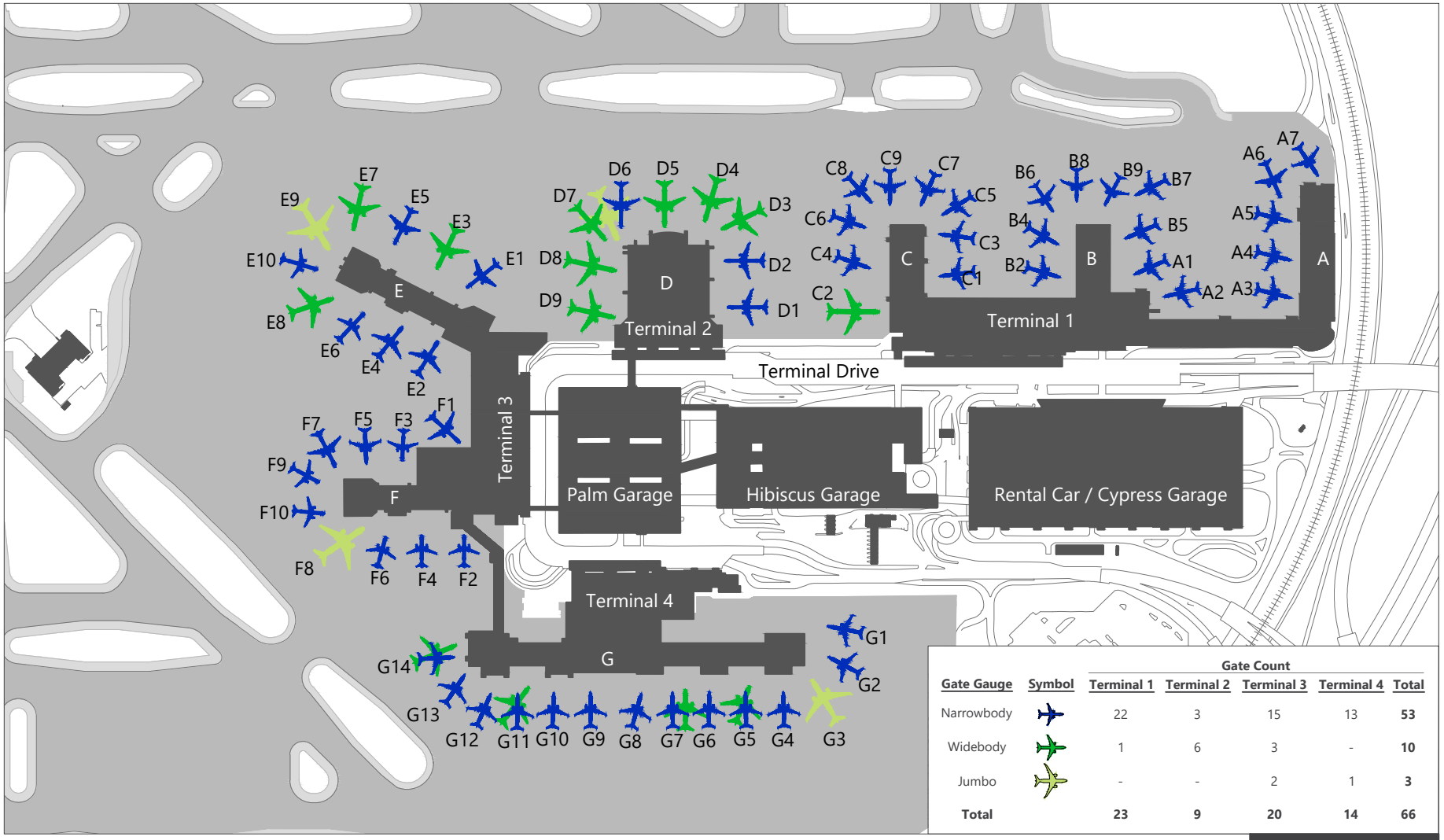
2.3.2 GATES AND APRON LAYOUT

Exhibit 2.3-15 illustrates the numbering and aircraft parking capabilities of the terminal's aircraft parking gates. In total, the terminal complex comprises 66 gates (upon completion of the Terminals 1 and 4 Modernization and Expansion Programs).

Terminal 1

Terminal 1 includes 23 gates located on three concourses: five on Concourse A and nine each on Concourses B and C. The aircraft operating at Terminal 1 are predominately narrowbody, with the exception of Gate C2, which can accommodate widebody aircraft. The five gates on Concourse A operate as swing gates, thus able to serve both international and domestic flights. The remaining 18 gates only accommodate domestic flights, or international departures.

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Gate Gauge	Symbol	Gate Count				
		Terminal 1	Terminal 2	Terminal 3	Terminal 4	Total
Narrowbody		22	3	15	13	**53**
Widebody		1	6	3	-	**10**
Jumbo		-	-	2	1	**3**
Total		**23**	**9**	**20**	**14**	**66**

SOURCE: *Broward County Aviation Department*, Fort Lauderdale-Hollywood International Airport Site Plan, May 2010.
PREPARED BY: Ricondo & Associates, Inc., April 2016.

EXHIBIT 2.3-15

NORTH 0 Not to Scale

Aircraft Gates
Baseline Conditions

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Table 2.3-7 summarizes the aircraft parking compatibility associated with the Terminal 1 gates. The gate inventory indicates the largest aircraft that can park at each gate without limitations, such as with adjoining gate occupancy, taxiway tail overhangs, fueling, and pushback operations.

Table 2.3-7: Aircraft Gate Inventory—Terminal 1

GATE	GATE CAPABILITY	ADG	AIRCRAFT TYPE
A1	Boeing 737	III	Narrowbody
A2	Boeing 737	III	Narrowbody
A3	Boeing 737	III	Narrowbody
A4	Boeing 737	III	Narrowbody
A5	Boeing 737	III	Narrowbody
A6	Boeing 757	IV	Narrowbody
A7	Boeing 737	III	Narrowbody
B2	Boeing 737	III	Narrowbody
B4	Boeing 737	III	Narrowbody
B5	Boeing 737	III	Narrowbody
B6	Boeing 737	III	Narrowbody
B7	Boeing 737	III	Narrowbody
B8	Boeing 737	III	Narrowbody
B9	Boeing 737	III	Narrowbody
C1	Boeing 757	IV	Narrowbody
C2	Boeing 767	IV	Widebody
C3	B737/A320	IV	Narrowbody
C4	B737/A320	III	Narrowbody
C5	B737/A320	III	Narrowbody
C6	B737/A320	III	Narrowbody
C7	B737/A321	III	Narrowbody
C8	B737/A321	III	Narrowbody
C9	B737/A321	III	Narrowbody

SOURCES: Broward County Aviation Department (BCAD), October 2014 (*Fort Lauderdale-Hollywood International Airport (FLL) existing marking plan*); Corgan, August 2015 (*FLL Terminal 1 Concourse A plan*); BCAD, *FLL* March 2016 (*aircraft gate parking*).
PREPARED BY: Ricondo & Associates, Inc., April 2016.

Terminal 2

Terminal 2 includes one concourse, Concourse D, with nine gates. The Terminal 2 gates only accommodate domestic flights. **Table 2.3-8** summarizes the aircraft parking compatibility associated with the Terminal 2 gates, upon the completion of the ongoing terminal modernization and redevelopment programs in 2018. The gate inventory indicates the largest aircraft that can park at each gate without limitations, such as with adjoining gate occupancy, taxiway tail overhangs, fueling, and pushback operations.

Table 2.3-8: Aircraft Gate Inventory—Terminal 2

GATE	GATE CAPABILITY	ADG	AIRCRAFT TYPE
D1	Boeing 757	IV	Narrowbody
D2	Boeing 757	IV	Narrowbody
D3	Boeing 767	IV	Widebody
D4	Boeing 767	IV	Widebody
D5	Boeing 767	IV	Widebody
D6	Boeing 767	IV	Widebody
D6A	Boeing 777	V	Jumbo
D7	Boeing 767	IV	Widebody
D8	Boeing 767	IV	Widebody
D9	Boeing 767	IV	Widebody

SOURCES: Broward County Aviation Department (BCAD), October 2014 (*Fort Lauderdale-Hollywood International Airport (FLL) existing marking plan*); BCAD, *FLL* March 2016 (*aircraft gate parking*).
PREPARED BY: Ricondo & Associates, Inc., April 2016.

Terminal 3

Terminal 3 includes Concourses E and F, with 10 gates each. Concourse E services one jumbo, three widebody, and six narrowbody gates. With the exception of Gate F8, which can accommodate a Boeing 777, all other gates on Concourse F serve narrowbody aircraft. The Terminal 3 gates only accommodate domestic flights. A secure connector links Terminal 3 with Terminal 4.

Table 2.3-9 summarizes the aircraft parking compatibility associated with the Terminal 3 gates, upon the completion of the ongoing terminal modernization and redevelopment programs. The gate inventory indicates the largest aircraft that can park at each gate without limitations, such as with adjoining gate occupancy, taxiway tail overhangs, fueling, and pushback operations.

Table 2.3-9: Aircraft Gate Inventory—Terminal 3

GATE	GATE CAPABILITY	ADG	AIRCRAFT TYPE
E1	Boeing 757	IV	Narrowbody
E2	Boeing 757	IV	Narrowbody
E3	Boeing 767	IV	Widebody
E4	Boeing 757	IV	Narrowbody
E5	Boeing 757	IV	Narrowbody
E6	Airbus 321	III	Narrowbody
E7	Boeing 787	IV	Widebody
E8	Airbus 300	IV	Widebody
E9	Boeing 777	V	Jumbo
E10	Boeing 737	III	Narrowbody
F2	Airbus 320	III	Narrowbody
F3	Airbus 320	III	Narrowbody
F4	Airbus 321	III	Narrowbody
F5	Boeing 737	III	Narrowbody
F6	Airbus 321	III	Narrowbody
F7	Airbus 321	III	Narrowbody
F8	Boeing 777	V	Jumbo
F9	Airbus 320	III	Narrowbody
F10	Airbus 321	III	Narrowbody

NOTE: Gate F1 is closed temporarily during Terminal 3 expansion.

SOURCES: Broward County Aviation Department (BCAD), October 2014 (*Fort Lauderdale-Hollywood International Airport (FLL) existing marking plan*); BCAD, *FLL* March 2016 (*aircraft gate parking*).

PREPARED BY: Ricondo & Associates, Inc., April 2016.

Terminal 4

Terminal 4 will be configured with 14 gates upon completion of the Terminal 4 Modernization and Expansion Program. Twelve of the gates are configured as international/domestic swing gates, while Gates 13 and 14 will serve domestic flights only.

Table 2.3-10 summarizes the aircraft parking compatibility associated with the Terminal 4 gates, (proposed as of April 2016). The gate inventory indicates the largest aircraft that can park at each gate without limitations, such as with adjoining gate occupancy, taxiway tail overhangs, fueling, and pushback operations.

Table 2.3-10: Aircraft Gate Inventory—Terminal 4

GATE	GATE CAPABILITY	ADG	AIRCRAFT TYPE
G1	Boeing 737	III	Narrowbody
G2	Boeing 737	III	Narrowbody
G3	Airbus A330	V	Jumbo
G4	Boeing 737	III	Narrowbody
G5	Boeing 737	III	Narrowbody
G6	Boeing 737	III	Narrowbody
G7	Boeing 737	III	Narrowbody
G8	Boeing 737	III	Narrowbody
G9	Boeing 737	III	Narrowbody
G10	Boeing 737	III	Narrowbody
G11	Boeing 737	III	Narrowbody
G11A	Boeing 767	IV	Widebody
G12	Boeing 737	III	Narrowbody
G13	Boeing 737	III	Narrowbody
G14	Boeing 767	III	Widebody

SOURCES: Broward County Aviation Department (BCAD), October 2014 (*Fort Lauderdale-Hollywood International Airport (FLL) existing marking plan*); BCAD, *FLL* March 2016 (*aircraft gate parking*). PGAL/Zyscovich (PZ), August 2014 (*Terminal 4 Construction Plan*).
PREPARED BY: Ricondo & Associates, Inc., April 2016.

Operational Limitations

In-ground fuel hydrants service all gates, with two gates, Gates E8 and E9, restricted to left-side refueling only.

Most gates at the Airport operate without restrictions, except at Terminal 2, where several gates are reduced or closed based on adjacent gate operations. Terminals 3 and 4 have combination gates that are compatible with larger aircraft when adjacent gates are closed. **Table 2.3-11** indicates which gates are reduced or closed due to adjoining gate operations.

Table 2.3-11: Gate Operational Restrictions

TERMINAL/ GATE	ADJACENT GATE RESTRICTIONS
	TERMINAL 2
D4	Restricted to MD80, 735W, E170/175/190 when using D5 for 747 and 737W or smaller when using D5 for 777 or A330
D5	Restricted to 767-4 or smaller when using D4 for 767-3W Restricted to 767-3 or smaller when using D6 for 757W
D6	Closed when using D5 for 747 or using D6A alternate line Reduced to DC9/MD88/MD90 only when 767-3W is on D7 Reduced to 737W or smaller when 767-4/3W on D5 and DC9 only when 777 or A330 on D5
D7	Reduced to 737W or smaller when 767-3W/4 is on D8 Reduced to DC9/MD88/MD90 only when 767-3W is on D7 Closed when using D6A alternate line
D8	Reduced to 757W when 767-3W is on D9
D9	Reduced to 757W when 767-3W/4 is on D8
	TERMINAL 3
E7	Closed when using E9A alternate line
	TERMINAL 4
G11	Closed when using G11A alternate line
G12	Closed when using G11A alternate line

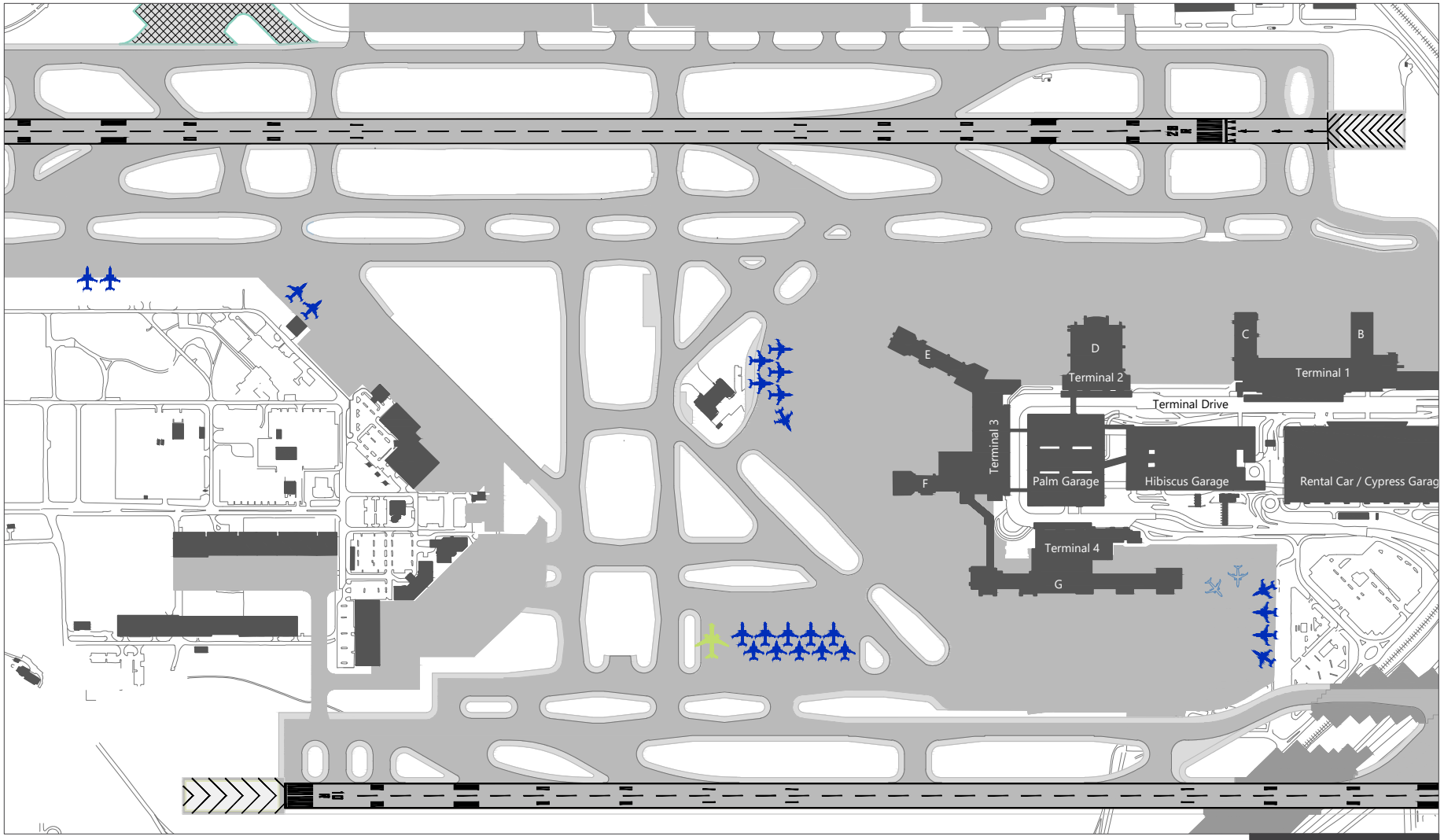
SOURCES: Broward County Aviation Department (BCAD), October 2014 (*Fort Lauderdale-Hollywood International Airport (FLL) existing marking plan*); Corgan, August 2015 (*FLL Terminal 1 Concourse A plan*); BCAD, *FLL* March 2016 (*aircraft gate parking*); PGAL, August 2014 (*Terminal 4 construction plan*).
PREPARED BY: Ricondo & Associates, Inc., April 2016.

2.3.2.1 Hardstand Parking Positions

Exhibit 2.3-16 depicts hardstand areas, where aircraft are moved to during extended stays at the Airport, if the gate needs to be made available for other aircraft. The following areas are anticipated to be used as hardstands with the Baseline airfield layout:

- A 5-position hardstand area located west of Terminal 3.
- A 4-position hardstand area located east of Terminal 4.
- The Zulu Ramp, located west of Terminal 4 between Taxiways T7 and T8, and between Taxiways Q and N, can accommodate 10 narrowbody aircraft parking positions, in a staggered pattern, and one widebody parking position. The Zulu ramp is typically utilized for remote overnight parking, but it also serves as a penalty box throughout the day when gates are unavailable. Occasionally, the Zulu Ramp is used for passenger boarding, via bus.

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SOURCE: *Broward County Aviation Department*, Fort Lauderdale-Hollywood International Airport Site Plan, May 2010.
PREPARED BY: Ricondo & Associates, Inc., April 2016.

EXHIBIT 2.3-16

NORTH 0 Not to Scale

Aircraft Hardstand Areas
Baseline Conditions

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- A pavement area located south of Taxiway C1, on the south side of Taxiway C, can also accommodate two narrowbody aircraft parking positions.
- An apron area northwest of the Signature apron, on the west airfield, is also used for hardstand parking.

2.4 Terminal Landside Facilities

This section documents the existing landside conditions at FLL; it assesses the terminal and access roadways and the curbfront operations. Landside facilities include the nonsecure access and circulation in and around the Airport. The on-Airport surface transportation data provided in this section was collected during the Fall of 2015. The data collection is divided into two categories: Landside Inventory, which is discussed in this section, and Curbfront Operational Observations, which are provided in **Appendix C**. The study area is shown on **Exhibit 2.4-1**.

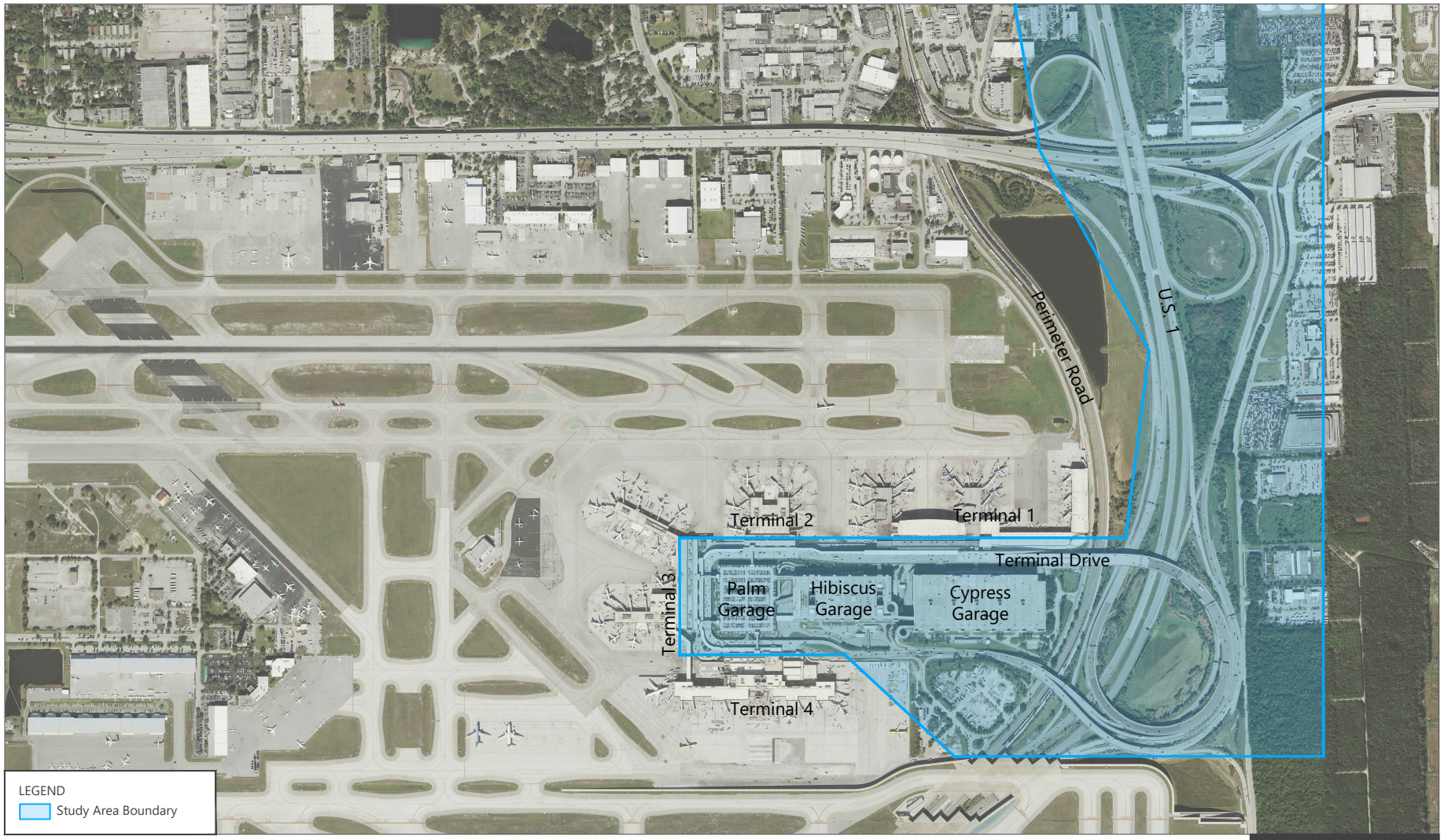
2.4.1 TERMINAL ACCESS ROADWAY INVENTORY

Landside facilities include the nonsecure access, circulation, and parking functions in and around the Airport site. The following sections detail the regional and terminal area access roadway network, the terminal curbfront, the rental car facilities, and the parking facilities.

Access to FLL is provided by a ground transportation system that includes regional highways and interstates, major arterial roadways, and signalized intersections. The airport access roadway system serves as the landside interface between the regional roadway system and the terminal curbfront facilities. The terminal access roadways are categorized as one of three terminal access roadway types: airport access roadway, terminal area roadway, or curbfront. Each roadway type is associated with different characteristics and different methodologies for calculating level of services (LOS). The LOS criteria and methodology is located in **Appendix D**. **Exhibit 2.4-2** illustrates the FLL terminal access roadways by the designated roadway category.

The regional roadways include the freeways, highways, and arterial roadways that provide access to the Airport and carry airport-related traffic, but they are primarily used for non-Airport trips. Traffic volumes on these roadways are high, as they serve a densely developed urban area and carry a large number of trips. Historically, traffic peaks in the late afternoon when commuter traffic overlaps with the evening peak periods of the Airport-related traffic. The Airport roadway system serves as the landside interface between the regional roadway system and the terminal curbfront facilities. As shown on Exhibit 2.4-2, the public airport access roadways provide landside access to the terminals, public and employee parking lots, rental car facilities, commercial vehicle holding areas, and Airport support/ancillary facilities. A summary of the access roadways is provided in the following subsections.

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SOURCE: *Pictometry Online (2016)*
PREPARED BY: Kimley Horn & Associates, Inc., April 2016.

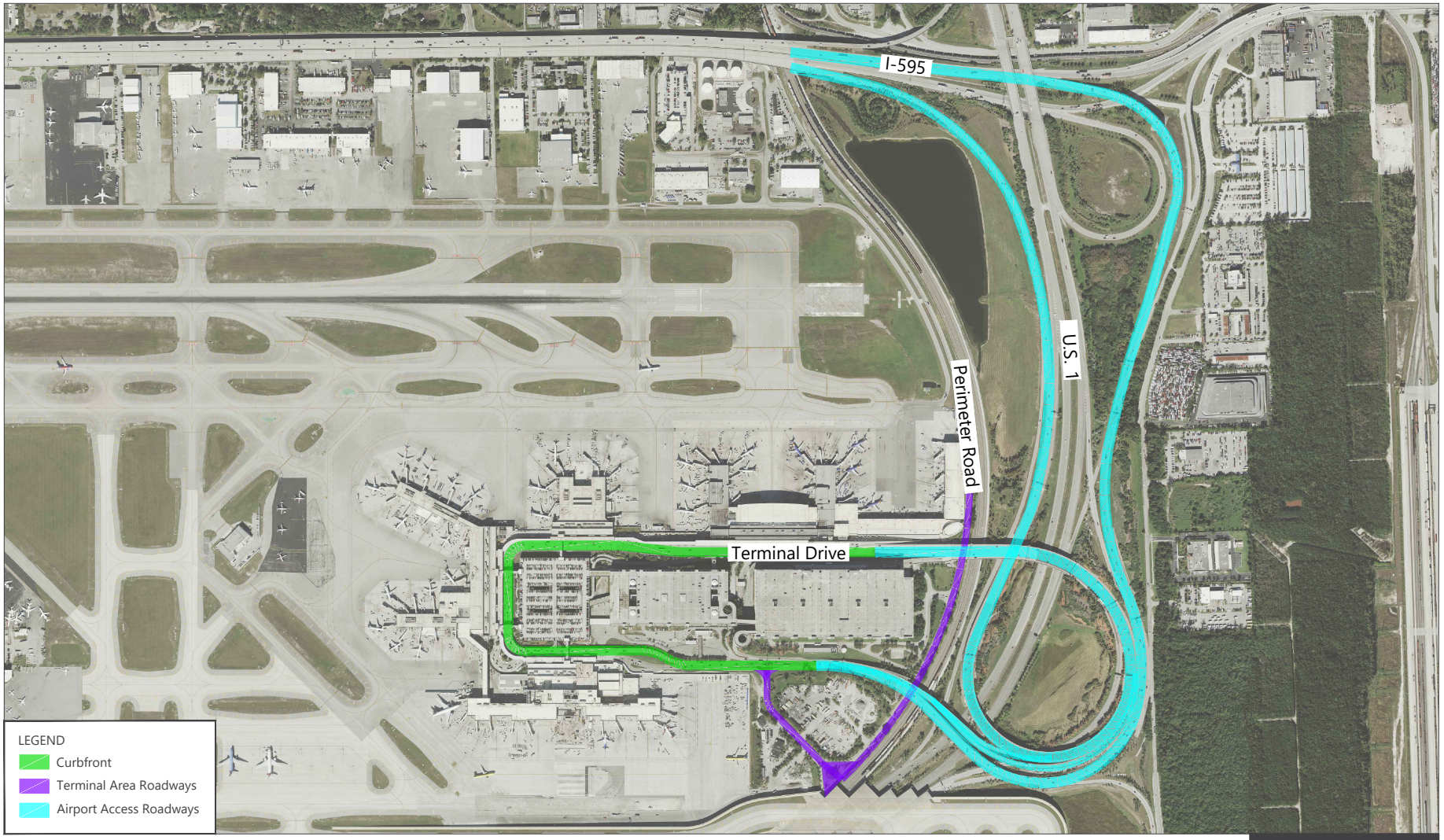
EXHIBIT 2.4-1

NORTH 0 1,200 ft.

Study Area
Terminal Area Roadways

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SOURCE: Google Earth (2016)
PREPARED BY: Kimley Horn & Associates, Inc., April 2016.

EXHIBIT 2.4-2

NORTH 0 1,000 ft.

Terminal Access Roadways

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2.4.1.1 Regional Roadways

There are two main regional roadways providing access to the Departure and Arrival Levels of each terminal complex: Federal Highway (U.S. 1) and Interstate 595 (I-595).

Federal Highway

U.S. 1 is a six-lane divided arterial roadway that runs in a north-south orientation along the eastern boundary of the Airport. U.S. 1 provides two access points to FLL: an entrance ramp 500 feet north of Griffin Road (northbound traffic) and another ramp that is one-quarter mile south of its I-595 interchange (southbound traffic).

Interstate 595

I-595 is an eight-lane divided interstate highway located north of the Airport. The U.S. 1 interchange at the eastern edge of the Airport is the final interchange at the eastern end of I-595, providing access to FLL and Port Everglades. The eastern terminus consists of two lanes for U.S. 1 southbound, two lanes for U.S. 1 northbound, and two lanes for Port Everglades via Eller Drive. I-595 extends to western Broward County, where it terminates with Interstate 75 and the Sawgrass Expressway. It also has interchanges with Interstate 95, Florida's Turnpike, and State Road 7/U.S. 441.

2.4.1.2 Airport Roadways

FLL has a two-level curbfront roadway that provides access to ticketing/check-in (departing passengers) on the Upper Level and to baggage claim (arriving passengers) on the Lower Level. Terminal Drive and Perimeter Road provide access to the terminal curbfronts, as depicted on **Exhibit 2.4-3**.

Terminal Drive

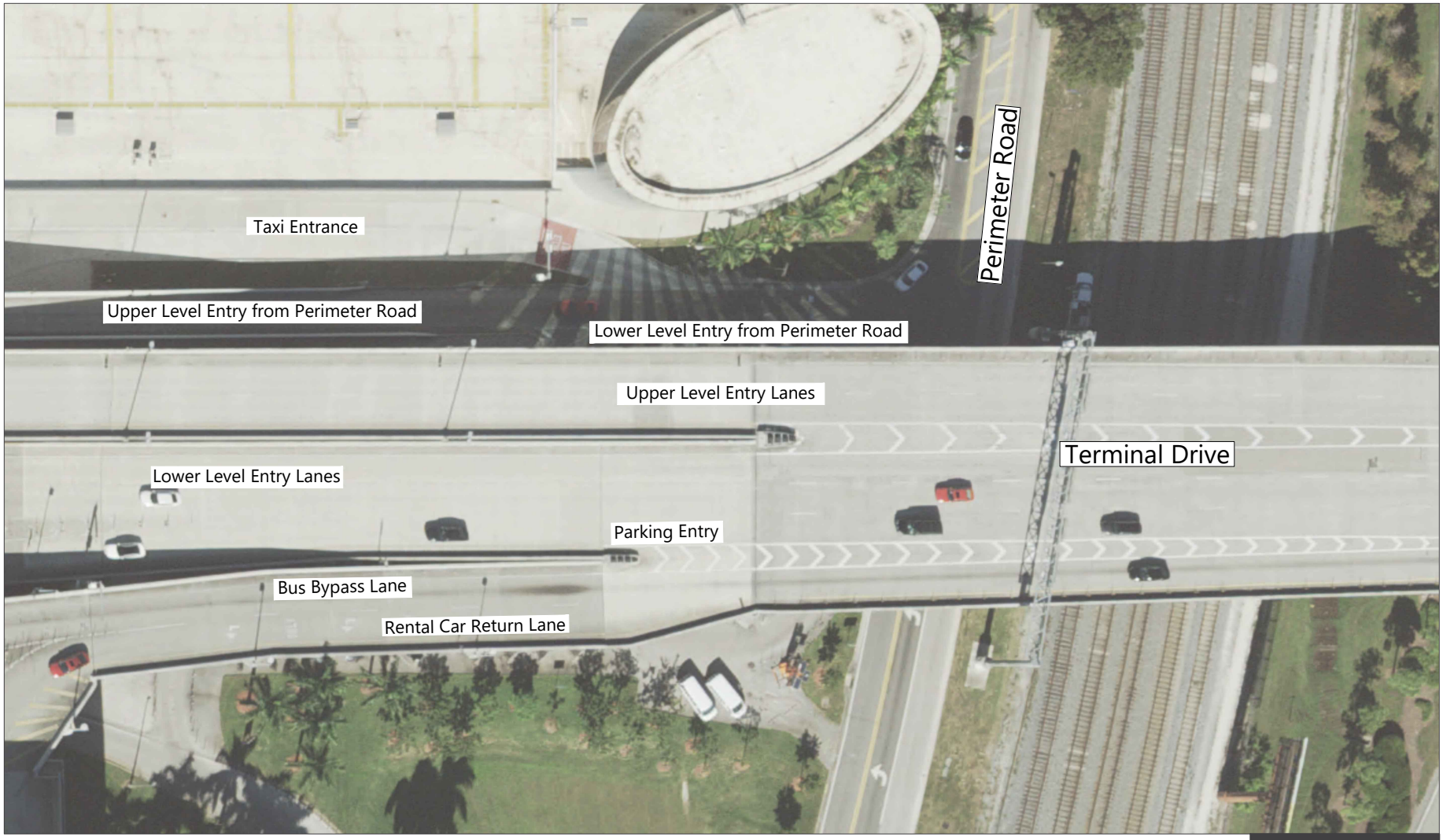
Terminal Drive is a two-to-six lane circulator road connecting I-595 and U.S. 1 to FLL. The posted speed limit of Terminal Drive is 35 mph, reducing to 15 mph at Terminal 1. Terminal Drive is six lanes prior to entering FLL. The inside (leftmost) lane splits and becomes the Bus Bypass and the Rental Car Return Lane. The two outside (right) lanes split and become the Departure Drop-Off lanes (upper level) and merge with a ramp from Perimeter Road. The three middle lanes become the Arrival Pick-Up lanes (Lower Level) and the Public Parking Entry Lane.

The entry lane configuration for Terminal Drive is also detailed on Exhibit 2.4-3. The Upper and Lower Levels are high-conflict areas with multiple commercial vehicle weave/merge transitions and significant pedestrian traffic.

Perimeter Road

Perimeter Road is an urban, major collector roadway with a posted speed limit of 35 mph; it is adjacent to the Airport's perimeter. The north segment passes under I-595, and the south segment has limited access and provides an internal route to the west side of FLL. The west segment provides access to the Commercial Ground Transportation Holding Lot and to the Aircraft Observation Area, and the east segment provides access to both levels of the terminal area.

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SOURCE: Pictometry Online (2016)
PREPARED BY: Kimley Horn & Associates, Inc., April 2016.

EXHIBIT 2.4-3

NORTH 0 N.T.S.

Curbfront Access Roadways

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The characteristics of each of the study area roadways are summarized in **Table 2.4-1**.

Table 2.4-1: Roadway Inventory Overview

ROADWAY	DESCRIPTION	NUMBER OF LANES	SPEED LIMIT	ROADWAY TYPE
I-595	Divided Interstate	8	65 mph	Airport Access Roadway
U.S. 1/Federal Highway	Divided Principal Arterial	6	50 mph	Airport Access Roadway
Perimeter Road	Urban Major Collector	2	35 mph	Terminal Area Roadway
Terminal Drive	Circulator Roadway	2 to 6	15 mph	Curbfront

SOURCE: Kimley-Horn and Associates, Inc., April 2016.
PREPARED BY: Kimley-Horn and Associates, Inc., April 2016.

2.4.2 CURBFRONT INVENTORY

2.4.2.1 Terminal Curbfronts

The terminal has a two-level curbfront roadway that provides access to the ticketing/check-in (departures) area on the upper level and to the baggage claim (arrivals) area on the lower level. This curbfront provides access to a variety of travel modes, including commercial and private vehicles. The specific curbfront layouts were determined based on a number of different sources. There are four unit terminals at FLL: Terminal 1, Terminal 2, Terminal 3, and Terminal 4. The terminals are further divided into Lower Level (Arrivals) and Upper Level (Departures).

The traffic lanes connecting the terminals are divided into two basic functions. The curbfront lanes, or inside lanes, are typically used for passenger loading and unloading. The outside lanes, or traffic flow lanes, are used for orbiting and circulating traffic throughout the Airport. The number of curbfront lanes varies at each unit terminal. **Table 2.4-2** provides a general description of each terminal curbfront configuration. **Exhibits 2.4-4** and **2.4-5** illustrate the terminal layouts. For clarity purposes, only commercial, government, public transit, shared rides, and taxi staging areas are shown.

2.4.2.2 Ground Transportation Areas

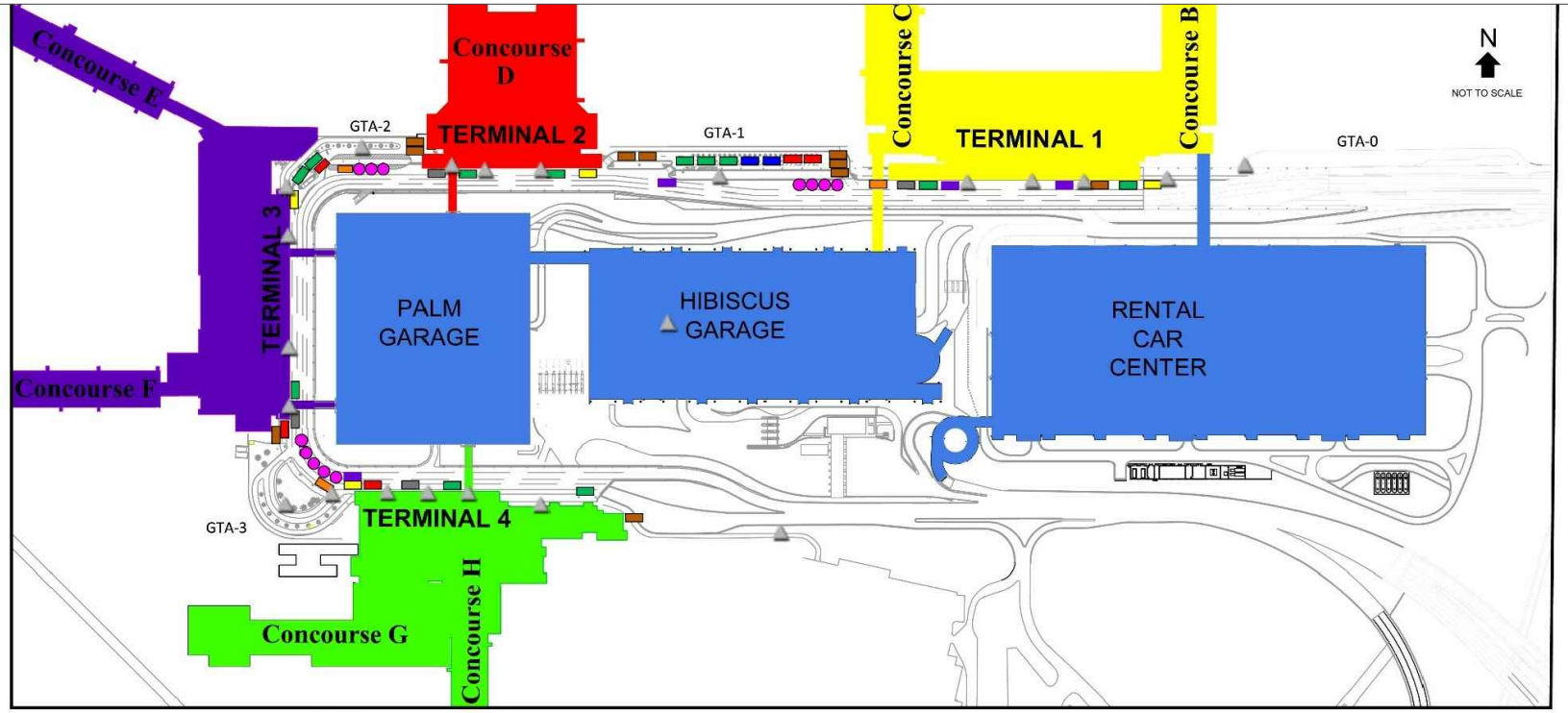
Located between the four terminals are five designated ground transportation areas (GTAs): GTA-0, GTA-1, GTA-2, GTA-3, and GTA-4. **Table 2.4-3** provides a general description of each GTA.

Exhibits 2.4-4 and 2.4-5 also depict the Lower Level and Upper Level GTAs, respectively. Lane designations for each of the GTAs, as well as for the taxi staging areas, are detailed in the following subsections.

Table 2.4-2: Curbfront Inventory by Terminal

LOCATION	DESCRIPTION OF ACTIVITY	NUMBER OF LANES	
		CURBFRONT	TRAVEL
TERMINAL 1			
UPPER	Passenger drop-off	2	3
LOWER	Passenger pickup	3	3
TERMINAL 2			
UPPER	Passenger drop-off	2	3
LOWER	Passenger pickup	2	3
TERMINAL 3			
UPPER	Passenger drop-off	2	3
LOWER	Passenger pickup	2	3
TERMINAL 4			
UPPER	Passenger drop-off	2	3
LOWER	Passenger pickup	2	3

SOURCE: Kimley-Horn and Associates, Inc., April 2016.
PREPARED BY: Kimley-Horn and Associates, Inc., April 2016.



LEGEND:

- SHERIFF VEHICLE ONLY
- AUTHORIZED VEHICLE ONLY
- TAXI
- CRUISE BAGGAGE TRUCKS
- DELIVERY VEHICLE
- COMMERCIAL VEHICLE LANE / EMBARKING CRUISE OPS
- INTER -TERMINAL / AIRPORT ECONOMY PARKING / TRI - RAIL / SUN TROLLEY
- GO AIRPORT SHUTTLE
- OPS
- CURBFRONT OBSERVATION LOCATION

NOTE:
- Gate 100 and Garages.
- Vehicle must be attended at all times. All vehicles are subject to security inspection.
- Deliveries 24/7

SOURCE: Broward County Aviation Department (2016)
PREPARED BY: Kimley Horn & Associates, Inc., April 2016.

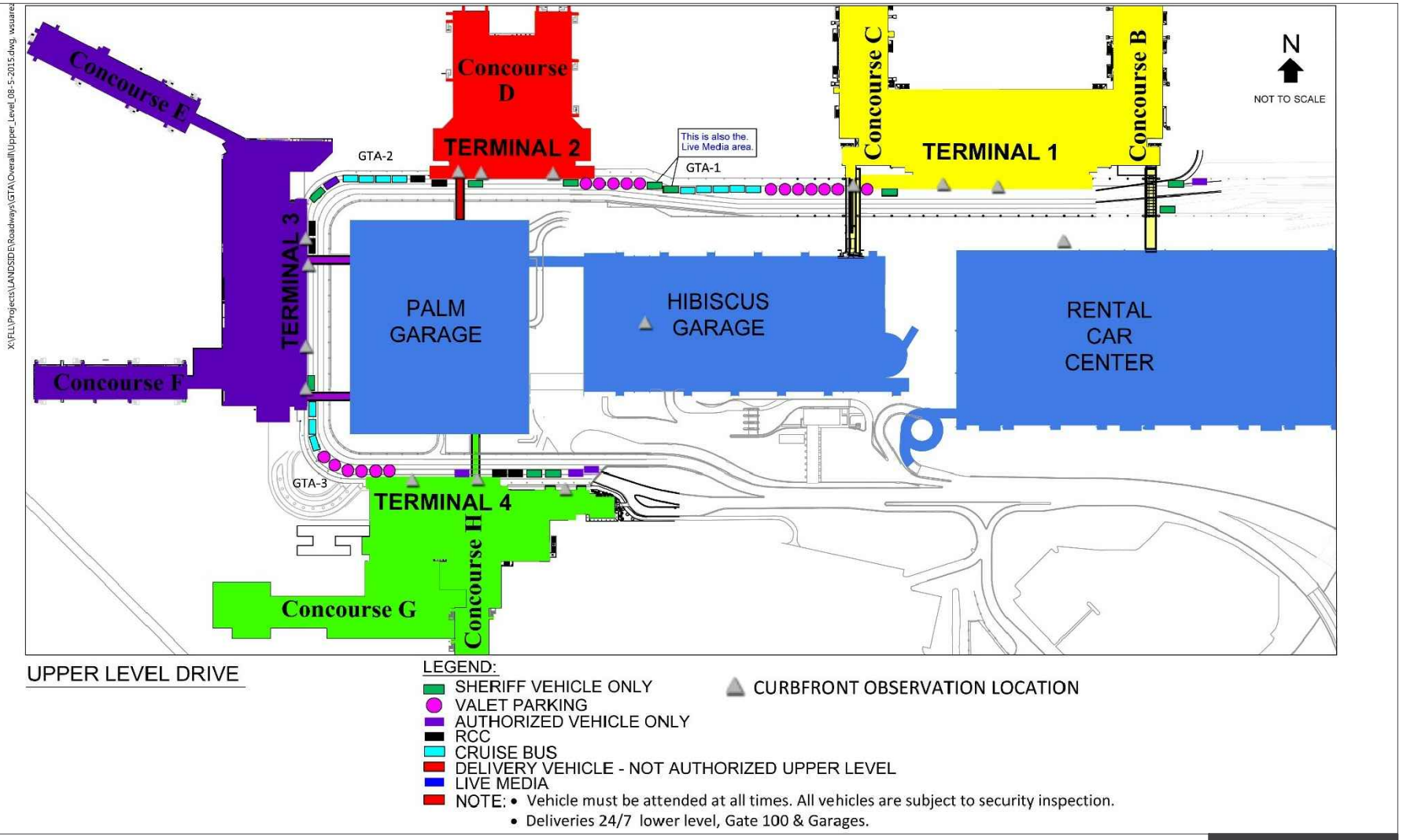
EXHIBIT 2.4-4

NORTH 0 N.T.S.

Curbfront Layout
Lower Level (Arrivals)

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SOURCE: Broward County Aviation Department (2016)
PREPARED BY: Kimley Horn & Associates, Inc., April 2016.

EXHIBIT 2.4-5

NORTH 0 N.T.S.

Curbfront Layout
Upper Level (Departure)

Drawing: P:\Project-Miami\BCAD\2015 Master Plan Updates\01 - FLL Tasks\I-4 Inventory\CAD\2.4-X.dwgLayout: Ex. 2.4-5 Plotted: Oct 28, 2020, 05:25PM

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Table 2.4-3: Curbfront Inventory by Ground Transportation Area

LOCATION	DESCRIPTION OF ACTIVITY	NUMBER OF LANES	
		CURBFRONT	TRAVEL
GTA-0			
Lower	Taxi staging	2	1
GTA-1			
Upper	Passenger drop-off	2	3
Lower	Passenger pickup	2	3
GTA-2			
Upper	Passenger drop-off	2	3
Lower	Passenger pickup	2	3
GTA-3			
Upper	Passenger drop-off	2	3
Lower	Passenger pickup	2	3
GTA-4			
Upper	Passenger drop-off	2	3
Lower	Passenger pickup	2	3

SOURCE: Kimley-Horn and Associates, Inc., April 2016.
PREPARED BY: Kimley-Horn and Associates, Inc., April 2016.

GTA-0

GTA-0 is located to the east of Terminal 1 on the Lower Level. The curbfront designations are characterized as follows:

- The inside north lane is designated for taxicab staging.
- The inside south lanes are designated for taxi and share-ride vehicle staging.
- The middle lane is designated as a vehicle movement lane.

GTA-1

There is an Upper Level and Lower Level GTA-1 located between Terminal 1 and Terminal 2. The lower level curbfront designations are characterized as follows:

- Inside Lanes (Traffic Flow Lanes):
  - The west half of the south lane is used as a taxicab staging area.
  - The lane marked with diagonal lines is used as a passenger/baggage loading area.
  - The north lane is designated for authorized bus activities, loading, and unloading.
  - The middle lane is designated as a vehicle movement lane.

- Outside Lanes (Curbfront Lanes):
  - Consolidated Rent-A-Car/Cypress Garage Shuttles load at the west end.
  - Courtesy Vehicles (hotel, off-Airport parking operators) load at the east end.
  - Tri-Rail bus stop is located at the west end of the Terminal 1 curb.

The Upper Level curbfront designations include:

- Loading and off-loading cruise/charter bus passengers; and
- Other purposes with prior approval by BCAD.

GTA-2

There is an Upper Level and Lower Level GTA-2 located between Terminal 2 and Terminal 3. The lower level curbfront designations include:

- Inside Lanes (Traffic Flow Lanes):
  - Inside left lane is for Consolidated Rental Car shuttles pick-up.
  - Inside right lane is designated for courtesy vehicles (hotel and off-Airport parking) pick-up.
  - The single lane closest to the Airport Operations Area (AOA) wall is designated for taxicab staging.
- Outside Lanes (Curbfront Lanes) comprise the following:
  - A Commercial Vehicle Loading Area,
  - A Tri-Rail stop on the west side, and
  - Economy and Inter-Terminal shuttle bus stops.

The Upper Level curbfront designations include:

- Cruise/charter bus passengers (loading and unloading),
- The Consolidated Rental Car/Cypress Garage shuttles drop-off, and
- Other purposes with prior approval by BCAD.

GTA-3

There is an Upper Level and Lower Level GTA-3 located between Terminal 3 and Terminal 4. The Lower Level curbfront designations include:

- Inside Lanes (Traffic Flow Lanes):
  - Consolidated Rent-A-Car/Cypress Garage shuttles load on the inner lane.
  - Courtesy vehicles (hotel and off-airport parking) shuttle pick-up stop at the east-end of the single lane closest to the AOA wall.

- Outside Lanes (Curbfront Lanes):
  - Tri-Rail stop is located at the west-end of the curb.
  - There is a Commercial Vehicle Loading Area.
  - There is an Economy Lot (as of the Fall of 2016, which is not in operation since the closure of the Economy Lot) and the Inter-Terminals shuttle bus stops.

The Upper Level curbfront designations include:

- The loading and unloading of cruise/charter buses,
- Designated baggage delivery truck loading/unloading, and
- Other purposes with prior approval by BCAD.

GTA-4

GTA-4 is located on the Lower Level east of Terminal 4. The curbfront designations include:

- Loading and unloading of hotel/motel shuttles,
- Loading and unloading of off-Airport parking shuttles, and
- Loading and unloading of Tri-Rail Shuttle and Sun Trolley.

2.4.3 SIGNAGE INVENTORY

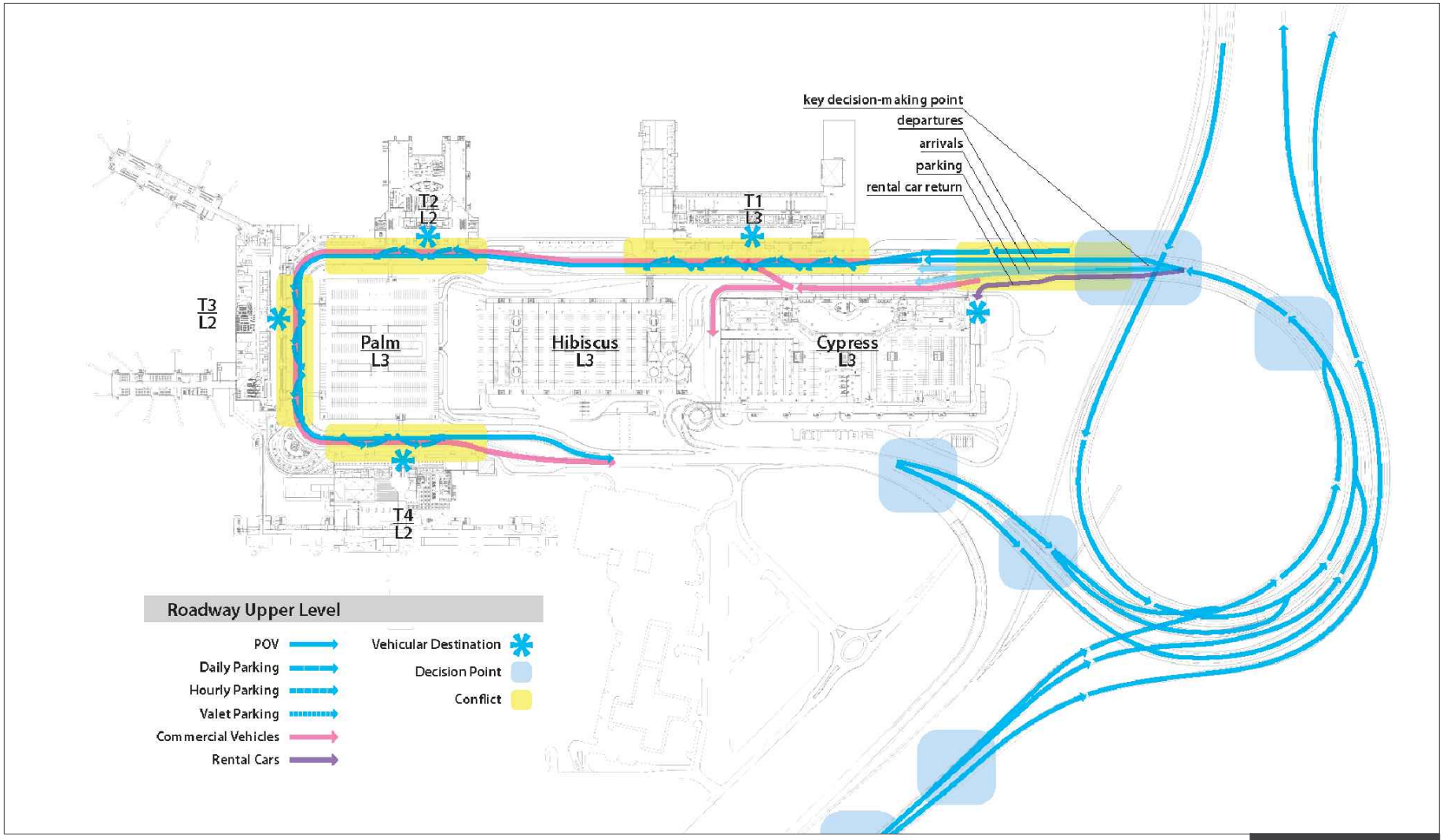
The *FLL Signage and Wayfinding Master Plan*[4] provides an inventory of the existing signage for the Airport approach, parking approach, curbfronts, and terminals. This document was utilized for completing a high-level analysis of potential existing issues that could adversely impact wayfinding into and out of the terminal complex. **Exhibits 2.4-6** and **2.4-7** highlight areas noted as major decision points, where wayfinding improvements should be focused, for the Upper Level and Lower Level roadways. The following excerpts regarding curbfront and terminal signs, as well as respective wayfinding issues, were obtained from the *FLL Signage and Wayfinding Master Plan*.

2.4.3.1 Curbfronts

The curbfronts represent a wayfinding challenge because of the volume and variety of vehicular and pedestrian traffic. With its single-curb access design on each level, FLL is prone to heavy vehicular and pedestrian traffic volume and congestion at peak periods. Commercial and private vehicular traffic intermix along much of the curbfront extents. Curbfront entry doors offer an opportunity to provide orientation to passengers and motorists through a unique numbering system. Low light levels at the Lower Level (Arrivals) contribute to visibility issues. Signs identifying pedestrian crosswalks are placed at the driver's upper viewing range. In most areas, pedestrian crosswalks span five to six lanes, requiring center lane drivers to use peripheral vision.

[4] Gresham, Smith and Partners, *FLL Signage and Wayfinding Master Plan*, January 2014.

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SOURCE: Gresham, Smith and Partners, *FLL Signage and Wayfinding Master Plan*, January 2014.
PREPARED BY: Kimley Horn & Associates, Inc., April 2016.

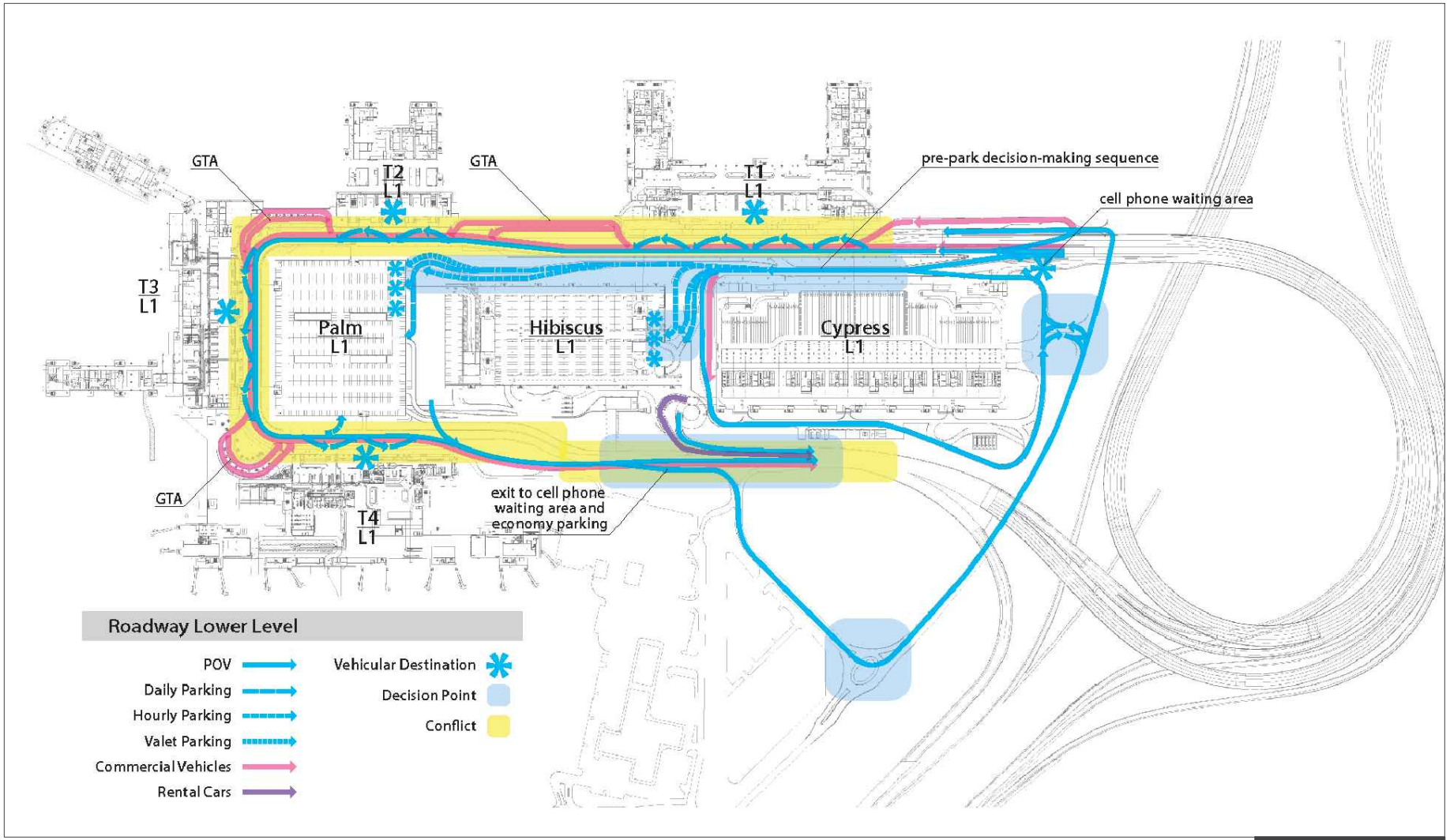
EXHIBIT 2.4-6

NORTH 0 N.T.S.

Roadway Documented Wayfinding Upper Level (Departures)

Drawing: P:\Project-Miami\BCAD\2015 Master Plan Updates\01 - FLL Tasks\I-4 Inventory\CAD\2.4-X.dwgLayout: Ex. 2.4-6 Plotted: Oct 28, 2020, 05:26PM

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SOURCE: Gresham, Smith and Partners, *FLL Signage and Wayfinding Master Plan*, January 2014.
PREPARED BY: Kimley Horn & Associates, Inc., April 2016.

EXHIBIT 2.4-7

NORTH 0 N.T.S.

Roadway Documented Wayfinding Lower Level (Arrivals)

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2.4.3.2 Terminals

Of all the areas studied at FLL, terminals seem to be the least confusing to passengers—particularly Terminals 2 and 3, which have fairly straightforward and intuitive layouts. Terminal 1, with its three-level design and walkway connections to the Rental Car Center and Hibiscus Garage, requires more wayfinding. Terminal 4 includes the separate international arrivals area, which requires internal navigation.

Each terminal currently has its own unique interior sign system, with variations in size, color, materials and finishes, illumination, graphic layouts, and placement. Wayfinding signs share viewing space with, and in some cases are obstructed by, advertising and concessions. Existing directories vary in content, layout, design, and location. Existing terminal signage appears in English only.

2.4.4 PUBLIC TRANSIT INVENTORY

Three public transit services provide transportation to FLL: South Florida Regional Transportation Authority (SFRTA) Tri-Rail Shuttle, Broward County Transit (BCT), and the Fort Lauderdale Sun Trolley. The route, schedule, and average headway for these three transit providers are summarized in **Table 2.4-4**.

Table 2.4-4: Public Transit Inventory

	TRANSIT SERVICE OPTION		
ROUTE INFORMATION	**TRI-RAIL SHUTTLE**	**BROWARD COUNTY TRANSIT ROUTE 1**	**SUN TROLLEY**
Description	Four stop locations at each unit terminal. Stop at Terminal 4 will be eliminated when GTA-4 closes.	The bus stop is located at the Rental Car Center, Stop 7.	Stops at all GTAs.
Schedule	Daily: 4:20 a.m. – 11:00 p.m.	Weekdays and Saturday: 5:30 a.m. – 11:45 p.m. Sunday: 6:20 a.m. – 9:45 a.m.	Saturday and Sunday: 9:00 a.m. – 4:00 p.m.
Headways	Weekday: 20–60 minutes Weekend: 60 minutes	15–30 minutes	Real-time tracking via mobile application

SOURCE: Kimley-Horn and Associates, Inc., April 2016.
PREPARED BY: Kimley-Horn and Associates, Inc., April 2016.

2.4.5 PASSENGER PROFILE CHARACTERISTICS

The *2014 FLL Air Passenger Survey*[5] is summarized in the following section. The survey was conducted from July 30 to August 18, 2014, and collected the necessary data to establish passenger profiles (i.e., passenger processing characteristics), including how passengers access the Airport, the purpose of their trip, how early they arrive, how much time they spend in the terminal, how they use the ticketing and security areas, and their baggage handling choices. The survey sampling plan was designed to be a representative sample of the departing passenger profile

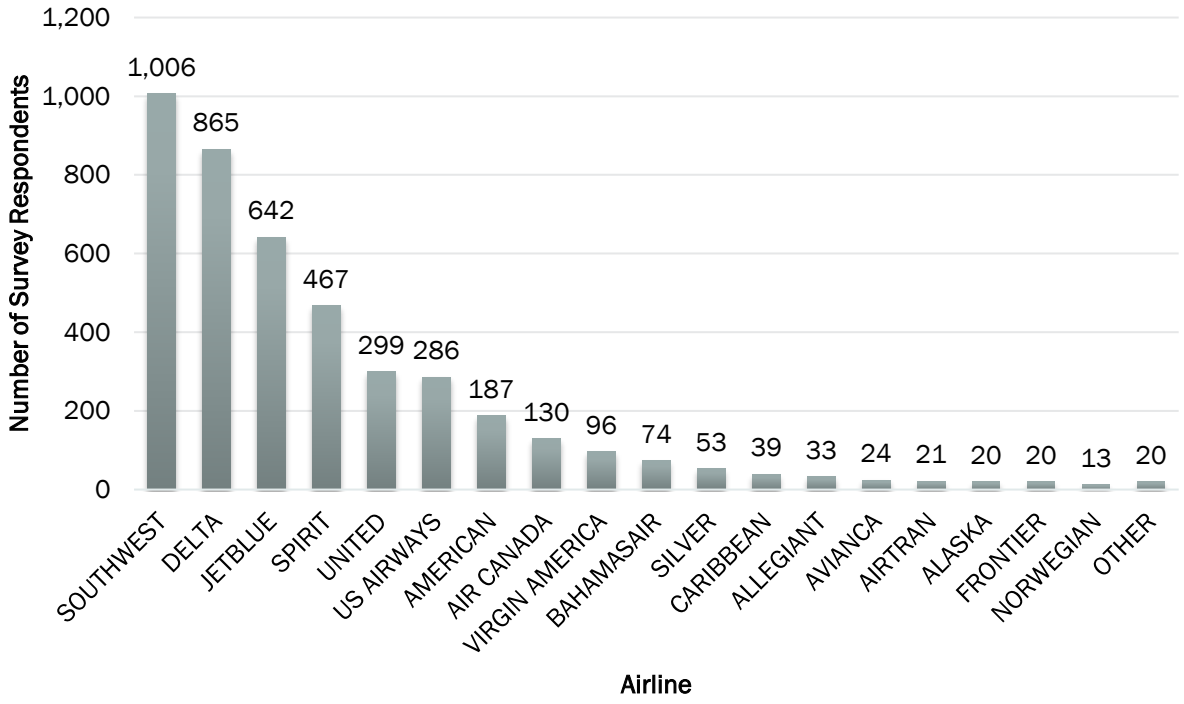
[5] Landrum & Brown, Inc., Keith and Associates, Inc., Cartaya & Associates Architects P.A., *Fort Lauderdale-Hollywood International Airport Air Passenger Survey*, 2014.

at FLL during the peak summer months. In total, 4,295 completed surveys were deemed useable for the purposes of determining departing passenger characteristics.

Of the 4,295 completed surveys, nearly 25 percent were from Southwest Airlines passengers. **Exhibit 2.4-8** shows the distribution of respondents by airline. Additionally, **Exhibit 2.4-9** shows the distribution of respondents by concourse.

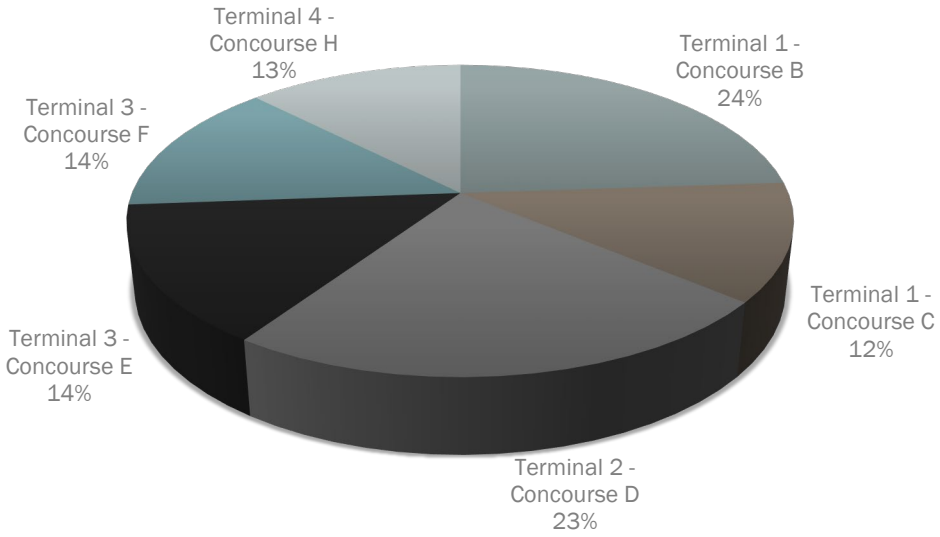
The passenger survey was reviewed in order to obtain passenger and visitor characteristics for the landside simulation model, as summarized in the following subsections. Within the simulation model, the flight schedule is used to generate the passenger activity. The passenger characteristics collected from the survey data will be applied to the passengers generated from the flight schedule in order to populate the model. This information, along with the peak-month average day flight schedules prepared as part of the forecasting effort, will be utilized in the landside simulation modeling.

Exhibit 2.4-8: Distribution of Respondents by Airline—2014 FLL Air Passenger Survey



SOURCE: Landrum & Brown, Inc., Keith and Associates, Inc., Cartaya & Associates Architects P.A., *Fort Lauderdale-Hollywood International Airport Air Passenger Survey*, 2014.
PREPARED BY: Kimley-Horn and Associates, Inc., April 2016.

Exhibit 2.4-9: Distribution of Respondents by Concourse—2014 FLL Air Passenger Survey



SOURCE: Landrum & Brown, Inc., Keith and Associates, Inc., Cartaya & Associates Architects P.A., *Fort Lauderdale-Hollywood International Airport Air Passenger Survey*, 2014.
PREPARED BY: Kimley-Horn and Associates, Inc., April 2016.

2.4.5.1 Travel Party Size

As reported in the survey, the average travel party size was 2.43 persons per party. **Table 2.4-5** presents the distribution of travel party size.

Table 2.4-5: Average Travel Party Size

TRAVEL PARTY SIZE	NUMBER OF RESPONDENTS	PERCENT OF RESPONSES
1	1,766	41.3%
2	1,098	25.7%
3	605	14.1%
4	347	8.1%
5	215	5.0%
6	92	2.1%
7	44	1.0%
8	32	0.7%
9	19	0.4%
10 or more	62	1.4%

NOTE: Percentage totals may not equal 100 percent due to rounding.

SOURCE: Landrum & Brown, Inc., Keith and Associates, Inc., Cartaya & Associates Architects P.A., *Fort Lauderdale-Hollywood International Airport Air Passenger Survey*, 2014.
PREPARED BY: Kimley-Horn and Associates, Inc., April 2016.

2.4.5.2 Visitor Activity

Airport visitors who accompany an originating passenger (well-wishers) or meet a terminating passenger (meeter/greeter) have trip activity associated with air passengers. The visitor ratios from the passenger survey (i.e., the number of visitors per passenger, by airline for the well-wishers) are presented in **Table 2.4-6**.

Among departing passengers, 25 percent were accompanied to the airport by well-wishers, with an average well-wisher party size of 0.55 persons. In addition, the ratio of average well-wishers per passenger for well-wishers entering the terminal is also presented in Table 2.4-6.

Table 2.4-6: Well-Wisher Ratio by Airline

AIRLINE	TERMINAL	NUMBER OF PASSENGERS SURVEYED	TOTAL NUMBER OF WELL-WISHERS IN TERMINAL	WELL-WISHERS ENTERING TERMINAL RATIO 1/
Air Canada	2	130	87	0.67
Air Jamaica	4	2	2	1.00
AirTran	4	21	5	0.24
Alaska	1	20	5	0.25
Allegiant	1	33	10	0.30
American	3	186	101	0.54
Avianca	4	24	9	0.38
BahamasAir	3	74	29	0.39
Caribbean	4	39	20	0.51
Condor Flugdienst	2	11	9	0.82
Copa	4	2	0	0.00
Delta	2	865	377	0.44
Frontier	1	20	25	1.25
JetBlue	3	642	617	0.96
Norwegian	3	13	5	0.38
Silver	1	53	24	0.45
Southwest	1	1004	441	0.44
Spirit	4	464	288	0.62
United	1	299	128	0.43
US Airways	3	286	115	0.40
Virgin America	1	96	45	0.47
WestJet	1	5	7	1.40

NOTE:

1/ The well-wisher ratio represents the number of well-wishers per passenger. For example, a well-wisher ratio of 0.5 represents 0.5 well-wishers per passenger. Therefore, for a flight with 100 passengers, 50 well-wishers would be generated based on the 0.5 well-wisher ratio.

SOURCE: Landrum & Brown, Inc., Keith and Associates, Inc., Cartaya & Associates Architects P.A., *Fort Lauderdale-Hollywood International Airport Air Passenger Survey*, 2014.

PREPARED BY: Kimley-Horn and Associates, Inc., April 2016.

2.4.5.3 Baggage Characteristics

The passenger survey also collected information regarding passengers' baggage, both checked and carry-on bags. **Table 2.4-7** presents the percent of passengers, by airline, with each type of bag. The average number of carry-on bags is 1.95 bags per passenger, and the average number of checked bags per traveling party is 1.75 bags per person. Southwest Airlines passengers account for over 25 percent of both checked and carry-on baggage.

Table 2.4-7: Baggage Distribution by Airline

AIRLINE	CHECKED BAG	PERCENT OF CHECKED BAG	CARRY-ON BAGS	PERCENT OF CARRY-ON BAGS 1/
Air Canada	275	3.7%	318	3.8%
Air Jamaica	8	0.1%	4	0.0%
AirTran	22	0.3%	29	0.3%
Alaska	29	0.4%	39	0.5%
Allegiant	13	0.2%	46	0.6%
American	297	4.0%	401	4.8%
Avianca	98	1.3%	48	0.6%
BahamasAir	304	4.1%	218	2.6%
Caribbean	145	1.9%	74	0.9%
Condor Flugdienst	29	0.4%	26	0.3%
Copa	3	0.0%	4	0.0%
Delta	1366	18.3%	1849	22.1%
Frontier	32	0.4%	28	0.3%
JetBlue	1040	13.9%	1103	13.2%
Norwegian	38	0.5%	40	0.5%
Silver	55	0.7%	92	1.1%
Southwest	2118	28.3%	2143	25.7%
Spirit	704	9.4%	600	7.2%
United	391	5.2%	528	6.3%
US Airways	374	5.0%	544	6.5%
Virgin America	127	1.7%	199	2.4%
Westjet	12	0.2%	17	0.2%
Total 1/	**7,480**	**100.0%**	**8,350**	**100.0%**

NOTE:

1/ Percentage totals may not total 100 percent due to rounding.

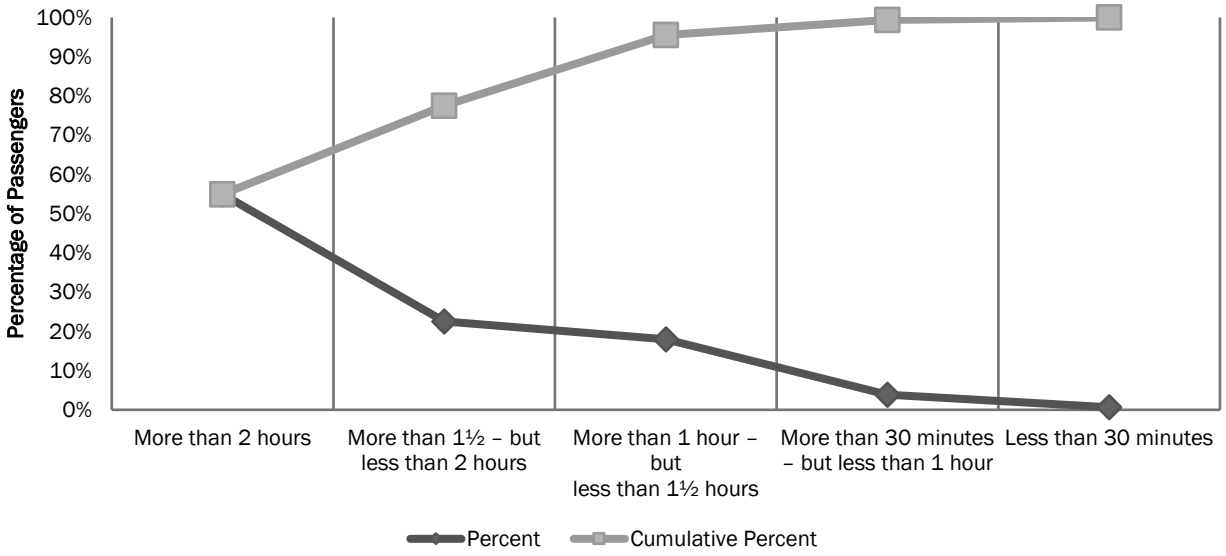
SOURCE: Landrum & Brown, Inc., Keith and Associates, Inc., Cartaya & Associates Architects P.A., *Fort Lauderdale-Hollywood International Airport Air Passenger Survey*, 2014.

PREPARED BY: Kimley-Horn and Associates, Inc., April 2016.

2.4.5.4 Time of Arrival

The time passengers arrive in advance of their flight time has an impact on the curbfront operations. These shifts are applied over a defined distribution either in advance of the time of enplaned flight departure or after the time of deplaned flight arrival. The passenger survey collected information on the time, with respect to flight departure, in which passengers arrived at the terminal building. The resulting time distribution curve for departing passengers is illustrated on **Exhibit 2.4-10**.

Exhibit 2.4-10: Passenger Arrival (to Terminal) Distribution Curve



SOURCE: Landrum & Brown, Inc., Keith and Associates, Inc., Cartaya & Associates Architects P.A., *Fort Lauderdale-Hollywood International Airport Air Passenger Survey*, 2014.
PREPARED BY: Kimley-Horn and Associates, Inc., April 2016.

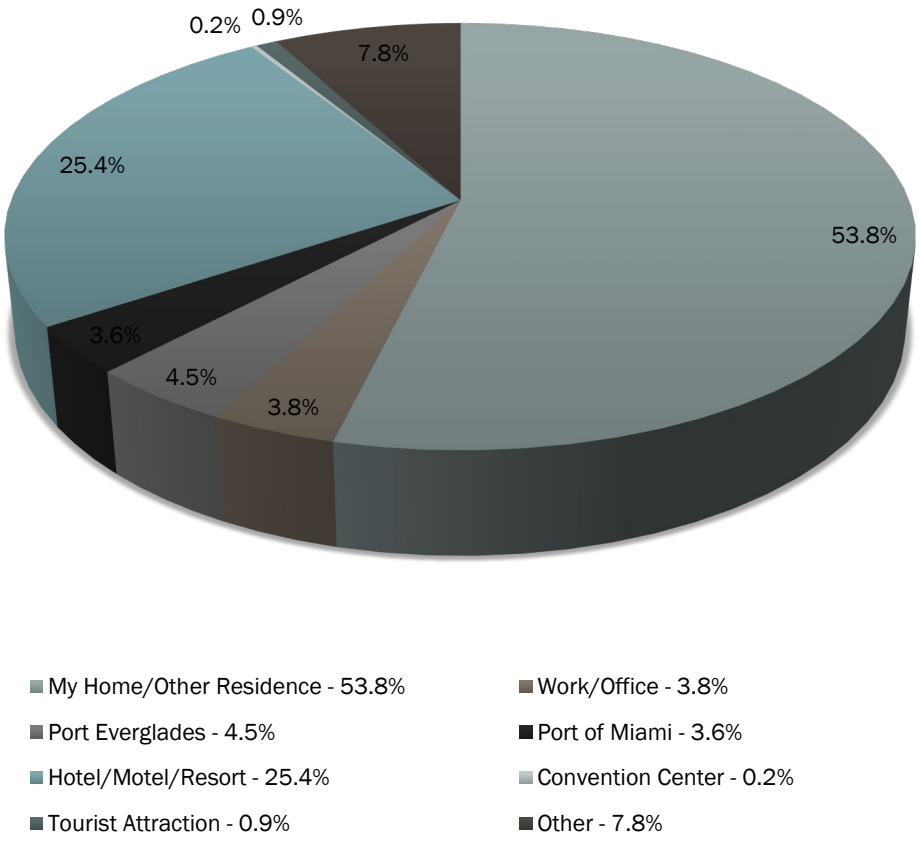
2.4.5.5 Trip Purpose

The passenger survey also collected information on the traveler's origin prior to arriving at the airport. **Exhibit 2.4-11** details the distribution of passenger trip purpose.

2.4.5.6 Mode of Arrival

Passengers were asked several questions regarding their mode of arrival to the airport (e.g., private auto, rental car, taxi, limo, etc.). The majority of the passengers travel by private auto (e.g., personal/company car or rental car). The resulting percentage of passengers traveling by each mode is shown on **Exhibit 2.4-12**.

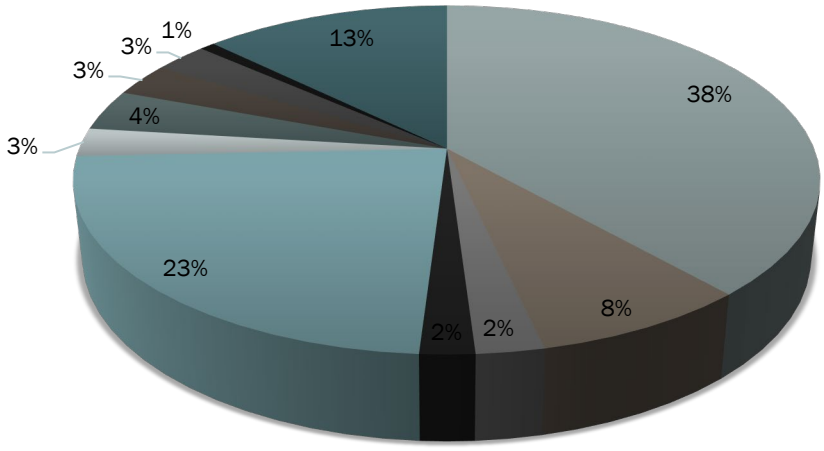
Exhibit 2.4-11: Trip Purpose Distribution



SOURCE: Landrum & Brown, Inc., Keith and Associates, Inc., Cartaya & Associates Architects P.A., *Fort Lauderdale-Hollywood International Airport Air Passenger Survey*, 2014.

PREPARED BY: Kimley-Horn and Associates, Inc., April 2016.

Exhibit 2.4-12: Mode of Arrival Distribution



- Private Car-Dropped Off - 38%
- Private Car-Parked On-Airport - 8%
- Private Car-Parked in the Economy Lot - 3%
- Private Car-Parked in an Off-Airport Lot - 2%
- Rental Car - 23%
- Other - 3%
- Cruise Line Charter Bus/Shuttle - 4%
- Hotel/Resort Courtesy Vehicle - 3%
- Scheduled Airport Bus/Van - 3%
- Public Transportation - 1%
- Taxi/Limo - 13%

SOURCE: Landrum & Brown, Inc., Keith and Associates, Inc., Cartaya & Associates Architects P.A., *Fort Lauderdale-Hollywood International Airport Air Passenger Survey*, 2014.
PREPARED BY: Kimley-Horn and Associates, Inc., April 2016.

2.5 Terminal and Off-Airport Vehicle Parking Facilities

Vehicle parking at the Airport includes public and employee parking, as well as a cell phone lot and a commercial vehicle staging lot. The public parking options vary from garage parking, which provides pedestrian and tram access to the terminals, to remote parking, which has shuttle service to the terminal curbsides. Several private off-Airport parking facilities also provide parking for Airport customers and provide their own shuttle service to and from the Airport. The subsections below describe the on-Airport and off-Airport public parking, employee parking, cell phone lot, and commercial ground transportation holding facilities.

2.5.1 ON-AIRPORT PARKING FACILITIES

On-Airport public parking facilities consist of multiple garage and surface lot facilities. There are three parking garages providing hourly and daily parking, one of which is exclusively for public parking (the Palm Garage), while the

other two (the Hibiscus and Cypress Garages) are a combination of public parking and employee parking. The Cypress Garage also accommodates rental car facilities. Additionally, there is a remote economy surface lot west of I-95. **Exhibit 2.5-1** depicts on-Airport parking facilities.

2.5.1.1 Public Parking

The Airport has four public parking categories: hourly, daily, valet, and economy. The facilities providing parking in each category are described further in the following sections.

Hourly

Hourly parking spaces are provided on Level 1 of the Palm Garage (465 spaces) and Level 2 of the Hibiscus Garage (182 spaces). The spaces are priced for short-term use, as shown in Table 2.5-2, and they are within walking distance of the terminals. There are courtesy trams that operate within the Palm and Hibiscus Garages to facilitate transit from the garages to various unit terminals. Operating from Level 1 of each garage, the trams run every eight minutes from 6:00 a.m. to 10:00 p.m. and every fifteen minutes from 10:00 p.m. to 6:00 a.m. Vehicle access into hourly parking for each garage is provided from Terminal Drive.

Daily

Daily parking spaces are provided on Levels 2–4 of the Palm Garage (1,992 spaces), Levels 3–7 of the Hibiscus Garage (3,749 spaces), and on a small portion of Level 6 of the Cypress Garage (24 spaces). These spaces are typically used by overnight parkers and are within walking distance of the Terminals. Vehicle access into daily parking in the Palm and Hibiscus Garages is provided via ramps from Terminal Drive. Access to the Cypress Garage for daily parking is provided via a ramp from the Hibiscus Garage on Level 7. The Palm and Hibiscus Garages are also connected on Level 4.

Valet

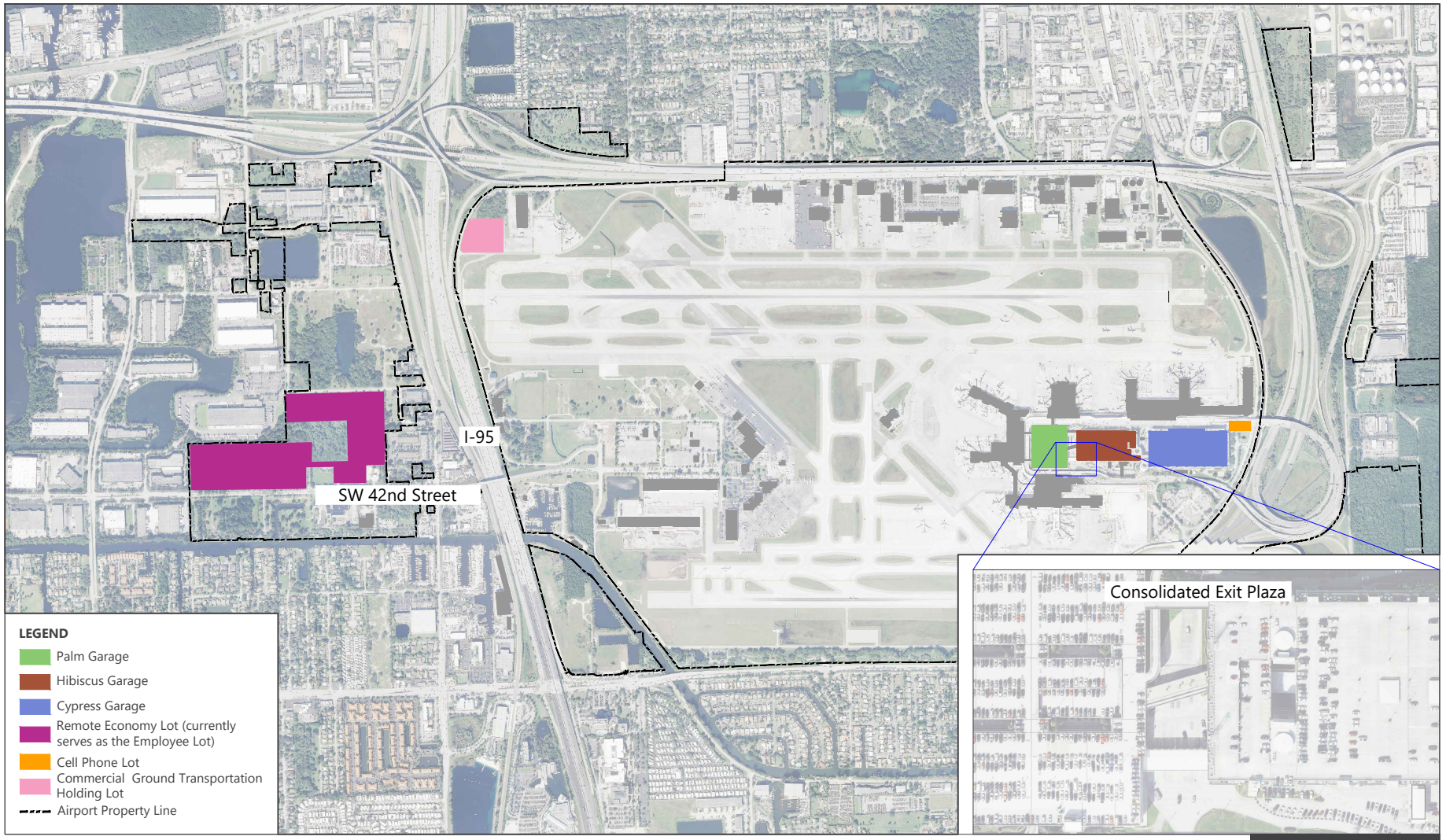
Valet parking drop-off is located on the Departures Level at Terminal 1, Terminal 2, and between Terminals 3 and 4. The Airport provides a la carte services for valet customers as well, such as a car wash or car detail. Valet vehicle parking is located in the Hibiscus and Cypress Garages (360 spaces and 1,025 spaces respectively).

Economy (converted to an Employee Parking Lot in 2017)

At the time of this analysys, economy parking spaces were provided in the Airport Economy Parking surface lot with the entrance located at 2755 SW 42nd Street (on May 1, 2017, the Economy Parking Lot was converted into the Employee Parking Lot and the Economy Parking product disappeared). The Airport Economy Parking lot provides 4,010 long-term, uncovered parking spaces, with shuttle service every 15 minutes to each terminal curbside. In the Spring of 2017, the Economy Lot was converted into an Employee Parking Lot and is no longer used for Public Parking.

The capacity of each facility is provided in **Table 2.5-1**, and the current parking rates for each category are provided in **Table 2.5-2**.

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SOURCE: Broward County Aviation Department, 2015 (aerial, property line).
PREPARED BY: Ricondo & Associates, Inc., April 2016.

EXHIBIT 2.5-1

NORTH 0 2,000 ft.

On-Airport Parking Facilities (As of April 2016)

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Table 2.5-1: On-Airport Public Parking Facility Capacity (As of April 2016)

PARKING FACILITY AND PRODUCT	LEVEL	NUMBER OF SPACES
Palm Garage		**2,501**
Hourly	1	465
Daily	2, 3, and 4	1,992
Reserved	3	44
Hibiscus Garage		**4,589**
Hourly	2	182
Daily	3, 4, 5, 6, and 7	3,749
Employee 1/	1, 2, and 6	298
Valet	1	360
Cypress Garage		**4,192**
Daily	6	24
Valet	6	1,025
Employee 2/	7, 8, and 9	3,143
Economy 2/		**4,010**
Total		**15,292**

NOTE:

1/ Spaces reserves for BCAD employees.

2/ On May 2017, the Employee spaces in the Cypress Garage were converted to public use spaces, and the Economy Lot was reassigned for Employee Parking. A replacement Economy Lot was not established.

SOURCE: Broward County Aviation Department, November 2015; Kimley-Horn and Associates, Inc., November 2015.
PREPARED BY: Ricondo & Associates, Inc., April 2016.

Table 2.5-2: On-Airport Public Parking Rates

PUBLIC PARKING PRODUCT	RATE STRUCTURE
Hourly	$3 per hour / $36 per day
Daily	$3 per hour / $15 per day
Valet	$25 per day
Economy	$7.50 per day

NOTES:

Garage facilities have a 15-minute grace period.

Rates current as of April 2016.

SOURCE: Broward County Aviation Department, April 2016.
PREPARED BY: Ricondo & Associates, Inc., April 2016.

2.5.1.2 Employee Parking

At the time of this Inventory, employee parking was provided in the Hibiscus and Cypress Garages. On May 1, 2017, Employee Parking was relocated to the former Economy Parking Lot (comprising approximately 4,010 spaces), on SW 42nd Street, and the Cypress Garage was converted to public use spaces.

2.5.1.3 Consolidated Exit Plaza

The Consolidated Exit Plaza serves customers exiting from the Hibiscus and Palm Garages. The Consolidated Exit Plaza is configured into two distinct parts: the main plaza has nine lanes not protected by a canopy and three lanes are separated from the main plaza under a canopy. Seven lanes are configured with a cashiered booth; however, all lanes are also configured for non-cashiered exiting where the customer inserts their parking ticket into the exit column and pays the parking fee due via credit card.

Processing times for the exit lanes were collected on Thursday, December 17, 2015, from 6:00 p.m. to 8:00 p.m. **Table 2.5-3** presents a summary of the processing times for each lane and its respective payment type. The average processing times for the cash lanes is 37.3 seconds, Sunpass lanes 15.5 seconds, and the credit card lanes 34.8 seconds. During these observations, no significant queues were observed and more than adequate space was available to process the demands. There were some instances of driver confusion when they entered wrong lanes (e.g. Sunpass) and had to reverse to access a different lane. In those instances, temporary congestion occurred.

Table 2.5-3: Exit Plaza Processing Times

LANE NUMBER	PAYMENT TYPE	AVERAGE PROCESSING TIME (SECONDS)
1	Credit Card, Prepaid, SunPass	16.9
2	Credit	50.7
3	Cash Only	44.0
4	Cash Only	35.3
5	Cash Only	40.1
6	SunPass	13.9
7	Credit 1/	36.9
8	SunPass 2/	19.5
9	SunPass 2/	13.0
10	Cash Only	29.9
11 3/	Closed	-
12 3/	Self-Serve, Credit Card or Prepaid	-
All Cash Lanes	Cash Only	37.3
All Credit Card Lanes	Credit	34.8
All SunPass Lanes	SunPass	15.5

NOTES:

1/ Alternate payment accepted: Prepaid.

2/ Alternate payment accepted: Credit Card and Prepaid.

3/ Lane closed due to software malfunctions.

Sample size: 100 vehicles.

SOURCE: Kimley-Horn and Associates, Inc., April 2016.
PREPARED BY: Kimley-Horn and Associates, Inc., April 2016.

2.5.1.4 Cell Phone Lot

A cell phone lot is located off Perimeter Road, northeast of the Cypress Garage, underneath the Terminal Drive Departures Level roadway, as depicted on Exhibit 2.5-1. The cell phone lot is for private vehicles waiting to pick up passengers; commercial vehicles are not allowed to park in this lot. The lot has 48 parking spaces. The cell phone lot occasionally overflows; as a result, vehicles have been observed to park on the adjacent grass areas. Exhibit 2.5-2 shows an image of the cell phone lot.

Exhibit 2.5-2: Cell Phone Lot



SOURCE: Kimley-Horn and Associates, Inc., April 2016.
PREPARED BY: Ricondo & Associates, Inc., April 2016.

2.5.1.5 Commercial Ground Transportation Holding Lot

The commercial ground transportation holding lot is located in the northwest corner of the Airport, as shown on Exhibit 2.5-1. Taxis must report there and wait for dispatching to the Arrivals Level curbside. Based on aerial photography observation, there is space for approximately 140 taxis in the taxi hold area. The holding lot also accommodates shared ride vans, prearranged vehicles, and cruise ship shuttle buses. Use and capacity data by mode is not available.

2.5.2 OFF-AIRPORT PARKING

A number of private operators offered off-Airport public parking as of April 2016. These facilities are primarily located to the north and east of the Airport. **Exhibit 2.5-3** illustrates the locations of these facilities. The names of the companies currently permitted by the Airport to operate on commercial vehicle airport roadways are provided in **Table 2.5-4**. Numbers of available parking spaces for these operators are not available.

Table 2.5-4: Permitted Off-Airport Public Parking Operators as of April 2016

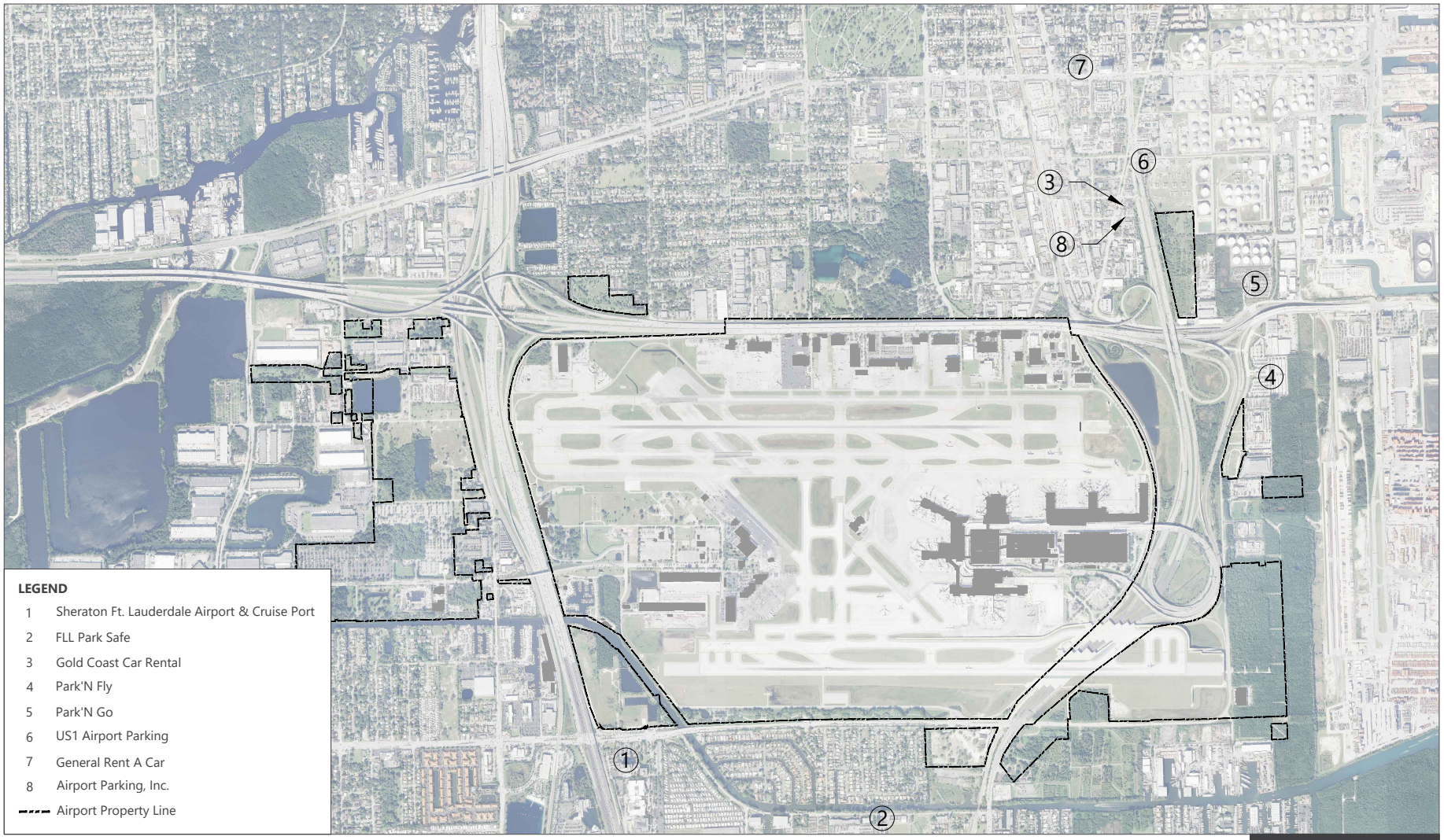
COMPANY NAME	ADDRESS	RATES 2/
Airport Parking, Inc.	3020 SE 6th Avenue, Fort Lauderdale, FL	$7 per day
FLL Park Safe, LLC	901 Old Griffin Road, Dania Beach, FL	$6 per day
Fort Lauderdale Shuttles, LLC (ACE Tours) 1/	814 SE 23rd Street, Fort Lauderdale, FL	Included in packaged hotel room rates
General Rent A Car dba Luxury Airport Parking	339 SE 24th Street, Fort Lauderdale, FL	N/A
Gold Coast Car Rental, Inc.	3000 SE 6th Avenue, Fort Lauderdale, FL	$8 per day
Park'N Fly, Inc.	2200 NE 7th Avenue, Dania Beach, FL	$8.50 per day
Park'N Go of Fort Lauderdale, LLC	1101 Eller Drive, Fort Lauderdale, FL	$8 per day
Sheraton Ft. Lauderdale Airport & Cruise Port	1825 Griffin Road, Dania Beach, FL 33004	$15 per day
US1 Airport Parking, LLC	2800 S Federal Highway, Fort Lauderdale,	$4 per day

NOTES:

1/ This company operates off-airport parking at three hotels: Fairfield Inn (2081 Griffin Road, Dania Beach, FL 33004), Homewood Suites (2061 Griffin Road, Dania Beach, FL 33004), and Hilton Garden Inn (180 SW 18th Avenue, Dania Beach, FL 33004).

2/ Rates were compiled from an online search on May 25, 2016, are generally the lowest advertised rates, and do not include any separately-charged taxes or fees.

SOURCE: Broward County Aviation Department, April 2016.
PREPARED BY: Ricondo & Associates, Inc., April 2016.



LEGEND

1 Sheraton Ft. Lauderdale Airport & Cruise Port
2 FLL Park Safe
3 Gold Coast Car Rental
4 Park'N Fly
5 Park'N Go
6 US1 Airport Parking
7 General Rent A Car
8 Airport Parking, Inc.
Airport Property Line

SOURCES: Broward County Aviation Department, 2015 (aerial, property line); Broward County Aviation Department, April 2016 (off-airport parking operators).
PREPARED BY: Ricondo & Associates, Inc., April 2016.

EXHIBIT 2.5-3

NORTH 0 2,500 ft.

Off-Airport Public Parking Operators (As of April 2016)

Drawing: P:\Project-Miami\BCAD\2015 Master Plan Updates\01 - FLL Tasks\I-4 Inventory\CAD\FLL Parking Inventory_20160418.dwgLayout: Off-Airport Parking Plotted: Oct 29, 2020, 10:41AM

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2.6 Rental Car Facilities

2.6.1 ON-AIRPORT RENTAL CAR

The Rental Car Center (RCC) opened in 2005 and is located within the Cypress Garage on Levels 1–5. Customers return vehicles via an access ramp from the Departures Level roadway to the northeast corner of the garage on Level 3, and customers renting vehicles exit the facility via a helix at the southwest corner of the garage. To and from the terminals, customers access the RCC via pedestrian access bridges from Terminal 1 and via shuttle bus from Terminals 2, 3, and 4.

The quick turn-around (QTA) is located on Level 1; the ready/return areas and the customer service lobbies for each rental car company are located on Levels 2, 3, and 4. Level 5 is utilized for vehicle staging and storage. **Exhibit 2.6-1** shows the space allocations on the QTA level for each rental car company. **Exhibits 2.6-2**, **2.6-3**, and **2.6-4** show the customer service and ready/return spaces by company on Levels 2, 3, and 4, respectively. **Table 2.6-1** lists each company operating within the RCC and which level its customer service lobby and ready/return spaces are located. **Exhibit 2.6-5** displays the vehicle staging and storage allocations by company on Level 5. The exhibits also show the approximate amount of square footage each company has for each function. Please note that some rental car companies have elected to use off-site storage instead of renting space on Level 5.

Table 2.6-1: Rental Car Customer Service and Ready/Return Space Locations

RENTAL CAR COMPANY	CUSTOMER SERVICE (GARAGE LEVEL)	READY/RETURN (GARAGE LEVEL)	2015 MARKET SHARE[1/2/]
Advantage	3	4	2%
Alamo/National	2	2	18%/9%
Avis	3	3	11%
Budget	4	4	12%
Dollar	4	4	8%
Enterprise	2	2	10%
E-Z Rent-A-Car	4	4	4%
Hertz	3	3	20%
Payless	4	4	2%
Royal	3	3	1%
Thrifty	4	4	4%

NOTES:

1/ 2015 Market Share is for the period of January-November 2015.

2/ Total may not add to 100% due to rounding.

SOURCES: Broward County Aviation Department, November 2015; LeighFisher, *Rental Car Center Operations and Capacity Study*, January 2015.
PREPARED BY: Ricondo & Associates, Inc., April 2016.

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LEGEND

- Alamo/National
- Avis
- Budget
- Dollar
- Enterprise
- Hertz
- Royal
- Small Operators
- Thrifty

NOTES

1/ Small Operators includes Advantage, E-Z Rent A Car, and Payless.

Total Area: 325,436 sq. ft.

SOURCES: Broward County Aviation Department, 2015 (base files); LeighFisher, *Rental Car Center Operations and Capacity Study*, January 2015.
PREPARED BY: Ricondo & Associates, Inc., April 2016.

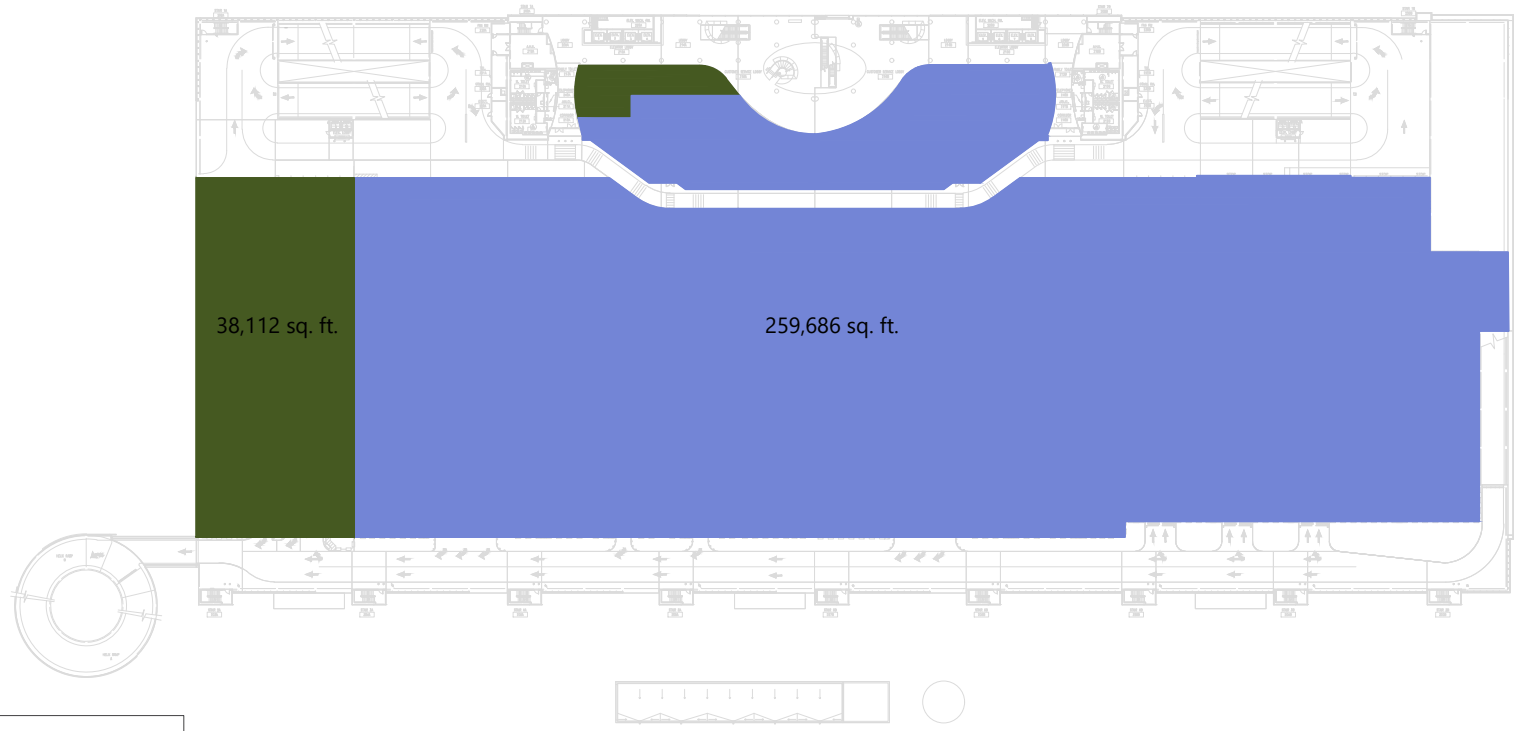
EXHIBIT 2.6-1

NORTH 0 150 ft.

Rental Car Center
Level 1 - Quick Turn-Around

Drawing: P:\Project-Miami\BCAD\2015 Master Plan Updates\01 - FLL Tasks\I-4 Inventory\CAD\FLL Cypress Garage Inventory_20160408.dwgLayout: Level 1 Plotted: Nov 2, 2020, 02:45PM

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Total Area: 297,798 sq. ft.

SOURCES: Broward County Aviation Department, November 2015; LeighFisher, *Rental Car Center Operations and Capacity Study*, January 2015.
PREPARED BY: Ricondo & Associates, Inc., April 2016.

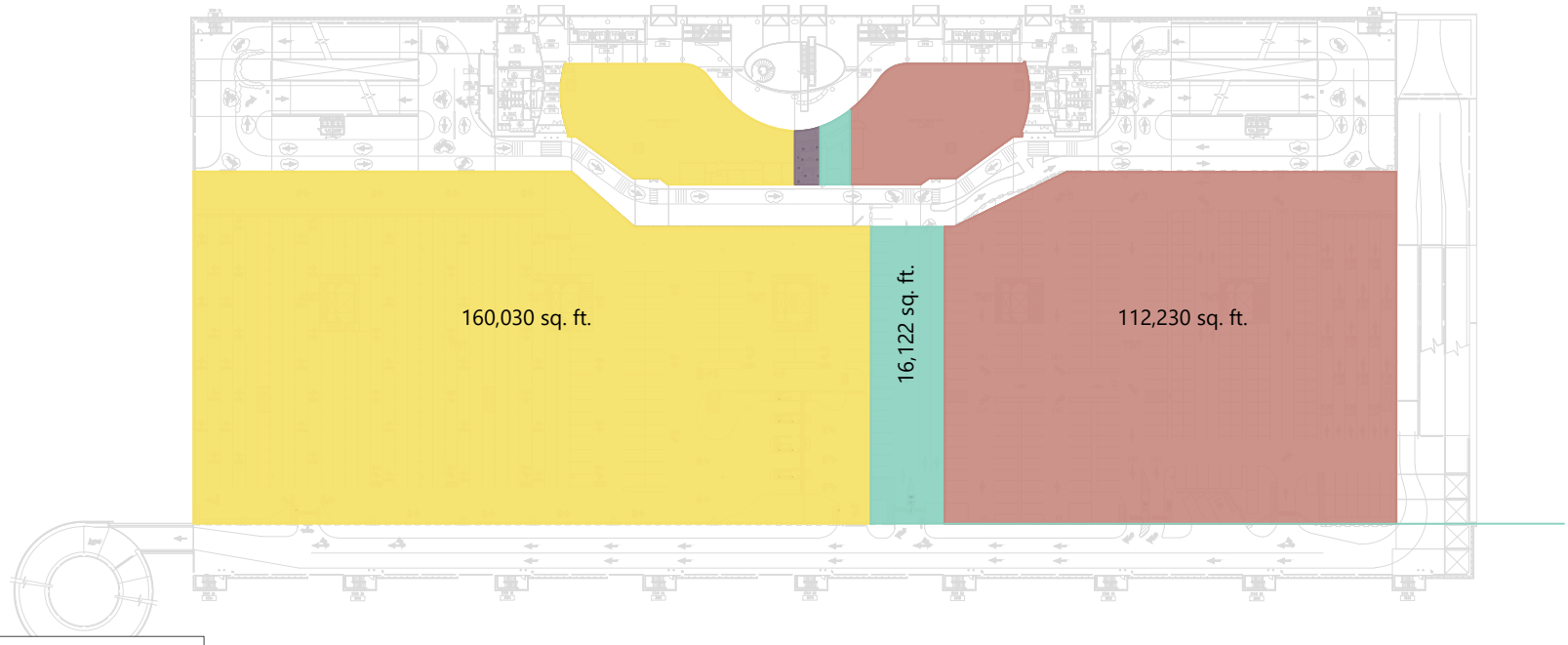
EXHIBIT 2.6-2

NORTH 0 150 ft.

Rental Car Center
Level 2 - Ready/Return

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SOURCES: Broward County Aviation Department, November 2015; LeighFisher, *Rental Car Center Operations and Capacity Study*, January 2015.
PREPARED BY: Ricondo & Associates, Inc., April 2016.

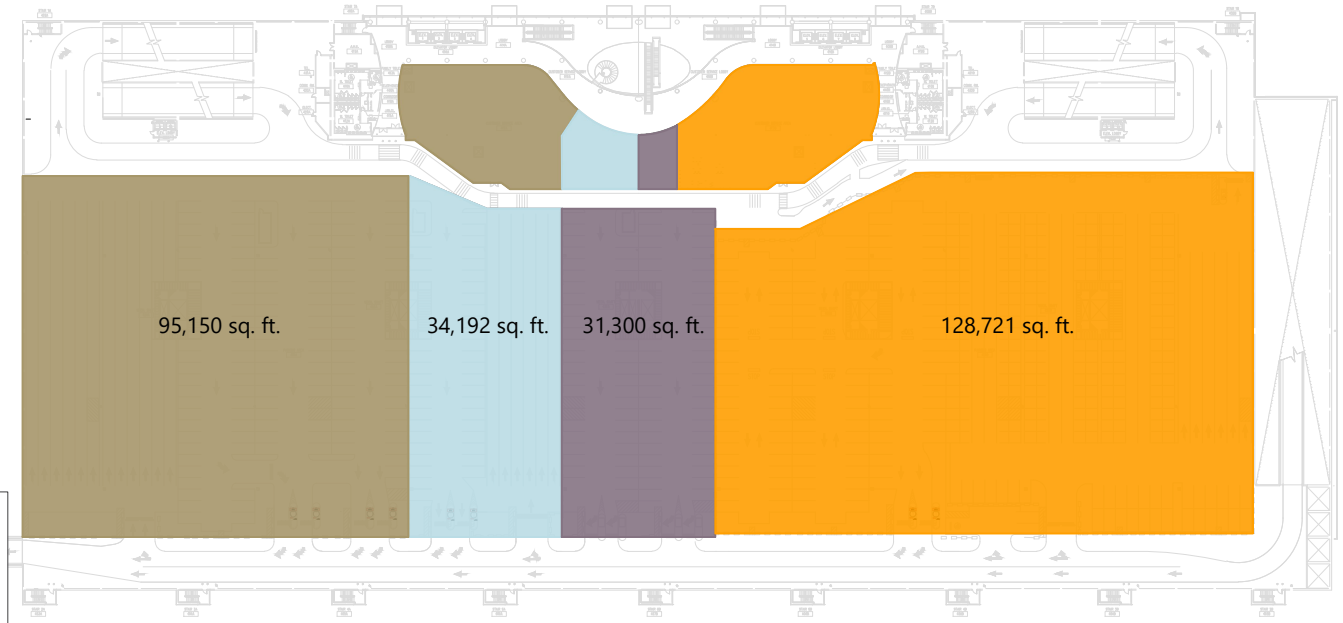
EXHIBIT 2.6-3

NORTH 0 150 ft.

Rental Car Center
Level 3 - Ready/Return

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LEGEND

- Budget
- Dollar
- Small Operators
- Thrifty

NOTES

1/ Small Operators includes Advantage, E-Z Rent A Car, and Payless.

Total Area: 289,363 sq. ft.

SOURCES: Broward County Aviation Department, November 2015; LeighFisher, *Rental Car Center Operations and Capacity Study*, January 2015.
PREPARED BY: Ricondo & Associates, Inc., April 2016.

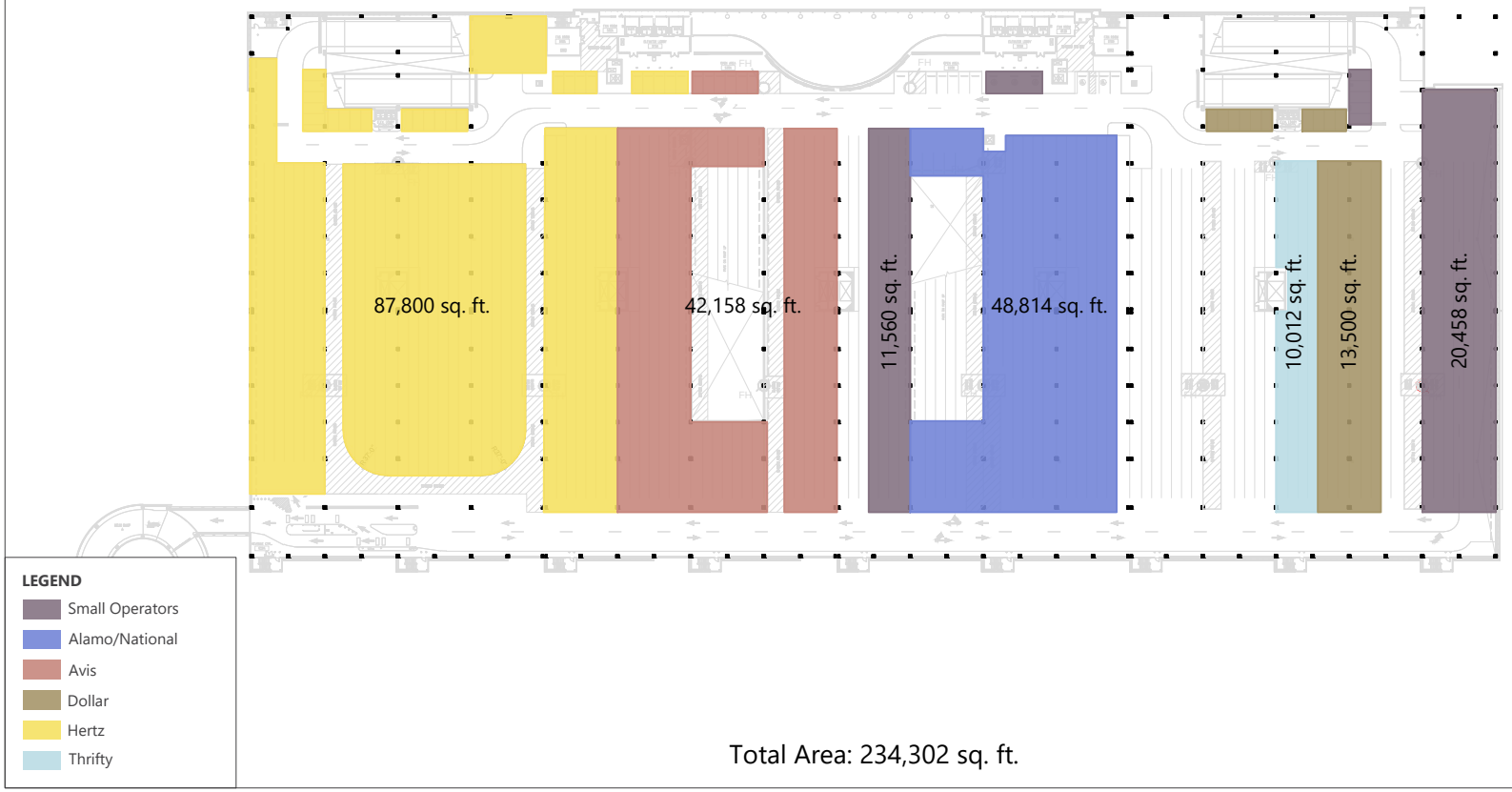
EXHIBIT 2.6-4

NORTH 0 150 ft.

Rental Car Center
Level 4 - Ready/Return

Drawing: P:\Project-Miami\BCAD\2015 Master Plan Updates\01 - FLL Tasks\I-4 Inventory\CAD\FLL Cypress Garage Inventory_20160408.dwgLayout: Level 4 Plotted: Oct 29, 2020, 11:17AM

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Total Area: 234,302 sq. ft.

SOURCES: Broward County Aviation Department, November 2015; LeighFisher, *Rental Car Center Operations and Capacity Study*, January 2015.
PREPARED BY: Ricondo & Associates, Inc., April 2016.

EXHIBIT 2.6-5

NORTH 0 150 ft.

Rental Car Center
Level 5 - Storage

Drawing: P:\Project-Miami\BCAD\2015 Master Plan Updates\01 - FLL Tasks\I-4 Inventory\CAD\FLL Cypress Garage Inventory_20160408.dwgLayout: Level 5 Plotted: Oct 29, 2020, 11:18AM

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2.6.2 OFF-AIRPORT RENTAL CAR

There are nine off-Airport rental car companies permitted to operate at the Airport as of April 2016. **Exhibit 2.6-6** illustrates the locations of these facilities. They are also listed in **Table 2.6-2**. The companies operate shuttles to and from their locations off-airport, and they are permitted to use curbside space on the Departures and Arrivals Levels of the Airport in accordance with Airport curbside allocations.

Table 2.6-2: Permitted Off-Airport Rental Car Operators as of April 2016

COMPANY NAME	ADDRESS
ACR Rental Services, Inc.	2908 E Sunrise Blvd, Fort Lauderdale, FL 33304
America's Best Car Rental	3234 SE 6th Ave, Fort Lauderdale, FL 33316
Bentley Auto Rental dba ACE	2330 S Andrews Ave, Fort Lauderdale, FL 33316
Carl's Van Rental	2400 S Andrews Ave, Fort Lauderdale, FL 33316
Global Car Rental, Inc.	17 W State Rd 84, Fort Lauderdale, FL 33315
Gold Coast Car Rental, Inc.	3000 SE 6th Avenue, Fort Lauderdale, FL 33316
Rent Max North, Inc.	3112 SE 4th Avenue, Fort Lauderdale, FL 33316
Silvercar, Inc.	3318 SE 6th Ave, Fort Lauderdale, FL 33316
Sixt Rent A Car, LLC	2900 N Federal Highway, Fort Lauderdale, FL 33316

SOURCE: Broward County Aviation Department, April 2016.
PREPARED BY: Ricondo & Associates, Inc., April 2016.

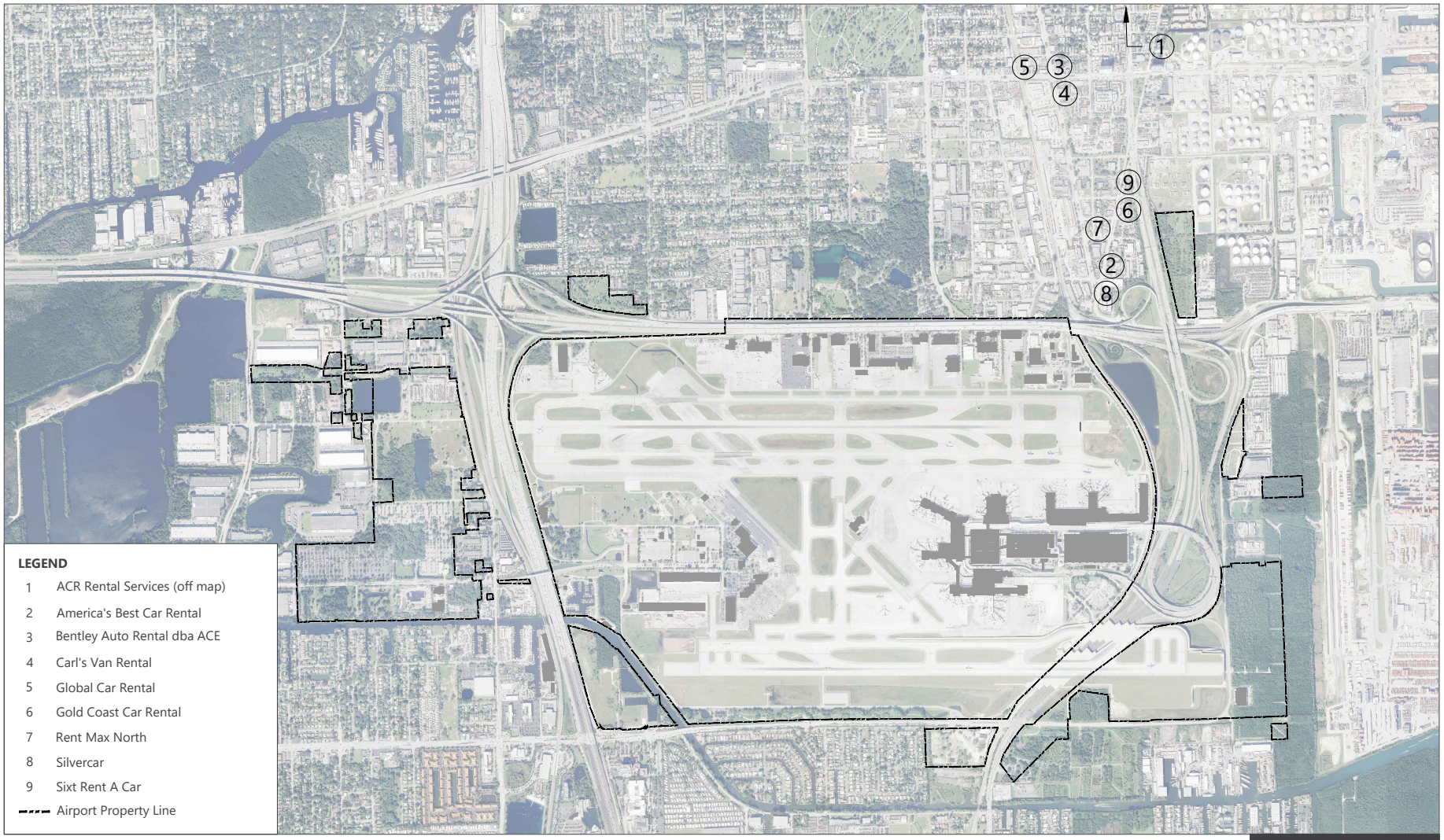
2.7 Nonterminal Roadways and Traffic Counts

This section documents the nonterminal roadway system at FLL and the associated traffic counts.

2.7.1 NONTERMINAL ROADWAYS

Perimeter Road is the principal nonterminal roadway at FLL; it circles around the Airport grounds, connecting other roadways to create a nonterminal roadway system. **Exhibits 2.7-1** and **2.7-2** depict close-ups of several sections of the non-terminal roadway system, marked by blue dots, for the north and south sides of the Airport respectively. Perimeter Road is a two-lane, two-way, undivided roadway; it has a posted speed limit of 35 miles per hour (mph). At the west entrance to the Airport, Perimeter Road (SW 16th Terrace) intersects SW 41st Court/SW 42nd Street to form a four-legged intersection. SW 41st Court/SW 42nd Street is a four-lane divided roadway; it has a posted speed limit of 30 mph. It connects with several streets, providing access to Airport tenants and other airport facilities located on the west side of the Airport. At the northwest corner of the Airport, Perimeter Road intersects SW 36th Street to form a three-legged intersection. SW 36th Street is a two-lane undivided roadway on the east side of Perimeter Road that terminates at a parking lot for taxis and busses. Along the north side of the Airport, Perimeter Road becomes SW 33rd Place/SW 34th Street, which is oriented from east to west. It intersects with SW 4th Avenue near the east corner of the Airport to form a three-legged intersection. SW 4th Avenue is a four-lane divided roadway on the north side of SW 33rd Place/SW 34th Street; it has a posted speed limit of 35 mph.

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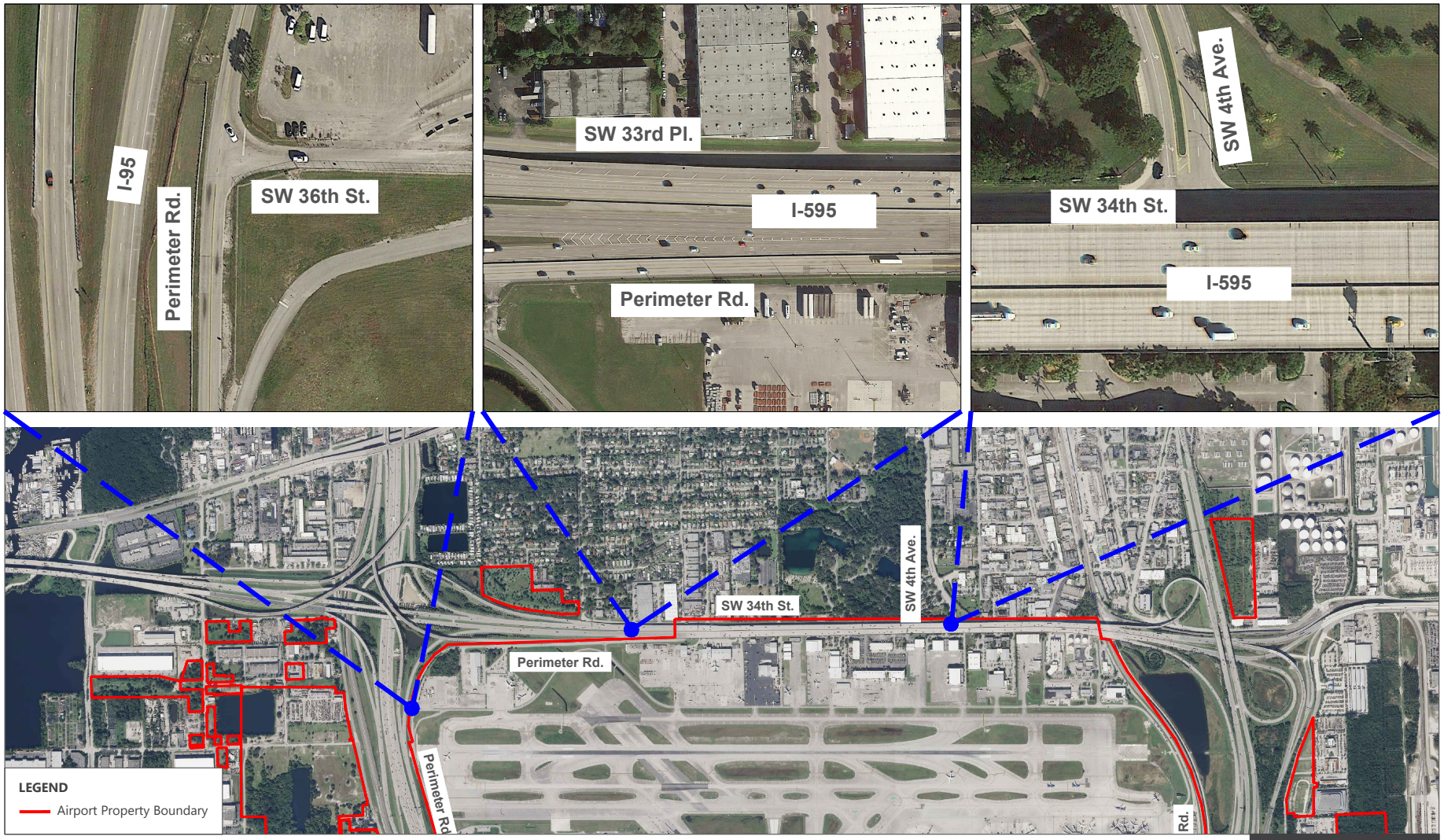
SOURCES: Broward County Aviation Department, 2015 (aerial, property line); Broward County Aviation Department, April 2016 (off-airport rental car operators).
PREPARED BY: Ricondo & Associates, Inc., April 2016.

EXHIBIT 2.6-6

NORTH 0 2,500 ft.

Off-Airport Rental Car Operators (As of April 2016)

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SOURCES: Google Maps, January , 2016; Broward County Aviation Department, *Fort Lauderdale - Hollywood International Airport Layout Plan*, December 29, 2015.
PREPARED BY: R.J. Behar & Company, Inc., April 2016.

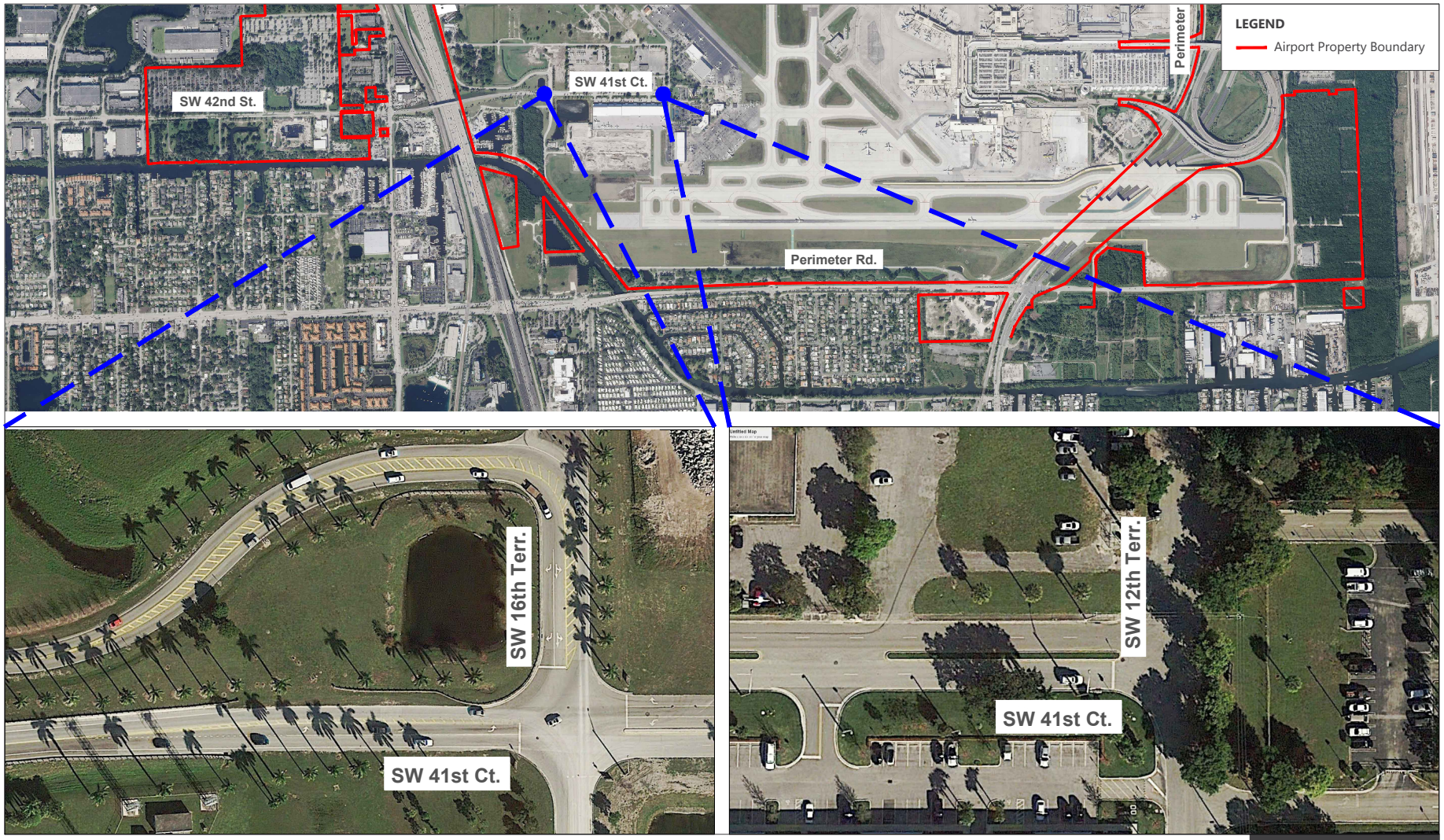
EXHIBIT 2.7-1

NORTH 0 N.T.S.

Nonterminal Roadway System
Airport North

Drawing: P:\Project-Miami\BCAD\2015 Master Plan Updates\01 - FLL Tasks\I-4 Inventory\CAD\2.7-1 - Non-Terminal Roadway System_FLL_04.13.2016.dwgLayout: Ft. Lauderdale_ON-SITE NORTH Plotted: Nov 2, 2020, 02:49PM

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SOURCES: Google Maps, January , 2016; Broward County Aviation Department, *Fort Lauderdale - Hollywood International Airport Layout Plan*, December 29, 2015.
PREPARED BY: R.J. Behar & Company, Inc., April 2016.

EXHIBIT 2.7-2

NORTH 0 N.T.S.

Nonterminal Roadway System
Airport South

Drawing: P:\Project-Miami\BCAD\2015 Master Plan Updates\01 - FLL Tasks\I-4 Inventory\CAD\2.7-1 - Non-Terminal Roadway System_FLL_04.13.2016.dwgLayout: Ft. Lauderdale_ON-SITE_SOUTH Plotted: Nov 2, 2020, 02:50PM

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2.7.2 TRAFFIC COUNT DATA COLLECTION

Traffic count data collection for nonterminal roadways was conducted in order to analyze the existing operations of the nonterminal roadway system. The data collected included:

1. 7-day continuous traffic volume counts at three locations. The purpose for the seven-day counts is to evaluate peaking patterns over the course of the week to establish the peak day and peak period for subsequent data collection purposes.
2. 24-hour, bi-directional traffic volume and vehicle classification counts at seven locations. The purpose for the 24-hour counts is to evaluate further the peaking patterns of the peak day to establish the morning and afternoon peak hour period for subsequent data collection purposes.
3. Turning movement counts (TMCs) at three unsignalized intersections. TMC's are collected during the morning and afternoon peak hour periods in order to understand specific travel patterns through a specific intersection. This data collection includes classification of heavy vehicles.

Exhibit 2.7-3 depicts the types of counts by location.

2.7.2.1 Seven-Day Traffic Counts

Roadway traffic volume counts were collected via automatic traffic recorders for a seven-day period, from February 17, 2016 to February 23, 2016, at the following three locations:

- SW 4th Avenue, north of SW 34th Street
- Perimeter Road, north of Terminal Drive (overpass)
- SW 41st Court, west of SW 16th Terrace

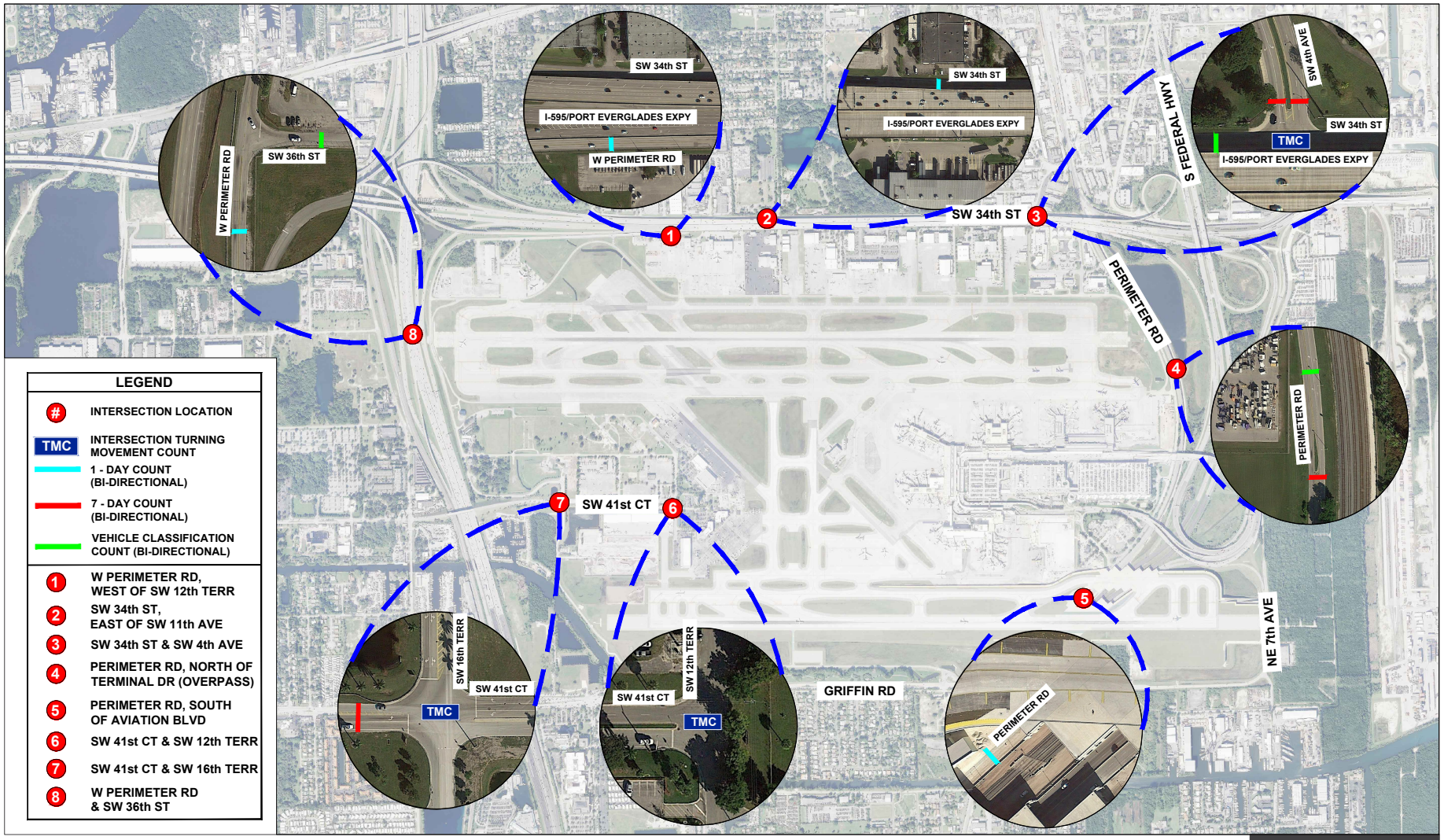
The purpose for the seven-day counts is to evaluate peaking patterns over the course of the week to establish the peak day and peak period for subsequent data collection purposes. **Table 2.7-1** summarizes the results of the seven-day, bidirectional counts data collection.

Table 2.7-1: Seven-Day Counts

	NUMBER OF VEHICLES		
DAY OF WEEK	SW 4TH AVENUE, NORTH OF SW 34TH STREET	PERIMETER ROAD, NORTH OF TERMINAL DRIVE (OVERPASS)	SW 41ST COURT, WEST OF SW 16TH TERRACE
Wed, 2/17/2016	10,791	10,643	6,500
Thu, 2/18/2016	10,788	10,908	6,675
Fri, 2/19/2016	**11,223**	**11,640**	**6,697**
Sat, 2/20/2016	6,674	8,483	4,103
Sun, 2/21/2016	5,515	7,874	3,568
Mon, 2/22/2016	10,229	11,022	6,024
Tue, 2/23/2016	10,342	9,602	6,218

SOURCE: RJ Behar & Company, Inc., data collection, automatic traffic recorders, from February 17 to February 23, 2016.
PREPARED BY: RJ Behar & Company, Inc., February 2016.

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SOURCE: Broward County Aviation Department, *FLL Aerial*, 2015.
PREPARED BY: R.J. Behar & Company, Inc.

EXHIBIT 2.7-3

NORTH 0 N.T.S.

Roadway Traffic Counts Type and Location

Drawing: P:\Project-Miami\BCAD\2015 Master Plan Updates\01 - FLL Tasks\I-4 Inventory\CAD\2.7-3 - Traffic Count Locations_FLL_20160419.dwgLayout: Ft. Lauderdale Plotted: Nov 2, 2020, 02:56PM

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Based on the results summarized in Table 2.7-1, the peak day of the week with the highest average volumes collected at all three locations was Friday, February 19, 2016. Furthermore, detailed analyses of the hourly volumes collected on this day indicate that the two peak-hour periods occur consecutively from 4:00 p.m. to 5:00 p.m. and from 5:00 p.m. to 6:00 p.m. As a result, subsequent data collection efforts, including 24-hour bidirectional traffic volume and classification counts, were conducted on a Friday, and intersection turning movement counts were collected on a Friday between 4:00 p.m. and 6:00 p.m.

2.7.2.2 24-Hour Counts

Based on the results of the 7-day counts data collection, 24-hour bidirectional traffic volume counts were collected on Friday (established peak-week day), March 11, 2016, at the following four locations:

- W Perimeter Road, west of SW 12th Terrace
- SW 34th Street, east of SW 11th Avenue
- Perimeter Road, south of Aviation Boulevard
- W Perimeter Road, south of SW 36th Street

In addition, 24-hour bidirectional vehicle classification counts were collected on Friday, March 11, 2016 at the following three locations:

- SW 34th Street, west of SW 4th Avenue
- Perimeter Road, north of Terminal Drive (overpass)
- SW 36th Street, east of W Perimeter Road

Tables 2.7-2 and **2.7-3** summarize the 24-hour counts collected at all seven locations.

2.7.2.3 Intersection Turning Movement Counts

Intersection turning movement counts (TMCs) were collected during the two peak-hour periods identified during the initial 7-day traffic counts. Consequently, TMCs were collected on Friday, March 18, 2016 from 4:00 p.m. to 5:00 p.m. and from 5:00 p.m. to 6:00 p.m. at the following three intersections:

- SW 34th Street and SW 4th Avenue
- SW 41st Court and SW 12th Terrace
- SW 41st Court and SW 16th Terrace

Table 2.7-4 through **Table 2.7-6** summarize the results of the data collected.

Table 2.7-2: 24-Hour Volume Counts

LOCATION DESCRIPTIONS	VEHICLES PER HOUR						AADT
	MORNING	AFTERNOON	MORNING	AFTERNOON	MORNING	AFTERNOON	
	SB		NB		COMBINED TOTALS		
Perimeter Rd, South of Aviation Boulevard	1,080	1,897	2,111	2,232	3,191	4,129	7,320
	36.3%	63.7%	48.6%	51.4%	43.6%	56.4%	
	EB		WB		COMBINED TOTALS		
SW 34 St, East of SW 11 Avenue	2,372	3,706	2,195	3290	4,567	6,996	11,563
	39.0%	61.0%	40.0%	60.0%	39.5%	60.5%	
	WB		EB		COMBINED TOTALS		
W Perimeter Rd., W of SW 12 Terrace	1,564	2,911	1,828	2,970	3,392	5,881	9,273
	34.9%	65.1%	38.1%	61.9%	36.6%	63.4%	
	SB		NB		COMBINED TOTALS		
W Perimeter Road, South of SW 36 Street	738	1,388	1,108	1,340	1,846	2,728	4,574
	34.7%	65.3%	45.3%	54.7%	40.4%	59.6%	

NOTE:

AADT = Annual Average Daily Traffic

SOURCE: RJ Behar & Company, Inc., March 11, 2016 (data collection – automatic traffic recorders).
PREPARED BY: RJ Behar & Company, Inc., March 2016.

Table 2.7-3: 24-Hour Classification Counts

LOCATION DESCRIPTION	BIKES	CARS	HEAVY VEHICLES
SW 34 Street, West of SW 4 Avenue	1.1%	65.2%	33.7%
Perimeter Road, North of Terminal Drive (overpass)	0.5%	75.5%	24.0%
SW 36 Street, East of W Perimeter Road	1.4%	75.8%	22.8%

NOTES:

1/ Cars include vehicles in the "not classified" column of the raw counts.

2/ Heavy vehicles classification includes all vehicles with more than two axels.

SOURCE: RJ Behar & Company, Inc., March 11, 2016 (data collection – automatic traffic recorders).
PREPARED BY: RJ Behar & Company, Inc., March 2016.

Table 2.7-4: Turning Movement Counts at SW 34th Street and SW 4th Avenue (T-Intersection)

	SW 4TH AVENUE SOUTHBOUND				SW 34TH STREET WESTBOUND				SW 34TH STREET EASTBOUND			
PEAK HOUR	P&B CWL	RIGHT-TURN	THRU	LEFT-TURN	P&B CNL	RIGHT-TURN	THRU	LEFT-TURN	P&B CSL	RIGHT-TURN	THRU	LEFT-TURN
4:00–5:00 PM	0	208	0	111	0	141	144	0	1	0	284	235
5:00–6:00 PM	0	214	0	133	0	155	120	0	0	0	244	162

NOTES:

P&B CWL: Pedestrians and Bicycles Crossing West Leg

P&B CNL: Pedestrians and Bicycles Crossing North Leg

P&B CSL: Pedestrians and Bicycles Crossing South Leg

SOURCE: RJ Behar & Company, Inc., March 18, 2016 (data collection – turning movement counts).
PREPARED BY: RJ Behar & Company, Inc., March 2016.

Table 2.7-5: Turning Movement Counts at SW 41st Court and SW 12th Terrace (T-Intersection)

	SW 12TH TERRACE SOUTHBOUND				SW 12TH TERRACE NORTHBOUND				SW 41ST COURT EASTBOUND			
PEAK HOUR	P&B CWL	RIGHT-TURN	THRU	LEFT-TURN	P&B CEL	RIGHT-TURN	THRU	LEFT-TURN	P&B CSL	RIGHT-TURN	THRU	LEFT-TURN
4:00–5:00 PM	5	85	13	0	1	1	5	72	0	51	0	15
5:00–6:00 PM	13	76	4	0	0	0	0	80	0	40	0	16

NOTES:

P&B CWL: Pedestrians and Bicycles Crossing West Leg

P&B CEL: Pedestrians and Bicycles Crossing East Leg

P&B CSL: Pedestrians and Bicycles Crossing South Leg

SOURCE: RJ Behar & Company, Inc., March 18, 2016 (data collection – turning movement counts).
PREPARED BY: RJ Behar & Company, Inc., March 2016.

Table 2.7-6: Turning Movement Counts at SW 41st Court and SW 16th Terrace

	SW 16TH TERRACE SOUTHBOUND				SW 41ST COURT WESTBOUND				SW 16TH TERRACE NORTHBOUND				SW 41ST COURT EASTBOUND			
PEAK HOUR	P&B CWL	RIGHT-TURN	THRU	LEFT-TURN	P&B CNL	RIGHT-TURN	THRU	LEFT-TURN	P&B CEL	RIGHT-TURN	THRU	LEFT-TURN	P&B CSL	RIGHT-TURN	THRU	LEFT-TURN
4:00–5:00 PM	0	183	2	20	1	35	157	2	0	2	2	15	0	10	55	90
5:00–6:00 PM	0	181	1	23	0	42	145	0	0	0	2	5	0	14	46	87

NOTES:

P&B CWL: Pedestrians and Bicycles Crossing West Leg

P&B CNL: Pedestrians and Bicycles Crossing North Leg

P&B CEL: Pedestrians and Bicycles Crossing East Leg

P&B CSL: Pedestrians and Bicycles Crossing South Leg

SOURCE: RJ Behar & Company, Inc., March 18, 2016 (data collection – turning movement counts).
PREPARED BY: RJ Behar & Company, Inc., March 2016.

2.7.3 INTERSECTION GEOMETRY

Intersection geometry for each of the study area intersections is provided in this section:

- SW 34th Street and SW 4th Avenue (T-Intersection):
  - Eastbound: One shared through/left turn lane
  - Southbound: One left turn lane, one right turn lane
  - Westbound: One shared through/right turn lane

Exhibits 2.7-4 and **2.7-5** illustrate the intersection site photographs.

- SW 41st Court and SW 12th Terrace (T-Intersection):
  - Northbound: One shared through/left turn lane
  - Eastbound: One left turn lane, one right turn lane
  - Southbound: One shared through/right turn lane

Exhibits 2.7-6 and **2.7-7** present the site photographs for the intersection.

- SW 41st Court and SW 16th Terrace (Four-leg Intersection):
  - Northbound: One left turn lane, one shared through/right turn lane
  - Eastbound: One left turn lane, one shared through/right turn lane
  - Southbound: One right turn lane, one shared through/left turn lane
  - Westbound: One left turn lane, one through lane, and one right turn lane

Exhibits 2.7-8 and **2.7-9** present the site photographs for the intersection.

Exhibit 2.7-4: Looking West at East Leg (SW 34th Street and SW 4th Avenue)



SOURCE: RJ Behar & Company, Inc., January 2016.
PREPARED BY: RJ Behar & Company, Inc., March 2016.

Exhibit 2.7-5: Looking North at Intersection (SW 34th Street and SW 4th Avenue)



SOURCE: RJ Behar & Company, Inc., January 2016.
PREPARED BY: RJ Behar & Company, Inc., March 2016.

Exhibit 2.7-6: Looking West at Intersection (SW 41st Court and SW 12th Terrace)



SOURCE: RJ Behar & Company, Inc., January 2016.
PREPARED BY: RJ Behar & Company, Inc., March 2016.

Exhibit 2.7-7: Looking North at South Leg (SW 41st Court and SW 12th Terrace)



SOURCE: RJ Behar & Company, Inc., January 2016.
PREPARED BY: RJ Behar & Company, Inc., March 2016.

Exhibit 2.7-8: Looking South at North Leg (SW 41st Court and SW 16th Terrace)



SOURCE: RJ Behar & Company, Inc., January 2016.
PREPARED BY: RJ Behar & Company, Inc., March 2016.

Exhibit 2.7-9: Looking East at West Leg (SW 41st Court and SW 16th Terrace)



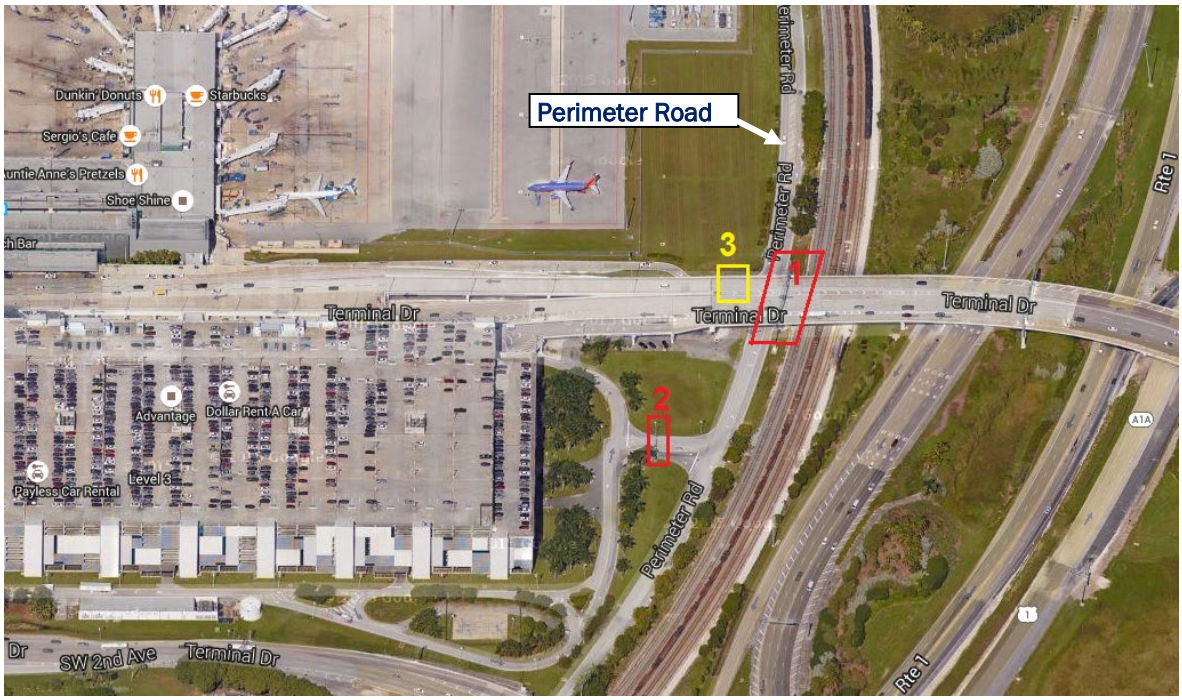
SOURCE: RJ Behar & Company, Inc., January 2016.
PREPARED BY: RJ Behar & Company, Inc., March 2016.

2.7.4 ON-SITE TRANSPORTATION

To determine the utilization of external service roadways to off-site facilities, traffic count information was supplemented from the BCAD Revenue Report for 2015. This data summarizes the number of trips by Operator Classification and Type for every month in the year 2015, and was collected from three access points to the terminal roadway system, with traffic readers. **Exhibit 2.7-10** shows the general location of the traffic readers as follows:

1. On the overhead entrance sign on the entrance loop to the terminals (shown in red);
2. At the entrance to the cell phone lot, off Perimeter Road (shown in red);
3. At the entrance to the Arrivals/Departures ramp and Ground Transportation Area Zero (GTA-0), off Perimeter Road. This is shown in yellow and is on the lower level.

Exhibit 2.7-10: Location of Entrance Traffic Readers



SOURCE: Broward County Aviation Department (BCAD), May 2016.
PREPARED BY: RJ Behar & Company, Inc., May 2016.

Table 2.7-7 summarizes the total number of trips per month for 2015, per operator classification. Taxi and Rental Car Shuttle operators had the largest number of on-site trips in 2015, totaling 649,870 and 311,661 trips, respectively. The months of November and October experienced a higher number of trips, compared to the other months of the year, with 150,440 (or 10.7 percent of the total trips obtained in 2015) and 158,181 (11.2 percent) vehicles per month, respectively.

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Table 2.7-7: Total Number of Trips by Operator Type per Month for 2015

OPERATOR CLASSIFICATION	OPERATOR TYPE	JAN-15	FEB-15	MAR-15	APR-15	MAY-15	JUN-15	JUL-15	AUG-15	SEP-15	OCT-15	NOV-15	DEC-15	TOTAL BY TYPE (VEHICLE)	TOTAL BY CLASSI-FICATION (VEHICLE)	% BY TYPE	% BY CLASSI-FICATION
Courtesy Vehicle	Courtesy Vehicle (1–19)	4,601	13,083	17,989	17,008	17,625	18,065	21,852	21,010	20,393	24,912	24,951	15,291	**216,780**	**221,564**	**15.4%**	**15.7%**
	Courtesy Vehicle (20+)	109	623	580	462	246	232	231	308	250	469	680	594	**4,784**		**0.3%**	
Go-Shuttle	Go-Shuttle (1–5)	-	4,177	7,636	7,212	6,972	6,031	6,499	6,360	5,354	6,272	5,781	2,555	**64,849**	**104,061**	**4.6%**	**7.4%**
	Go-Shuttle (6–14)	-	2,323	4,430	4,469	4,362	3,794	4,468	4,099	3,469	3,430	3,339	1,029	**39,212**		**2.8%**	
Prearranged	Prearranged (1–5)	1,711	3,234	2,688	2,497	2,354	1,967	2,437	2,262	2,771	3,740	4,534	2,161	**32,356**	**111,035**	**2.3%**	**7.9%**
	Prearranged (6–14)	2,589	6,155	5,081	2,718	2,308	3,389	6,426	7,529	6,134	8,810	12,287	2,899	**66,325**		**4.7%**	
	Prearranged (15–19)	7	36	7	7	5	2	91	127	115	89	150	36	**672**		**0.0%**	
	Prearranged (20–27)	121	257	313	298	284	139	175	150	158	161	336	130	**2,522**		**0.2%**	
	Prearranged (28+)	242	834	1,099	875	523	430	445	587	650	1,240	2,009	226	**9,160**		**0.6%**	
Taxi	Taxi	33,732	35,680	60,988	59,831	48,715	48,440	58,155	55,637	51,732	62,161	66,079	68,720	**649,870**	**649,870**	**46.0%**	**46.0%**
Rental Car Shuttle	Rental Car Shuttle	-	-	12,998	30,335	31,511	29,833	30,297	31,206	33,107	37,970	36,740	37,664	**311,661**	**311,661**	**22.1%**	**22.1%**
SP Plus	SP Plus	1,256	1,042	1,168	1,220	1,226	1,080	1,090	1,133	1,013	1,186	1,295	729	**13,438**	**13,438**	**1.0%**	**1.0%**
TOTAL BY MONTH (VEHICLE)		**44,368**	**67,444**	**114,977**	**126,932**	**116,131**	**113,402**	**132,166**	**130,408**	**125,146**	**150,440**	**158,181**	**132,034**	**1,411,629**	**1,411,629**	**100.0%**	**100.0%**
PERCENT BY MONTH		**3.1%**	**4.8%**	**8.1%**	**9.0%**	**8.2%**	**8.0%**	**9.4%**	**9.2%**	**8.9%**	**10.7%**	**11.2%**	**9.4%**				

NOTES:

- Undetermined data

SP Plus: discount off-Airport parking operator

Sun Trolley and Public-Parking Shuttle operator classifications were not shown in the table since the total number of trips for the year were 0.

SOURCE: Broward County Aviation Department, FLL: Trip Charge Totals By Operator Type/Month, March 2016.
PREPARED BY: RJ Behar & Company, Inc., March 2016.

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2.8 Regional Transportation Systems

This section documents the regional transportation systems around FLL.

2.8.1 REGIONAL OFF-AIRPORT ROADWAYS

The Airport is surrounded by a regional (off-Airport) transportation system that includes freeways, highways, and arterial roadways. The boundaries of the area evaluated as the off-Airport roadway system were defined by the Consultant Team as part of the scoping process. Although these roadways provide access for airport-related traffic, they are primarily used for non-Airport trips. Traffic volumes on these roadways are high, as they serve a densely developed urban area and carry a large number of vehicles. Historically, traffic peaks in the late afternoon when commuter traffic overlaps with the evening peak periods of Airport-related traffic. **Exhibit 2.8-1** illustrates the regional area and identifies the regional roadways in the vicinity of FLL. The regional (off-Airport) area is bounded by State Road (SR) 7/U.S. 441 to the west, U.S. 1 to the east, Stirling Road (SR 848) to the south, and Davie Boulevard (SR 736) to the north. A summary of the major regional roadways is presented in the following subsections.

2.8.1.1 Davie Boulevard (SR 736) between SR 7/U.S. 441 and U.S. 1

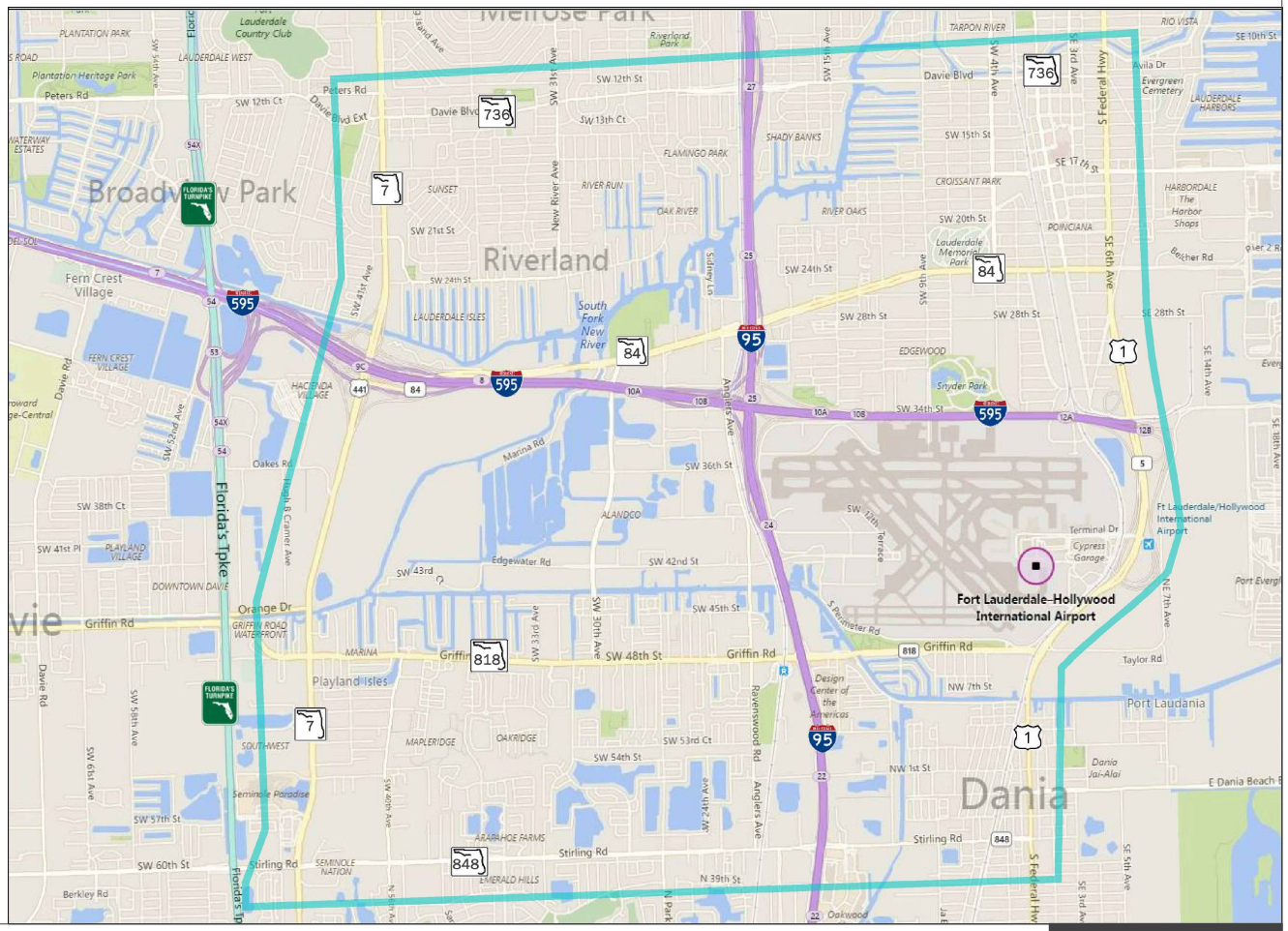
SR 736, locally known as Davie Boulevard, is an east-west highway north of the Airport that serves central Broward County. It extends for four miles from its western terminus at the intersection with SR 7/U.S. 441 to its eastern terminus at the interchange with U.S. 1. Davie Boulevard is a four-lane undivided highway (two lanes in each direction) with a posted speed limit of 35 mph.

As depicted on **Exhibit 2.8-2**, two historical counts locations were obtained from the Florida Department of Transportation (FDOT) Historical Annual Average Daily Traffic (AADT) Report at Davie Boulevard. The AADT represents an average daily (24-hour) traffic count for the specified location. The historical counts show an AADT of 28,500 vehicles in 2014 on the west portion of Davie Boulevard and 34,500 vehicles on the east portion of Davie Boulevard. The traffic flowing east and west throughout Davie Boulevard is approximately equal, but the sections approaching U.S. 1 has heavier traffic. To directly access FLL from Davie Boulevard, drivers travel south on U.S. 1 to Terminal Drive. An alternative route to the Airport from Davie Boulevard is traveling south on I-95, east on I-595, and south on U.S. 1 to Terminal Drive.

2.8.1.2 SR 84 between SR 7/U.S. 441 and U.S. 1

SR 84 is a 12-mile major state road segment traveling in an east-west direction in Broward County. The westernmost nine miles are primarily a service road for I-595, consisting of two lanes in each direction that run parallel to I-595. The easternmost three-mile segment, also known as Marina Mile Boulevard, splits from I-595 and continues northeast, traversing the city of Fort Lauderdale north of the Airport. SR 84 consists of an eight-lane divided highway. Within the regional off-Airport area, the interchanges located along SR 84 consist of SR 7/U.S. 441 to the west and I-95, as well as U.S. 1, to the east. Two historical counts locations, as depicted on Exhibit 2.8-2, were obtained from the FDOT Historical AADT Report at SR 84.

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LEGEND

- Off-airport Roadway System Boundary
- Freeway
- Freeway with Toll
- Major State Road
- State Road

SOURCE: Bing Maps, Basemap, 2016
PREPARED BY: Kimley Horn & Associates, Inc., March 2016.

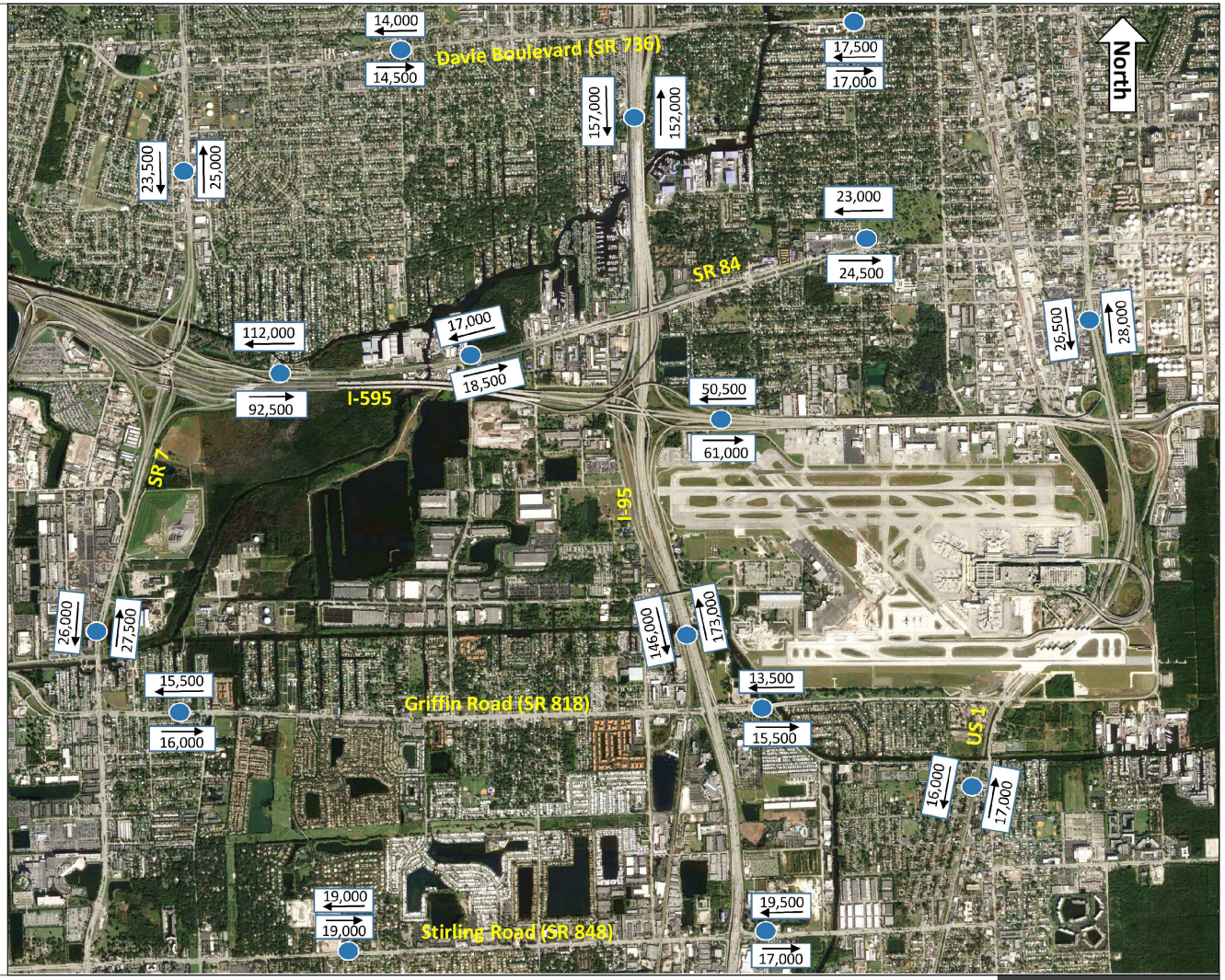
EXHIBIT 2.8-1

NORTH 0 N.T.S.

Regional Roadway System

Drawing: P:\Project-Miami\BCAD\2015 Master Plan Updates\01 - FLL Tasks\I-4 Inventory\CAD\2.8-X_Traffic Count Locations_FLL.dwgLayout: 2.8-1 Plotted: Nov 2, 2020, 03:01PM

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LEGEND

XX **Directional Average Annual Daily Traffic (2014)**

Historical Count Locations analyzed:

- Davie Boulevard (SR 736) between SR 7 and US 1
- SR 84 between SR 7 and US 1
- I-595 between SR 7 and US 1
- Griffin Road (SR 818) between SR 7 and US 1
- Stirling Road (SR 848) between SR 7 and US 1
- SR 7 between Davie Boulevard and Stirling Road
- I-95 between Davie Boulevard and Stirling Road
- US 1 between Davie Boulevard and Stirling Road

SOURCES: Florida Department of Transportation, *Statistics 2014 Historical AADT Report*, 2014 Data (from counts locations);Google Earth, 2014 Aerial.
PREPARED BY: Kimley Horn & Associates, Inc., March 2016.

EXHIBIT 2.8-2

NORTH 0 N.T.S.

Historical Traffic Count Locations

Drawing: P:\Project-Miami\BCAD\2015 Master Plan Updates\01 - FLL Tasks\I-4 Inventory\CAD\2.8-X_Traffic Count Locations_FLL.dwgLayout: 2.8-2 Plotted: Oct 29, 2020, 11:37AM

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The historical counts show an AADT of 35,500 vehicles in 2014 on the westernmost portion of SR 84 and 47,500 vehicles on the easternmost portion (Marina Mile Boulevard). The traffic flowing east throughout SR 84 shows approximately 1,500 more vehicles than the westbound traffic.

2.8.1.4 *Interstate 595 between SR 7/U.S. 441 and U.S. 1*

I-595 is a 12-mile interstate highway (freeway) that connects Interstate 75 (I-75) and the Sawgrass Expressway in the west with Florida's Turnpike, I-95, FLL, U.S. 1, and SR A1A, before terminating at the Port Everglades Seaport Terminal. From its western terminus at I-75, the interstate highway goes east to Davie, serving as a commuter route between the western fringes of the populated part of Broward County and Fort Lauderdale. In Fort Lauderdale, I-595 intersects with I-95 at the northwest corner of the Airport. The final interchange with U.S. 1 is at the northeast corner of the Airport, where vehicles exit for the Airport. With four to six lanes in each direction, a posted speed limit of 70 mph, and the recently opened tolled express lanes, I-595 is the main freeway carrier of Airport-related traffic, along with I-95. Two historical counts locations are depicted on Exhibit 2.8-2, which were obtained from the FDOT Historical AADT Report at I-595. The historical counts show an AADT of 204,500 vehicles in 2014 at the first location, east of SR 7/U.S. 441, from which 95,500 travel eastbound. At the second location, east of I-95, an AADT of 111,500 vehicles was recorded in 2014, from which 61,000 travel eastbound towards the Airport exit at U.S. 1.

2.8.1.5 *Griffin Road (SR 818) between SR 7/U.S. 441 and U.S. 1*

SR 818, also known as Griffin Road, extends approximately 10 miles in an east-west orientation from Flamingo Road to the west, and to the east it forms the southern border of FLL, with residential areas lining the road to the south as the road approaches the southeast corner of the Airport. It serves as a major commuter road for Cooper City, Davie, Hollywood, and Dania Beach, and it is a primary access road for FLL. In the vicinity of the Airport, Griffin Road is a three-lane divided highway with a posted speed limit of 45 mph. It provides access to FLL from an intersection with U.S. 1, and it is also the main exit for vehicles traveling southbound. This intersection is crucial for Airport access, and it has recently undergone various projects to accommodate the expansion of FLL's south runway, which now overpasses U.S. 1. Two historical counts locations depicted on Exhibit 2.8-2 were obtained from the FDOT Historical AADT Report at Griffin Road. The historical counts show an AADT of 31,500 vehicles in 2014 at the first location, east of SR 7/U.S. 441. At the second location, east of I-95, an AADT of 29,000 vehicles was recorded in 2014, from which 15,500 were traveling eastbound towards the Airport at U.S. 1.

2.8.1.6 *Stirling Road (SR 848) between SR 7/U.S. 441 and U.S. 1*

Stirling Road is a seven-mile east-west commuter road that begins at the intersection with Dykes Road to the west, crossing east over Florida's Turnpike without an interchange, followed by an interchange at I-95. Its eastern terminus is at the intersection with U.S. 1 as a six-lane divided highway, just south of the Airport, where the posted speed limit is 45 mph. Two historical counts locations depicted on Exhibit 2.8-2 were obtained from the FDOT Historical AADT Report at Stirling Road. The historical counts show an AADT of 38,000 vehicles in 2014 at the first location, east of SR 7. At the second location, east of I-95, an AADT of 36,500 vehicles was recorded in 2014.

2.8.1.7 *SR 7 between Davie Boulevard (SR 736) and Stirling Road (SR 848)*

SR 7 is a major 70-mile north-south artery in South Florida, connecting U.S. 41 in Miami with 60th Street in Loxahatchee. In the regional off-Airport area, SR 7 runs parallel and close to Florida's Turnpike. It is signed as U.S.

441 but indicated as SR 7 from the cross streets. SR 7 is a three-to-four lane divided highway that is described as the "free" (not-tolled) alternative to Florida's Turnpike, and it is located nearly three miles west of FLL. Due to its distance from FLL, it is not anticipated to serve substantial Airport-related traffic, since other major north-south highways, I-95 and U.S. 1, travel closer to the Airport. Two historical counts locations depicted on Exhibit 2.8-2 were obtained from the FDOT Historical AADT Report at SR 7. The historical counts recorded an AADT of 53,500 vehicles in 2014 at the first location, north of Griffin Road. At the second location, north of I-595, an AADT of 48,500 vehicles was recorded in 2014.

2.8.1.8 *I-95 between Davie Boulevard (SR 736) and Stirling Road (SR 848)*

I-95 is a 10-to-12 lane divided freeway that runs 382 miles in a north-south orientation through the east coast of Florida, and it continues north along the eastern seaboard into Maine. I-95 is one of the primary sources and feeders of Airport-related traffic, since it has direct access to FLL with exits at the interchanges of Griffin Road and I-595. In Fort Lauderdale, I-95 also has interchanges with Marina Mile Boulevard (SR 84), Griffin Boulevard (SR 818), Davie Boulevard (SR 736), Broward Boulevard (SR 842), and Sunrise Boulevard (SR 838). Along with serving Airport-related traffic, it also accommodates a significant share of non-Airport-related traffic, given that it is a major non-tolled freeway used by commuters. Express lanes are currently in operation in Miami-Dade County and under construction in Broward County as of 2016. Express lanes run parallel with general traffic lanes and are separated only by plastic delineators. Commuters are allowed to enter the express lanes at one of the designated entry points, preceded by overhead signs displaying the current toll amount. Tolls are collected electronically and are based on congestion pricing, which means the toll will increase or decrease depending on the number of vehicles entering the express lanes at a time. Consequently, during heavily congested peak hours, the toll rates increase and can exceed $10, particularly south of the Golden Glades Interchange for approximately 10 miles.

Two historical counts locations depicted on Exhibit 2.8-2 were obtained from the FDOT Historical AADT Report at I-95. The historical counts show an AADT of 309,000 vehicles in 2014 at the first location, north of I-595. At the second location, south of I-595, an AADT of 319,000 vehicles was recorded in 2014. The northern location shows an approximately equal number of trips traveling northbound and southbound, while the southern location shows 173,000 traveling northbound and 146,000 traveling southbound.

2.8.1.9 Federal Highway (U.S. 1) between Davie Boulevard (SR 736) and Stirling Road (SR 848)

Entering Broward County near Hallandale Beach, U.S. 1 first intersects Hallandale Beach Boulevard (SR 858). In the vicinity of the Airport, U.S. 1 varies from a four lane to an eight lane divided highway depending on the segment, and it has a posted speed limit of 40 mph. It runs along the entire eastern edge of the Airport, granting access to the Airport via two northbound entrances and one southbound entrance. U.S. 1 intersects with the eastern terminus of I-595 at the northeast corner of FLL. South of the Airport, U.S. 1 intersects with Stirling Road (SR 848) and Griffin Road (SR 818) and, to the north, it intersects with Marina Mile Boulevard (SR 84) and Davie Boulevard (SR 736), where it enters Fort Lauderdale. Two historical counts locations depicted on Exhibit 2.8-2 were obtained from the FDOT Historical AADT Report at SR 7. The historical counts show an AADT of 54,500 vehicles in 2014 at the first location, north of I-595. At the second location, south of Griffin Road, an AADT of 33,000 vehicles was recorded in 2014. Both locations show an approximately equal number of trips traveling northbound and southbound.

2.8.2 REGIONAL ROADWAY STUDIES

Seven recent studies or projects were identified and reviewed as part of the regional roadway system inventory for this Master Plan Update. A brief summary of these projects is included in this section.

- FDOT District 4 Exit Ramp Assessment, Fort Lauderdale-Hollywood International Airport, August 2014.
- FDOT District 4 U.S. 1 and Griffin Road (SR 818) Intersection Study, task initiated May 2015, completed December 2015.
- Broward County Intermodal Center and People Mover System, Fort Lauderdale-Hollywood International Airport and Port Everglades, Preliminary Engineering Report Draft
- , June 2009.
- FDOT I-95 Interchange Master Plan Study, Broward County section completed April 2016, Miami-Dade section expected to be completed by February 2018.
- Ongoing I-95 Express Phase 2 Project, initiated November 2011, expected to be completed by spring 2016.
- I-95 Express Phase 3 FDOT I-95 Express Lanes Project, first segments expected to begin construction by mid-2016, second segment by 2018 and third segment by 2020.
- FDOT System Planning Office I-95/I-595 Interchange Modification Report, December 2004.

2.8.2.1 FDOT District 4 Exit Ramp Assessment, Fort Lauderdale-Hollywood International Airport

The closure and temporary detour of the southbound exit ramp to U.S. 1, and the proposed permanent changes in access from the Airport to southbound U.S. 1, have generated some concern within the communities located south of the Airport. FDOT was asked to review the decision-making process employed by BCAD to evaluate the elimination of direct access to southbound U.S. 1, as well as to review other options available for southbound access to U.S. 1. The purpose of this report is to summarize the results of an independent study based upon available information directly requested and received from FDOT and BCAD. Three alternative alignments for access to southbound U.S. 1 have been developed as part of this independent study. A summary of the alternatives and the primary issues affecting these alternatives are as follows:

- Utilize the Perimeter Road alignment as an alternative route for connection to southbound U.S. 1. This connection does not provide adequate weave distance for rental car and public parking garage traffic to access Perimeter Road. There is no practical connection to U.S. 1 south of the extended runway utilizing either Griffin Road or a newly constructed flyover.
- Restoration of the direct connection to southbound U.S. 1 with a short flyover connecting the Airport exit over Florida East Coast (FEC) Railway. This connection also does not provide adequate weave distance for rental car and parking deck traffic to access the exit to southbound U.S. 1. A proper connection to southbound U.S. 1 is not feasible prior to Griffin Road, given the required clearance over the railroad and available clearance to the runway extension bridge structures.
- Connection to southbound U.S. 1 through an alternative loop and/or flyover combination located north of the existing Airport exit. Similar to the second category, a proper connection to southbound U.S. 1 is not

feasible prior to Griffin Road, given the required flyover clearance and available clearance to the runway extension bridge structures. Shifting of this alternative further north to provide adequate space for a southbound U.S. 1 connection is not feasible due to required runway clearance requirements for the north runway.

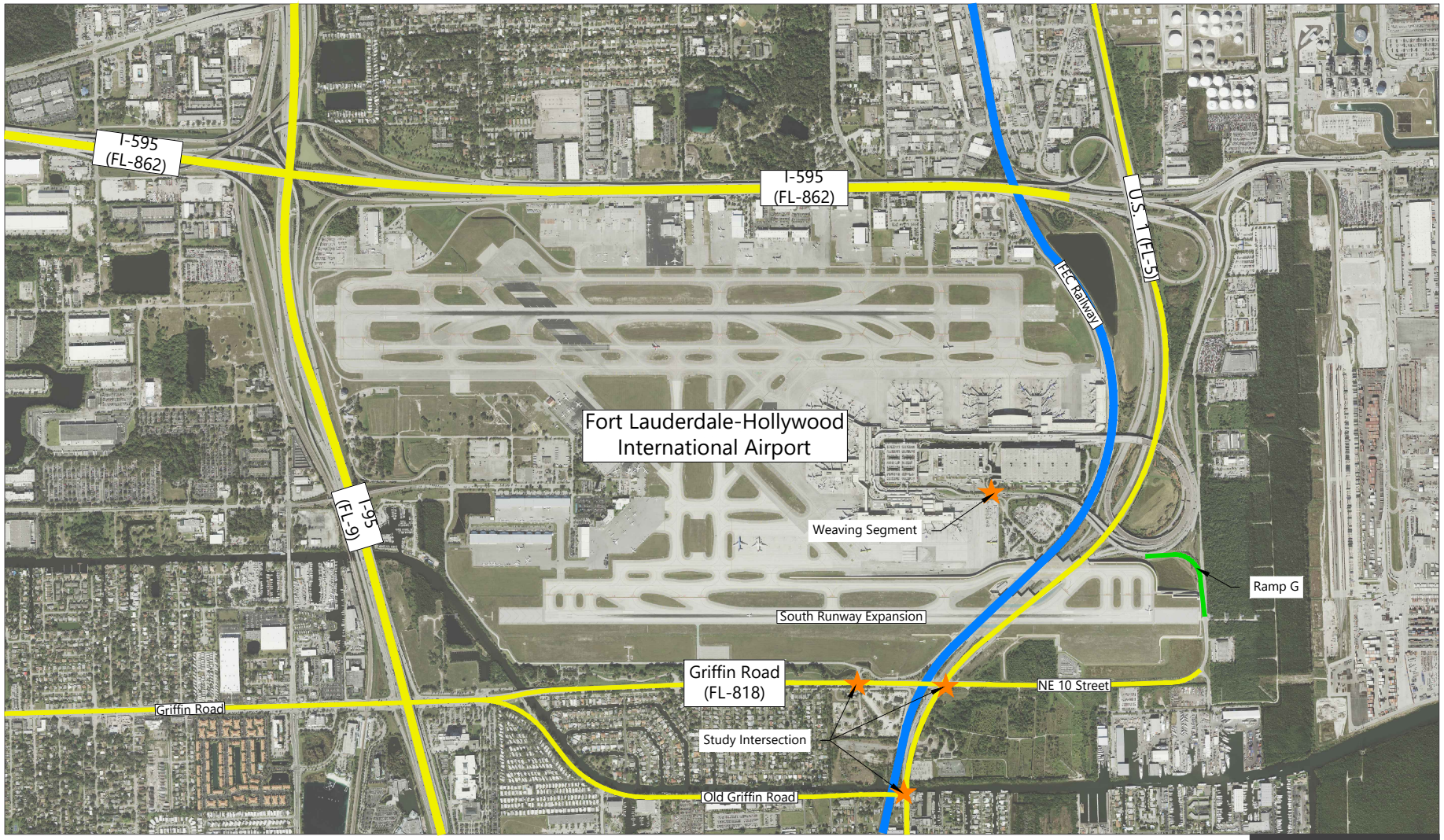
The results of this detailed analysis indicate the current proposed Ramp G connection for southbound U.S. 1 and the diversion to NE 7th Avenue and NE 10th Street provides the best exit route for southbound U.S. 1 traffic, due to the restrictions created by the new runway extension bridges, the proximity of the FEC Railway and U.S. 1, and the flight-path encroachment restrictions.

2.8.2.2 FDOT District 4 U.S. 1 and Griffin Road (SR 818) Intersection Study, task initiated May 2015, completed December 2015

The expansion of the south runway at FLL modified the roadway access connections between the Airport and adjacent roadways. The direct-connect ramp from the Airport to southbound U.S. 1 was eliminated in favor of an at-grade access connection around the eastern end of the extended runway. This new connection recently opened in January 2015. FDOT and BCAD commissioned a study of the operational and safety characteristics for three intersections and a portion of Terminal Drive that were impacted by the newly completed ramp connection from Terminal Drive to U.S. 1 southbound at Griffin Road (SR 818) and Taylor Road. The study focused specifically on the intersections of U.S. 1 at Griffin Road/NE 10th Street, U.S. 1 at Old Griffin Road, and Griffin Road (SR 818) at Perimeter Road. The project location is shown on **Exhibit 2.8-3**.

The study evaluated the operational and safety characteristics for each connection, and engineering analyses were conducted in order to develop and analyze conceptual design alternatives that would provide current, short-term, or mid-term improvements primarily within available right-of-way. Proposed improvements for the study intersection are as follows:

- The westbound approach modifications require widening from a five-lane undivided section to a seven-lane divided section. The proposed seven-lane divided section has six westbound lanes (one right-turn lane, two through lanes, and three left-turn lanes) and one eastbound through lane.
- Pedestrian access was reviewed and discussed with the various stakeholders. In order to connect the sidewalk along Griffin Road to the sidewalk on Perimeter Road, a pedestrian crosswalk would be required and would need to be approved. Additionally, a pedestrian railroad crossing would need to be constructed if a sidewalk was proposed on the north side of Griffin Road.



SOURCE: Kimley-Horn & Associates, Inc., *U.S.-1/SR 5 - Griffin Road/SR 818 Intersection Study*, September 2015.
PREPARED BY: Kimley Horn & Associates, Inc., March 2016.

EXHIBIT 2.8-3

NORTH 0 2,000 ft.

Runway Expansion and Study Intersections

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2.8.2.3 *Broward County Intermodal Center and People Mover System, Fort Lauderdale-Hollywood International Airport and Port Everglades, Preliminary Engineering Report Draft, June 2009*

This document detailed Broward County's 2020 Vision Plan for future development at FLL and Port Everglades, specifically focusing on the Intermodal Center (IMC) and people mover. The people mover consisted of an approximately five-mile-long proposed premium transit route, coordinated bus service, or automated people mover (APM), with station stops at the FLL passenger terminals, the Broward County IMC, and the Midport and Northport Port Everglades cruise terminals. However, the project was discontinued due to the high anticipated costs; additionally, new projects, such as the Wave Street Car System, have been on the rise, which could replace the APM project. Section 2.8.3.1 describes the Wave Street Car System Initiative.

The IMC consists of a transit transfer station that provides a connection between the APM and proposed elements of the regional transportation network, such as the ones evaluated in the Central Broward East/West Transit Analysis and the South Florida East Coast Rail Corridor Transit Analysis, as well as the Broward County Transit's planned bus route improvements.

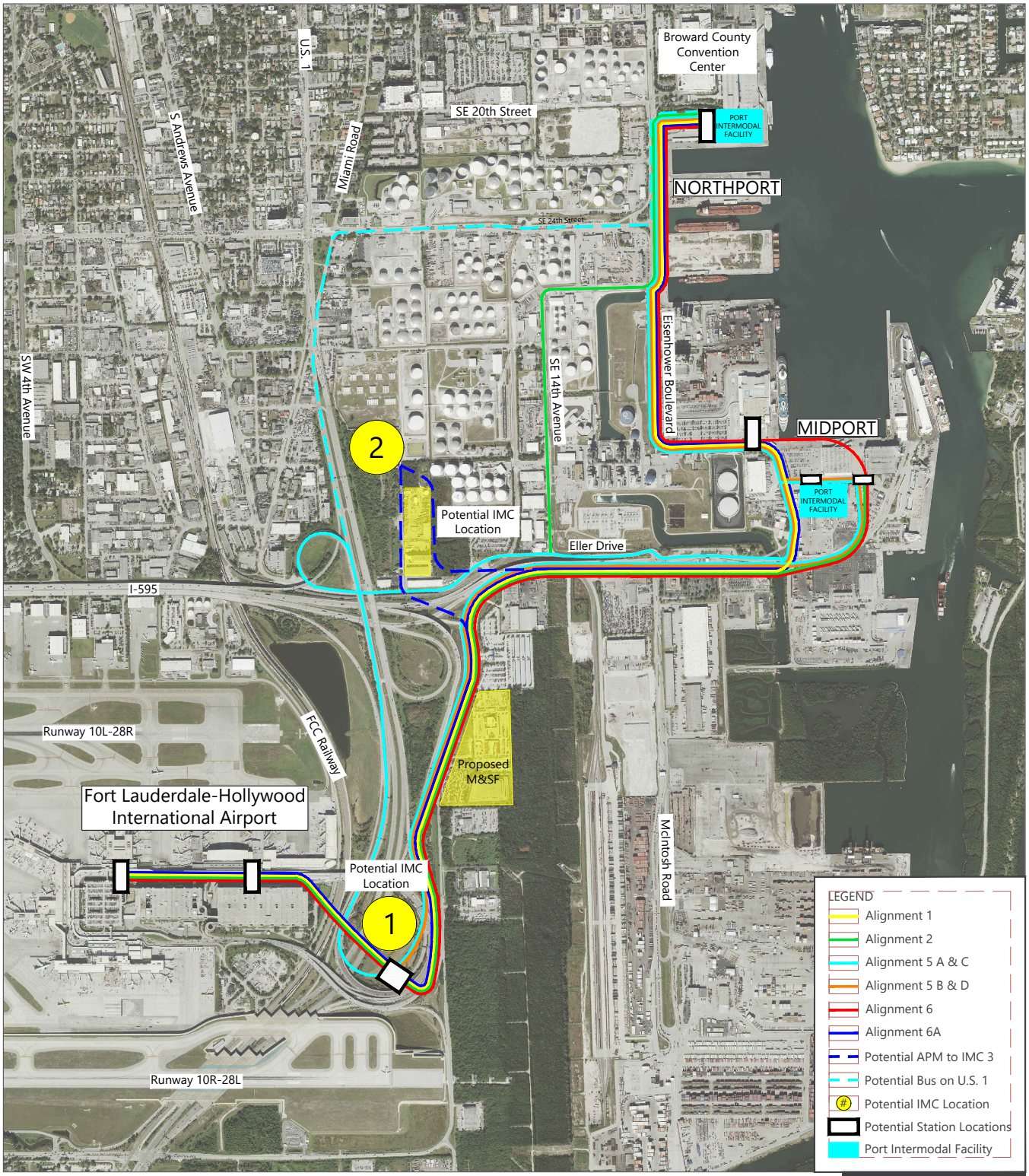
A Feasibility Study found that the project was technically viable, and the study recommended the County should attempt to secure federal/state funding to offset the costs. Average traffic volumes on the Airport roadways would be reduced by 33 percent and the volumes on Eisenhower Boulevard within the Seaport would be 5 percent lower from the APM Option 1 Alternative, which is forecasted in the year 2030 relative to the No Build Options. Under Bus Option 5A, average traffic volumes would be reduced by 4 percent on Eisenhower Boulevard within the Seaport, relative to the No Build Option, and there would be no difference on the Airport roadways.

After further evaluations and rankings, a few recommended alternatives were identified for long-term build-out alternatives:

- People Mover Alternative 6A: Develop an APM within the Alternative 6A corridor between FLL and Port Everglades.
- IMC Alternative 1: Develop a County Intermodal Center within the U.S. 1/Airport Interchange.
- Project Phasing Option: An interim measure of initially constructing portions of the system as a lower-cost elevated Busway, which could later be converted to APM system technology. This phased approach may involve implementing portions of Elevated Bus Alternative 5B, which was the second highest ranked option and follows the same corridor as APM Alternative 6A. The conversion from bus to APM would be facilitated by constructing the supporting elevated guideway for the Busway with the dimensions and structural capacity required to accommodate the operation of APM system technology in the future.

The eight alternatives developed for this study are presented on **Exhibit 2.8-4**. The people mover element of the project would be implemented along the preferred corridor (Alternative 6A) through a phased approached of converting a busway into an APM.

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SOURCES: Lea+Elliott Team, *PD&E Broward County Intermodal Center and People Mover*, June 2009; Google Earth, 2014 Aerial
PREPARED BY: Kimley Horn & Associates, Inc., March 2016.

EXHIBIT 2.8-4

NORTH 0 N.T.S.

Alignment Alternatives for SunPort Project Area

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2.8.2.4 *FDOT System Planning Office I-95/I-595 Interchange Modification Report*

This document details the I-595 Systems Interchange Modification Report from east of I-75 to east of I-95, which was completed in December 2004. The Build Alternative improvements are recommended to occur in two phases between Year 2014 and Year 2034. Phase I and Phase II address the improvements completed by 2014 and 2034, respectively.

- Phase I includes the improvements at the Florida's Turnpike interchange and braided ramps (i.e., crossing over of on-ramps/off ramps) at the interchanges of Nob Hill and Pine Island Roads, as well as the construction of a new SR 84 slip ramp to provide direct access to I-595 eastbound, west of SW 136th Avenue.
- Phase II includes adding two-lane and three-lane collector-distributor roads from I-95 to Davie Road, as well as reversible lanes along I-595 between SW 136th Avenue and the SR 7 interchanges.

2.8.2.5 *Ongoing FDOT I-95 Interchange Master Plan Study*

The primary purpose of the I-95 Interchange Master Plan Study is to identify the short-term and long-term needs for the I-95 interchanges in Broward and Palm Beach Counties through the year 2040, as well as to develop design concepts to address traffic spillback onto the interstate, to improve interchange operations, to reduce congestion, and to enhance safety at the study interchanges. For the purpose of the FLL Master Plan Update, the Griffin Road Interchange Concept Report was reviewed. Based on the future year 2040 analysis, the following long-term improvements are recommended for the Griffin Road (SR 818) interchange along I-95:

Griffin Road (SR 818)

- Extend storage for eastbound right-turn lane onto I-95 southbound on-ramp.
- Provide third receiving lane on I-95 southbound on-ramp to allow free-flow eastbound right-turn movement from Griffin Road.
- Provide third (triple) southbound left-turn lane from I-95 southbound off-ramp to eastbound Griffin Road.
- Provide third (triple) northbound left-turn lane from I-95 northbound off-ramp to westbound Griffin Road.
- Provide second (dual) northbound right-turn lane from I-95 northbound off-ramp to eastbound Griffin Road.
- Provide second (dual) westbound right-turn lane from eastbound Griffin Road to I-95 northbound on-ramp.

I-95

- Provide a southbound braided ramp for the Stirling Road southbound off-ramp from I-95.

Adjacent Minor/Side Street Approaches to Griffin Road (Optional/Noncritical)

- Provide second (dual) northbound left-turn lane from Griffin Road eastbound onto Anglers Avenue/Ravenswood Road.
- Restripe outside through-lane on Griffin Road westbound to right-turn to provide second (dual) northbound right-turn lane onto Anglers Avenue/Ravenswood Road.

- Provide second (dual) southbound left-turn lane on Anglers Avenue/Ravenswood Road onto eastbound Griffin Road.
- Provide exclusive westbound right-turn lane onto Anglers Avenue/Ravenswood Road.
- Provide second receiving lane along Old Griffin Road and restripe eastbound right-turn lane at Old Griffin Road/Design Center of the Americas (DCOTA) entrance to a shared through/right-turn lane.

2.8.2.6 Ongoing FDOT I-95 Express Lanes Phase 2 Project

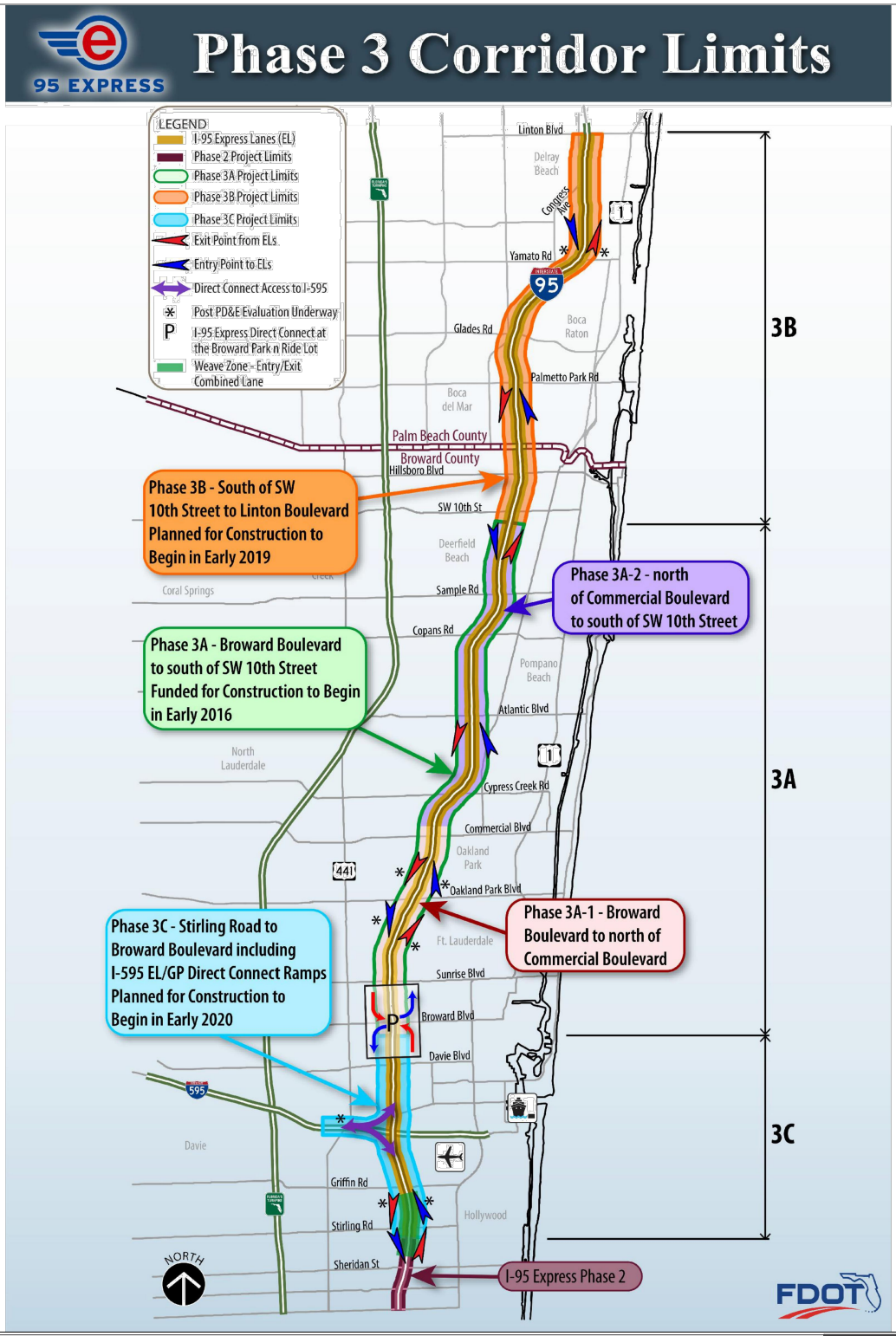
Construction of Phase 2 of I-95 Express Lanes began in November 2011, and continued in 2016. Phase 2 will extend the existing express lanes north from the Golden Glades interchange, in Miami-Dade County, to Broward Boulevard, in Broward County, by converting the existing high-occupancy vehicle (HOV) lanes into two express lanes in each direction. Other project activities include:

- Road widening along 1-95 is ongoing at various locations throughout the project limits.
- Installation of tolling and intelligent transportation system (ITS) equipment is ongoing throughout the project limits.
- Overhead sign installation is ongoing along I-95 in Miami-Dade and Broward Counties.
- Installation of new toll gantries in Miami-Dade and Broward Counties.

2.8.2.7 I-95 Express Phase 3 Project

The purpose of the I-95 Express Lanes Project is to improve mobility, relieve congestion, provide additional travel options, enhance transit services, accommodate future growth and development in the region, enhance emergency evacuation, and improve system connectivity between key limited-access facilities in South Florida. "95 Express" is part of a regional network of express lanes that will provide a safe, efficient, and reliable transportation alternative to drivers traveling throughout South Florida. The I-95 Express Phase 3 project was divided in 3 sub-phases or segments, as depicted on **Exhibit 2.8-5**.

Phase 3A is the first segment of a phased construction plan for the full Phase 3 limits. This phase is divided in two segments; 3A-1 and 3A-2. The first segment (3A-1) includes from south of Broward Boulevard to north of Commercial Boulevard, and the second segment (3A-2) includes from north of Commercial Boulevard to SW 10th Street as depicted in Exhibit 2.8-5. Phase 3B, is also divided in two segments; 3B-1 going from south of SW 10th Street to south of Glades Road, and 3B-2 going from south of Glades Road to Linton Boulevard. Phase 3C, between Stirling Road (SR 848) to Broward Boulevard (SR 818), includes the I-595 Express Lanes and General Purpose (non-tolled) direct-connect ramps. Phase 3C is a key component of Phase 3, providing a potential direct connection between northbound and southbound I-95 and I-595, to and from the west.



SOURCE: Florida Department of Transportation, *I-95 Express Phase 3 Corridor Limits Map*, August 2014; http://www.95express.com, March 2016.
PREPARED BY: Kimley Horn & Associates, Inc., March 2016

EXHIBIT 2.8-5

NORTH 0 N.T.S.

I-95 Express Phase 3 Corridor Limits

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2.8.3 REGIONAL TRANSPORTATION INITIATIVES

Future transportation initiatives on the regional off-Airport transportation area may provide information useful to the Master Plan Update, such as location assessment and ridership estimates. Research related to the following projects was performed in order to assess the different initiatives' ability to relieve traffic congestion, their impacts to on-site transportation access, and their scheduled implementations. **Exhibit 2.8-6** depicts the location of the potential transportation initiatives discussed in this section. The following subsections provide useful information from the analyzed transportation initiatives.

2.8.3.1 The Wave Streetcar System—Downtown Development Authority of Fort Lauderdale/SFRTA

The Wave is a modern streetcar system for Downtown Fort Lauderdale. FDOT District Four, in collaboration with Broward County, the Broward Metropolitan Planning Organization (MPO), the City of Fort Lauderdale, and the Downtown Development Authority, is undertaking the project development for the Central Broward Transit (CBT) Phase 1 Project Study. The CBT Phase 1 Project would extend the future Wave Streetcar, currently being implemented, and create transit connections among downtown Fort Lauderdale, the Greater Fort Lauderdale-Broward County Convention Center/Port Everglades, and FLL. **Exhibit 2.8-7** depicts the Wave Street Car System CBT Phase 1 Map proposed in 2016. On May 2018, The Broward County Commision voted to end the Wave Street Car System project.

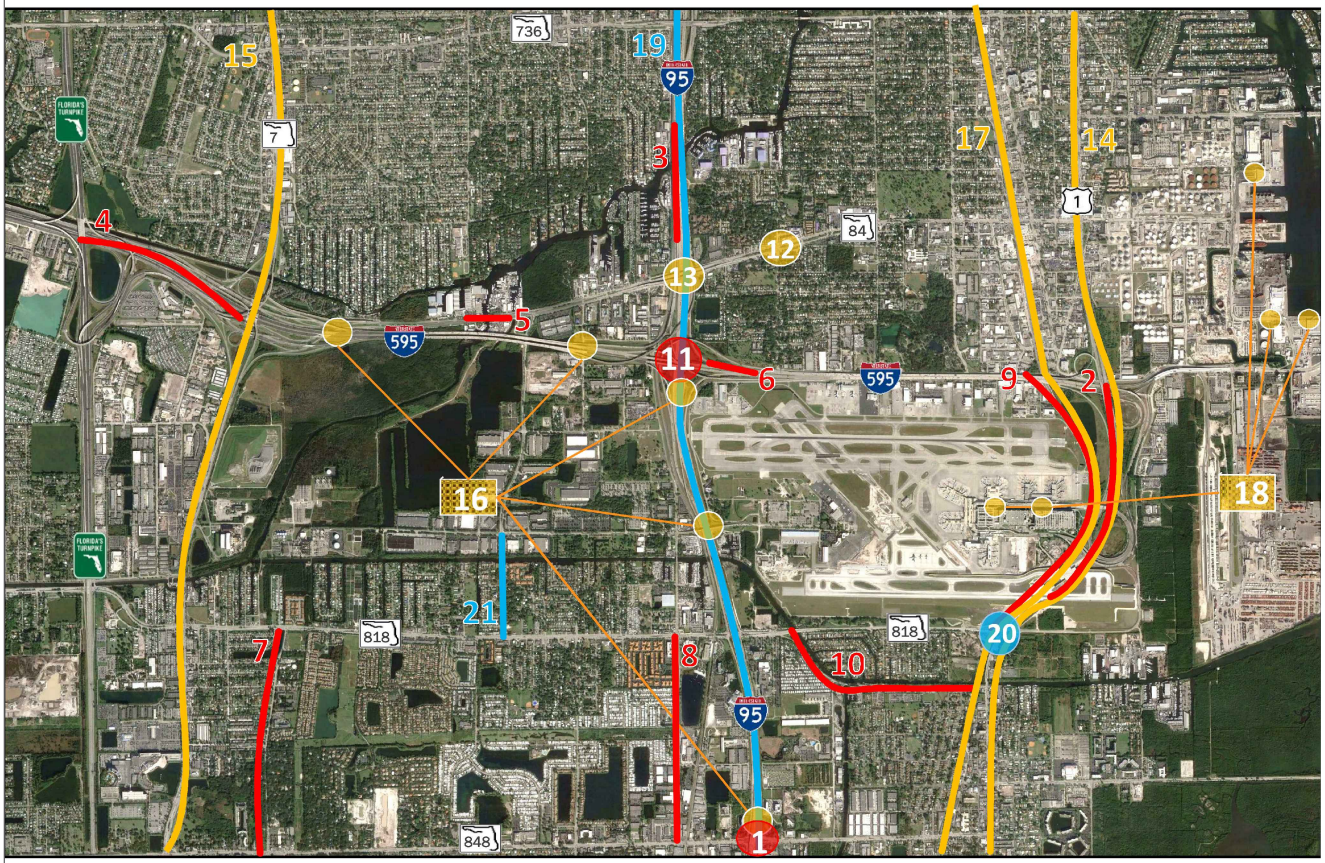
2.8.3.2 Regional TSM&O and Integrated Corridor Management

Transportation System Management and Operations (TSM&O) is defined as a program based on measuring performance, actively managing the transportation network, and delivering a safe and convenient experience to the public. It is a strategy that aims to improve mobility for roadway users by utilizing technology and delivering real-time management and operation of the transportation system. FDOT operates an Arterial Management Program (AMP) program along several arterial corridors in South Florida. The AMP actively manages corridors in Broward County through an Intelligent Transportation System (ITS). Specifically, cameras, dynamic message signs (DMS), and travel-time devices monitor congestion along the arterials. This information is relayed to operators in the Broward County Traffic Management Center (TMC), where they have the ability to recommend signal timing changes or implement other active management strategies. In addition, operators can post messages on the DMS alerting drivers of incidents or congestion events.

In a parallel effort, the Broward MPO developed an Integrated Corridor Management (ICM) system requirements report and to plan for the design, construction, integration, operations and maintenance of the ICM components. The Broward MPO was also able to obtain FDOT's support of in-kind services in the amount of $50,000 to execute the study.

ICM is targeted to improve the multimodal transportation system along the I-95 corridor in Broward County. The goal is to have an ICM system that coordinates the management of freeways, arterials, transit and parking systems within a corridor instead of individual facilities. The ICM system is expected to enhance the rerouting of traffic to alternative roads in the event of high congestion due to crashes, railroad grade crossings or special events.

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LEGEND:

Broward MPOs Transportation Improvement Programs (TIP):

1. Lighting
2. Maintenance/Landscaping
3. Rail Preservation
4. Bridge Rehabilitation
5. Bridge Rehabilitation
6. Bridge Rehabilitation
7. Bike Lane & Sidewalk
8. Bike Lane & Sidewalk
9. Bike Lane & Sidewalk
10. Sidewalk
11. Interchange Improvement

Broward MPO Commitment 2040:

12. Intersection Improvement
13. Interchange Modification
14. US 1 Corridor Bus Service Upgrades
15. SR 7 Multimodal Improvements
16. Assigned Locations for SIS (Strategic Intermodal System)
17. All Aboard Florida Station
18. Potential People Mover Stations

FDOT District 4 Adopted 5 Year Work Program (STIP):

19. Addition of lanes, express lanes, arterial traffic management and corridor interchange master plan
20. PD&E on Griffin Rd and US-1 intersection
21. Addition of lanes and reconstruction

SOURCE: Broward Metropolitan Planning Organization, *Broward MPO Project Fact Sheet*, June 2015.
PREPARED BY: Kimley Horn & Associates, Inc., March 2016.

EXHIBIT 2.8-6

NORTH 0 N.T.S.

Potential Off-Airport Transportation Initiatives

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SOURCE: Florida Department of Transportation, *Central Broward East-West Transit Study*, August 2014, http://www.95express.com (Accessed January 2016).
PREPARED BY: Kimley Horn & Associates, Inc., March 2016.

EXHIBIT 2.8-7

NORTH 0 N.T.S.

Proposed Wave Streetcar Alignment

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2.8.3.3 *All Aboard Florida Intercity Rail Service —AAF/FECR (Brightline)*

All Aboard Florida (AAF)'s Brighline is a passenger rail system that will connect Miami and Orlando, including stops in Fort Lauderdale and West Palm Beach, through express intercity service. This station is located on five acres of land adjacent to the Florida East Coast Railway (FECR) corridor on NW 2nd Avenue, between Broward Boulevard and NW 4th Street.

2.8.3.4 *The Tri-Rail Coastal Link Commuter Rail Service—FDOT/SFRTA*

Tri-Rail Coastal Link will add new service between Jupiter and downtown Fort Lauderdale (Green Line) to connect the coastal downtowns. The existing Tri-Rail service between Boca Raton and the Miami Intermodal Center (Blue Line) will continue to provide the same convenient service to FLL and MIA. **Exhibit 2.8-8** depicts the Tri-Rail System Map as of June 2014.

2.8.3.5 *Airport/Seaport Automated People Mover—Broward County*

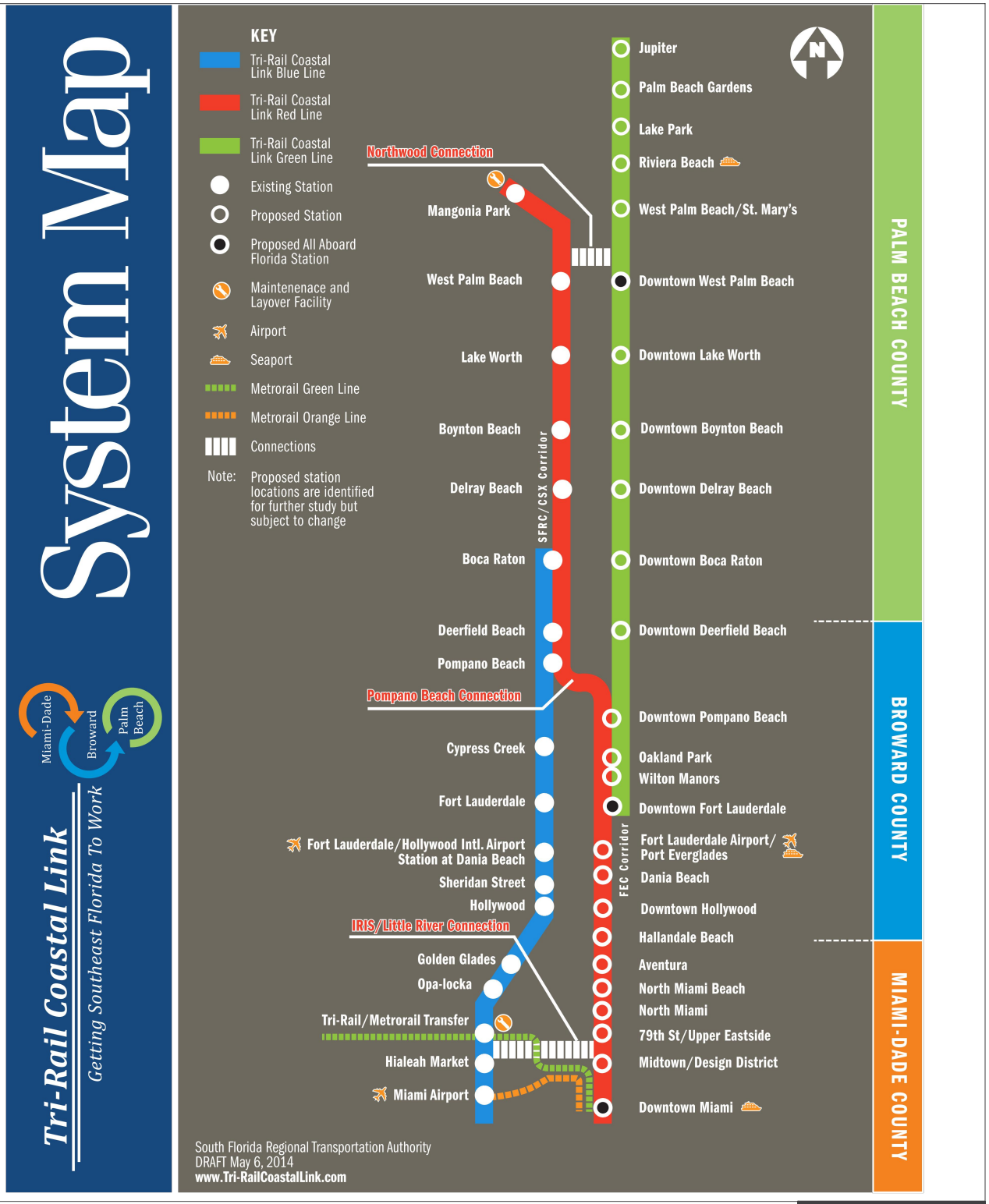
In 2002, Broward County outlined a framework for future development at FLL and Port Everglades, as well as elements that would promote regional transportation and transit improvements, as a part of its 2020 Vision Plan. Key elements of the proposed 2020 Plan were an IMC and APM. The APM was proposed as an approximately five-mile long premium transit route (coordinated bus service or APM) with station stops at the Airport terminals, the Broward County Intermodal Center, and the Midport and Northport of Port Everglades cruise terminals. The APM would provide additional capacity and effective transportation within the regional transportation network, the Airport, and the Seaport. Primary benefits of the system include:

- Providing convenient access to the Airport and Seaport for local travelers, employees of these two facilities, as well as others using the regional transportation network.
- Reducing traffic congestion along Seaport and Airport roadways, due to additional transportation capacity between these two facilities.
- Increasing the LOS and convenience for multi-day cruise passengers who use the Seaport and FLL for their flights.

Eight alternatives were identified in the 2020 Vision Plan; however, based on definition of the alternatives, the results pertaining to Option 1 also apply to Alignments 2, 6, and 6A. Impacts and results for Option 5A can be considered generally applicable to Options 5B, C, and D.

- Alternative 1: Alternative 1 would consist of an elevated APM following Terminal Drive to connect to the IMC. Past the IMC, the system would follow Eller Drive to reach the Port. On the Port, the alternative would split into Midport and Northport branches, with Eisenhower Boulevard to reach Northport and the continuation of Eller Drive to reach Midport.
- Alternative 5A: Alternative 5A would utilize existing surface streets to provide bus service along two routes connecting Midport and Northport with the IMC. On the Airport, Alternative 5A would utilize an APM, which would meet the bus routes at IMC. The alternative would require some roadway improvements to provide this service.

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SOURCE: Florida Department of Transportation, *Central Broward East-West Transit Study*, June 2014, http://www.95express.com (Accessed January 2016).
PREPARED BY: Kimley Horn & Associates, Inc., March 2016.

EXHIBIT 2.8-8

NORTH 0 N.T.S.

Tri-Rail System Map

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2.8.3.6 SR 7 Multimodal Improvements Corridor Study—Broward Metropolitan Planning Organization

The study area for the SR 7 Multimodal Improvements Corridor Study involves a 21-mile long and one-mile wide corridor centered on SR 7, from south of the Miami-Dade County line going northbound (passing to the west of FLL) and terminating north of Sample Road. This corridor is said to have the highest transit ridership of any corridor in Broward County, with over 20,000 transit riders per day. The need for this study was identified in Broward's MPO Long Range Transportation Plan.

The purpose of this study was to enhance the transit passenger and bicycle and pedestrian experience by identifying congestion and safety improvements, developing short-term recommendations, and identifying long-term improvements for project development. The objective was to reduce traffic congestion, reduce crashes and their severity, increase the number of bikers and pedestrians, improve access to transit and its performance, and promote infill and redevelopment. **Exhibit 2.8-9** depicts the corridor study area, which illustrates how the regional off-Airport transportation area might be impacted.

2.8.3.7 Commitment 2040—Broward Metropolitan Planning Organization *Long Range Transportation Plan*

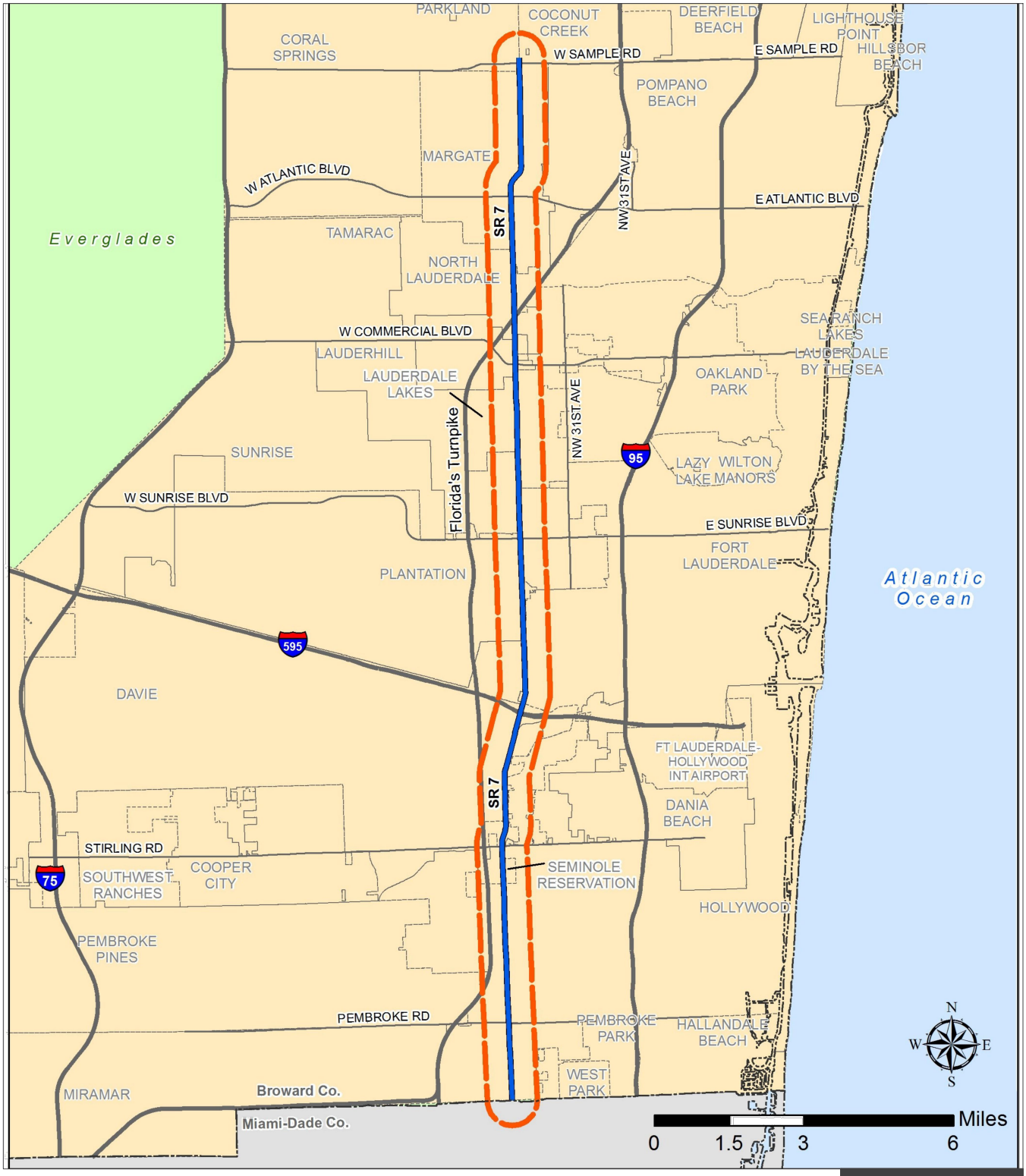
The plan focuses on the long-term transportation improvements for Broward County through the year 2040. This document was prepared by the Broward MPO and covers several forms of transportation within Broward County.

FLL falls under the category of "Facilities extending beyond the MPO Planning Area," because it is considered a direct recipient of federal funds or loans and has independent authority and/or ownership interest to develop financially constrained plans, including operation and maintenance. The Airport is considered a self-funded enterprise of Broward County government that maintains a master plan, which directs its investment strategies and lists affordable projects.

Projects planned inside the off-Airport regional transportation area are the following:

- Intersection Improvements: Intersection reconstruction to improve traffic flow.
  - Location: SW 15th Avenue and SR 84
  - Time Period: 2021–2025
  - Cost: $600,000
- Interchange Modification: Improve safety, LOS, and facilitate goods movement.
  - Location: I-95 and SR 84
  - Time Period: 2031–2040
  - Cost: $38.6 M

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SOURCE: South Florida Regional Transortation Authority, *Tri-Rail Coastal Link System Map*, May 2014; http://tri-railcoastallink.com (Accessed March 2016).
PREPARED BY: Kimley Horn & Associates, Inc., March 2016.

EXHIBIT 2.8-9

NORTH 0 N.T.S.

SR 7 Corridor Study Area

Drawing: P:\Project-Miami\BCAD\2015 Master Plan Updates\01 - FLL Tasks\I-4 Inventory\CAD\2.8-X_Traffic Count Locations_FLL.dwgLayout: 2.8-9 Plotted: Oct 29, 2020, 11:55AM

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- U.S. 1 Corridor Upgrades: Support enhanced bus service, provide passenger amenities, and improve reliability.
  - Location: Aventura Mall to Downtown Fort Lauderdale Terminal
  - Time Period: 2019–2020
  - Cost: $36.7 M
- SR 7 Multimodal Improvements Corridor Upgrades: Support enhanced bus service, provide passenger amenities, and improve reliability.
  - Location: Golden Glades to Sample Road
  - Time Period: 2031–2040
  - Cost: $386.2 M
- Florida's Strategic Intermodal System (SIS) Plan: Network and locations designated as a highly important transportation facility based on volume and economic activity.
- All Aboard Florida: Described previously in section 2.8.3.3.

2.8.3.8 Broward Metropolitan Planning Organization's Transportation Improvement Program (TIP)

Twelve transportation improvement programs were identified on the regional off-Airport area, which involve projects related to maintenance, lighting, rail preservation, bridge rehabilitation, sidewalk and bike lane implementation, interchange improvement, and urban corridor improvements. **Table 2.8-1** lists the details available regarding these projects as of April 2016.

Table 2.8-1: Broward Metropolitan Planning Organization Transportation Improvement Programs

LOCATION	SUMMARY	YEAR	COST
U.S. 1 from Griffin Road to North of Eller Drive	Landscaping, ADA and Maintenance	2020	$220,000
Stirling Road at I-95 Interchange	Lighting	2018	$332,887
I-95 North of I-595 Interchange	Replacement of Existing Bridge – Rail Preservation	TBD	$35,226,770
I-595 From Exit Ramp to Northbound I-95	Bridge Rehabilitation of 0.3 miles	2017	$587,763
I-595 From Florida's Turnpike to SR 7 Interchange	Bridge Rehabilitation of 1.5 miles	2019	$12,960,551
SR 84 Bridge Over New River	Bridge Rehabilitation of 0.4 miles	2018	$933,066
SW 40th Avenue From Stirling Road to Griffin Road	Bike Lane and Sidewalk of 1.1 miles	2018	$1,745,025
Ravenswood Road From Stirling Road to Griffin Road	Bike Lane and Sidewalk of 1.0 mile	2016	$3,671,307
Perimeter Road From Griffin Road to SW 4th Avenue	Bike Lane and Sidewalk of 1.97 miles	2018	$2,452,316
Old Griffin Road from Griffin Road to U.S. 1	Sidewalk of 1.1 miles	2020	$744,497
I-595 and I-95 Interchange	Interchange Improvement	2020	$256,925,669
Broward Boulevard from Pine Island Road to U.S. 1	Urban Corridor Improvements for 6.8 miles	2016	$1,813,703

SOURCE: Florida Department of Transportation, State Transportation Improvement Program, *Interactive Projects Map*, http://www.dot.state.fl.us/agencyresources/maps/index.html, accessed April 2016.
PREPARED BY: Kimley-Horn & Associates, Inc., April 2016.

2.8.3.9 *State Transportation Improvement Program—FDOT District 4 Adopted Five Year Work Program*

The State Transportation Improvement Program (STIP) is a federally mandated document that must include a listing of projects planned with federal funding participation in the next four fiscal years. The report is based upon the same projects that are listed in the first four years of FDOT's Adopted Five Year Work Program. The projects listed that are located in the regional off-Airport area, and that have not been mentioned in the previous sections, include the following:

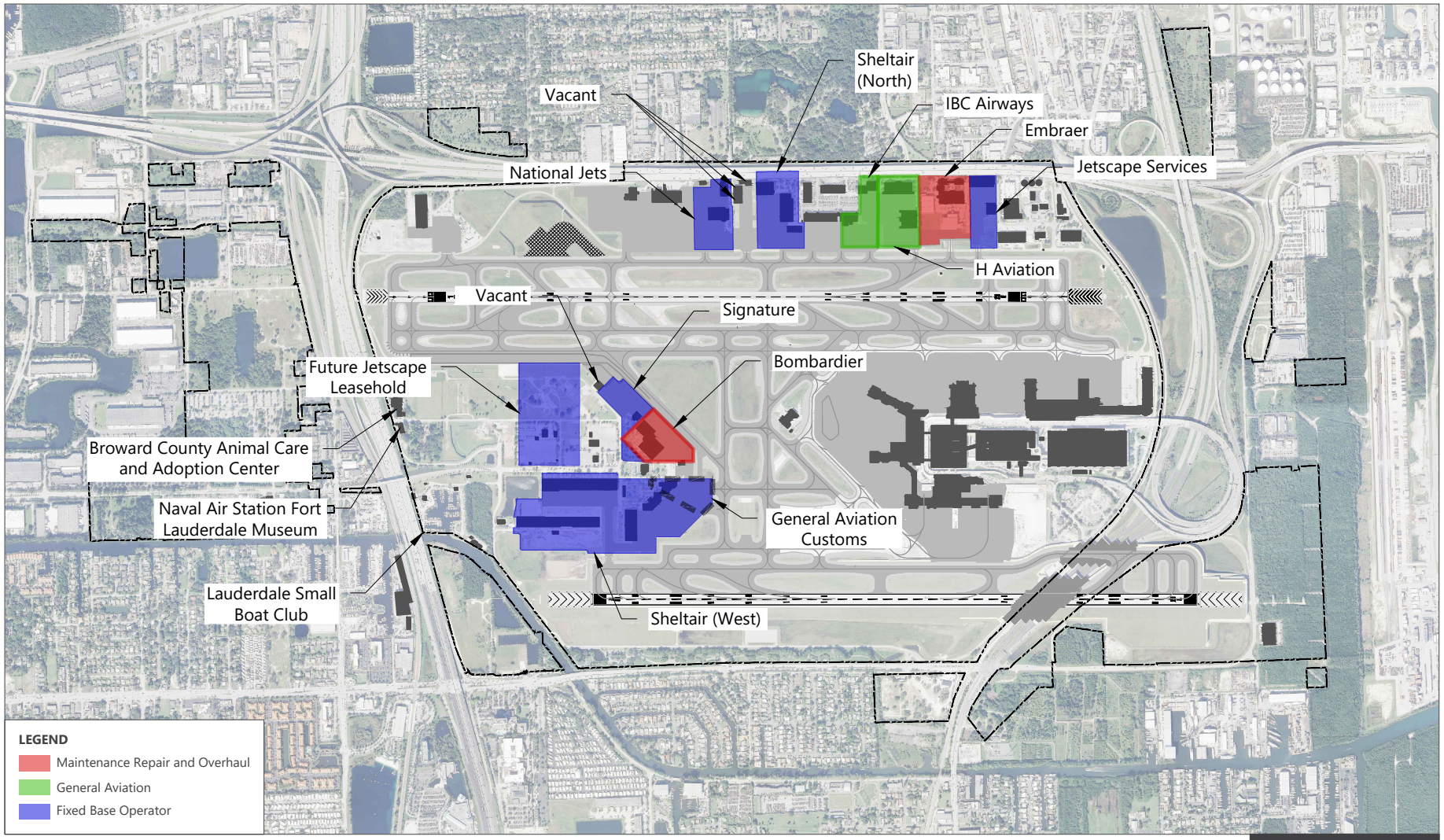
- Addition of lanes at I-95 interchange from south of Sheridan Street to north of Griffin Road (no budget estimate provided).
- Arterial traffic management on I-95 from the Broward/Miami-Dade County line to Broward/Palm Beach County line; estimated cost is $180,000.
- I-95 Broward County's corridor interchange master plan (PD&E); estimated cost is $18,308.
- PD&E on Griffin Road and U.S. 1 intersection; estimated cost is $268,806.
- Addition of lanes and reconstruction of SW 30th Avenue from Griffin Road to SW 45th Street; estimated cost is $2,009,800.

2.9 Fixed Base Operator and Other General Aviation Facilities

General aviation (GA) tenants are typically businesses and government agencies that provide a full range of services to meet the operational and safety needs of private and general aviation aircraft operators. At FLL, GA tenants include four Fixed Base Operators (FBOs), aircraft maintenance facilities, a corporate business operator (CBO), a charter operator, and the U.S. Customs and Border Protection Service for GA operators. **Exhibit 2.9-1** depicts the leasehold boundaries of the various GA facilities at FLL.

2.9.1 FIXED BASE OPERATORS

FBOs provide general aviation services, such as passenger services, aircraft rentals, aircraft charters, aircraft parking, hangar rentals, refueling, flight instruction, and light maintenance at public-use airports. Four FBOs lease facilities at the Airport: Sheltair North and Sheltair West, Signature Flight Support, National Jets, and Jetscape Services. These facilities' general location and operation are described in the following subsections. A set of tables at the end of this section summarizes the facilities' sizes by functional area, aircraft parking capability, and fuel storage capacity.



SOURCES: Broward County Aviation Department, *Fort Lauderdale-Hollywood International Airport Layout Plan,* July 15, 2015; Stoner and Associates, Inc., *Boundary and Topographic Survey of Westside Expansion Parcel,* October 2008; Stoner and Associates, Inc., *Sketch and Description of Sheltair,* May 1998; Joseph Roles and Associates, Inc., *Partial Airside Plan for FedEx Sort Facility and Nathonal Jets FBO,* March 2016; Broward County Aviation Department, *FLL Aerial,* 2015.
PREPARED BY: Ricondo & Associates, Inc., April 2016.

EXHIBIT 2.9-1

NORTH 0 2,000 ft.

General Aviation and Fixed Base Operator Facilities

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2.9.1.1 Sheltair

Sheltair operates two separate leaseholds on the Airport:

- The Sheltair (North) facilities, detailed in **Exhibit 2.9-2**, are located on the Airport's north side along SW 34th Street and occupies a total of 534,700 square feet (12.3 acres). These facilities' lease runs through September 2035. The facilities are in good condition, as they were recently built. No expansion is planned to the Sheltair (North) complex. The Sheltair (North) facilities include aircraft storage hangars (Buildings N-11 and N-12), as well as a paint and maintenance hangar (Building N-13).
- The Sheltair (West) facilities, detailed in **Exhibit 2.9-3**, are located on the Airport's west side along Lee Wagener Boulevard and occupy a total of 2,393,500 square feet (54.9 acres). These facilities' lease runs through September 2038. The facilities are in good condition, and underwent recent roof and air conditioning repairs. The facilities include two aircraft hangars: the northernmost hangar is existing, while the southernmost hangar is currently under construction. Sheltair also expressed the need for additional hangar space and an automobile parking garage.

Sheltair offers aircraft parking, fueling, cleaning, ground support, passenger/crew services, hangar, ramp and office space options. Sheltair has a fuel farm on its Sheltair West complex, with 10 fuel tanks; fuel trucks deliver fuel to both Sheltair North and West facilities.

2.9.1.2 Signature Flight Support

Signature Flight Support facilities, detailed in **Exhibit 2.9-4**, are located on the Airport's west side on Lee Wagener Boulevard. This location is adjacent to the Bombardier facility and occupies a total of 306,200 square feet (7.0 acres). These facilities' lease runs through November 2020. Signature Flight Support expressed the need for additional space and submitted an expansion proposal to BCAD.

Signature Flight Support offers aircraft parking, fueling, cleaning, ground support, and passenger/crew services. Signature Flight Support does not have any fuel tanks on its leasehold. Jet A and AvGas fuel trucks comprise Signature's aircraft fuel capacity.

2.9.1.3 National Jets

National Jets facilities, detailed in the **Exhibit 2.9-5**, are located on the Airport's north side along SW 34th Street. The facilities are located adjacent to the FedEx cargo facility and occupy 485,800 square feet (11.2 acres). These facilities' lease runs through May 2022. The facilities were built in 1992. National Jets expressed the need for additional hangars and submitted an expansion proposal to BCAD. The National Jets facilities include an aircraft storage hangar (Building N-7) and a maintenance hangar (Building N-5).

National Jets offers fueling, aircraft parking, maintenance, executive charter, air ambulance and cargo services. There are three hangars at National Jets, front and west line parking. National Jets has an in-ground tank farm with a capacity of 80,000 gallons (Jet A, Avgas, diesel, auto). There are 10 based aircraft at National Jets, combining jet and turbo prop aircraft.

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SOURCES: Broward County Aviation Department (BCAD), *Fort Lauderdale-Hollywood International Airport Layout Plan,* July 15, 2015; Stoner and Associates, Inc., May 1998 (Sketch and description of Sheltair); BCAD, *2015 FLL Aerial*, 2015
PREPARED BY: Basulto Management Consulting, April 2016

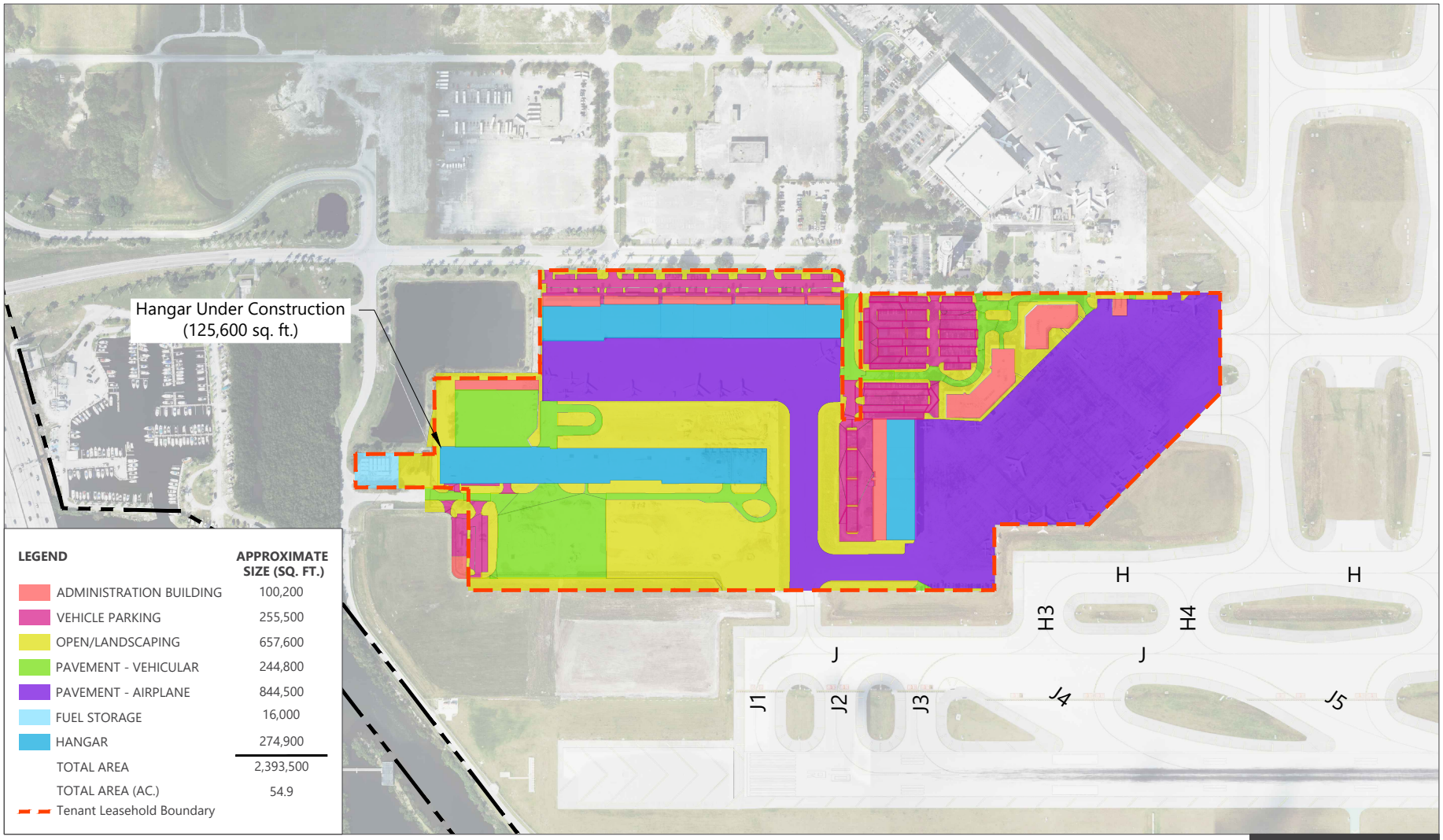
EXHIBIT 2.9-2

NORTH 0 200 ft.

Sheltair North Facilities

Drawing: P:\Project-Miami\BCAD\2015 Master Plan Updates\01 - FLL Tasks\I-4 Inventory\CAD\2.9-2 - FLL SHELTAIR NORTH.dwgLayout: 8.5x11L Plotted: Oct 29, 2020, 01:12PM

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LEGEND	APPROXIMATE SIZE (SQ. FT.)
ADMINISTRATION BUILDING	100,200
VEHICLE PARKING	255,500
OPEN/LANDSCAPING	657,600
PAVEMENT - VEHICULAR	244,800
PAVEMENT - AIRPLANE	844,500
FUEL STORAGE	16,000
HANGAR	274,900
TOTAL AREA	2,393,500
TOTAL AREA (AC.)	54.9
Tenant Leasehold Boundary	

SOURCES: Broward County Aviation Department (BCAD), *Fort Lauderdale-Hollywood International Airport Layout Plan,* July 15, 2015; Stoner and Associates, Inc., *Boundary and Topographic Survey of Westside Expansion Parcel,* October 2008
BCAD, *2015 Aerial,* 2015.
PREPARED BY: Basulto Management Consulting, April 2016

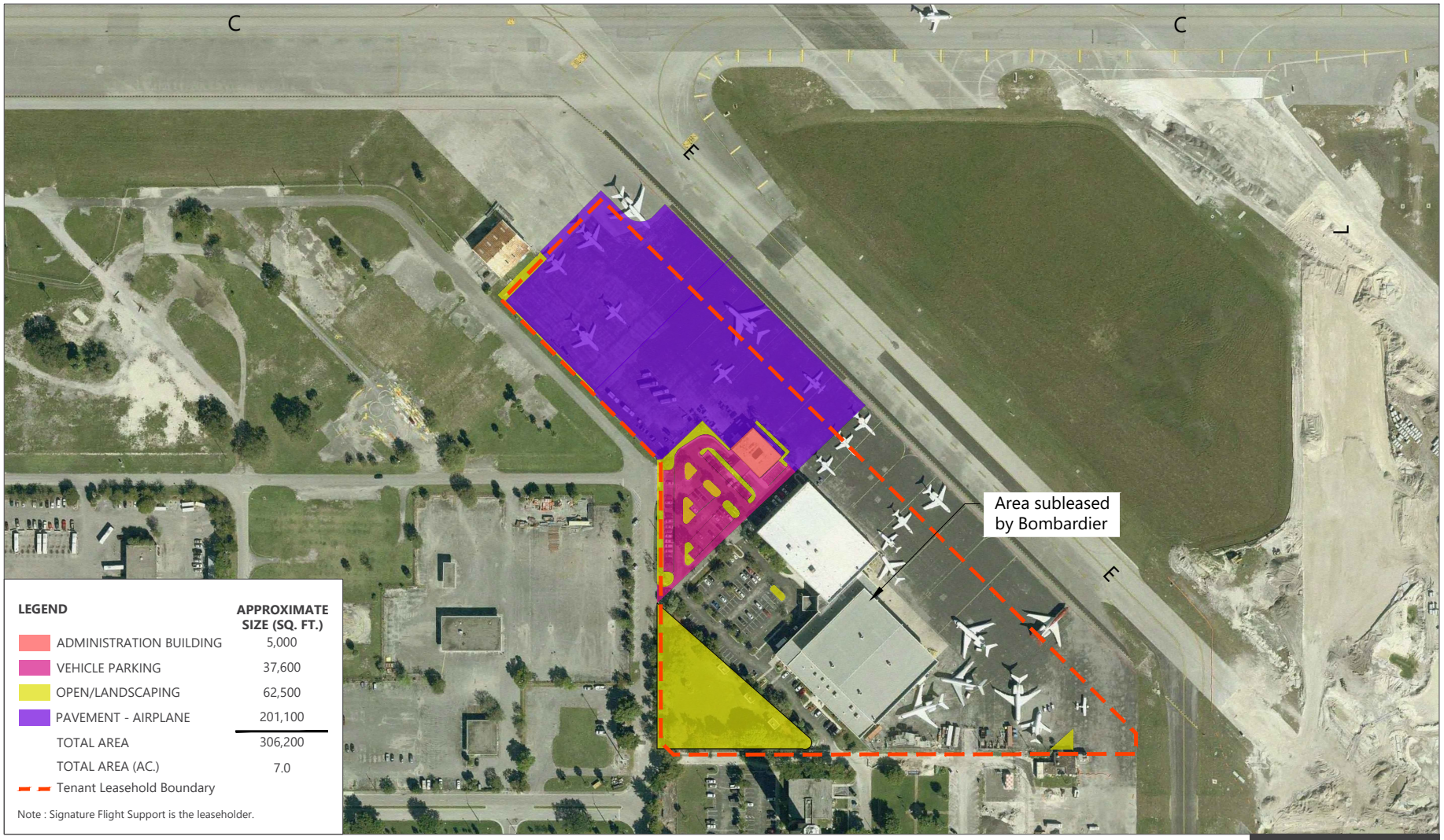
EXHIBIT 2.9-3

NORTH 0 500 ft.

Sheltair West Facilities

Drawing: P:\Project-Miami\BCAD\2015 Master Plan Updates\01 - FLL Tasks\I-4 Inventory\CAD\2.9-3 - FLL SHELTAIR WEST_Inventory.dwgLayout: 8.5x11L Plotted: Oct 29, 2020, 01:16PM

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SOURCES: Broward County Aviation Department, *Fort Lauderdale-Hollywood International Airport Layout Plan*, July 15, 2015; BCAD, *Aerial Photography of FLL*, 2015.
PREPARED BY: Basulto Management Consulting, April 2016

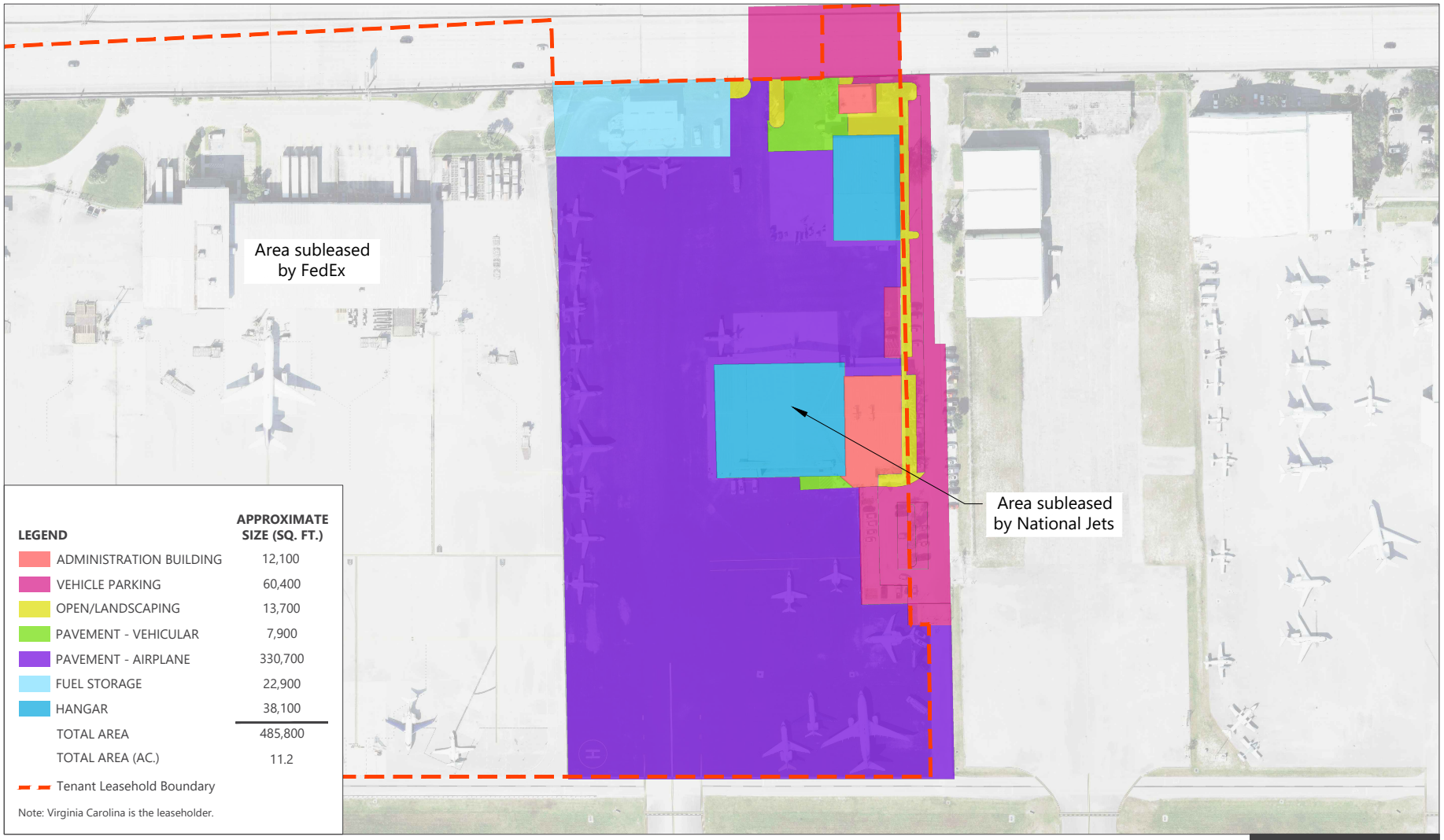
EXHIBIT 2.9-4

NORTH 0 300 ft.

Signature Flight Support Facilities

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SOURCES: Broward County Aviation Department (BCAD), *Fort Lauderdale-Hollywood International Airport Layout Plan*, July 15, 2015; Joseph Roles and Associates, Inc., March 2016 (Partial airside plan for National Jets FBO); BCAD, 2015 (Aerial Photography)
PREPARED BY: Basulto Management Consulting, April 2016

EXHIBIT 2.9-5

NORTH 0 200 ft.

National Jets Facilities

Drawing: P:\Project-Miami\BCAD\2015 Master Plan Updates\01 - FLL Tasks\I-4 Inventory\CAD\2.9-5 - FLL NATIONAL JETS_Inventory.dwgLayout: 8.5x11L Plotted: Oct 29, 2020, 01:24PM

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2.9.1.5 Jetscape Services

Jetscape Services facilities, detailed in **Exhibit 2.9-6**, are located on the Airport's north side at SW 34th Street and Fuel Tender Road. This location is adjacent to the Airport fuel storage facility, and occupies a total of 374,100 square feet (8.6 acres). These facilities' lease runs through December 2045.

JetScape Services offers fueling, aircraft parking and storage, maintenance, aircraft painting. It has two hangars dedicated to aircraft storage (Building N-26) and one for aircraft maintenance/painting activities (Building N-27); offices are attached to each hangar. The FBO currently has 11 based aircraft: three piston aircraft (including one twin-engine aircraft), four turboprop and four jet aircraft. Hangar aircraft storage capacity is four midsize jets and one to two piston aircraft. Apron parking capacity is two single-engine and 10 twin-engine piston aircraft, and 16 midsize jet aircraft. Jetscape Services (North) does not have any aircraft fuel tanks on its leasehold.

Jetscape Services recently entered a lease for a new location at FLL, a 25-acre site in the west airfield, as of April 2016. JetScape Services is anticipated to relocate all its operations to the new location in the west airfield, which will incude a full lobby, three hangars, offices and a fuel farm. The current lease in the north airfield is anticipated to be terminated upon relocation.

2.9.1.6 FBO Summary Tables

Table 2.9-1 summarizes tenant facilities sizes.

Table 2.9-1: FBO Facilities Sizes (As of April 2016)

	FACILITY SIZE (IN SQUARE FEET)						
FBO NAME	ADMINISTRATION BUILDING	VEHICLE PARKING/ PAVEMENT VEHICULAR	OPEN/ LANDSCAPING	AIRSIDE APRON	FUEL STORAGE	HANGAR	TOTAL
Sheltair North	27,800	80,000	44,200	311,500	0	71,200	534,700
Sheltair West	100,200	500,300	657,600	844,500	16,000	274,900 1/	2,393,500
Signature Flight Support	5,000	37,600	62,500	201,100	0	0	306,200
National Jet	12,100	68,300	13,700	330,700	22,900	38,100	485,800
Jetscape Services	6,400	41,100	119,400	159,000	0	48,200	374,100
Vacant 2/	6,400	9,800	80,000	173,300	0	20,600	290,100
TOTAL	**157,900**	**737,100**	**977,400**	**2,020,100**	**38,900**	**453,000**	**4,384,400**

NOTES:

1/ Includes hangars under construction.

2/ "Vacant" facilities comprise Buildings N-8, N-9 and N-10, located between the National Jets and Sheltair North facilities.

SOURCES: Broward County Aviation Department, *Fort Lauderdale-Hollywood International Airport, Airport Layout Plan*, February 2011; Broward County Aviation Department, Tenant Leasehold Boundaries, January 2017; Basulto Management Company, Tenant Interviews, July 2016.

PREPARED BY: Ricondo & Associates, January 2017.

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SOURCES: Broward County Aviation Department, *Fort Lauderdale-Hollywood International Airport Layout Plan*, July 15, 2015; BCAD, Aerial Photography of FLL, 2015.
PREPARED BY: Basulto Management Consulting, April 2016

EXHIBIT 2.9-6

NORTH 0 200 ft.

Jetscape Services Facilities

Drawing: P:\Project-Miami\BCAD\2015 Master Plan Updates\01 - FLL Tasks\I-4 Inventory\CAD\2.9-6 - FLL JETSCAPE_Inventory.dwgLayout: 8.5x11L Plotted: Oct 29, 2020, 01:26PM

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Table 2.9-2 summarizes tenants aircraft parking and storage capabilities.

Table 2.9-2: FBO Aircraft Parking and Storage

	AIRCRAFT POSITIONS		
FBO NAME	HANGAR	APRON	TIE-DOWN
Sheltair North	16	15	10
Sheltair West 1/	40	30	10
Customs	0	4	0
Signature Flight Support	0	20 to 25	4
National Jet	10 light jets	16	2
Jetscape Services 2/	4 jets / 10 piston	16 jets / 12 piston	0
Vacant 3/	0	0	0

NOTES:

1/ Includes hangars under construction.

2/ Excludes west side development initiated in early 2019.

3/ "Vacant" facilities comprise Buildings N-8, N-9 and N-10, located between the National Jets and Sheltair North facilities.

SOURCE: Basulto Management Company, Tenant Interviews, July 2016.
PREPARED BY: Ricondo & Associates, July 2016.

Table 2.9-3 summarizes tenant fuel storage capacity.

Table 2.9-3: FBO Fuel Storage

	FUEL STORAGE CAPACITY (IN GALLONS)				
	JET A		AVGAS		
FBO NAME	TANKS	TRUCKS	TANKS	TRUCKS	SOURCE OF FUEL
Sheltair North			Shared with Sheltair West		
Sheltair West	195,000	32,000	15,000	2,400	Sheltair Fuel Farm
Signature Flight Support	0	23,000	0	1,000	BCAD Fuel Farm
National Jet	75,000	16,000	2,000	1,500	BCAD Fuel Farm
Jetscape Services	0	10,000	0	5,000	BCAD Fuel Farm
Vacant	0	0	0	0	-
TOTAL	**270,000**	**81,000**	**17,000**	**9,900**	

NOTES:

"Vacant" facilities comprise Buildings N-8, N-9 and N-10, located between the National Jets and Sheltair North facilities.

SOURCE: Basulto Management Company, Tenant Interviews, July 2016.
PREPARED BY: Ricondo & Associates, July 2016.

Table 2.9-4 summarizes tenants automobile parking positions.

Table 2.9-4: FBO Automobile Parking Positions

FBO NAME	AUTOMOBILE PARKING POSITIONS
Sheltair North	141
Sheltair West 1/	441
Customs 2/	0
Signature Flight Support	70
National Jet 3/	75
Jetscape Services 3/	41
Vacant 4/	67
TOTAL	**835**

NOTES:

1/ Includes hangars under construction.

2/ Customs visitors and employees use the Sheltair West automobile parking facilities.

3/ Does not include parking spaces under Interstate 595 or spaces being added in the west side development initiated in early 2019.

4/ "Vacant" facilities comprise Buildings N-8, N-9 and N-10, located between the National Jets and Sheltair North facilities.

SOURCES: Broward County Aviation Department, Tenant Leasehold Boundaries, January 2017; Basulto Management Company, Tenant Interviews, July 2016.
PREPARED BY: Ricondo & Associates, January 2017.

2.9.2 AIRCRAFT MAINTENANCE AND MANUFACTURING

Two aircraft maintenance facilities are based at FLL: Embraer Aircraft Holdings, Inc. and Bombardier Business Aircraft Service Centre.

2.9.2.1 Embraer Aircraft Holdings, Inc.

The Embraer Aircraft Holding, Inc. U.S. headquarters are located at FLL, on the Airport's north side at SW 34th Street. The Embraer facilities are adjacent to H Aviation Inc. to the west and JetScape Services to the east. They occupy approximately 735,400 square feet (16.9 acres), and combine executive offices, commercial aircraft sales, a maintenance center for executive jets and a warehouse with spare parts for commercial and executive jets. The Embraer facilities are depicted on **Exhibit 2.9-7**. The interior of the administration building has been well maintained by the client and is in relatively good condition.



SOURCES: Broward County Aviation Department, *Fort Lauderdale-Hollywood International Airport Layout Plan*, July 15, 2015. BCAD, *Aerial Photography of FLL*, 2015.
PREPARED BY: Basulto Management Consulting, April 2016

EXHIBIT 2.9-7

NORTH 0 200 ft.

Embraer Facilities

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2.9.2.3 Bombardier Business Aircraft Service Center

The Bombardier Business Aircraft Service Centre is located on the Airport's west side, on Lee Wagner Boulevard, adjacent to Signature Flight Support to the northwest and Sheltair West to the south. The Bombardier facilities occupy approximately 406,200 square feet (9.3 acres), and combine airframe, avionics and engine repair services, interior, paint, and engineering services, as well as full line services. The Bombardier facilities are depicted on **Exhibit 2.9-8**. The facilities consist of open hangar bays and supporting office and shop spaces. The exterior envelope systems are those of a pre-engineered metal building with typical ribbed insulating wall and roof panels.

Table 2.9-5 summarizes the facilities size by functional area.

Table 2.9-5: Aircraft Maintenance Facilities

	FACILITY SIZE (IN SQUARE FEET)					
TENANT FACILITY	ADMINISTRATION BUILDING	VEHICLE PARKING/PAVEMENT VEHICULAR	OPEN/ LANDSCAPING	PAVEMENT AIRPLANE	HANGAR	TOTAL
Embraer	112,800	222,600	300,00	64,800	35,200	735,400
Bombardier	23,400	62,200	24,100	241,200	55,300	406,200

SOURCE: Broward County Aviation Department, Fort Lauderdale-Hollywood International Airport, Airport Layout Plan, February 2011; Broward County Aviation Department, Tenant Leasehold Boundaries, January 2017.
PREPARED BY: Basulto Management Company, April 2016; Ricondo & Associates, January 2017.

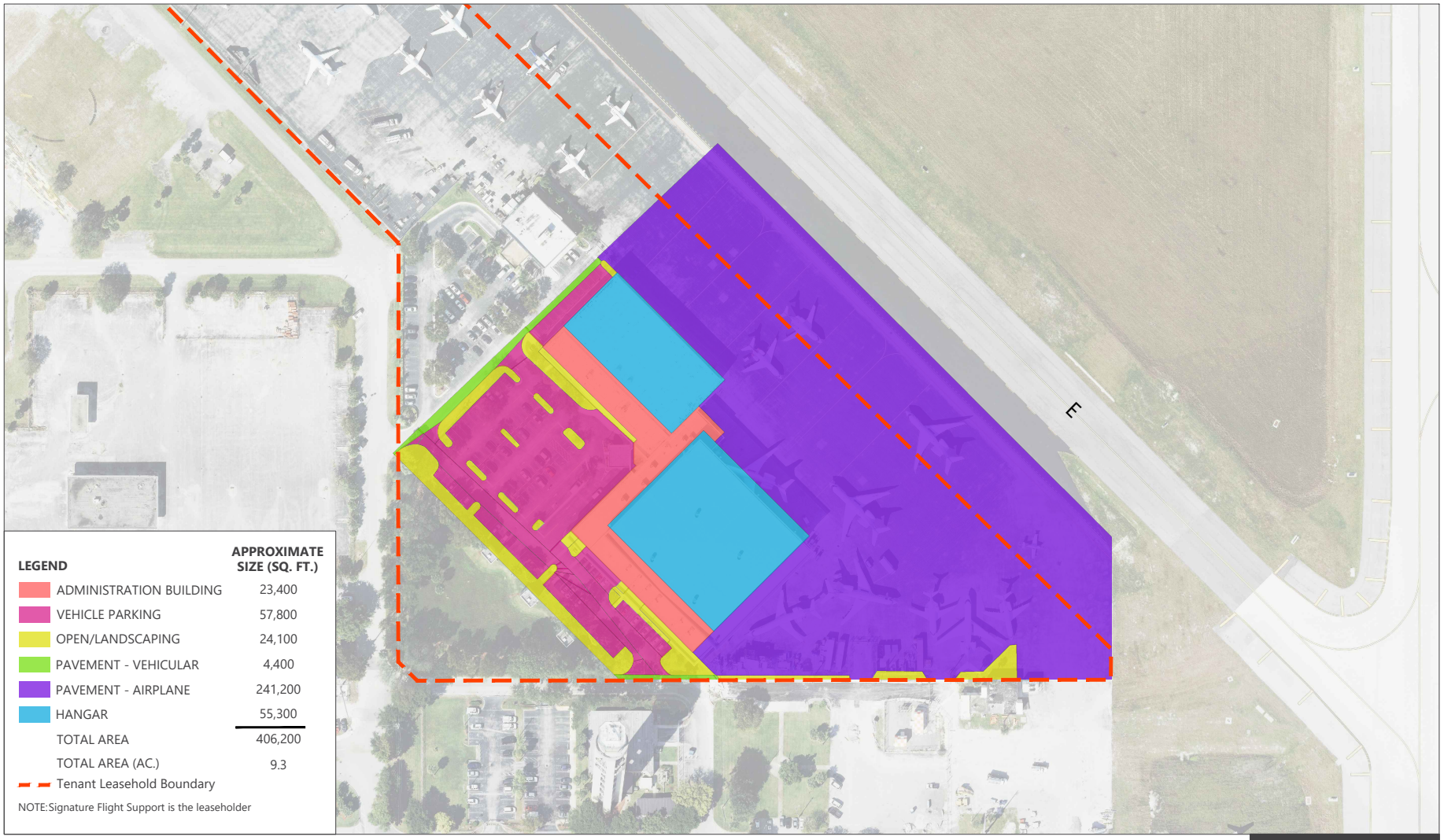
2.9.3 OTHER GENERAL AVIATION FACILITIES

In addition, there is a GA customs clearance facility, a Custom and Border Protectoin (CBP) facility, a charter airline (IBC Airways), several unoccupied tenant facilities that are configured to serve GA purposes, as well as several non-aeronautical tenants on Airport property. Exhibit 2.9-1 also illustrates the location of these facilities at FLL.

2.9.3.1 U.S. Customs and Border Protection Service

U.S. CBP regulations govern landing requirements and procedures for private aircraft arriving into the United States. Federal inspection services for general aviation aircraft are available 24 hours a day and seven days a week at the Airport. The GA CBP facilities at FLL are located on the west airfield, on the northeast end of the Sheltair West FBO campus, as depicted on Exhibit 2.9-1. They were refurbished in early 2016. The nearly $2 million makeover of the 10,000-sq-ft clearance space, funded by Sheltair and the Broward County Aviation Department, provides a new ramp access location, expanded processing areas, modern security technology and an improved interior layout to expedite the flow of passenger traffic. The 46,300-square foot ramp area immediately east of the CBP building is dedicated for CBP operations.

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SOURCES: Broward County Aviation Department, *Fort Lauderdale-Hollywood International Airport Layout Plan*, July 15, 2015. BCAD, *Aerial Photography of FLL*, 2015.
PREPARED BY: Basulto Management Consulting, April 2016

EXHIBIT 2.9-8

NORTH 0 200 ft.

Bombardier Facilities

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2.9.3.2 H Aviation, Inc.

Currently, H Aviation, Inc. is the only general aviation tenant that leases facilities (from Embraer) for the exclusive use of it its own aircraft storage (Building N-37) and light maintenance activities (Building N-38) at FLL. **Exhibit 2.9-9** depicts the H Aviation, Inc. facility, which is located on the Airport's north side at SW 34th Street and SW 4th Avenue, west of the Embraer facilities. This facility occupies a total of 525,300 square feet (12.1 acres). **Table 2.9-6** summarizes the facility size by functional area.

Table 2.9-6: H Aviation Facilities

	FACILITY SIZE (IN SQUARE FEET)					
FACILITY NAME	ADMINISTRATION BUILDING	VEHICLE PARKING/PAVEMENT VEHICULAR	OPEN/ LANDSCAPING	AIRSIDE APRON	HANGAR	TOTAL
H AVIATION	10,500	77,900	73,100	279,900	83,900	525,300

SOURCE: Broward County Aviation Department, Fort Lauderdale-Hollywood International Airport, Airport Layout Plan, February 2011.
PREPARED BY: Basulto Management Company, April 2016.

2.9.3.3 IBC Airways

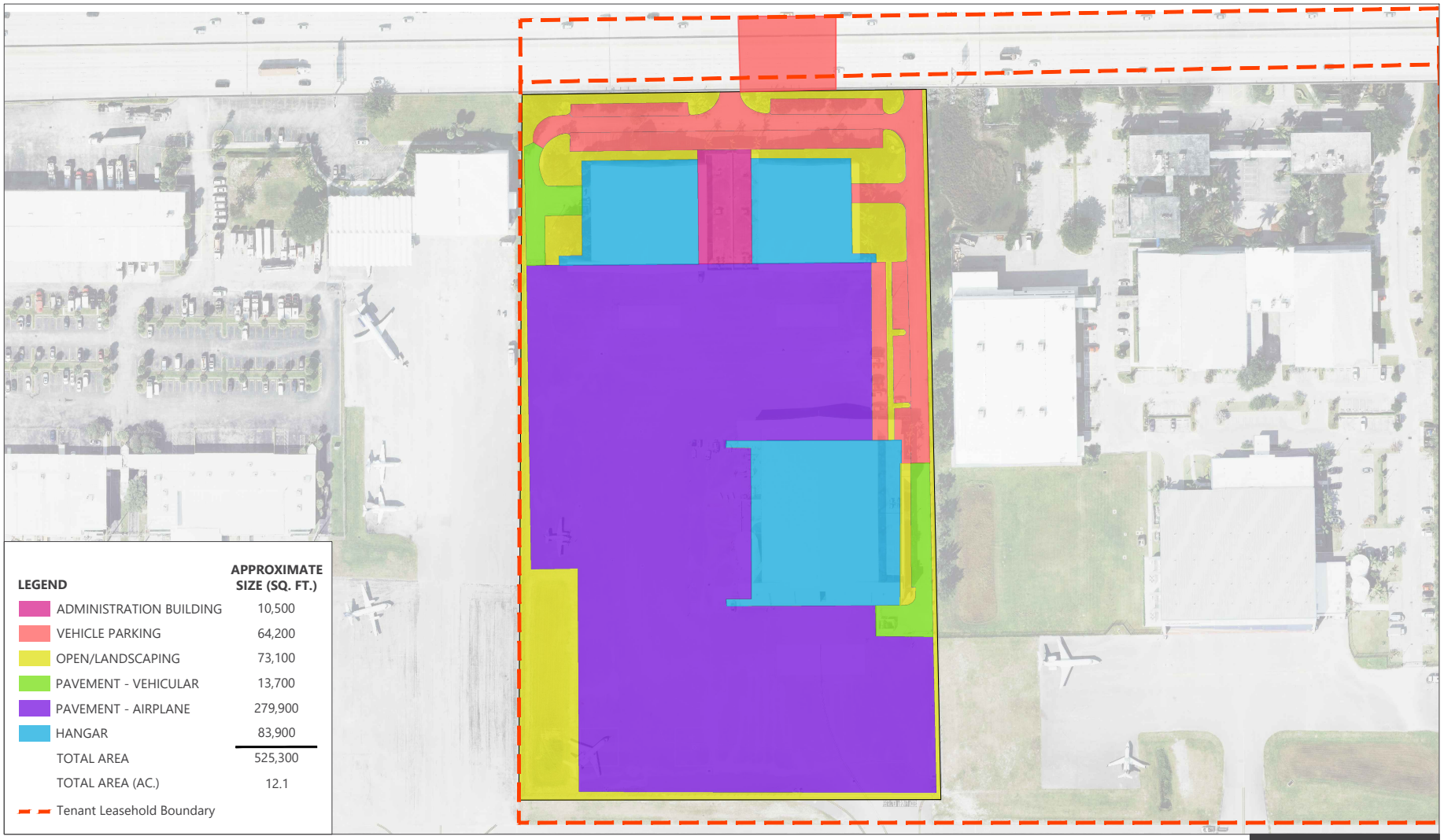
IBC Airways is a charter passenger and cargo operator to destinations in the Caribbean. IBC Airways operates a fleet of Embraer 145, Saab 340 and Metroliner aircraft. It operates in portions of Buildings N-19E, N-17 and N-18, and uses the apron in front of these buildings, as depicted **in Exhibit 2.9-10.** IBC Airways facilities occupy a total of 342,400 square feet (7.9 acres). **Table 2.9-7** summarizes the facilities size by functional area.

Table 2.9-7: IBC Airways Facilities

	FACILITY SIZE (IN SQUARE FEET)					
FACILITY NAME	ADMINISTRATION BUILDING	VEHICLE PARKING/PAVEMENT VEHICULAR	OPEN/ LANDSCAPING	AIRSIDE APRON	HANGAR	TOTAL
IBC AIRWAYS	25,800	6,400	17,500	269,200	23,500	342,400

SOURCE: Broward County Aviation Department, Fort Lauderdale-Hollywood International Airport, Airport Layout Plan, February 2011.
PREPARED BY: Basulto Management Company, April 2016.

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SOURCES: Broward County Aviation Department, *Fort Lauderdale-Hollywood International Airport Layout Plan*, July 15, 2015. BCAD, *Aerial Photography of FLL*, 2015.
PREPARED BY: Basulto Management Consulting, April 2016

EXHIBIT 2.9-9

NORTH 0 200 ft.

H Aviation Facilities

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SOURCES: Broward County Aviation Department, *Fort Lauderdale-Hollywood International Airport Layout Plan*, July 15, 2015. BCAD, *Aerial Photography of FLL*, 2015.
PREPARED BY: Ricondo & Associate, Inc., March 2017.

EXHIBIT 2.9-10

NORTH 0 200 ft.

IBC Airways Facilities

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2.9.3.4 Vacant General Aviation Facilities

Table 2.9-8 lists vacant general aviation facilities.

Table 2.9-8: Vacant General Aviation Facilities

BUILDING NUMBER	SIZE (SQUARE FEET)	ADDRESS
N-8	6,200	850 SW 34 St., Ft. Lauderdale, FL. 33315
N-9	10,000	3402-3404 SW 9th Ave., Ft. Lauderdale, FL. 33315
N-10	10,000	3406 SW 9th Ave., Ft. Lauderdale, FL. 33315
W-7	6,400	3940 SW 12th Terrace, Ft. Lauderdale, FL 33315
TOTAL	**32,600**	

NOTE: Building W-7 is slated for demolition.

SOURCE: Broward County Aviation Department, Fort Lauderdale-Hollywood International Airport, Airport Layout Plan, February 2011.
PREPARED BY: Ricondo & Associates, April 2016.

2.9.4 NON-AERONAUTICAL TENANTS

Other non-aeronautical Airport tenants, also depicted on Exhibit 2.9-1, include:

- the Lauderdale Small Boat Club, located at 1740 SW 42nd St, whose lease runs through August 2020,
- the Naval Air Station Fort Lauderdale Museum, located at 4000 W Perimeter Rd., with an open lease, and;
- the Broward County Animal Care and Adoption Center, located at 1870 SW 39th St. whose lease runs through September 2016.

2.10 Cargo Facilities

There are four air cargo facilities at FLL, situated north of Runway 10L-28R, and operated by the following entities:

- BCAD, who operates the Airport's joint-use Belly Haul Air Cargo Building.
- FedEx Cargo, a major cargo integrator, which currently accounts for the majority of dedicated air cargo space at the Airport.
- United Parcel Service, a major cargo integrator, which operates on a ramp position adjacent to a third-party cargo building (Lynxs Cargoport) in the northwest corner of the Airport.
- Aero Lauderdale LTD, which includes a total of six buildings (four cargo buildings, a single story office structure and a conventional hangar) at the approximate mid-point of the facilities north of Runway 10L-28R, and which is managed by AeroTerm. These facilities are occupied by a mix of users that include Azul/JetBlue Airlines Cargo, Spirit Airlines Cargo, United Airlines Cargo/Ground Support Equipment (GSE)

and GB Airlink Express, a small South Florida cargo carrier providing service to several destinations in the Bahamas.

Table 2.10-1 summarizes the area of the cargo facilities per functional use, and **Exhibit 2.10-1** depicts the location of these cargo facilities on the airfield, which are further described in the following paragraphs.

2.10.1 BELLY HAUL AIR CARGO BUILDING

Exhibit 2.10-2 details the layout of the Belly Haul Air Cargo Building (Belly Cargo Building). Airline belly cargo is handled through this multi-tenant facility, located in the northeast corner of the Airport, immediately south of the new Airport Maintenance Building.

2.10.1.1 Building Description

The Belly Cargo Building (FLL Building N-29) is a single-story 35,000 square-foot structure. As constructed, the building is capable of providing a total of 26 grade-separated truck loading bays, as well as an additional bay with a ramp for vehicle access from the landside. However, as presently configured, the building provides 18 grade-separated truck loading docks on the landside of the structure with the remaining 9 bays of building being developed as office, administrative, and support space. The building floor elevation is approximately 4 feet above the ground elevation of the loading dock positions, providing for direct movement of freight pallets from the Belly Cargo Building into the backs of parked trucks with no elevation change. The distance between the alignment of Fuel Tender Road and the Belly Cargo Building is limited and constrains truck movements on the landside of the Belly Cargo Building.

The building is currently occupied by four tenants as of April 2016, listed below (west to east), and has one vacant space:

- Consolidated Airline Services - 5,000 sq. ft. and an estimated three truck dock positions.
- Southwest Airlines Cargo -10,000 sq. ft. and five truck dock positions, and;
- United Airlines Cargo - 2,500 sq. ft. and two truck dock positions;
- Vacant – 2,500 sq. ft. and three truck dock positions;
- Delta Air Lines Cargo – 15,000 sq. ft. and five truck dock positions;

2.10.1.2 Landside Access

Landside access to the Belly Cargo Building is provided from SW 34th Street at SW 2nd Avenue, via Fuel Tender Road. Fuel Tender Road provides access to the new Airport Maintenance Building and the Belly Cargo Building, as well as to other tenants in the northeast quadrant that are located within the airside operations area (AOA) and require access through Gate 100.

On the east non-secure side of the Belly Cargo Building, and just southwest of Gate 100, is a paved vehicle area that is typically used for overflow parking of vehicles waiting for an escort into the AOA. When needed, this location also accommodates trucks waiting to access a truck dock at one of the four belly cargo tenant facilities. This paved area is part of the belly cargo area and provides approximately 13,500 sq. ft. of overflow vehicle parking and staging on the non-secure side of the Belly Cargo Building.

Table 2.10-1: Cargo Facilities Areas (Square Feet)

FUNCTIONAL USE	BELLY HAUL CARGO BUILDING	FEDEX	LYNXS CARGOPORT		AERO LAUDERDALE					TOTAL SPACE AVAILABLE
			AVAILABLE 4/	UPS 5/	AVAILABLE 6/	SPIRIT AIRLINES	UNITED AIRLINES	AZUL/ JETBLUE	GB AIRLINK	
Cargo/Warehouse/Office	35,000	62,100	56,100	1,220		19,200	0	7,200	7,000	
Ground Support Equipment Storage (Outdoor)	43,200	181,300 3/	28,620	9,150			3,000		0	
Truck Dock Area	21,220 (*)	25,750 (*)	24,560 (*)	0					3,000 (*)	
Aircraft Parking Ramp	0	641,000	77,200	54,090					6,000	
Vehicular Parking	25,570 (*) 1/)	109,170(*)	36,000 (*) 1/	0					66,000 (*)(1)	
Drainage/Landscape	13,500 (*)	266,400 (*)	136,900 (*) 1/	0					0	
Vacant	11,200	0	0	0					0	
TOTAL (SQUARE FEET)	124,120 2/	1,285,720	359,380	64,460 4/					16,000 4/	
TOTAL (ACRES)	2.8	29.5	8.3	1.5					0.4	

NOTES: The areas are an approximation and do not reflect exact square footage on site.

1/ Area reflects shared vehicular parking lot or drainage. Does not belong to leasehold area for specific tenant.

2/ Total facility area minus the shared vehicular parking lot/drainage area.

3/ Ground support equipment storage occupies approximately 128,800 square feet, and tractor trailer storage occupies approximately 52,500 square feet.

4/ Area reflects total area available on site under major tenant. The sub-tenant (UPS) does not use/lease all that area.

5/ Area reflects the area currently used/leased by UPS (the sub-tenant).

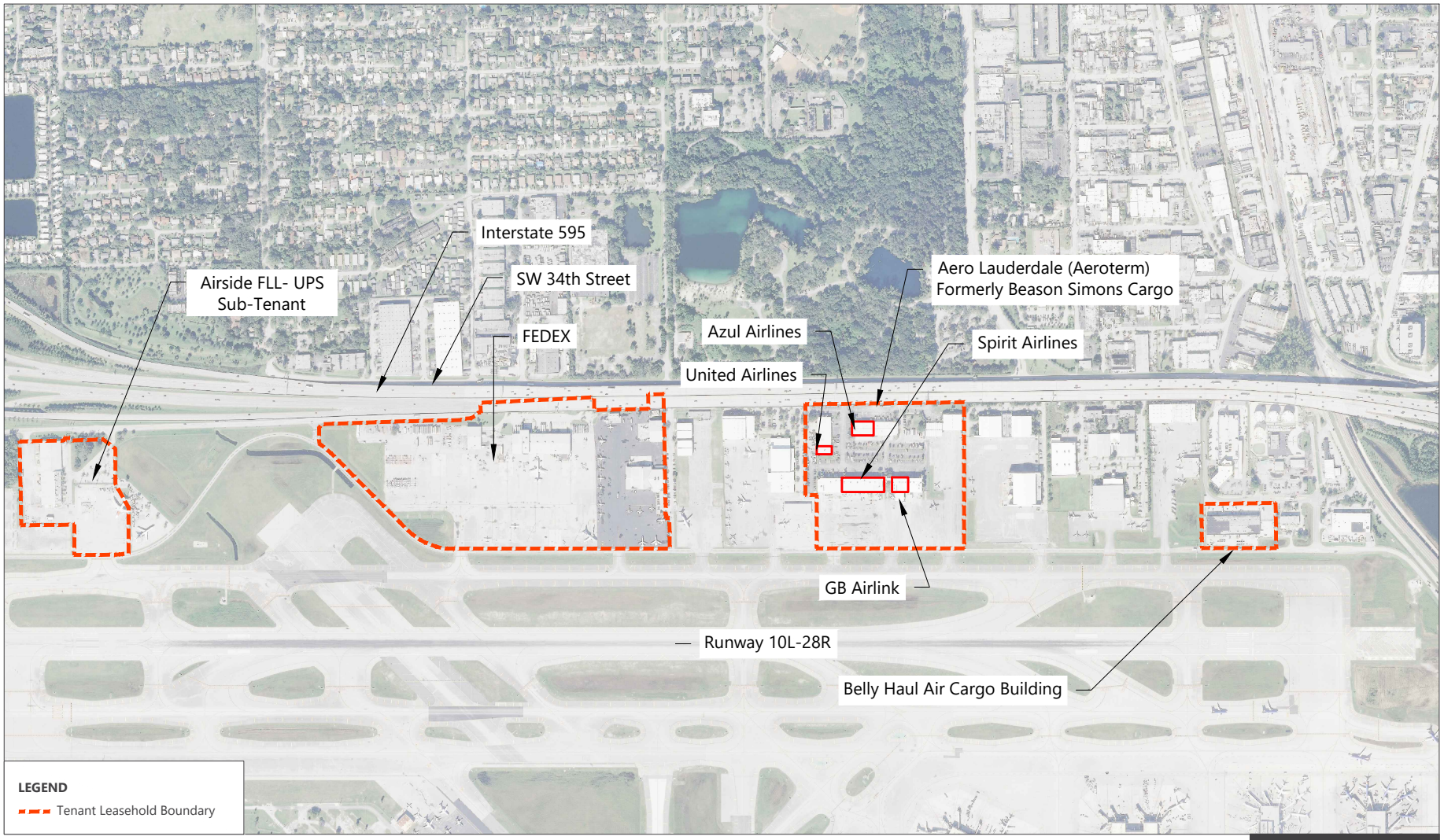
6/ Area available in four cargo buildings of the Aero Lauderdale complex (does not include Buildings N-15 and N-15, currently used by IBC Airways for charter operations).

(*) Measurements approximated/obtained from Google Earth Pro, 2016.

SOURCES: Joe Grandolpho, FedEx Facilities, April 2016; Bill Clutter, GB Airlink Facilities, March 2016; Kevin Hoffmann, UPS Facilities, April 2016; BCAD, Leaseholds Spreadsheet, January 2016; BCAD, North Side Lease Spreadsheet, January 2016.

PREPARED BY: Kimley-Horn & Associates, Inc.

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SOURCE: BCAD, FLL basemap, 2015; Joe Grandolpho, Fedex Facilities, April 2016; Kevin Hoffmann, UPS Facilities, April 2016; Bill Clutter, GB Facilities, March 2016; Google Earth, Belly Cargo Facilities, 2016.
PREPARED BY: Kimley Horn & Associates, Inc., April 2016.

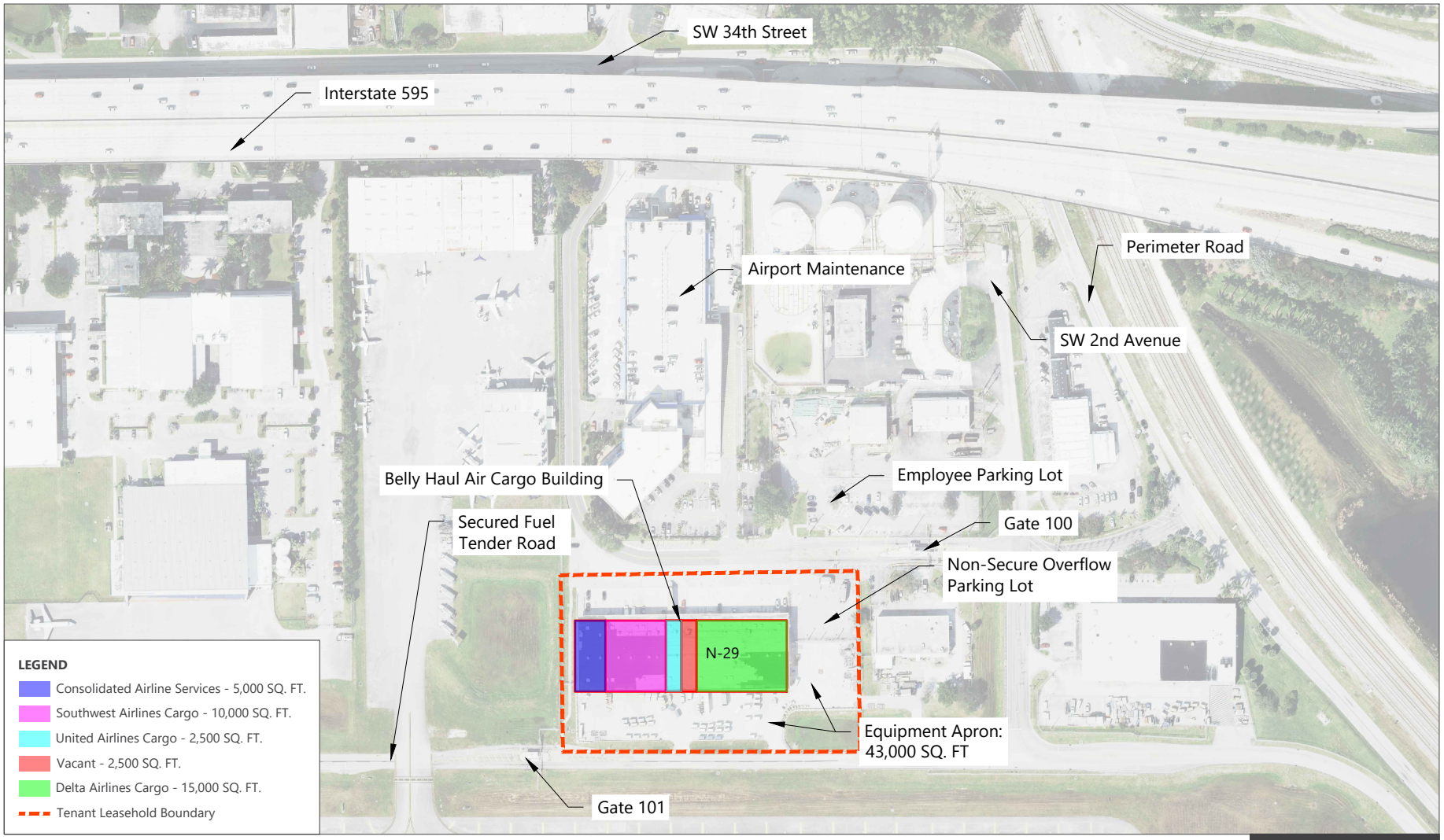
EXHIBIT 2.10-1

NORTH 0 1,000 ft.

Cargo Facilities Overview

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SOURCE: BCAD, FLL basemap, 2016; Google Earth, Belly Cargo Facilities, 2016
PREPARED BY: Kimley Horn & Associates, Inc., April 2016.

EXHIBIT 2.10-2

NORTH 0 250 ft.

Belly Haul Air Cargo Building

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2.10.1.3 Airside Access

Access to the Belly Cargo Building from the Passenger Terminal is provided via a secure 25-foot-wide, bi-directional roadway that extends from the northeastern end of the apron serving Terminal 1, around the east end of Runway 10L-28R. The roadway provides access to the south side of the Belly Cargo Building via two access drives just prior to Gate 101.

2.10.1.4 Ground Support Equipment Staging and Storage

A paved equipment maneuvering area located inside the security fence is provided along the entire south side of the Belly Cargo Building, as well as adjacent to the east side of the building. Not including the paved access points between the equipment apron and the perimeter roadway, these two connected secure side paved equipment operational areas provide a total of 43,200 square feet (sq. ft.) of space for tugs, carts and vehicle movements. There is no grade separation between this paved exterior apron and the floor elevation of the building, and as such, ground equipment can drive directly into the Belly Cargo Building from the outdoor equipment apron.

2.10.1.5 Employee and Visitor Parking

Parking for customers coming to the facility to pick up packages is not specifically delineated in the area in front of the Belly Cargo Building. Generally, customers park immediately in front of the nine bays that have been converted to office and administrative space. This informal arrangement is not ideal, but given space limitations in front of the Belly Cargo Building, the ability to designate specific customer parking spaces is constrained. The paved area noted in the previous paragraph could alleviate some of this need, but due to its location on the end of the building, it is not well suited to serving the needs of customers of tenants located in the west half of the facility. Additionally, there is a need for a location to stage vehicles requiring an escort to enter the AOA to avoid creating a bottleneck at Gate 100; as such, for the time being, the use of this area is anticipated to remain unchanged.

Parking for employees is provided in a parking lot located to the immediate north of Gate 100, across Fuel Tender Road and northeast of the Belly Cargo Building. This lot, which is also used by employees at the Delta GSE maintenance shop, has 53 parking spaces located outside of the security fence.

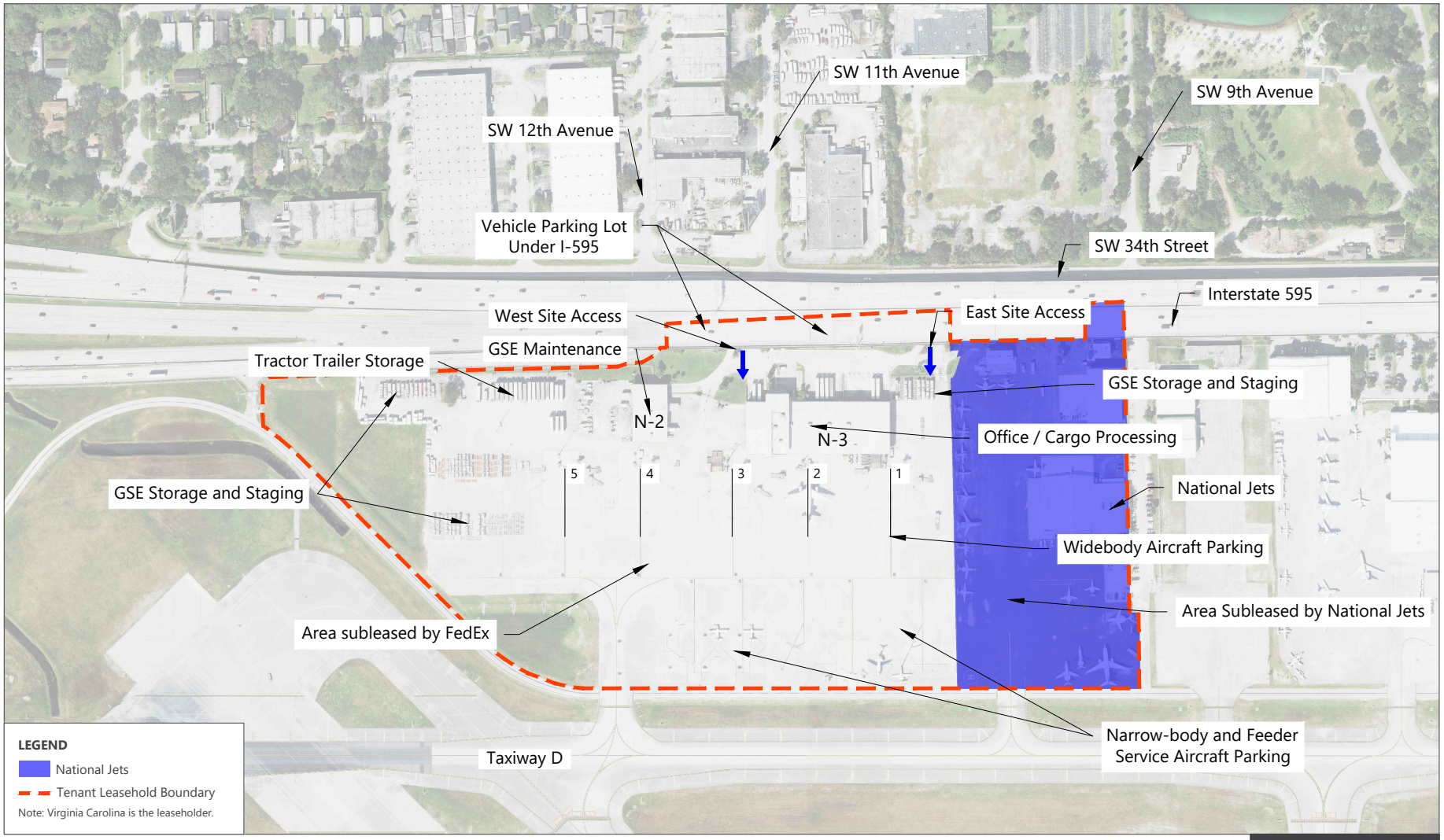
2.10.2 FEDEX CARGO FACILITY

Exhibit 2.10-3 shows the layout of the FedEx Cargo Facility. The FedEx Cargo Facility is located east of the abandoned crosswind runway at FLL, along Taxiway A and west of the National Jets FBO. FedEx Cargo operates on a leasehold held by the Virginia-Carolina Joint Venture, who is also the owner/operator of National Jets FBO, which shares the overall leasehold with FedEx. The combined leasehold of National Jets FBO and FedEx Cargo comprises 41 acres and the lease for the entire site expires May 31, 2022. Based on a calculation of area occupied by National Jets FBO, FedEx Cargo facilities and operations occupy an estimated 23 acres of the total leasehold.

2.10.2.1 Buildings Description

The portion of the overall leasehold occupied by FedEx Cargo includes two buildings (FLL Buildings N-3 and N-2), area for the staging of ground equipment used in the loading and off-loading of containerized cargo, a dedicated storage area for staging tractor trailers and an extensive aircraft ramp area with parking positions for a combination of wide-body aircraft, narrow-body aircraft, and small feeder aircraft.

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SOURCE: BCAD, FLL basemap, 2016; Joe Grandolpho, Fedex Facilities, April 2016
PREPARED BY: Kimley Horn & Associates, Inc., April 2016.

EXHIBIT 2.10-3

NORTH 0 400 ft.

FedEx Cargo Facility

Drawing: P:\Project-Miami\BCAD\2015 Master Plan Updates\01 - FLL Tasks\I-4 Inventory\CAD\2.10-3 - FedEx Cargo Facility_Inventory.dwgLayout: Layout1 Plotted: Oct 29, 2020, 03:51PM

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Cargo Processing/Administration (Building N-3)

Building N-3 houses cargo processing, office space and administrative functions, and is approximately 50,900 sq. ft. The warehouse/processing portion of the building is on a single level, while the office space is on two levels.

Cargo is offloaded from aircraft and processed through the warehouse/processing area before being loaded onto trucks and distributed to regional service centers for delivery to customers, or is loaded onto the two to three Cessna Caravan aircraft operated by Mountain Air, an affiliated carrier that provides feeder service from Key West and Marathon, Florida.

On the airside, the building has large overhead doors at ramp level, to facilitate ingress and egress by GSE, along the building's south and east walls. The doors along the east wall open onto a covered area, and allow for the movement of equipment and freight containers from inside the building to the ramp or to equipment staging areas, including one located near the northwest corner of the main cargo processing building.

On the landside, there are a total of 21 tractor trailers parking positions, located as follows:

- 15 positions back to an elevated loading dock that allows for direct landside loading and off-loading of cargo from the cargo building floor onto the tractor trailers without the need to move the cargo vertically.
- 2 positions, located on the far-east end, back to an open ramp area covered by the building roof.
- 4 positions back to the loading dock, but without direct access into the cargo processing area of the building.

Maintenance (Building N-2)

Building N-2, located approximately 215 feet to the west of Building N-3, has a ground footprint of 11,200 sq. ft. It has a partial second floor in roughly the southern half of the building, while the northern half is a single level. The building fulfills several functions that include:

- conducting indoor maintenance and repair of GSE and other service and support vehicles,
- storage of equipment parts and other materials needed in the repair services provided that includes a limited inventory of aircraft parts to address potential routine maintenance needs.
- small office and administrative area for personnel.

Two large overhead doors are located along the west side of the building, within the airport security perimeter fence. Three large overhead doors are located along the east side of the building and provide access to maintenance areas; the northernmost door is situated outside of the AOA fence, thereby allowing for vehicles to enter the building without having to enter the Security Identification Display Areas (SIDA),, while the other two overhead doors are on the secure side. The first floor office/administrative area is also located on the secure side of the building. Vehicle access to the secured areas of the building is provided via a gate located between the west end of Building N-3 and the east side of Building N-2.

2.10.2.2 Apron

Airfield Access

Airfield access from the FedEx apron is provided by a single 90- foot wide connector taxiway between Taxiway A and the apron. This connecting taxiway is located east of Taxiway D.

Aircraft Parking

The majority of the FedEx ramp is devoted to aircraft parking. Additionally, it accommodates storage and staging of GSE, cargo containers and semi-truck trailers.

As shown on Exhibit 2.10-3, the apron is configured to accommodate six wide-body aircraft positions (five north of the apron taxilane, and one south of it, in the southeast corner of the apron) and four narrow-body or smaller aircraft parking positions (south of the apron taxilane). The aircraft parking positions south of the apron taxilane carry aircraft length limitations. Per input from FedEx, a variety of aircraft have been used in their operations at FLL including such models as the MD 10-10/30, MD-11, A300, A310 and more recently the B767-300F. It was also noted that three of the wide-body positions nearest the cargo processing building are being improved with the addition of nose tethers and fixed air stairs for the expanded use of the B767-300F, as the MD 10-10/30 will be phased out over the next several years. These improvements, while focused on the Boeing 767 aircraft, would not preclude the use of these positions by other wide-body aircraft in the fleet. While the south side of the aircraft parking ramp is primarily marked for narrow-body aircraft positions, the current fleet operated by FedEx does not include what are traditionally considered narrow-body aircraft, with the exception of the Boeing 757-200 aircraft; however, the Boeing 757-200 aircraft is approximately 14 feet too long to use the wide-body parking position in the southeast corner of the apron. Due to these aircraft length limitations, the apron area south of the apron taxilane is not heavily used and mainly accommodates the operations by Mountain Air Cargo. The portion of the apron specifically devoted or marked for aircraft-related parking and maneuvering encompasses an estimated 641,000 sq. ft. of full strength apron pavement.

Ground Support Equipment Staging and Storage

West of the wide-body apron parking positions is a large area devoted to the storage and staging of cargo handling equipment, such as cargo containers and container carts, along with 20 marked spaces for tractor trailer storage and parking of fuel trucks. Combined, the GSE storage areas, tractor trailer storage and affiliated circulation area on the west end of the apron occupy an estimated 181,300 sq. ft., which includes excess space to accommodate additional equipment staging if needed.

East of and adjacent to Building N-3 is an area used for cargo container storage and staging.

2.10.2.3 Landside Access

Landside access to the FedEx Cargo facilities is provided via two entry points, the east site access and the west site access. The east site access enters along the boundary line with the National Jets FBO site. This access drive extends under I-595 and onto the FedEx site and consists of a divided four lane drive with two entrance and two exit lanes separated by a center median. When traveling from east to west on SW 34th Street, this is the first means of ingress to and egress from the FedEx Cargo site. This east site access is used primarily by FedEx to accommodate

trucks entering the site through a double gate to the aircraft parking apron and the east end of Building N-3, as well as providing the primary means to access the Building N-3 truck docks. FedEx prefers that the east site access not be used by automobile traffic, as it routes this traffic directly in front of the majority of the truck docks, creating the potential for congestion and delay in their movement of products.

The west site access is further west on SW 34th Street/SW 33rd Place, west of the intersection of SW 11th Avenue. The drive consists of four lanes with two entrance and two exit lanes separated by a partial raised median along with a painted median. This drive provides access to two parking areas located under the elevated alignment of I-595, to the main entrance and office/administrative portion of Building N-3 and to a security gate accessing the FedEx apron and the area of the GSE maintenance building located inside the security fence.

2.10.2.4 Employee and Visitor Parking

Employee and visitor parking is provided in three locations in front (north) of Building N-3. These areas include two parking lots located under the elevated alignment of I-595, and one small parking lot directly in front of the main entrance to Building N-3. The parking lots located beneath I-595 are accessed from the west site access. The access drive bisects the lots into a lot to the east and a lot to the west of the drive. The parking area on the west side of the access drive is a paved parking area that provides a total of 37 vehicle parking spaces. To the east of the access drive is a larger parking area, also located beneath I-595, providing an additional 103 total parking spaces, including three handicapped spaces. In front of the main entrance to the FedEx office and cargo processing building is a small parking area that provides an additional seven parking positions, consisting of three handicapped spaces, one space reserved for the employee of the month and three additional standard spaces. Combined, the three parking areas provide a total of six handicapped parking spaces and 138 standard parking spaces for a total available parking capacity of 144 spaces. Based on input from FedEx, the number of available parking spaces is not currently adequate to meet the needs of their employees, and additional parking needs to be considered.

2.10.3 UNITED PARCEL SERVICE CARGO FACILITY

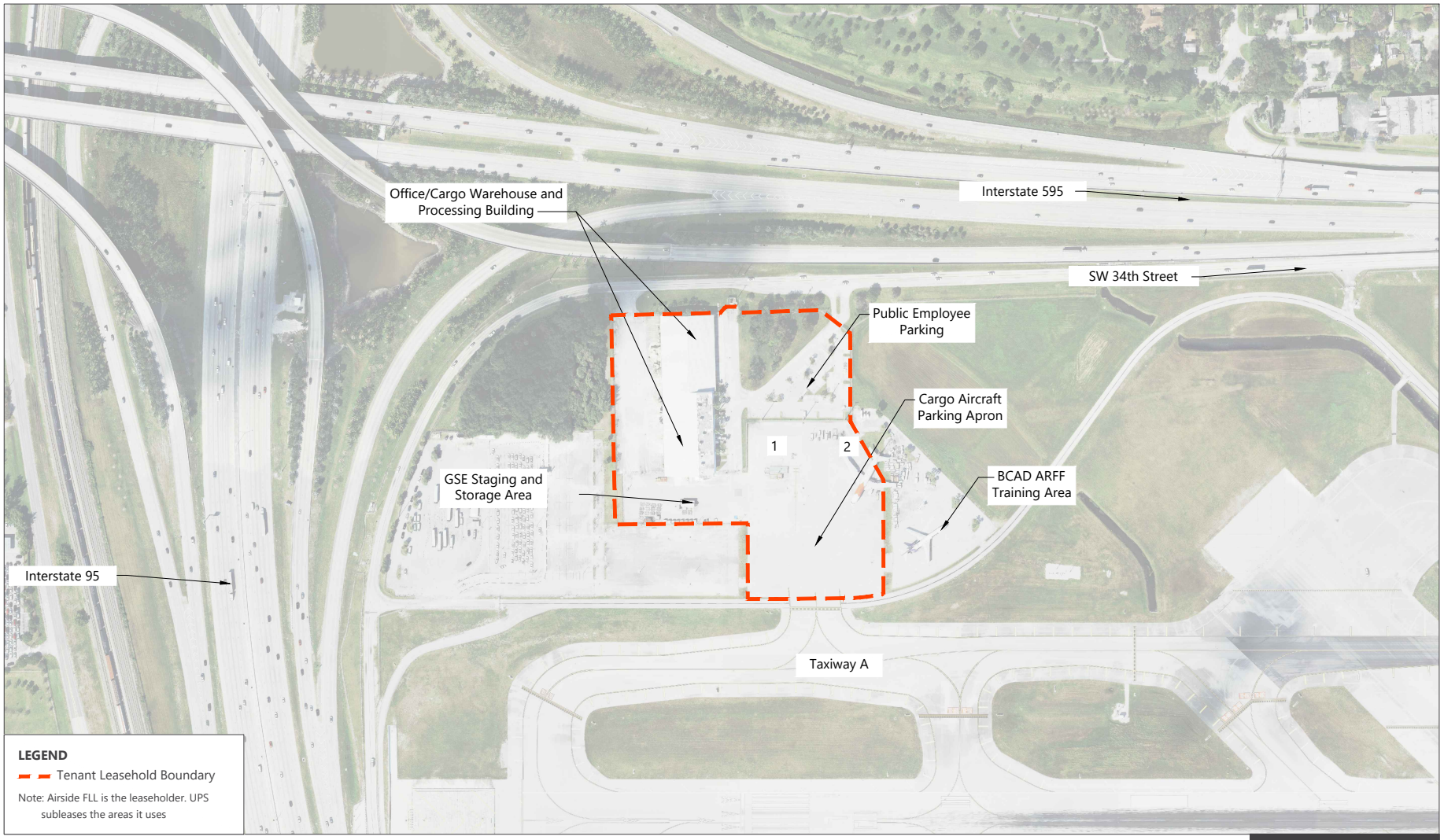
Exhibit 2.10-4 shows the layout of the United Parcel Service (UPS) Cargo facility. UPS recently moved their cargo operations from a site between the Sheltair North FBO aircraft parking apron and the Aeroterm Ramp, to the former Lynxs Cargoport leasehold, which is located in the northwest corner of the Airport, where they now operate as a tenant. The overall lease on the Lynxs Cargoport expires May 31st, 2028. Based on visual observations, UPS operates out of a portion of the former Lynxs Cargoport facility, which is located on an 11-acre site.

2.10.3.1 Building Description

Available Facilities

Building N-1 (approximately 56,100 sq. ft.in total) is designed as a cargo processing building, and includes a two-story area on the east (landside) side of the building that houses office space, in approximately 19,800 square feet.

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SOURCE: BCAD, FLL basemap, 2015; Kevin Hoffman, UPS facilities, April 2016
PREPARED BY: Kimley Horn & Associates, Inc., April 2016.

EXHIBIT 2.10-4

NORTH 0 400 ft.

United Parcel Service Cargo Facility

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Building N-1 has a total of 25 grade-separated truck dock positions along the western length of the building, capable of serving vehicles up to and including semi-tractor trailer trucks. Truck positions at each dock space consist of a 10-foot by 40-foot stall with an additional 88 feet beyond the end of the stall for on-site truck circulation and maneuvering. This paved maneuvering area is currently fenced off with gated access via SW 34th Street. An additional 15 grade-separated truck dock positions are located in the northern half of the building, on its eastern publically-accessible side. South of these truck docks, along the east side of the building, is the two-story office area. The cargo portion of the Lynxs Cargoport is configured in a manner more typical of a truck freight operation than an air cargo building. Air cargo buildings typically, but not always, allow for tug and cargo cart access directly from the aircraft parking apron into the cargo building without any grade separation between the aircraft apron and the building floor. Truck terminals tend to use elevated loading dock positions, often along both sides of a building, to facilitate truck to truck transfers of cargo or "crossdocking", which is a configuration much more similar to that of the Lynxs Cargoport facility.

To facilitate the processing of air cargo, a ramped access point located at the south end of the building is provided. This allows for cargo tugs and carts to enter from and exit to the SIDA while providing access to the cargo processing portion of the building, where cargo would be dispersed to the truck loading positions based on its customer or destination.

Facilities Used by UPS

UPS indicated that no sorting and cargo processing takes place in Building N-1, as all of UPS's cargo processing is performed off-Airport. UPS uses some of the Building N-1 office space: approximately 520 sq. ft. for management and load planning and approximately 700 sq. ft. for aircraft maintenance storage.

UPS indicated that they currently do not use or lease any of the truck docks, but rather load containerized cargo off and onto their aircraft directly to and from UPS trucks on the apron, for transport to their local processing center.

UPS also indicated they had a manual sort building on the property, but did not elaborate on building size. As a result, determining the current and future use, or extent of availability of building and apron space at this particular location, will be dependent upon receipt of additional input and clarification regarding the activities of UPS.

2.10.3.2 Apron

The aircraft parking apron associated with the Lynxs Cargoport is approximately 462 feet in length (north to south) and 361 feet in width (east to west) in the southern two thirds of the apron, and narrows to 272 feet on the north end.

Airfield Access

Airfield access to the Lynxs Cargoport apron is provided by a single 135-foot wide taxiway connector between Taxiway A and the apron. This connector is located west of Taxiway A1.

Aircraft Parking

The existing apron provides approximately 164,000 sq. ft. of aircraft parking. Two aircraft positions are evident from a review of aerial photography, although only the westernmost position is marked with an aircraft parking position line. This western parking position is the only one currently used by UPS. There are two concrete pads on the apron; cargo aircraft are typically parked so as to position the landing gear on these concrete pad. The existing aircraft parking position line used by UPS is not centered on the westernmost concrete, nor is it lined up with previous markings on the apron. As such, the existing lead-in taxilane reduces the size of aircraft that could taxi in and be parked with its nose facing north on the eastern parking position/concrete pad. The eastern parking position is currently occupied by a Dynamic Airline B767 that suffered a fuel fire and is currently not airworthy. Although this aircraft has been pushed to the far northeast corner of the apron for storage, it blocks the east aircraft parking position.

Based on approximate dimensioning, the apron may simultaneously accommodate two common ADG IV cargo aircraft, such as the Boeing 767-300F, Airbus 300-600F or Airbus 310F, should demand dictate. However, only one ADG V aircraft, such as the Boeing 777-200F or Airbus 330F, could be accommodated at a time on the apron. UPS typically operates a daily Boeing 757-200PF to serve FLL. UPS indicated that they currently lease 54,090 sq. ft. of aircraft ramp area.

Ground Support Equipment Staging and Storage

South of the cargo building and inside the AOA is a paved GSE storage and staging area comprising an estimated 64,500 sq. ft. of space. UPS currently uses approximately 9,150 sq. ft. of the GSE area for their equipment. This area also provides a paved movement area for cargo tugs and carts moving cargo to and from the point of entry and exit on the south end of the cargo building.

To the immediate east of the aircraft parking apron is another paved area, separated from the parking apron by a narrow grass strip. This area is currently occupied by a decommissioned Boeing 727-200 aircraft that was donated to BCAD by FedEx for use in training exercises by airport emergency personnel. The northwesterly portion of this area is also used for outdoor storage of various pieces of GSE. There is taxiway connector between the designated cargo apron area and this section of pavement.

2.10.3.3 Landside Access

Landside access to the Lynxs Cargoport is provided via two entry points along W. Perimeter Road:

- One entry point provides access to the non-secure side of the building and employee/visitor parking facilities, and;
- One entry point provides access to the secure side of the building, through a security gate leading to the truck docks area.

2.10.3.4 Employee and Visitor Parking

Employee and customer parking for this cargo facility is also provided on the east side of the building. A total of 110 standard and four handicapped parking positions are provided, with 13 of these fronting the office portion of the

cargo building. The remaining spaces, including all four handicapped spaces, are located in a triangular shaped lot positioned immediately north of the aircraft parking apron.

2.10.4 AERO LAUDERDALE COMPLEX

2.10.4.1 Building Description

The Aero Lauderdale complex is generally located to the south of SW 34th Avenue between SW 4th Street and SW 9th Street, immediately east of the Sheltair North FBO. The complex was originally known as the Beason-Simons LTD Cargo Offices, and included a total of seven buildings on the site, of which six were ultimately constructed (FLL Buildings N-14, N-15, N-17, N-18, N-19W and N-19E). The seventh building was identified on site drawings as a 20-foot wide, 129.5-foot long, two-story concrete block and stucco office structure.

Facilities within the Aero Lauderdale leasehold are managed by AeroTerm, whose current lease expires July 31, 2022. Aero Term is a third-party company specializing in development, acquisition, financing, leasing and management of airport properties, with a particular focus on facilities serving both airports and tenants specializing in air cargo operations and other airport support related activities. **Table 2.10-2** provides building characteristics for the existing facilities within the Aero Lauderdale leasehold.

Table 2.10-2: Aero Lauderdale Building Characteristics

BUILDING NUMBER	BUILDING TYPE/USE	FLOORS	SQUARE FEET (FT²)	TRUCK DOCKS	CONSTRUCTION TYPE
N-14	Cargo	1-Story	19,200 sf	12	Metal
N-15	Cargo	1-Story	24,000 sf	27	Meta
N-17	Office	1-Story	4,700 sf	None	Concrete Block/Stucco
N-18	Hangar	1-Story	13,182 sf	None	Metal
N-19E	Cargo with Office	3-Story	33,600 sf – 1st floor 4,800 sf – 2nd floor (1)(2) 10,200 sf – 3rd floor (1) Level 2 & 3 are office	23	Metal
N-19W	Cargo with Office	3-Story	16,800 sf – 1st floor 5,600 sf – 2nd floor (1)(2) 19,600 sf – 3rd floor (1) Level 2 & 3 are office	8	Metal

NOTES:

Building number N-16 is assumed to have been reserved for the structure shown on the boundary survey drawing but not constructed.

1/ Measurements approximated/obtained from Google Earth Pro, 2016.

2/ Area values for levels 2 & 3 were estimated based on visual observation and review of aerial photography as as-build drawings were unavailable.

SOURCES: Joe Grandolpho, FedEx Facilities, April 2016; Bill Clutter, GB Airlink Facilities, March 2016; Kevin Hoffmann, UPS Facilities, April 2016; BCAD, Leaseholds Spreadsheet, January 2016; BCAD, FLL North Side Lease Terms 09-23-20015, May 2016; Beason-Simons LTD, Boundary Survey drawing – BCAD 5197, Ground floor building areas, May 2016.

PREPARED BY: Kimley-Horn & Associates, Inc., May 2016.

As indicated above, Buildings N-14 and N-15 in the complex were not designed as standard pass-through cargo handling facilities. These consist of a concrete block office structure and an adjacent conventional 13,000 sq. ft. metal hangar originally constructed for Amerijet, who conducted cargo operations from the facility. These two buildings and associated landside and airside areas are now used by IBC Airlines, who formerly operated cargo flights from FLL, but indicated that these operations ceased and they are now operating passenger charter flights using regional jet aircraft. As noted, although the remaining four buildings that are presently located within the Aero Lauderdale LTD. leasehold were constructed consistent with a typical pass-through cargo building, and serve in this capacity for four current tenants (GB Airlink Express, United Airlines Belly Cargo, Azul/JetBlue Airlines Belly Cargo and Spirit Airlines Belly Cargo, discussed shortly), there are a number of other tenants and uses conducted in the site (as of April 2016) that include, but are not limited to:

- Lufthansa Sky Chefs – Passenger Airline Aircraft Catering – Portion of Building N-19W
- HMS Host – Airport Concessionaire – Portion of Building N-19
- D&D Ground Service Support – Ground Service Equipment Service – Portion of Building N-14
- Aviation Ground Support Services – Ground Handling services – Portion of Building N-15
- Broward Sheriff's Department – Police and Fire Equipment Servicing - East half of Building N-15
- IBC Airways – Passenger Air Charter Airline – Portion of Building N-19E, Building N-17 and N-18

2.10.4.2 Landside Access

Access to the Aero Lauderdale leasehold is afforded via four points of ingress and egress along the north boundary of the Aero Lauderdale site from SW 34th Street.

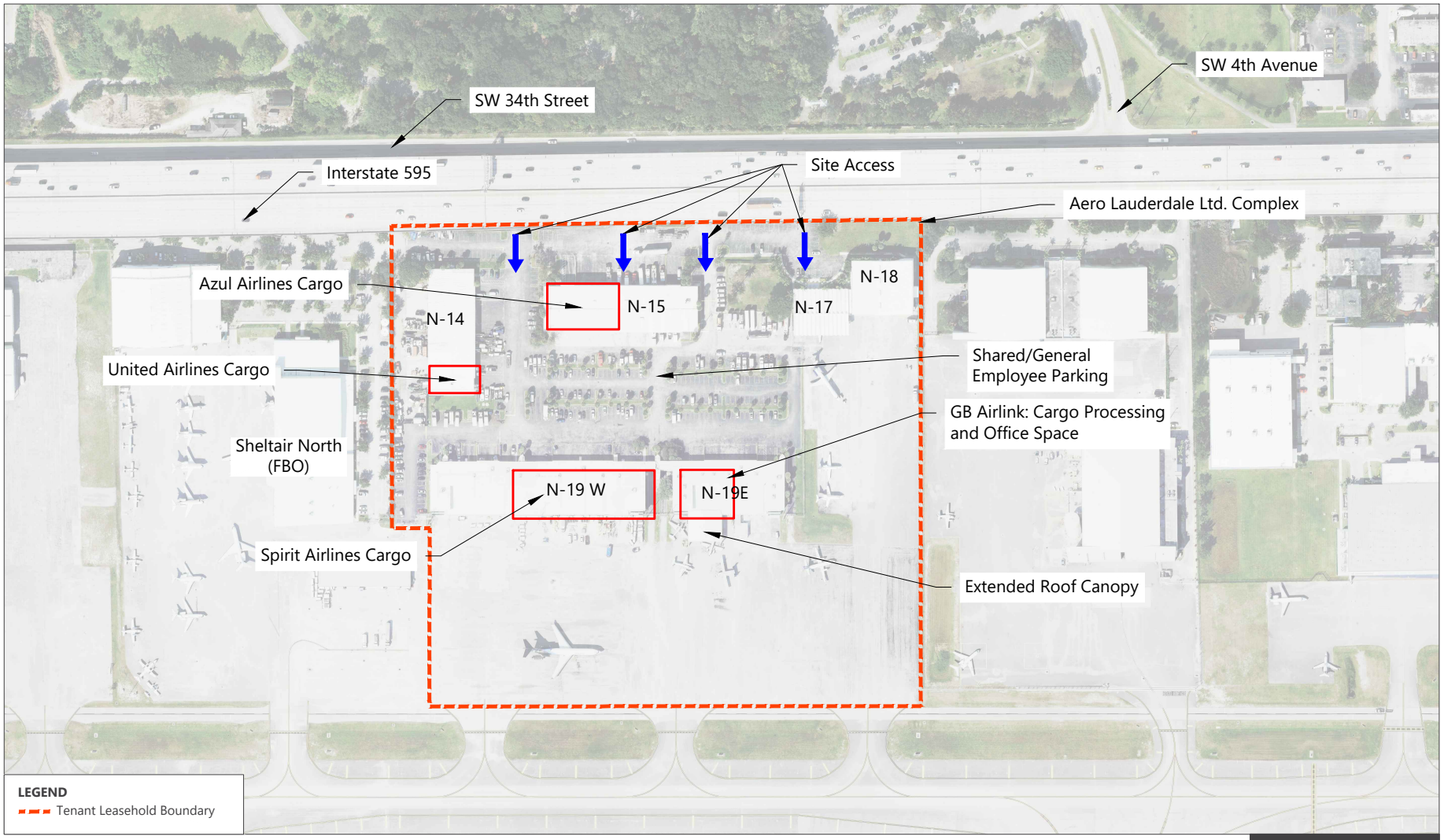
2.10.4.3 Employee and Visitor Parking

Employee and customer parking for the tenants in the Aero Lauderdale leasehold is provided by a large central parking area in the center of the site that provides 195 vehicle parking spaces. This central lot is supplement by additional parking that is located in front or along the sides of individual buildings that increases the total number of vehicle parking spaces on the site to 365, including eight handicapped spaces. An additional 12 spaces are provided for large truck parking and/or semi-trailer storage. The majority of these are currently occupied by the Broward County Sheriff and Fire Department for parking of emergency equipment.

2.10.4.4 Cargo Tenants

GB Airlink Express

Exhibit 2.10-5 shows the location of the GB Airlink Express Cargo facility. GB Airlink Express is an air cargo carrier providing on-demand expedited air and ground transportation for time-critical cargo/package deliveries. GB Airlink utilizes a fleet of three Beechcraft Turboliner aircraft to serve markets in the Bahamas and the northern Caribbean, along with providing service to markets in the southeast U.S. The majority of their activity occurs on routes between FLL and the Bahamas.



SOURCE: BCAD, FLL basemap, 2015; Bill Clutter, GB Facilities, March 2016
PREPARED BY: Kimley Horn & Associates, Inc., April 2016.

EXHIBIT 2.10-5

NORTH 0 300 ft.

Aero Lauderdale Facilities and Cargo Tenants

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GB Airlink Express is located at 610 SW 34th Street in space leased from AeroTerm, who manages multiple nearby buildings and tenants within their overall leasehold. GB Airlink Express operates out of the first floor of a two-story multi-tenant space with direct airside access to the aircraft apron via a large overhead door opening from the south side of their building. They currently occupy approximately 2,500 sq. ft. of building space that includes a limited area devoted to office/administrative and support space, and 4,500 sq. ft. of space devoted to cargo processing and storage, and tools and parts used for light maintenance activities on their aircraft.

On the landside, GB Airlink Express uses two truck dock loading positions for their cargo operation. One truck dock position allows trucks to offload from the bed of a trailer directly onto the floor of the building, while the second loading position provides the ability to back directly into the building itself. Off the south end of the GB Airlink Express building space is an extended roof that is approximately 65 feet wide and projects approximately 55 feet beyond the south side of their leased area. This provides a covered area to facilitate loading and off-loading of cargo during periods of inclement weather.

Airside access to the airfield is provided via two 75-foot wide taxiway connectors between the parking apron and Taxiway A, located roughly halfway between the intersection of Taxiway A with Taxiway A4 and Taxiway Q. Based on discussions with senior representatives of the carrier, ample ramp area of approximate 6,000 sq. ft. exists on the south side of the GB Airlink Express building space for their current operations the airline's anticipated future growth.

Employee and customer parking is provided in the general parking lot that serves the overall complex of buildings and was noted as being adequate. No specific assigned parking spaces are defined for GB Airlink.

Spirit Airlines Belly Cargo

Spirit Airlines occupies 16,800 square feet of cargo warehouse and processing space and an additional 2,400 square feet of office area on the east end of building N-19W (slightly over half of the ground level portion of this building), as depicted on Exhibit 2.10-5. Both Building N-19W and N-19E are constructed for the south face of the building fronts directly onto aircraft parking apron. As such, tenants in these buildings have the ability to offload cargo from aircraft directly into the cargo building itself, although for airline belly cargo, most of it would typically be tugged from the terminal area to each airline's cargo facility. On the landside, the portion of building occupied by Spirit Airlines is served by four grade-separated truck docks that allow for direct access from the cargo processing floor into the back of a semi-trailer, and six additional truck loading positions that are at the same grade as the finished first floor elevation of the cargo building.

As previously noted, employee and customer parking is provided by a large central parking area in the center of the Aero Lauderdale leasehold, and shared in common with other tenants of the complex. An additional 39 parking spaces are located on the west end of building N-19W, and are shared with tenants of building N-14 to the north.

A large aircraft parking apron is located south of Buildings N-19W and N-19E, comprising approximately 17,790 sq. yards, of which approximately 8,850 sq. yards is adjacent to the Spirit Airlines portion of the building. Visual observations have identified periods of time when two Spirit Airlines aircraft were parked on this section of apron. This area of the Spirit Airlines leasehold also provides space for the staging and storage of the airline's GSE.

United Airlines Belly Cargo

United Airlines occupies 3,460 square feet of space on the southern end of Building N-14. Building N-14 is a north-south oriented single-story cargo building near the western boundary of the Aero Lauderdale leasehold; it is 80 feet wide (east-west) and 240 feet in length (north to south), for a total of 19,200 square feet of total available space. Building N-14 does not directly abut an aircraft parking aircraft apron. Lack of direct apron access is far less of an issue for a belly haul cargo operation, as cargo carried in the belly of airline passenger aircraft is typically offloaded at the terminal gate and moved by tug to the belly cargo facility. While this space was identified in discussions with representatives of AeroTerm as belly cargo use, site visits indicated that the space may also experience use as a site for minor serving and/or repairs of GSE and activity often found in conjunction with space used for airline belly cargo handling.

Customer and employee parking for the United Airlines belly cargo space is provided by the large parking area located in the center of the Aero Lauderdale site. Additional parking for Building N-14 is located north of the building. The United Airlines space is served by three loading docks on the east side of the building that are not grade separated.

On the west side of the building is an operational area that is just under 80 feet in depth from the back of the building to the west boundary of the leasehold. This area accommodates the lateral movement of equipment along the entire length of Building N-14, as well as being used as a location for equipment storage and staging.

Azul/JetBlue Airlines Belly Cargo

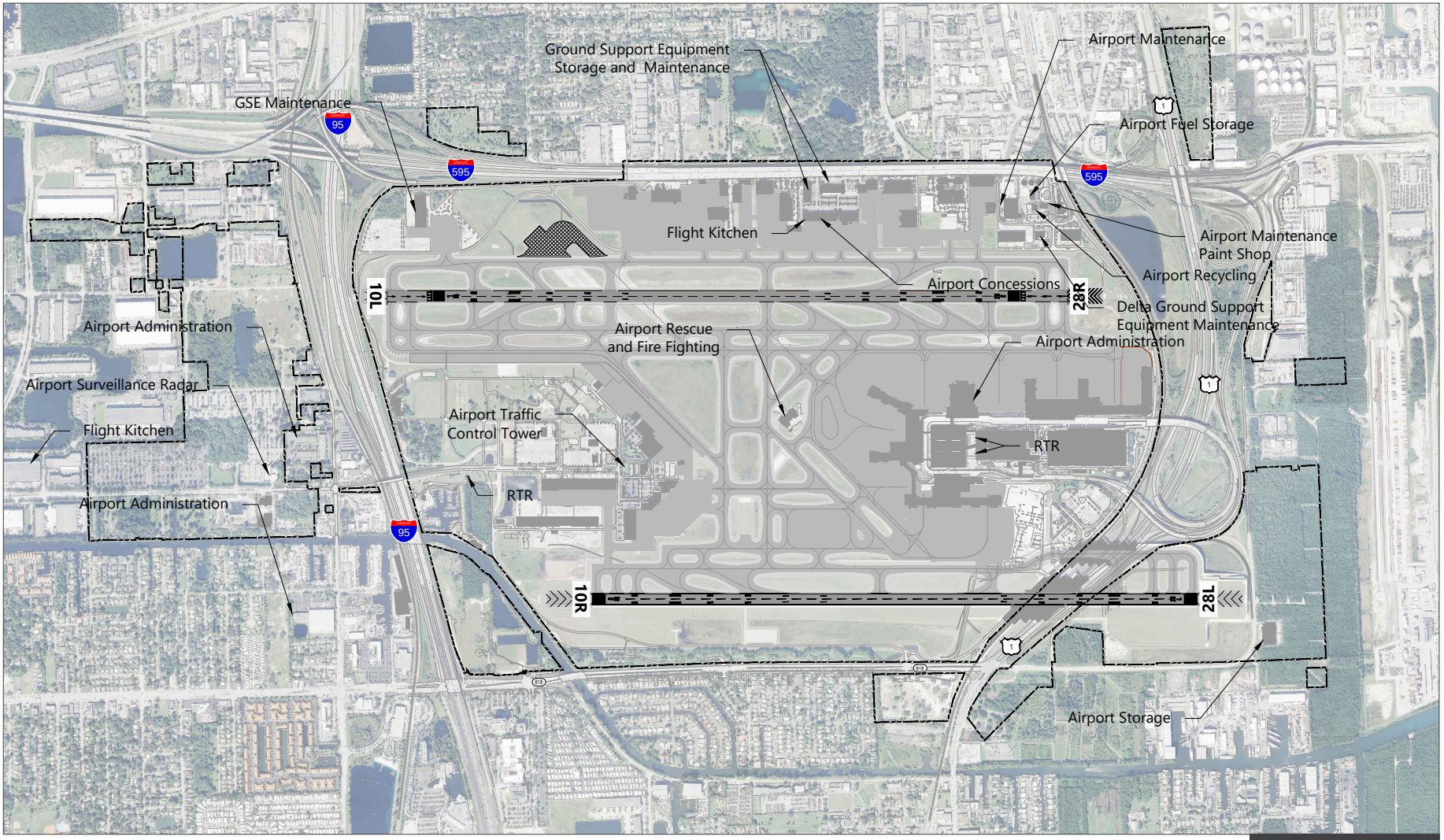
Azul/JetBlue Airlines belly cargo occupies the western section of Building N-15, as depicted on Exhibit 2.10-5. The remainder of Building N-15 is occupied by a non-cargo tenant. Building N-15 is an east-west oriented single story cargo building, and is 80 feet wide and 300 feet long, for a total building area of 24,000 square feet. Azul/JetBlue Airlines occupies 9,000 sq. ft. Similar to Building N-14, Building N-15 does not directly abut an aircraft parking apron.

Buildings N-15 has 13 loading dock positions on the south side of the building that are at the same level as the finished floor level of the cargo building, and another 14 dock positions, two at the same level as the floor elevation of the building, and 12 grade-separated loading dock positions. Building N-15 is configured to allow for movement of cargo in a cross-docking manner more typical of a cargo trucking transfer operation. Azul/JetBlue Airlines uses five dock positions on the north side of the building, four of which are grade separated and one at the same level as the cargo building floor; Azul/JetBlue Airlines also uses five of the non-grade separated dock positions on the south side of Building N-15.

Azul/JetBlue Airlines employees and customers may use parking facilities in the center of the leasehold, as well as at the north end of Building N-14 and to the north of the IBC Airways facilities in Building N-17 and N-18.

2.11 Airline and Airport Support Facilities

Support facilities provide various functions at an airport by supporting the airlines, airfield and terminal, but also support other airport and aviation activities. Activities conducted in these facilities directly impact the quality and safety of airport operations and contribute to a well-run airport. The location of airline and airport support facilities is depicted on **Exhibit 2.11-1**, and each facility is described below.



SOURCE: Fort Lauderdale-Hollywood International Airport Layout Plan, Broward County Aviation Department, July 15, 2015., Boundary and Topographic Survey of: Westside Expansion Parcel, Stoner and Associates, Inc., Partial Airside Plan for FedEX Sort Facility and National Jets FBO Prepared by Joseph Roles and Assoc., Inc., Sketch and Description of Sheltair, Stoner and Associates, Inc.,
PREPARED BY: Ricondo & Associates, Inc., Month Year.

EXHIBIT 2.11-1

NORTH 0 2,000 ft.

Airline and Airport Support Facilities

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2.11.1 AIRLINE SUPPORT

Airline support activities at FLL include fuel storage, flight kitchen, and GSE storage.

Aviation Fuel Storage Facilities

The FLL fuel storage facility is owned by Broward County and operated by Aircraft Service Group International's (ASIG). It consists of an on-Airport fuel farm with four above ground fuel storage tanks and associated fuel transfer infrastructure. Fuel is provided to both airlines and fueling companies such as World Fuel Services, who in turn, provide fuel to FBOs and GA users on the airport. The existing fuel tanks each have a capacity of 1.15 million gallons (approximately a total capacity of 4.6 million gallons). Three of the tanks are approximately 30 years old, and the fourth was installed in 2016. These tanks are fed via two pipelines; ASIG reports that less than 1 percent of the fuel comes in on trucks. Given current volumes, the facility has about 5 days of fuel available at any given time. Currently, the facility has five pumps (each capable of dispensing 1,000 gallons/minute), but only three or four pumps are typically in use during peak periods. Much of the piping, transfer, and control systems are also 30 years old and have been noted as being outdated.[6] The age of the equipment results in inaccurate tank gauging, poor fuel flow management, and requires increasing maintenance and hard to find replacement parts. The fuel facility maintenance and operations building (Building N-31) is noted as being insufficient to meet the function and space requirements for the control room, administrative offices, and laboratory. The *Northeast Quadrant Facilities and Access Planning Study* (Kimley-Horn, March 2016), indicates that the fuel farm site has experienced previous hazardous materials contamination and is encumbered by ongoing remediation and monitoring efforts. ASIG has administrative offices adjacent to and just north of the airport at 3383 SW 11th Avenue.

Flight Kitchens

Two flight kitchens serve FLL's airlines: LSG Sky Chefs and Gate Gourmet:

- LSG Sky Chefs is located on Airport property, in section of Buildings N-19W and N-14 (Aero Lauderdale complex), where it occupies a total of 17,500 sf. This space is used predominately to support concession type food and snack contracts with the airlines. For airlines requiring full meal service at FLL, LSG Sky Chefs maintains an offsite meal preparation facility located in Miami, which delivers meals to FLL via truck. Typically, LSG Sky Chefs provide international airlines with meals and domestics airlines with concessions.
- Gate Gourmet is located off Airport property, at 4140 SW 30th Avenue (intersection of SW 30th Avenue and SW 42nd Street).

Ground Support Equipment Storage and Maintenance

Delta Airlines performs routine GSE maintenance activities in Building N-34, located immediately east of the Belly Haul Cargo Building. The structure is a single- story structure approximately 30 feet in height and encompasses an estimated 7,140 square feet of enclosed space. When originally developed, the building was located outside of the airport security fence (SIDA), but with the construction the security gate (Gate 100) immediately north of the building,

[6] Aircraft Service Group International (ASIG), Proposal from Argus Consulting, Inc. to Spirit Airlines for Fueling Facility Engineering Study (January 18, 2016)

public access to the facility was precluded. A limited paved area on the north side of the building, that includes part of a former vehicle access entrance, is available for vehicle parking and is sufficient to accommodate between 6 to 8 vehicles, while some additional space along the east side of the building could accommodate an additional 3 to 4 vehicles. Based on a site visit and aerial photography, these vehicle spaces are sometimes occupied by GSE equipment awaiting repair. Additional parking for employees is located to the north of Gate 100, outside of the SIDA, with access to the GSE site provided via a pedestrian security gate located near the northwest corner of the Delta GSE building. The building has 4 ground level garage door access points along its north face, but does not have any designated loading positions. To the rear of the building is a paved area used for GSE storage that is approximately 8,800 square feet in size The Delta GSE facility has an access drive that connects from the rear of the facility to the airport perimeter roadway and to the paved equipment staging area on the south side (inside the SIDA) of the Belly Haul Cargo Building.

Aero Lauderdale and Airside Fort Lauderdale lease space at FLL. They have tenants such as Air General and TUG Technologies that provide GSE maintenance and support for both passenger and cargo traffic at the Airport. Air General and TUG are based at 1800 SW 34th Street, but their GSE is primarily stored in the gate areas around the terminal, in proximity to the aircraft they service.

TUG Technologies reports that the warehouse they currently occupy is not suited for their purpose and would like to see a maintenance-specific facility built at FLL in the future.

2.11.2 AIRPORT SUPPORT

Airport support facilities are operated to assist Airport and aircraft operations and airfield safety procedures. They are comprised of Fire Rescue facilities, airport security and police, airport administration offices, maintenance and equipment storage, airport traffic control tower, remote transmitter / receiver (RTR), airport surveillance radar (ASR), and are described in this section.

Airport Rescue and Firefighting Station

Broward Sheriff's Office Fire Rescue Service operates an airport rescue and firefighting (ARFF) station, located in the midfield, just east of Taxiway Q. The station is sized to meet Title 14 Code of Federal Regulations Part 139 (14 CFR Part 14) Index D aircraft operations[7], thereby accommodating the required personnel and equipment. From the ARFF station, one fire engine can be maneuvered to the midpoint of any runway in 3 minutes, thus meeting the FAA-mandated 3-minute response-time requirement.

The ARFF station has a footprint of approximately 20,400 square feet. At any time, there are between 11 and 13 employees working in or from the ARFF station. The station houses six passenger trucks ranging from a Dodge Durango to a Ford F-250 crew cab, one fire truck, a medical transport vehicle and three crash trucks. The facility is in good condition, and no structural or other problems are known.

[7] The Index is established in 14 CFR Part 139, *Airport Certification: Airports,* which categorizes airports according to the longest length of aircraft serving the airport. For example, Index D includes aircraft with a length of at least 159 feet but less than 200 feet.

Airport Police and Security

Airport police and security offices are in various locations throughout the Airport. Further details are provided in Section 2.13, Airport Security Overview.

Airport Administration

BCAD has three airport administration facilities:

- One facility is located in Terminal 2, where BCAD occupies 6,900 square feet and employs 147 employees in its Operations division.
- The second facility is located off-Airport, west of the Airport, at 4101 Ravenswood, where BCAD occupies 21,000 square feet and employs 64 employees. The Airport Expansion/Development division, including the Capital Improvement group, operates from this location.
- The third facility is also located off-Airport, at 2200 SW 45 St, in nearby Dania Beach. This facility occupies 32,800 square feet and employs 98 employees. Executive Staff, as well as the Administration, Legal, Risk Management, Business & Properties Management, Finance, Information Technology and Planning divisions operate from this location.

Airport Maintenance and Storage

Airport maintenance and storage facilities are located on- Airport:

- The BCAD Maintenance Facility (Building N-28) is located west of the FLL fuel farm. The facility includes 63,900 square feet of warehouse and shop space over two floors, as well as 50,000 square feet of automobile parking on the roof of the facility and on the ground. In addition, there is a 19,000-square foot outdoor storage yard along the North and East side of the new building. Adjacent to the maintenance building is a two-story, 40,000-square foot, administration building for the maintenance division, with an additional 47 parking spaces.
- The "Lancaster Steel Building" (Building E-29), located on-Airport, at 1100 NE 7th Avenue, is a 40,500 square foot building that is used exclusively for storage, given its proximity to the South Runway's east end.
- BCAD Maintenance also uses approximately 87,000 square feet (2 acres) of land on the west side of the airport, adjacent to the existing Naval Air Museum, for landscape debris storage. This area is fully utilized after storm events until the debris is trucked off-Airport.

Federal Aviation Administration Facilities and Equipment

The FAA currently operates an ATCT, two remote transmitter/receiver antenna farms, and an airport surveillance radar (ASR) at FLL.

The ATCT was built in 1983 and is located on the West side of the Airport, next to the Sheltair West FBO. It includes a 1.74-acre site that has two administration buildings, totaling 8,700 square feet and 60 automobile parking spaces. The ATCT is 177.4 feet in height and has a 163-foot cab eye-sight elevation. The current ATCT does not meet line-of-sight/depth perception criteria to the east end of the South Runway, and as such, a new tower is required.

Two set of RTR antennas relay communications between ATCT personnel and pilots at FLL: one set of antennas is mounted atop the Hibiscus Garage, and another set of antennas is located on 42nd street, next to the Lauderdale Small Boat Club.

The Airport Surveillance Radar (ASR) is a radar facility used to detect and display azimuth, range, and elevation of aircraft operating within terminal airspace. ASR antennas scan through 360 degrees to present the controller with the location of all aircraft within 60 nautical miles of the airport. The FLL ASR is located 1,800 feet west of West Perimeter road at 2351 SW 42nd Street, and was constructed in 2012. It was moved to this new location as part of the South Runway Expansion project.

2.12 Airport Utilities

2.12.1 POTABLE WATER

The water distribution system that serves FLL is owned and operated by Broward County Water and Wastewater Services (BCWWS). The Airport lies within the District 3A BCWWS service area. The BCWWS purchases the water supply for this district through the City of Hollywood, through an inter-local resale water services agreement. District 3A has an approximate average daily water demand of 4.4 million gallons per day (MGD).[8] The resale agreement covers current demand and allows for increased future demand.

There are currently two emergency interconnects from the District 3A system to the FLL water service area. They consist of:

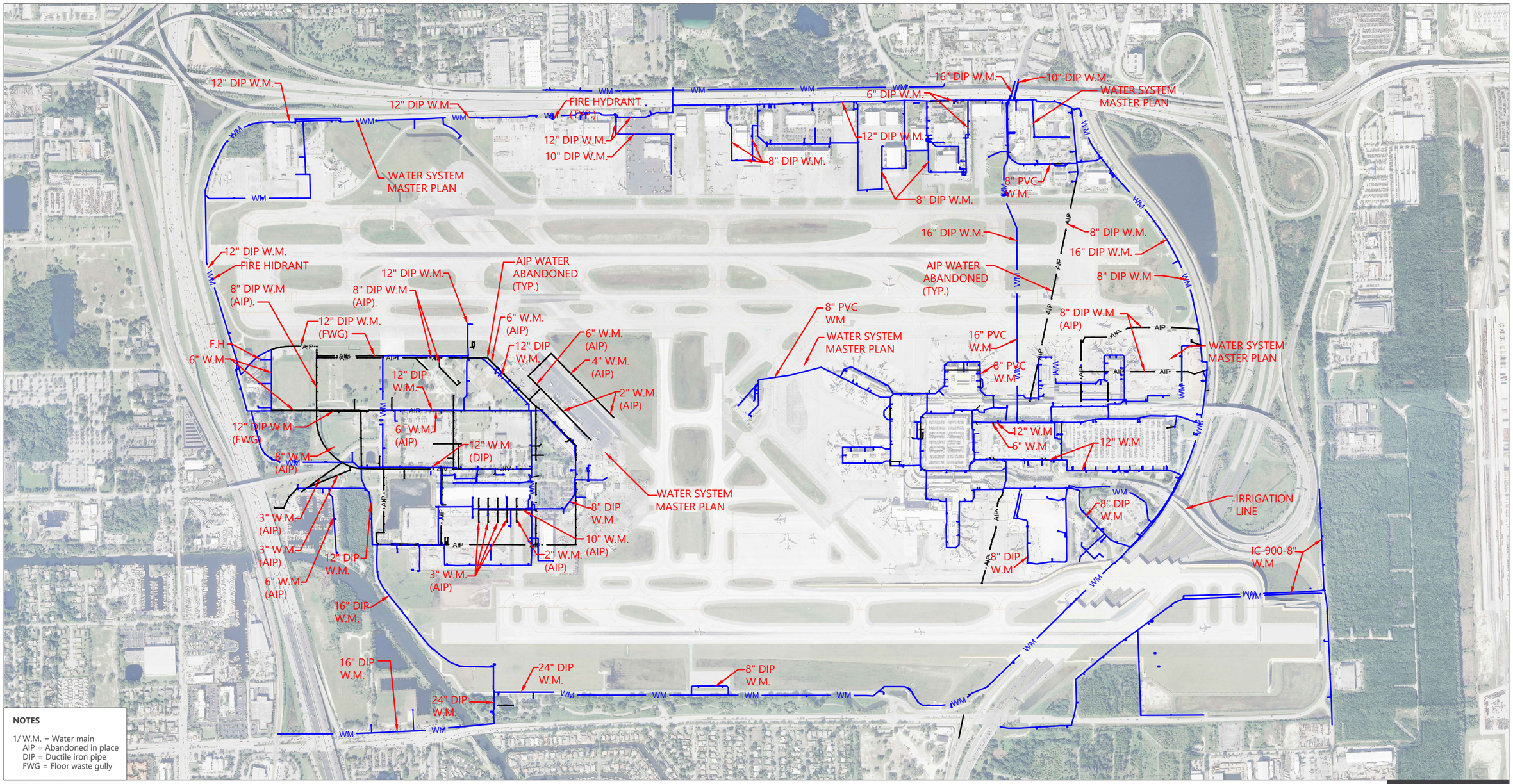
- the north end of the Airport, in the north Right-of-Way (ROW) of I-595, just south of the south end of Longmead Terrace (BCWWS #PIC30142600)
- the north end of the Airport, in the north R.O.W. of I-595, just south of Snyder Park (BCWWS #PIC30106500)

The water is metered at two locations:

- at the south end of the airport, just north of the FLL property line and Sailfish Waterway intersection (12-inch diameter pipe at BCWWS meter # PMM3014900)
- along the west property line of FLL, near the north end (16-inch diameter pipe at BCWWS meter # PMM3014500)

Potable water is conveyed through a network of water mains that create a grid around the perimeter of the site and are also adjacent to the existing facilities throughout the Airport. The main network consists of piping varying in size from 8-inches to 24-inches in diameter. The services within the Airport comprise smaller piping scattered throughout the site. **Exhibit 2.12-1** depicts the location of existing Airport water mains.

[8] Broward County, *Broward County Water Supply Facilities Work Plan*, November 2014, p. 55.



NOTES

1/ W.M. = Water main
AIP = Abandoned in place
DIP = Ductile iron pipe
FWG = Floor waste gully

SOURCE: Broward County Aviation Division, *G.I.S. Maps*, 2015
PREPARED BY: Craven Thompson & Associates, Inc., March 2016.

EXHIBIT 2.12-1

NORTH 0 1,000 ft.

Potable Water Distribution System

Drawing: P:\Project-Miami\BCAD\2015 Master Plan Updates\01 - FLL Tasks\II-4 Inventory\CAD\2.12-1 Potable Water Distribution System.dwgLayout: WAT 2.11-1 Plotted: Oct 29, 2020, 04:06PM

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The existing potable water system includes approximately:

- 4,000 feet of 6-inch diameter water main
- 57,600 feet of 8-inch diameter water main
- 2,000 feet of 10-inch diameter water main
- 32,000 feet of 12-inch diameter water main
- 8,000 feet of 16-inch diameter water main
- 10,000 feet of 24-inch diameter water main
- Approximately 37,000 feet of abandoned water main exists throughout the Airport site.

2.12.2 SANITARY SEWER

The existing sanitary sewer system for the Airport is owned and operated the BCWWS, within the District 3A service area. The Airport's service area is further divided into three service regions, identified by geographical location as follows: Northside, Eastside, and Westside. As of 2011, the system generated approximately 221,570 gallons of wastewater per day.[9]

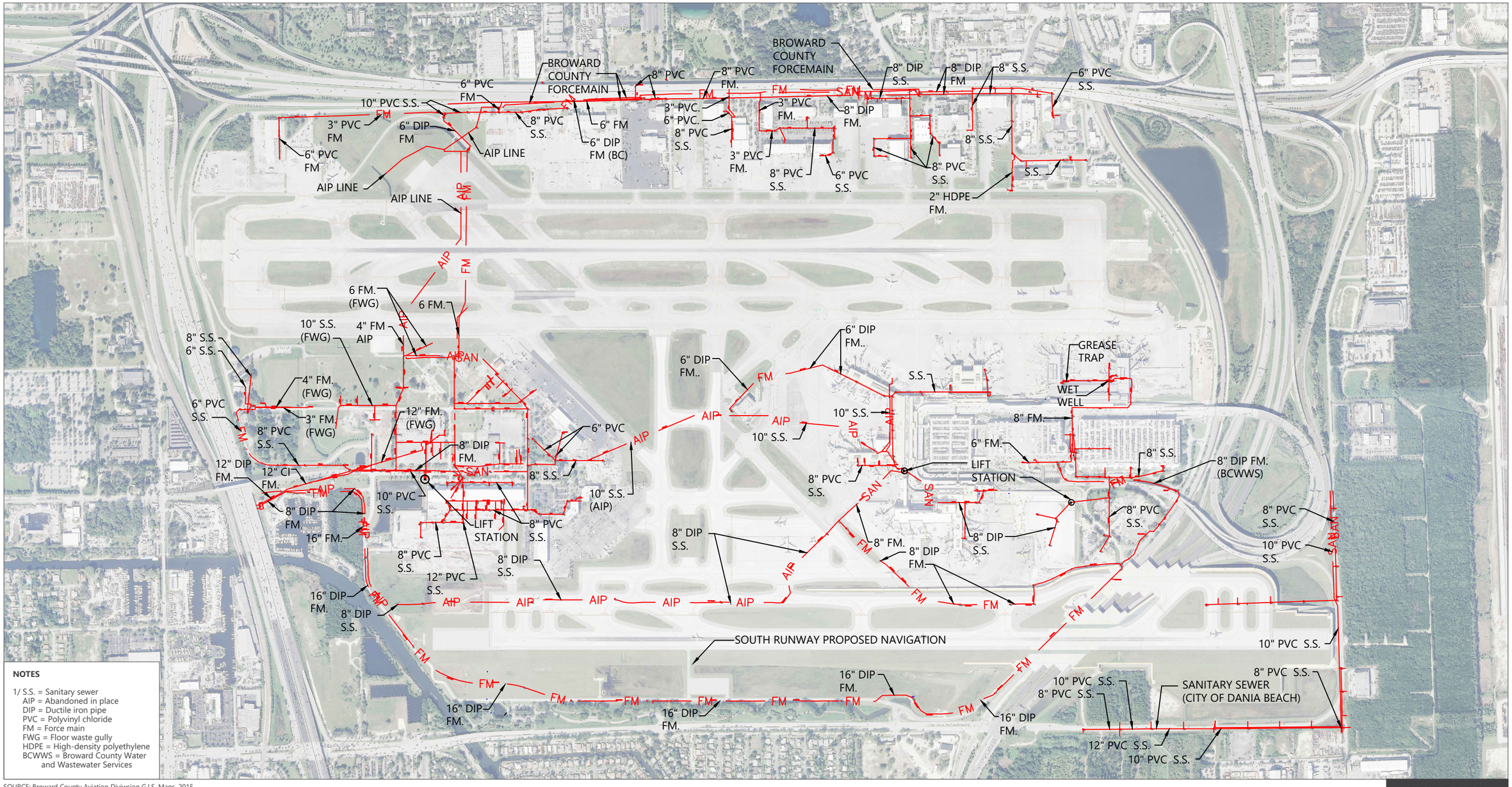
The Airport is serviced by a total of 11 internal lift stations that discharge into master pump station 310 (BCWWS #30100310). The wastewater is discharged from Station 310 through a 16-inch diameter pipe running west under I-95. The collection system consists of 8-inch to 12-inch diameter piping, and the transmission system ranges from 4-inch diameter mains to 16-inch diameter force mains. **Exhibit 2.12-2** depicts the existing Airport sanitary sewer system. The FLL stormwater management system is permitted by the South Florida Water Management District (SFWMD) under permit #06-0039-S. The system has been modified numerous times within the past three years to include improvements, such as the Terminal 1 Expansion, the Terminal 4 East/West Expansion, the Terminal 3 In-Line Baggage, the Perimeter Road Relocation, and the New South Runway. The installed drainage improvements were sufficient to meet both the water quantity and water quality regulations of the SFWMD. In addition, BCAD and FAA stage requirements are met as the stormwater management system was designed to keep all runways and taxiways free from ponding water during the 5-year, 1-day and 10-year, 1-day design storm events.[10] **Exhibit 2.12-3** depicts the existing Airport stormwater drainage system.

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9 EAC Consulting, Inc., *Fort Lauderdale-Hollywood International Airport, Wastewater System Master Plan*, May 2011, pp. 4–2.

10 Atkins and RS&H, *Broward County Aviation Department-Airport Expansion Program, Permit Application Documents (Drainage Report), Expansion of Runway 9R-27L,* April 2013, p. 20.

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NOTES

1/ S.S. = Sanitary sewer
AIP = Abandoned in place
DIP = Ductile iron pipe
PVC = Polyvinyl chloride
FM = Force main
FWG = Floor waste gully
HDPE = High-density polyethylene
BCWWS = Broward County Water and Wastewater Services

SOURCE: Broward County Aviation Diviwsion G.I.S. Maps, 2015.
PREPARED BY: Craven Thompson & Associates, Inc., March 2016.

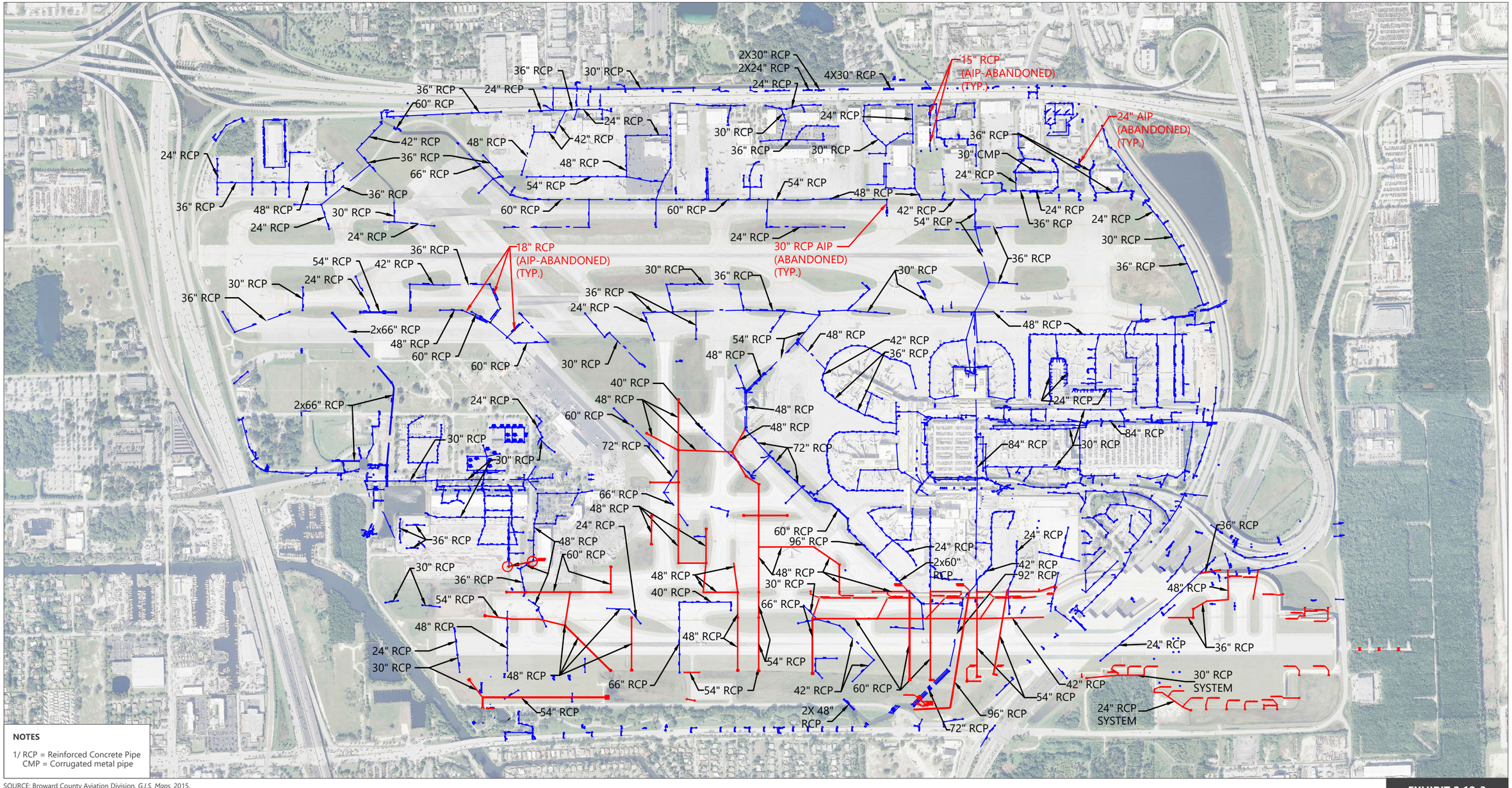
EXHIBIT 2.12-2

NORTH 0 1,000 ft.

Sanitary Sewer Drainage System

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NOTES

1/ RCP = Reinforced Concrete Pipe
CMP = Corrugated metal pipe

SOURCE: Broward County Aviation Division, *G.I.S. Maps*, 2015.
PREPARED BY: Craven Thompson & Associates, Inc., March 2016.

EXHIBIT 2.12-3

NORTH 0 1,000 ft.

Stormwater Drainage System

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The existing wastewater collection and transmission system includes approximately:

- One master pump station, PS 310, and 10 tributary stations: LS31A, LS31A1, LS31A2, LS31A3, LS31A4, LS31F1, LS31F2, LS31F2-1, LS31F2-2, and LS31G
- 3,000 feet of 6-inch gravity main
- 17,000 feet of 8-inch gravity main
- 2,800 feet of 10-inch gravity main
- 2,600 feet of 12-inch gravity main
- 1,100 feet of 4-inch force main
- 10,900 feet of 6-inch force main
- 8,200 feet of 8-inch force main
- 1,000 feet of 10-inch force main
- 5,100 feet of 12-inch force main
- 10,270 feet of 16-inch force main

2.12.3 STORMWATER DRAINAGE

The Airport drainage area encompasses approximately 1,430 acres, and it is located in east-central Broward County. Elevations at FLL generally range from sea level to 65 feet (New South Runway), based on 1988 NAVD datum. Slopes are generally mild to flat, ranging from 0.01 to 0.98 percent, and soils are moderately drained. The Airport is approximately 77 percent impervious.[11] The system has eight major off-site outfalls that are tributary to the Dania Cutoff Canal.

The existing stormwater piping/culvert system (inclusive of exfiltration trench) includes approximately:

- 3,000 feet of 6-inch storm sewer pipe
- 3,000 feet of 6-inch storm sewer pipe
- 4,200 feet of 12-inch storm sewer pipe
- 9,400 feet of 15-inch storm sewer pipe
- 14,600 feet of 18-inch storm sewer pipe
- 23,000 feet of 24-inch storm sewer pipe
- 16,600 feet of 30-inch storm sewer pipe
- 21,200 feet of 36-inch storm sewer pipe

[11] Camp Dresser and McKee, Inc., *Fort Lauderdale-Hollywood International Airport Stormwater Master Plan*, July 2001, p. 1.

- 6,900 feet of 42-inch storm sewer pipe
- 19,300 feet of 48-inch storm sewer pipe
- 8,200 feet of 54-inch storm sewer pipe
- 9,200 feet of 60-inch storm sewer pipe
- 5,500 feet of 66-inch storm sewer pipe
- 4,700 feet of 72-inch storm sewer pipe
- 1,100 feet of 84-inch storm sewer pipe
- 4,400 feet of 96-inch storm sewer pipe
- 1,500 feet of slot drain

2.12.4 OVER 900 DRAINAGE STRUCTURESNATURAL GAS

Natural gas at FLL is provided by Peoples Gas System. **Exhibit 2.12-4** depicts the existing Airport natural gas distribution system. The natural gas distribution system on Airport grounds includes approximately 37,200 feet of pipeline.

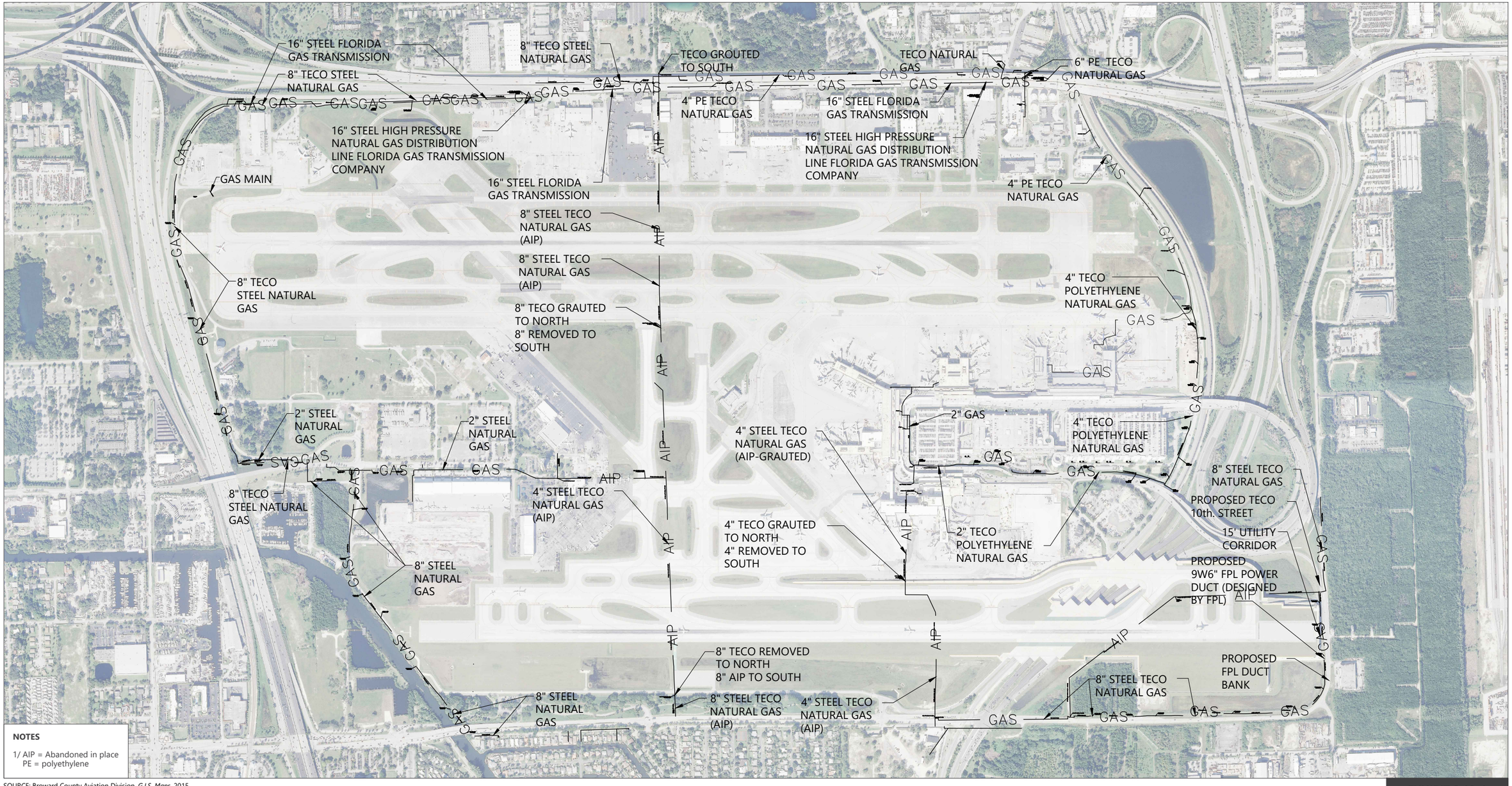
2.12.5 FUEL

Aviation fuel (JET-A and AVGAS), unleaded gasoline, and diesel fuel are provided to the Airport through several sources. Unleaded gasoline and diesel fuel used for ground support equipment (GSE) and other ground access vehicles and equipment is obtained from local providers. FBOs at FLL provide JET-A and AVGAS for general aviation aircraft, which is obtained from Texaco, Phillips 66, Air BP, and AVFUEL, depending on the FBO. JET-A fuel, used by scheduled commercial service airlines, is stored at the FLL fuel farm, which is managed by the Aircraft Service International Group (ASIG). JET-A fuel is obtained from Air BP, Chevron, Citgo, and Phillips 66, according to airline fuel contracts, and the fuel is stored collectively at the fuel farm.[12] **Exhibit 2.12-5** depicts the existing Airport fuel distribution system, which includes the fuel hydrant system that serves the terminal gates and the gasoline fueling lines serving the consolidated rental car center in Cypress Garage. The fuel line system on Airport grounds includes approximately 35,500 feet of pipeline.

2.12.6 TELEPHONE AND COMMUNICATIONS

AT&T Southeast (formerly Bellsouth Corporation) provides telephone landline services to the Airport. The Airport communications network is a shared-services model that provides Airport tenants with hardwired, wireless, and fiber connectivity. The fiber-optic backbone communication system accommodates applications such as high-speed wireless, IP telephony, and airline-specific operations, including gate management systems and common use terminal. The network includes fiber-optic connection from the terminals to the central data center and is dispersed to 11 distribution switches throughout the Airport.

[12] Landrum & Brown Inc. Team, *Environmental Impact Statement (EIS),* Chapter 5.H.4 - Natural Resources and Energy Supply, pp. 5H–26, June 2008.



NOTES

1/ AIP = Abandoned in place
PE = polyethylene

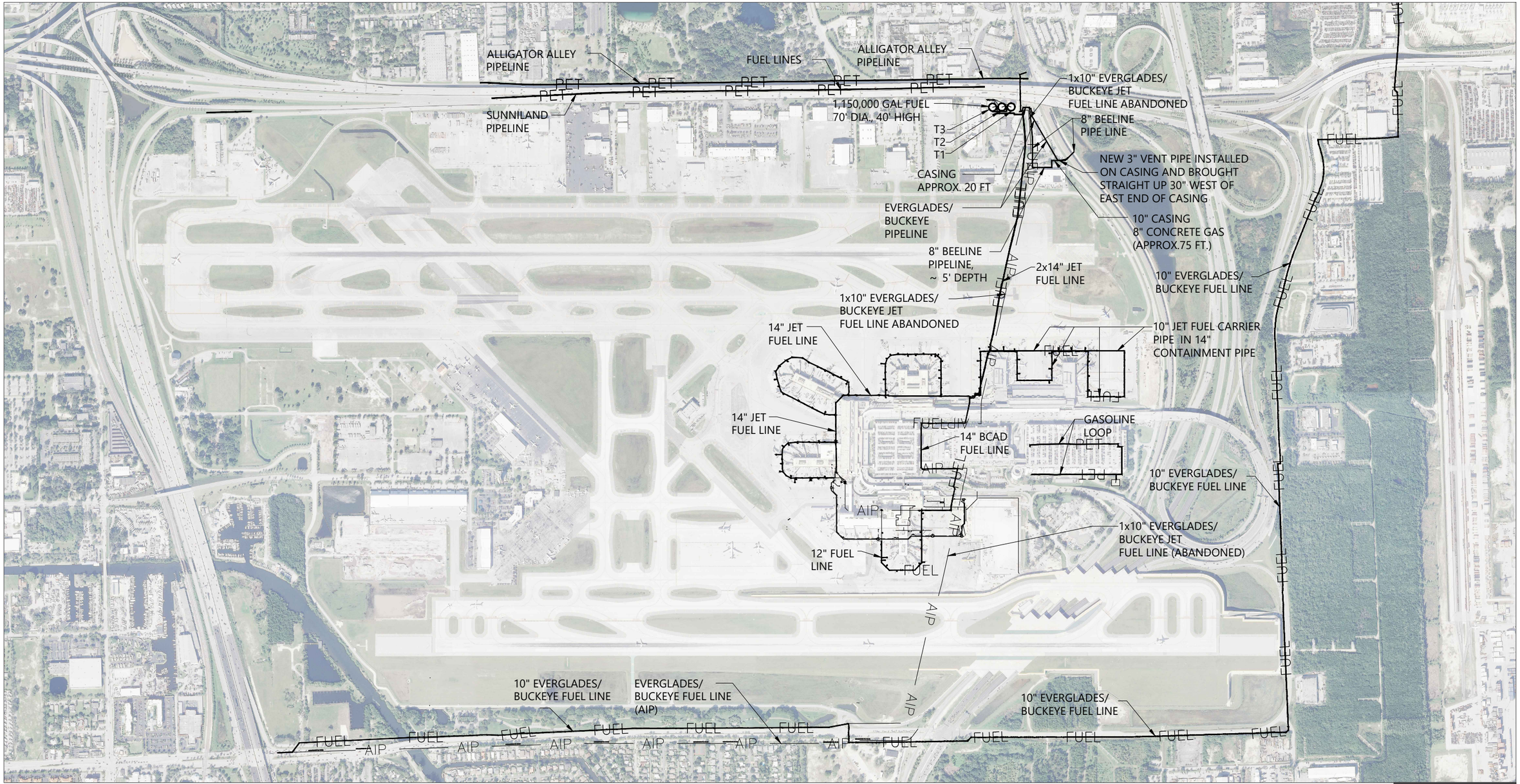
SOURCE: Broward County Aviation Division, *G.I.S. Maps*, 2015.
PREPARED BY: Craven Thompson & Associates, Inc., March 2016.

EXHIBIT 2.12-4

NORTH 0 1,000 ft.

Natural Gas Distribution System

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SOURCE: Broward County Aviation Division, *G.I.S. Maps*, 2015.
PREPARED BY: Craven Thompson & Associates, Inc., March 2016.

EXHIBIT 2.12-5

NORTH
0 1,000 ft.

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Fuel Distribution System

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The system incorporates integration, control, management, and security, which enables dynamic bandwidth management and integration with all current and future security standards. Broward County retains control of the bandwidth and infrastructure. **Exhibit 2.12-6** depicts the existing Airport telephone and communications lines. The telephone and communication system on Airport grounds includes approximately 117,000 feet of fiber optic lines and wiring.

2.12.8 ELECTRIC POWER

Florida Power & Light Company (FPL) is the electric power utility provider for the Airport. Electric power was previously delivered to the Airport by FPL from two gas turbine (GT) power-generating plants located in Broward County: the Lauderdale Plant and the Port Everglades Plant. The GT plant at Port Everglades was demolished in 2013 and will be replaced by a combined cycle (CC) natural gas plant on the same site as the GT plant. The GT plant known as Lauderdale is being modified into a combustion turbine (CT), which will go online in 2019.

The Port Everglades Plant will deliver a peak summer power of 1,237 megawatts (MW), and the Lauderdale Plant will deliver 1,005 MW once upgraded. Standard underground feeder lines provide 13,720 volts of electrical power to the airport transformer.[13]

The distribution lines are located throughout the Airport property and are metered at numerous locations to various tenants on the property. The electrical vault is located east of the ATCT. **Exhibit 2.12-7** depicts existing Airport electrical power lines. The electric power distribution system on Airport grounds includes approximately 266,000 feet of wiring.

2.13 Airport Security Overview

Two separate organizations—Broward Sheriff's Office (BSO) and Broward County Airport Security—provide security at FLL.

2.13.1 BROWARD SHERIFF'S OFFICE

The largest BSO district in the County is at FLL. BSO partners with BCAD, the TSA, the Airline Managers Association, Airport tenants, and ancillary federal agencies to provide law enforcement and fire rescue protection for the 1,400-acre Airport site and its 12,500 on-Airport badged employees.[14] BSO provides law enforcement services for the FLL and handles security measures related to parking and general airport security.

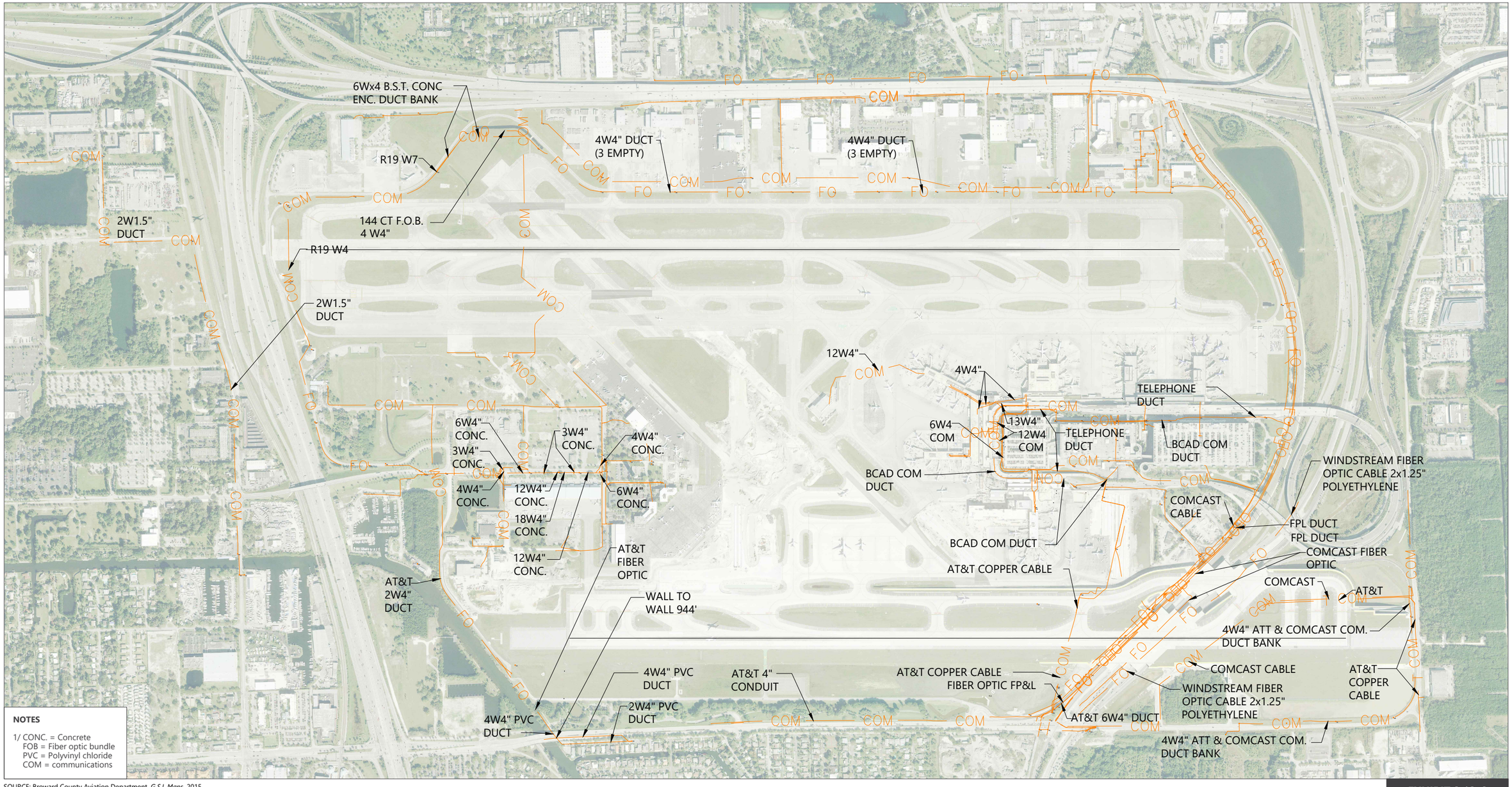
The FLL BSO offices are located at Terminal 2; 28 employees per shift work in approximately 4,300 sq. ft. of space. There have been discussions on relocating BSO, but no specific locations have been finalized.

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13 Landrum & Brown Inc. Team, *Environmental Impact Statement (EIS),* Chapter 5.H.4 - Natural Resources and Energy Supply, pp. 5H–24, June 2008.

14 Broward County Aviation Department, *Fort Lauderdale-Hollywood International Airport Fact Sheet*, http://www.broward.org/Airport/About/Documents/FLLFactsheet2016ada2.pdf, Accessed May 27, 2016.

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NOTES

1/ CONC. = Concrete
FOB = Fiber optic bundle
PVC = Polyvinyl chloride
COM = communications

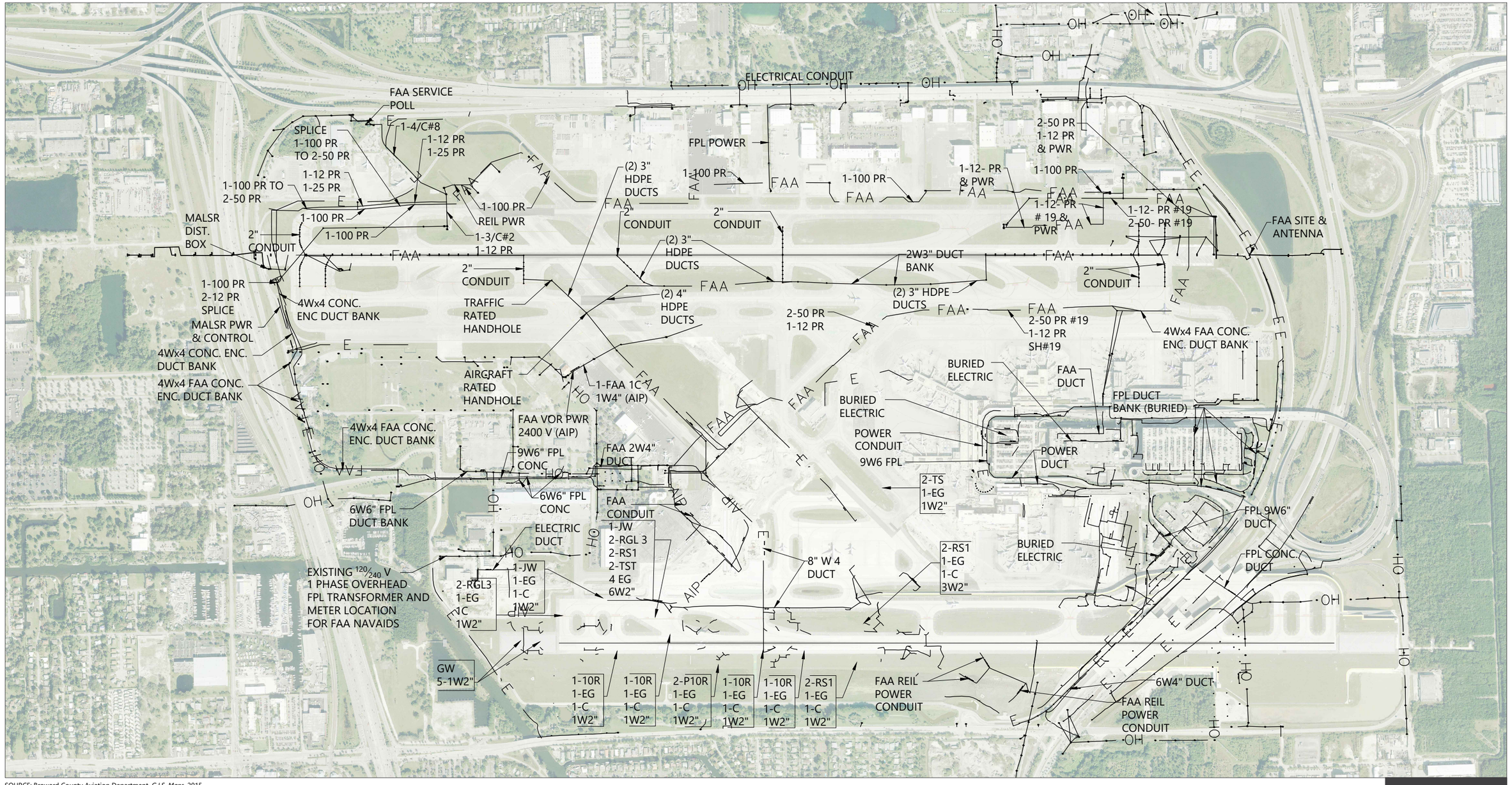
SOURCE: Broward County Aviation Department, *G.S.I. Maps,* 2015.
PREPARED BY: Craven Thompson & Associates, Inc., March 2016.

EXHIBIT 2.12-6

NORTH 0 1,000 ft.

Telephone and Communication Lines

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SOURCE: Broward County Aviation Department, *G.I.S. Maps*, 2015.
PREPARED BY: Craven Thompson & Associates, Inc., March 2016.

EXHIBIT 2.12-7

NORTH 0 1,000 ft.

Electrical Power Distribution System

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2.13.2 BROWARD COUNTY AIRPORT SECURITY

BCAD Airport Security comprises three different divisions:

- The Executive Division is located in the BCAD Administration Offices, in the Cabot Building, in nearby Dania Beach west of I-95, and, as of April 2016, includes 4 employees per shift.
- The Operations Division includes (as of April 2016) 12 employees per shift, and is split between:
  - the old BCAD Maintenance Building (Building N-35), in the northeast quadrant, where BCAD Security Operations and Executive staff occupy approximately 6,200 sf, and;.
  - The Terminal 3 Departure Level, where the BCAD Airport Security Emergency Operations Center (EOC) occupies approximately 1,000 sf.
- The Badging/Credentialing Division is located in trailers adjacent to the parking garage north of Terminal 4, and includes 21 employees per shift as of April 2016. This division occupies facilities approximately 4,600 sq. ft. in size.

There have been discussions on relocating BCAD Airport Security, possibly consolidating it with FLL BSO, but no specific locations have been finalized.

2.14 On- and Off-Airport Land Uses

2.14.1 ON-AIRPORT LAND USE

The existing land use data within the FLL environs was obtained from neighboring municipalities, including Fort Lauderdale, Dania, and Hollywood. On-Airport land uses are summarized in **Table 2.14-1.**

Table 2.14-1: On-Airport Land Uses

LAND USES	ACREAGE	PERCENTAGE
Airfield	729	42%
Non-Aeronautical	35	2%
Undeveloped	305	18%
General Aviation	126	7%
Cargo	57	3%
Airport Support	88	5%
Preserve, Buffer, Recreational	218	13%
Terminal Passenger Facility	160	9%
Total	1,718	100%

NOTE: May not add up due to rounding.

SOURCE: Broward County Aviation Department, Fort Lauderdale-Hollywood International Airport, *Exhibit A*, May 25, 2016.
PREPARED BY: Ricondo & Associates, Inc., May 2016.

Exhibit 2.14-1depicts on-Airport land uses. The main on-Airport land use at FLL is airfield, covering about 42 percent of the Airport property. Undeveloped and preserve/buffer/recreational land uses cover approximately 31 percent of the Airport property. Terminal passenger facilities, airport support, cargo and GA cover approximately 24 percent of the Airport property, while non-aeronautical uses cover 2 percent.

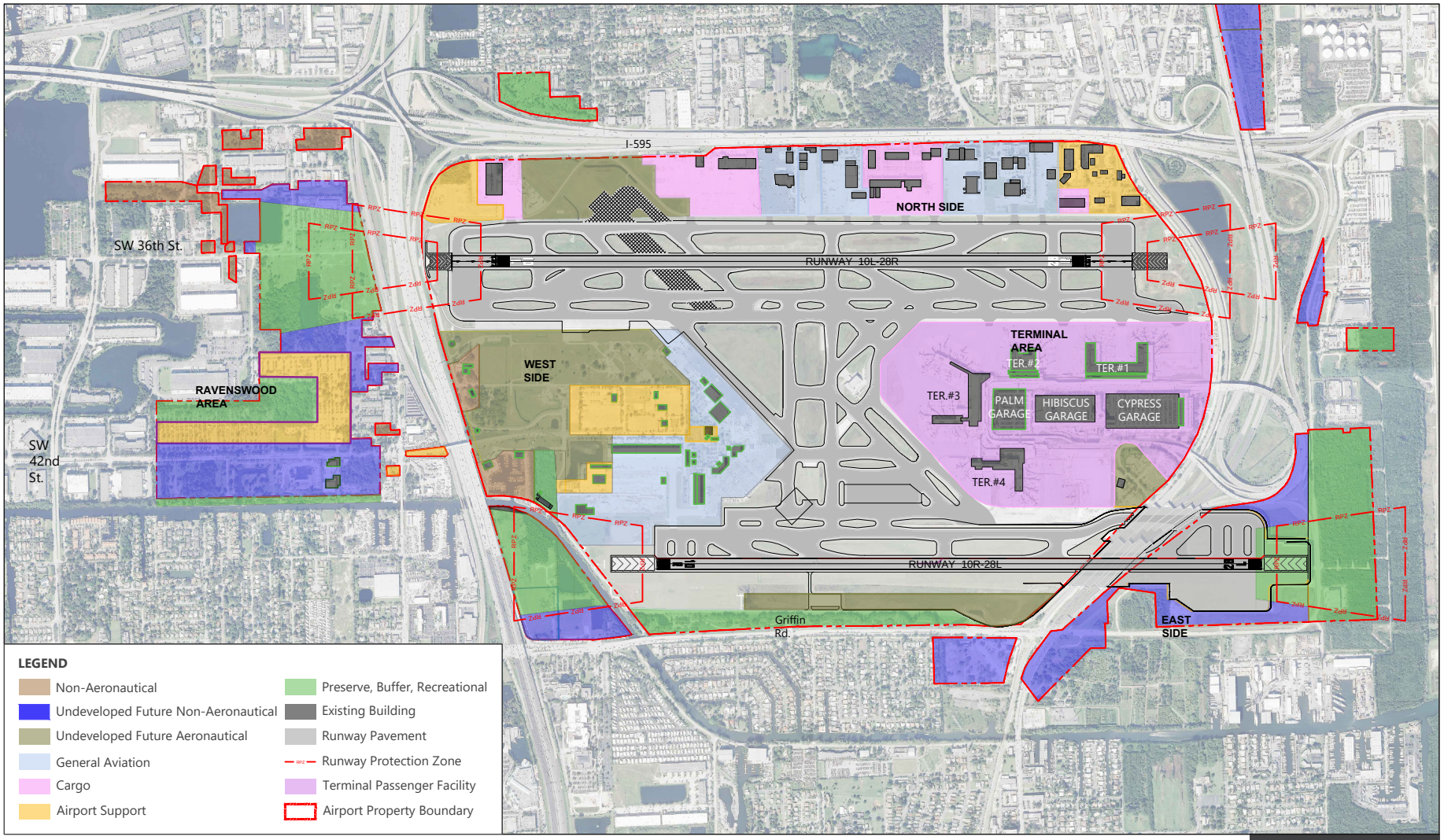
2.14.2 OFF-AIRPORT LAND USE

The off-Airport land use boundary extends to the 65 dNL noise contours (dNL is the day-night average sound level in decibels [dB]). The Broward County geographic information system (GIS) land use map serves as the source for the off-Airport land use map shown on **Exhibit 2.14-2**. The majority of land uses on the west and north sides of the Airport are residential and industrial. On the south side of the Airport, the main land uses are classified as regional activity center and residential. Land uses on the east side of the Airport are predominantly classified as transportation and water. There are several commercial land uses distributed around the Airport area.

2.15 Environmental Conditions

This section provides a summary of existing environmental conditions relevant to master planning at and around the Airport. The purpose of this summary is to provide an understanding of the existing environmental conditions relevant to the identification and evaluation of projects being considered in the master plan. Environmental resources defined in FAA Orders 1050.1F, *Environmental Impacts: Policies and Procedures,* and 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions,* were considered. Of the resources defined in the FAA Orders, those with the potential to affect the evaluation of master plan project alternatives are discussed in this section:

- Air Quality
- Biological Resources
- Climate
- Coastal Resources
- Department of Transportation Act, Section 4(f)
- Hazardous Materials
- Historical, Architectural, Archaeological, and Cultural Resources
- Noise
- Water Resources



SOURCE: Broward County Aviation Department (BCAD), *Fort Lauderdale-Hollywood International Airport Layout Plan*, December 2015; BCAD, *FLL Address Map*, December 2015; Jacobs Consultancy, *Matsterplan Update Phase 2/3*, 2010.
PREPARED BY: R.J. Behar & Company, Inc., March 2016.

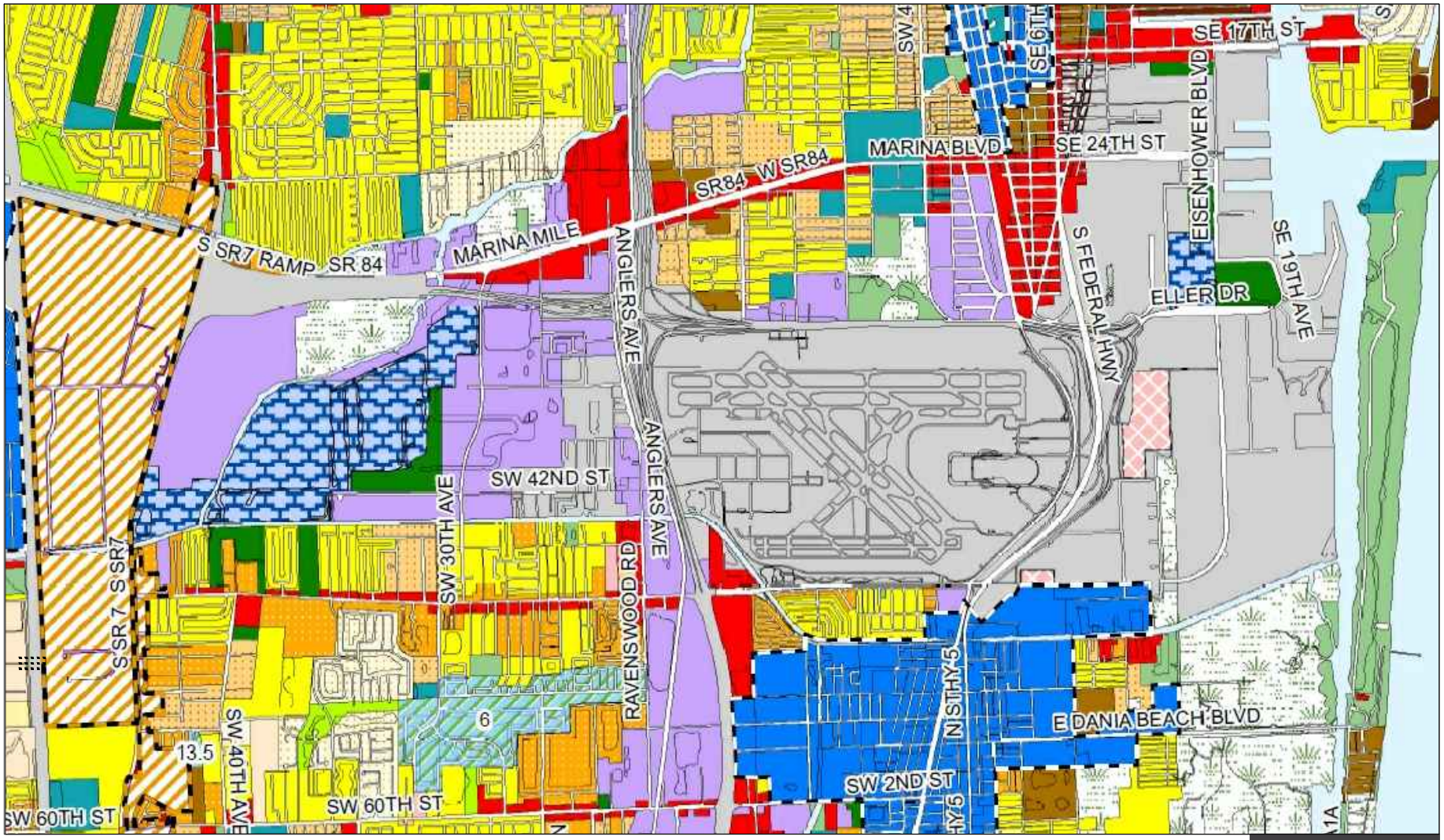
EXHIBIT 2.14-1

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On-Airport Land Uses

Drawing: P:\Project-Miami\BCAD\2015 Master Plan Updates\01 - FLL Tasks\I-4 Inventory\CAD\2.14-1_On-Airport Land Uses_FLL_02 16 2017.dwgLayout: Ft. Lauderdale_ON-SITE Plotted: Oct 29, 2020, 04:34PM

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SOURCES: ES RI Data Set, 2010 (road network); Broward County Aviation Department (BCAD), For t Lauderdale - Hollywood International Airport Layout Plan, December 29, 20 15; BCAD, 20 15 (noise exposure contour s); Broward County Planning Council, GIS Data, http://www.broward.org/PLANNINGCOUNCIL /Pages/gisdata.aspx, accessed April 2016 (land uses).
PREPARED BY: Ricondo & Associates, Inc., April 2016.

EXHIBIT 2.14-2

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Off-Airport Land Uses

Drawing: P:\Project-Miami\BCAD\2015 Master Plan Updates\01 - FLL Tasks\I-4 Inventory\CAD\2.14-2_Off-Airport Land Uses_FLL_03.17.2016.dwgLayout: OFF-SITE LAND USE Plotted: Oct 29, 2020, 04:37PM

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The Airport, which encompasses approximately 1,718 acres of land, is located 2 miles west of the Atlantic Ocean in southeastern Broward County, Florida, approximately 40 miles south of Palm Beach International Airport (PBI) and 25 miles north of MIA. The airfield, terminal areas, and aviation support facilities are located on the main, contiguous parcel of Airport property, which is bounded by I-595 on the north, U.S. 1 on the east, I-95 on the west, and Griffin Road on the south. Several noncontiguous parcels bound the main property on all sides.

2.15.1 AIR QUALITY

The federal Clean Air Act, as amended, requires individual states to identify general geographic areas where the National Ambient Air Quality Standards (NAAQS) are not met for seven criteria pollutants: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), sulfur dioxide (SO_2), lead (Pb), particulate matter (PM_{10}), and fine particulates ($PM_{2.5}$). The U.S. Environmental Protection Agency (EPA) has designated such areas as nonattainment areas. A state with a nonattainment area must prepare a State Implementation Plan (SIP) that describes the programs and requirements the state will implement to attain the NAAQS by the deadlines specified in the Clean Air Act Amendments of 1990 (CAAA), as well as subsequent documents promulgated by the EPA. In Florida, the Florida Department of Environmental Protection (FDEP) is responsible for formulating and maintaining the SIP. The CAAA requires federal agencies to ensure that their actions conform to the appropriate SIP. Conformity is defined as demonstrating that a project or action conforms to the SIP's purpose of eliminating or reducing the severity and number of violations of the NAAQS, in addition to achieving expeditious attainment of such standards.

The following agencies have responsibilities related to air quality near the Airport:

- At the federal level, the EPA establishes the guiding principles and policies for protecting air quality conditions throughout the nation. Relevant to this assessment, the EPA is also responsible for promulgating the NAAQS, the approval of the SIP, and the regulation of aircraft emissions.
- At the state level, the FDEP Division of Air Quality serves to help ensure that federal air quality requirements and guidelines are met. FDEP monitors air quality and regulates mobile sources of emissions (i.e., on-road and off-road motor vehicles and equipment).
- At the local level, the Broward County Air Quality Program operates eight air quality sites throughout Broward County that measure data on the criteria air pollutants.[15] The monitoring site closest to the Airport is located at John U. Lloyd State Park, approximately 1.4 miles to the east.

The Airport is located within Broward County, which, as of October 2015, is designated by the EPA to be in attainment for all NAAQS.[16] Broward County had been operating under a maintenance plan for ozone emissions since 1995

15 Broward County, www.broward.org/POLLUTIONPREVENTION/AIRQUALITY/AIRMONITORING/Pages/Default.aspx (accessed February 24, 2016).

16 U.S. Environmental Protection Agency, *Criterial Pollutant Nonattainment Summary Report*, October 1, 2015, .www.epa.gov/oaqps001/greenbk/ancl3.html (accessed February 28, 2016).

based on the *Southeast Florida Area Maintenance Plan Update*, which was in effect through 2015 or until the SIP is revised.[17]

2.15.2 BIOLOGICAL RESOURCES

The Endangered Species Act (ESA), as amended, protects federally listed species, including species proposed for listing and their habitats. Section 7 of the ESA, as amended, sets forth requirements for consultation regarding effects on an endangered or threatened species or the destruction or modification of Critical Habitat. The State of Florida protects additional species, and the state list of species for wildlife is maintained by the Florida Fish and Wildlife Conservation Commission (FFWCC) under Florida Administrative Code (FAC) Rules 68A-47, while the Florida Department of Agriculture and Consumer Services (FDACS) lists plants under FAC 5B-40.

The habitat at and surrounding the Airport supports a limited number of biological resources, since much of the area to the north, west, and south has already been developed. According to the U.S. Fish & Wildlife Service's (FWS's) Critical Habitat Portal, there are no designated critical habitats at the Airport.[18] The nearest critical habitat is located approximately 2.4 miles west along the Atlantic Coast.

The potential for the occurrence or presence of federally listed and state-listed animal and plant species was assessed for the 2008 Final Environmental Impact Statement for the development and expansion of Runway 9R-27L (2008 FEIS). **Table 2.15-1** lists the species that may be present at the Airport. Given the disturbed nature of the airfield and the lack of significant aquatic resources, it is unlikely any federally protected species would be present.

The Florida burrowing owl is common at Florida airports. Airfield maintenance practices maintain open areas with short or no vegetation to ensure visibility of lights and markers, and these conditions create favorable habitat for the burrowing owl. Burrowing owls nest in holes created by other burrowing mammals, such as ground squirrels and voles. As a state species of special concern, burrowing owls are not afforded the protective provisions specified in the federal ESA. However, a permit from the FFWCC must be acquired prior to impacting burrowing owls and their nests.[19]

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17 U.S. Department of Transportation, Federal Aviation Administration, *Final Environmental Impact Statement for the Development and Expansion of Runway 9R/27L and Other Associated Airport Projects at Fort Lauderdale-Hollywood International Airport, Broward County, Florida*, Chapter 5, Section 5.B, Air Quality, June 2008.

18 U.S. Fish & Wildlife Service, *Critical Habitat Portal,* ecos.fws.gov/crithab/ (accessed November 10, 2015).

19 Florida Fish & Wildlife Conservation Commission, *Burrowing Owl Nest Protection Guidelines and Procedures in Urban Areas*, myfwc.com/media/290095/buowguidelines2009.pdf (accessed February 25, 2016).

Table 2.15-1: Biological Species with the Potential to be Present at the Airport

COMMON NAME	SCIENTIFIC NAME	FEDERAL STATUS	STATE STATUS	PROBABILITY OF OCCURRENCE
Fish				
Smalltooth sawfish	*Pristis pectinata*	E	E	Low
Reptiles and Amphibians				
American alligator	*Alligator mississippiensis*	T (SA)	T (SA)	Low
American crocodile	*Crocodylus acutus*	T	E	Low
Birds				
Florida burrowing owl	*Athene cunicularias*	-	SSC	Medium
Little blue heron	*Egretta caerulea*	-	SSC	Medium
Snowy egret	*Egretta thula*	-	SSC	Medium
Southeastern American kestrel	*Falco sparverius paulus*	-	T	Low-Medium
Tricolored heron	*Egretta tricolor*	-	SSC	Medium
White ibis	*Eudocimus albus*	-	SSC	Medium
Wood Stork	*Mycteria americana*	T	T	Medium
Mammals				
West Indian Manatee	*Trichechus manatus*	E	E	Low
Wet Habitats				
Golden leather fern	*Acrostichum aureum*	-	T	Low
Johnsons' seagrass	*Halophila johnsonii*	T	T	Low

NOTES:

SSC – Species of Special Concern

T – Threatened

E – Endangered

T (SA) – Threatened due to Similarity of Appearance

SOURCES: U.S. Department of Transportation, Federal Aviation Administration, *Final Environmental Impact Statement for the Development and Expansion of Runway 9R/27L and Other Associated Airport Projects at Fort Lauderdale-Hollywood International Airport, Broward County, Florida,* Chapter 6, Tables 6.F.1-1 and 6.F1.-2, June 2008; Florida Fish and Wildlife Conservation Commission, http://myfwc.com/wildlifehabitats (accessed November 11, 2015); U.S. Fish & Wildlife Service, Environmental Conservation Online System, ecos.fws.gov (accessed November 11, 2015).

PREPARED BY: Ricondo & Associates, Inc., November 2015.

The Migratory Bird Treaty Act (MBTA) makes it unlawful to pursue, capture, kill, or possess, or attempt to do the same, to any migratory bird or part, nest, or egg of such bird without a permit issued by the FWS.[20] Migratory birds are those species that breed in latitudes different from those in which they winter. The state of Florida is within the Atlantic Flyway, a bird migratory route that generally follows the Atlantic Coast.[21]

20 U.S. Fish & Wildlife Service, *Migratory Bird Treaty Act*, www.fws.gov/birds/policies-and-regulations/laws-legislations/migratory-bird-treaty-act.php (accessed February 24, 2016).

21 U.S. Fish & Wildlife Service, *Migratory Bird Program, Flyways*, www.fws.gov/birds/management/flyways.php (accessed February 1, 2016).

2.15.3 CLIMATE

In consideration of climate impacts, federal agencies disclose greenhouse gas (GHG) emissions resulting from any program or project undertaken, as well as discuss the implications of climate change, including the current level of preparedness with respect to the aspects of climate change.

In 2010, Broward County developed the *Broward County Climate Change Action Plan: Addressing our Changing Climate* (the Climate Change Action Plan), which developed recommendations for a program to mitigate the causes and to adapt to the consequences of climate change given Southeast Florida's vulnerability to sea level rise and to violent weather patterns.[22] As part of the Climate Change Action Plan, the County defined the need to support the integration of mitigation and adaptation plans into planning processes.

In support of the Climate Change Action Plan, Broward County conducted a vulnerability assessment that identified areas of vulnerability under one-, two-, and three-foot sea level rise scenarios in the region. The Airport was determined to be vulnerable under a two-foot sea level rise scenario projected to occur as early as 2060, but the potential inundation areas are limited to low-lying, underdeveloped areas between buildings, runways, and taxiways.[23]

BCAD recognizes its commitment to addressing climate change in one of the guiding principles of its vision for sustainability: *"striving to meet the County's GHG emissions reduction goals and working with its regional partners to cultivate innovative solutions to environmental challenges.*[24] *"*

2.15.4 COASTAL RESOURCES

The Coastal Barrier Resources Act (CBRA) of 1982 prohibits federal financial assistance for development within the Coastal Barrier Resources System (CBRS), which contains undeveloped coastal barriers along the Atlantic and Gulf coasts and the Great Lakes. The Coastal Zone Management Act (CZMA) of 1972 ensures effective management, beneficial use, protection, and development of the coastal zone. Coastal zone management programs, prepared by states according to guidelines issued by the National Oceanic and Atmospheric Administration (NOAA), are designed to address issues affecting coastal areas.

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22 Broward County, *Broward County Climate Change Action Plan: Addressing our Changing Climate,* May 4, 2010.

23 Southeast Florida Regional Climate Change Compact, Inundation Mapping and Vulnerability Assessment Work Group, *Analysis of the Vulnerability of Southeast Florida to Sea Level Rise,* August 2012.

24 Broward County Aviation Department, *Sustainability Vision*, www.broward.org/Airport/FLLair/Environmental/Pages/Sustainability.aspx (accessed February 28, 2016).

The Florida Coastal Management Program (FCMP) was approved by NOAA in 1981 and is codified in Chapter 380, Part II, F.S.[25] The FCMP approval authorizes the state of Florida to review certain federal activities affecting the land or water uses or natural resources of its coastal zone for consistency with its program. This authority is referred to as "federal consistency," and it allows states to review the following[26]:

- Activities conducted by, or on behalf of, a federal government agency
- Federal licenses or permits
- Permits issued under the Outer Continental Shelf Lands Act for offshore minerals exploration or development
- Federally funded activities

Within the State of Florida, federal consistency reviews are integrated into other review processes. There are no categorical exclusions from the consistency requirement.

The Airport is not located within coastal barrier lands designated as part of the CBRS. The CBRS comprises two types of units: system units, which include private lands that were typically undeveloped at the time of their designation, and otherwise protected areas (OPAs), which include lands managed for wildlife refuge, sanctuary, recreational, or other natural resource conservation purposes. The nearest CBRS unit is located over one mile to the east of the Airport (the Lloyd Beach CBRS Unit FL-20P, designated as an OPA).

2.15.5 DEPARTMENT OF TRANSPORTATION ACT, SECTION 4(F)

Section 4(f) of the Department of Transportation (DOT) Act of 1966, as amended, dictates that, for any program or project undertaken or approved by the U.S. DOT, impacts to the use of any publicly owned land of a public park; recreation area; or wildlife and waterfowl refuge of national, state, or local significance; or land from a historic site of national, state, or local significance must be considered. The Act prohibits the Secretary of Transportation from approving actions that would result in the use of these properties for transportation purposes, unless no prudent and feasible alternative exists and all efforts have been made to minimize impacts, or the use would have a *de minimis* impact.

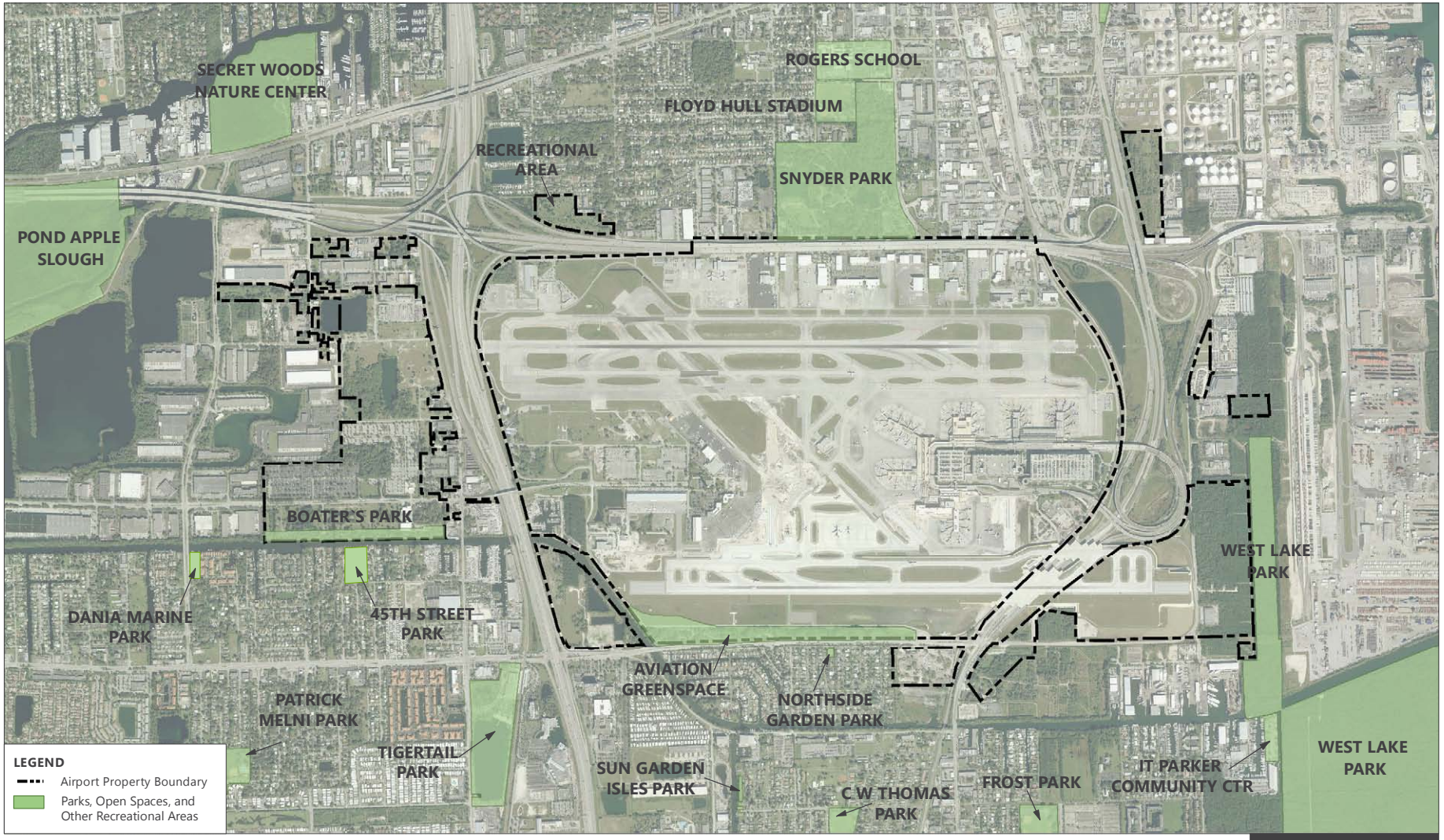
A number of parks, open spaces, and other recreational areas are located on and adjacent to the Airport, as shown on **Exhibit 2.15-1**. Snyder Park, adjacent to the north boundary of the Airport, Floyd Hull Stadium, and Rogers School are managed by the City of Fort Lauderdale. West Lake Park located east and southeast of the Airport, and Pond Apple Slough and Secret Woods Nature Center, located to the west of the Airport, are managed by Broward County. The City of Dania Beach manages several parks south and southwest of the Airport: the IT Parker Community Center, Frost Park, C W Thomas Park, Northside Garden Park, Sun Garden Isle Park, Tigertail Park, SW 45th Street Park, and Dania Marine Park. Two recreation areas are located on Airport property: a greenspace area along the Airport's south boundary and Boater's Park, which is west of the Airport along the north side of the Dania Cut-off Canal.

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25 Florida Statutes, Title XXVIII, Chapter 380, Part II, *Coastal Planning and Management,* 2015.

26 Florida Department of Environmental Protection, *Florida Coastal Management Program Guide,* September 16, 2015.

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SOURCES: Broward County Aviation Department, 2015 (aerial and airport boundary); Broward County, GIS Data, gis.broward.org/GISData.htm (accessed February 27, 2016) (city and county parks); City of Dania Beach, www.ci.dania-beach.fl.us/index.aspx?nid=215 (accessed February 29, 2016) (City of Dania Beach parks).
PREPARED BY: Ricondo & Associates, Inc., February 2016.

EXHIBIT 2.15-1

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Parks, Open Spaces, and Other Recreational Areas

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2.15.6 HAZARDOUS MATERIALS, SOLID WASTE, AND POLLUTION PREVENTION

2.15.6.1 Hazardous Materials

There are multiple federal laws that govern the handling and disposal of hazardous materials, chemicals, substances, and wastes. The two federal statutes often relevant to airport projects are the Resource Conservation and Recovery Act (RCRA), as amended by the Federal Facilities Compliance Act of 1992, and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended (also known as Superfund). RCRA governs the generation, treatment, storage, and disposal of hazardous wastes. CERCLA provides for cleanup of any release of a hazardous substance (excluding petroleum) into the environment. In addition to RCRA and CERCLA, the Clean Air Act Amendments (CAAA), Clean Water Act (CWA), the Safe Drinking Water Act (SDWA), Hazardous Materials Transportation Act (HMTA), and the Emergency Planning and Community Right to Know Act (EPCRA) establish regulations for hazardous materials; they are mostly promulgated by the EPA. Together, these regulations serve as guiding principles governing the storage, use, and transportation of hazardous and other regulated materials from their time of origin to their ultimate disposal. These regulations also govern the recovery and cleanup of environmental contamination resulting from the accidental or unlawful release of these materials and substances.

At the state level, the agency with authority similar to the EPA over hazardous materials is the FDEP Bureau of Solid and Hazardous Waste Management. The Bureau of Petroleum Storage Systems administers Florida's above-ground and underground pollutant storage tank regulation program, as well as the petroleum cleanup program. The Bureau of Waste Cleanup is responsible for all activities related to the cleanup of sites and for conducting investigations of groundwater contamination.

The Broward County Environmental Protection Department (BCEDP) manages state-funded cleanup programs for the FDEP and has responsibility for the oversight, licensing, assessment, and remediation of non-state funded cleanup projects.

The 2008 FEIS documented contaminated and potentially contaminated sites at the Airport. Five sites are designated as having active leaking underground storage tanks (LUST), and seven sites are identified as "petroleum impacted" and of concern for potential contamination.[27] These sites are listed in **Table 2.15-2**. The EPA Superfund databases were reviewed for additional potential sites at the Airport, and no areas identified as a National Priorities List (NPL) or non-NPL Superfund site were identified.

[27] U.S. Department of Transportation, Federal Aviation Administration, *Final Environmental Impact Statement for the Development and Expansion of Runway 9R/27L and Other Associated Airport Projects at Fort Lauderdale-Hollywood International Airport, Broward County, Florida*, Chapter 5, Section 5.G.1, June 2008.

Table 2.15-2: Known Hazardous Sites

SITE NAME	ADDRESS	AIRPORT AREA
Leaking Underground Storage Tank Sites		
Walkers Aviation Services	500 SW 34th Street	North Side
FLL Fuel	210 SW 34th Street	North/West Sides
BCAD Parking Lot	320 A Terminal Drive	East Side
BCAD South Terminal	300 Terminal Drive	East Side
Budget Rent A Car #1905	1655 Airport Perimeter Road	East Side
National Car Rental	1795 N Perimeter Road	East Side
Petroleum Impacted Sites—Areas of Potential Contamination 1/		
Aircraft Services International Group	3451 SW 2nd Avenue	North Side
Avis Rent-A-Car	1203 SW 41st Court	East Side
Carolina Aircraft Corporation	3500 SW 11th Avenue	North Side
Value Rent-A-Car/Budget Rent-A-Car	1030 Taylor Road	East Side

NOTES:

BCAD – Broward County Aviation Department

FLL - Fort Lauderdale-Hollywood International Airport

1/ Sites with documented incidences of petroleum-based contamination in the soil and/or groundwater

SOURCE: Broward County, Contaminated Sites, http://bcgis.maps.arcgis.com/apps/OnePane/basicviewer/index.html?appid=5d9ec5c1eb614c8b88d8990f48b15b7a (accessed May 31, 2016).

PREPARED BY: Ricondo & Associates, Inc., May 2016.

2.15.6.2 Solid Waste

The Waste Regulation Section of the Broward County Environmental Protection and Growth Management Department's Pollution Prevention Division is responsible for licensing and compliance for solid waste management facilities and waste transporters within Broward County. Solid waste from tenants, terminal buildings, county facilities, and the rental car center is taken to an onsite sorting and recycling facility located at the northeast corner of the Airport. The facility processes approximately 7 million pounds of solid waste per year, with an average recycling rate of 30 percent annually. The remaining processed waste is sent to a local facility, where it is used to generate electricity. [28]

2.15.6.3 Pollution Prevention

In accordance with the Code of Federal Regulations Title 40 Part 112 and the Florida Administrative Code Chapter 62-761, Broward County has developed a Spill Prevention, Control, and Countermeasure Plan (SPCC) for the Airport.

28 Broward County, Fort Lauderdale-Hollywood International Airport, http://www.broward.org/Airport/Community/Pages/EnvironmentalInitiatives.aspx#recycling (accessed May 31, 2016).

The SPCC outlines procedures for preventing spills and the actions to be taken in the event of a spill.[29] Airport tenant lease agreements require lessees to maintain a contingency plan that includes minimum standards and procedures for storage, transfer, disposal, and spill containment of hazardous materials.[30]

2.15.7 HISTORICAL, ARCHITECTURAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

Multiple laws and regulations require consideration of possible effects on historic, architectural, archaeological, and cultural resources during the planning and execution of federal undertakings. These laws and regulations stipulate a process of compliance, define the responsibilities of the federal agency proposing the actions, and prescribe the relationships among involved agencies. NEPA directs federal agencies to assess the environmental impacts of their proposed actions, including impacts to historic and cultural resources. In addition to NEPA, the primary laws that pertain to the treatment of historic, architectural, archaeological, and cultural resources during environmental analyses are the National Historic Preservation Act (particularly Sections 106 and 110), the Archaeological Resources Protection Act, the American Indian Religious Freedom Act, and the Native American Graves Protection and Repatriation Act.

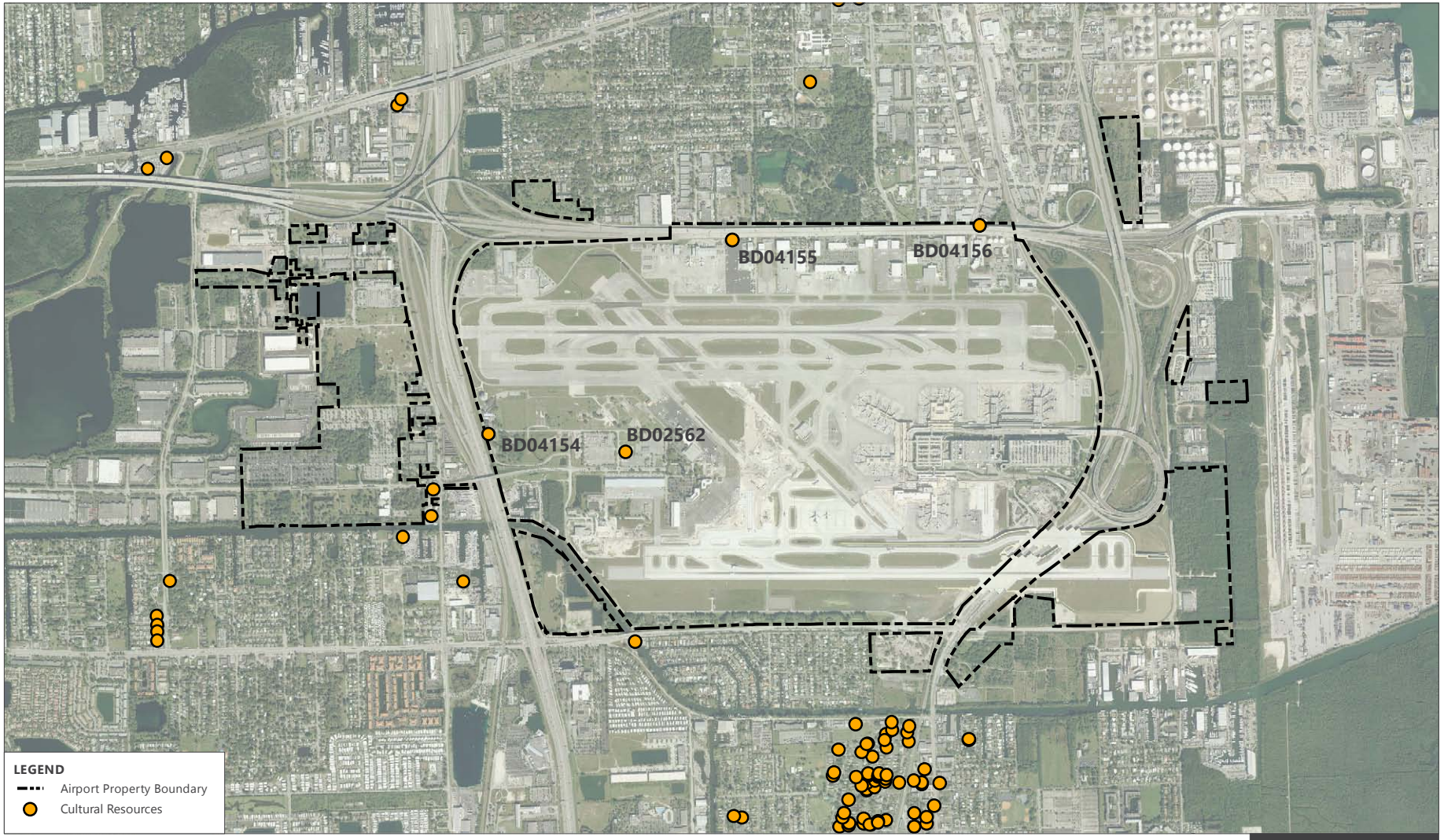
Section 106 of the National Historic Preservation Act (NHPA) requires federal agencies to consider whether their activities could affect historic properties through consultation with the State Historic Preservation Officer (SHPO). A historic property is defined as any prehistoric or historic district site, building, structure, or object listed in, or eligible for listing in, the National Register of Historic Places (NRHP). Properties that are either listed in or eligible for listing in the NRHP are provided the same measure of protection under Section 106. If an undertaking has the potential to affect historic properties, then the federal agency, in consultation with the SHPO, defines an Area of Potential Effect (APE).

The Florida Geographic Data Library documents the presence of 14 potential historical resources on Airport property, as shown on **Exhibit 2.15-2** and listed in **Table 2.15-3**. Ten of these resources were identified in the 2008 FEIS as having been demolished prior to initiation of the EIS (Sites BD02561, BD02889, BD02890, BD02891, BD02892, BD02893, BD02894, BD02895, BD02896, and BD02897). Of the four remaining resources, the Florida Geographic Data Library documents that only one site has been determined to be eligible for listing on the NRHP by the SHPO: the Link Trainer Building, which is being operated as a museum by the Naval Air Station Fort Lauderdale Historical Association.

29 Cherokee Enterprises, Inc., *Spill Prevention Control and Countermeasure Plan, Fort Lauderdale/Hollywood International Airport*, April 2003.

30 Broward County Aviation Department, *Leasehold Document*, Section 33: Environmental Compliance; Environmental Containment and Removal,

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SOURCES: Broward County Aviation Department, 2015 (aerial and airport boundary); Florida Geographic Data Library, Metadata Explorer, www.fgdl.org (accessed February 27, 2016) (cultural resources).
PREPARED BY: Ricondo & Associates, Inc., February 2016.

EXHIBIT 2.15-2

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Cultural Resources

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Table 2.15-3: Potential Historical Resources on Airport Property

SITE ID	SITE NAME	ADDRESS	YEAR BUILT	USE	NRHP ELIGIBILITY
BD02562	Link Trainer	4000 W. Perimeter Road	1942	Government	Eligible
BD04154	Sentry Gate	4000 W. Perimeter Road	1942	Military	Ineligible
BD04155	GB Airlink	850 SW 34th Street	1956	Commercial	Ineligible
BD04156	3340 SW 2nd Avenue	3340 SW 2nd Avenue	1948	Commercial	Ineligible
BD02561	Junior Bachelor Officers Quarters NAS	1615 SW 39th Street	1942	Demolished2/	Likely1/
BD02889	Paint Building NAS Building 1	Naval Air Station	1942	Demolished2/	Ineligible
BD02890	Antenna Communications NAS Building 4	1650 SW 39th Street	1953	Demolished2/	Ineligible
BD02891	Hoisting Tower NAS Building 4	1650 SW 39th Street	1953	Demolished2/	Ineligible
BD02892	Mine Test Tank NAS Building 7	1650 SW 39th Street	1942	Demolished2/	Ineligible
BD02893	Underwater Weapons Systems Lab NAS Building 14	1650 SW 39th Street	1942	Demolished2/	Ineligible
BD02894	Administration Building NAS Building 15	Naval Air Station	1942	Demolished2/	Ineligible
BD02895	Magazines/Small Arms NAS Building 20	1650 SW 39th Street	1943	Demolished2/	Ineligible
BD02896	Magazines/High Explosive NAS Building 21	1650 SW 39th Street	1943	Demolished2/	Ineligible
BD02897	Magazines/Small Arms NAS Building 22	1650 SW 39th Street	1943	Demolished2/	Ineligible

NOTES:

NRHP – National Register of Historic Places

NAS – Naval Air Station

1/ Site is likely eligible for listing on the NHRP but was not evaluated by the State Historic Preservation Officer.

2/ Site was demolished prior to initiation of the 2008 FEIS.

SOURCES: Florida Geographic Library Database, GIS Metadata Explorer: GIS Data, www.fgld.org/metadataexplorer/explorer.jsp (accessed February 27, 2016); U.S. Department of Transportation, Federal Aviation Administration, *Final Environmental Impact Statement for the Development and Expansion of Runway 9R/27L and Other Associated Airport Projects at Fort Lauderdale-Hollywood International Airport, Broward County, Florida,* Chapter 5, Section 5.D.1.2, June 2008.

PREPARED BY: Ricondo & Associates, Inc., February 2016.

2.15.8 NOISE

FAA laws and regulations provide a basis for local development of airport plans, analysis of potential impacts from airport development, and compatibility policies. In terms of land-use compatibility, the primary role of the FAA is regulation of noise at the source. This includes the development of noise standards for certificated aircraft and the approval of noise-abatement flight procedures. The FAA also plays a supporting role in the development of local airport noise abatement plans and policies to ensure that land uses in the immediate vicinity of airports are compatible with normal airport operations.

The FAA defines the day-night average sound level (DNL) 65 decibels (dB) as the threshold of exterior noise compatibility for residential and other noise-sensitive land uses, such as schools, libraries, and religious facilities. The FAA requires an analysis of noise exposure when development actions may change the cumulative noise exposure in areas surrounding an airport. Common development actions that may change the cumulative noise environment include changes to: runway configuration, aircraft operations and/or movements, aircraft types using the Airport, or aircraft tracks and profiles.

The existing aircraft noise environment at and around the Airport is dominated by aircraft departing, landing, and taxiing on runways and connecting taxiways. Other sources of noise near the Airport include roadway noise from I-95 and I-595, U.S. 1, and other ground transportation infrastructure.

BCAD initiated the update of the FLL Part 150 Noise Study in 2017, which will generate new noise contours.

2.15.9 WATER RESOURCES

2.15.9.1 Wetlands

The Clean Water Act (CWA) is the primary federal law governing water pollution.[31],[32] The U.S. Army Corps of Engineers (the Corps) is responsible for investigating, developing, and maintaining the waters of the United States and related environmental resources.[33] Waters under the jurisdiction of the Corps fall into two categories: wetlands and other waters of the United States. Section 404 of the CWA provides the Corps the authority to permit the discharge of dredged or fill material into waters of the United States.[34] Pursuant to Sections 9 and 10 of the Rivers and Harbors Act of 1899, the Corps oversees work and the placement of structures in navigable waters.[35]

The Airport is highly developed (e.g., paved surfaces, buildings, ornamental landscaping). Small wetland areas are located on the southwest area of the Airport and along the east side property line near the terminal facilities, as shown on **Exhibit 2.15-3**. Extensive wetland areas to both the east and west of the Airport are identified in the Florida Geographic Data Library mapping.

2.15.9.2 Floodplains

Executive Order No. 11988 was enacted in order to require avoidance, to the extent possible, of the long- and short-term adverse impacts associated with the occupancy and modification of floodplains, as well as to avoid direct and indirect support of floodplain development wherever there is a practical alternative. The order was issued in furtherance of NEPA, the National Flood Insurance Act of 1968, and the Flood Disaster Act of 1973.

Floodplains are defined as lowland and flat areas adjoining waters that are subject to a 1 percent or greater chance of flooding in any given year (i.e., a 100-year flood event).

According to the Federal Emergency Management Agency (FEMA), the Airport is within three flood zone designations—areas designated as being subject to 500-year flood events, areas designated as being subject to 100-year flood events, and areas designated as being subject to 100-year flood events with ponding flood depths of 1 to 3 feet.

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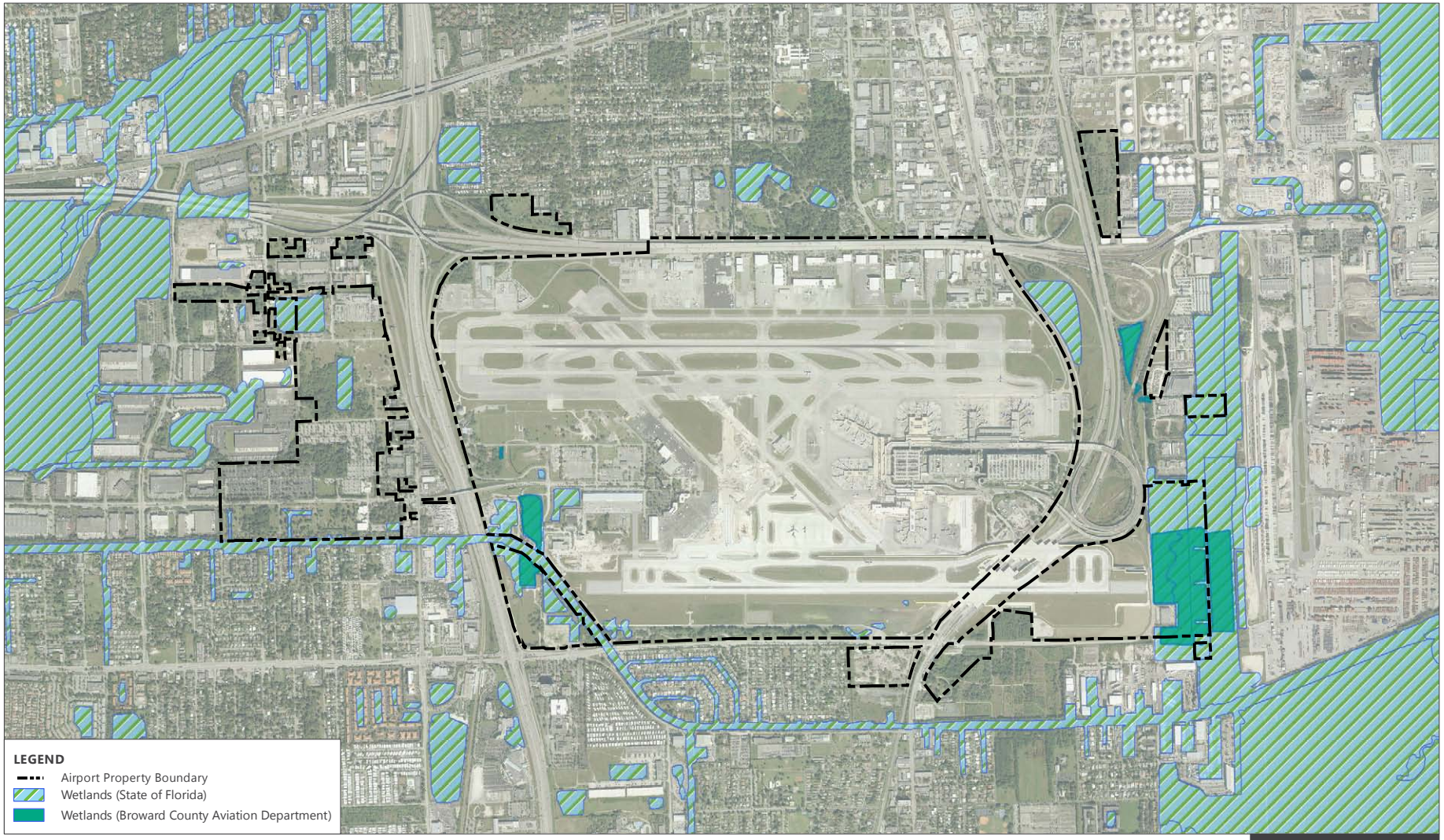
31 33 U.S. Code 1251, Clean Water Act.

32 40 Code of Federal Regulations (CFR) Parts 110, 112, 116, 117, 122, 125, 129, 130, 131, 136, 142, 149, 401, and 403.

33 U.S. Army Corps of Engineers, www.usace.army.mil/ (accessed February 26, 2016).

34 33 U.S.C. 1251-1387.

35 33 U.S.C. 401 and 403.



SOURCES: Broward County Aviation Department, 2015 (aerial and airport boundary); Florida Geographic Data Library, Metadata Explorer, www.fgdl.org (accessed September 29, 2015) (wetlands); Broward County Aviation Department, 2016 (wetlands).
PREPARED BY: Ricondo & Associates, Inc., February 2016.

EXHIBIT 2.15-3

NORTH 0 2,500 ft.

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Wetlands

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As shown on **Exhibit 2.15-4**, the 100-year floodplain is scattered throughout the Airport. Many of the airside and landside facilities (i.e. terminals, concourses, and parking) lie within the 100-year floodplain. Runway 10L-28R is not within the floodplain.

2.15.9.3 Surface Waters

Surface and ground waters are sensitive to changes in land cover and uses, such as the conversion of turfgrass to impervious surface. Therefore, any proposed improvements or operational changes that increase impervious areas at the Airport may affect stormwater runoff patterns, thus directly or indirectly influencing local water resources. Section 402 of the CWA regulates the discharge of pollutants into waters of the United States, as determined by the Corps, through the National Pollutant Discharge Elimination System permit program. The Florida Department of Environmental Protection oversees the Environmental Resource Permitting (ERP) Program, which regulates activities that result in the alteration of surface water flows.[36]

The Airport is located in an area of generally flat terrain, with the exception of the elevated end of Runway 28L. As depicted on **Exhibit 2.15-5,** in addition to open water bodies to the east and west of Airport property, several drainage ditches cross the Airport, and the Dania Cut-Off Canal flows from the west, along the south side of the Airport towards the Atlantic Ocean.

2.15.9.4 Groundwater

The principal aquifers under the Airport are the Biscayne Aquifer and the Floridian aquifer system.

The Biscayne Aquifer is a surficial aquifer that underlies Broward, Miami-Dade, and parts of Palm Beach Counties, and it consists of very permeable, interbedded limestone and sandstone of marine origin. The Biscayne Aquifer is designated by the EPA as a sole-source drinking water aquifer[37] and supplies all of Broward County's drinking water.[38]

The depth of the Biscayne Aquifer is reported to be between four and five feet below the surface of the Airport.[39]

The Biscayne Aquifer is vulnerable to contamination from saltwater intrusion and infiltration of surface contaminates due to the shallow depth of the water table and the aquifer's high permeability. The Airport lies within the area intruded by salt water.[40]

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36 Florida Department of Environmental Protection, www.dep.state.fl.us/Water/wetlands/erp/index.htm (accessed February 26, 2016).

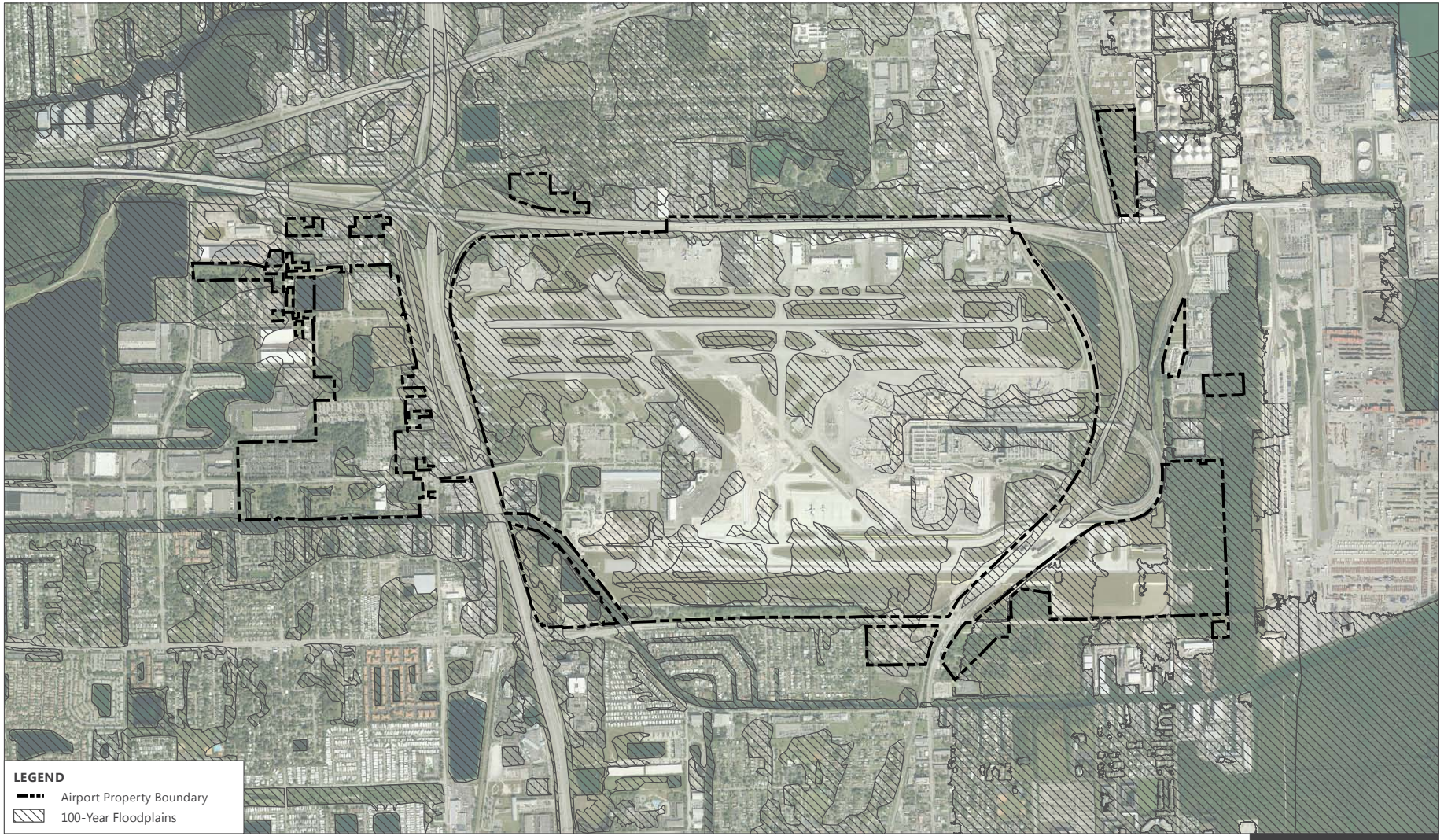
37 Florida Department of Environmental Protection, *Integrated Water Quality Assessment for Florida: 2014 Sections 303(d), 305(b), and314 Report and Listing Update,* April 2014.

38 Broward County Protection & Growth Management Department, *Broward County Water Resources Fact Book,* June 2015.

39 U.S. Department of Transportation, Federal Aviation Administration, *Final Environmental Impact Statement for the Development and Expansion of Runway 9R/27L and Other Associated Airport Projects at Fort Lauderdale-Hollywood International Airport, Broward County, Florida,* Chapter 5, Section 5.E, June 2008.

40 *Ibid.*

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SOURCES: Broward County Aviation Department, 2015 (aerial and airport boundary); and Florida Geographic Data Library, Metadata Explorer, www.fgdl.org (accessed February 27, 2016) (Federal Emergency Management Agency floodplains).
PREPARED BY: Ricondo & Associates, Inc., February 2016.

EXHIBIT 2.15-4

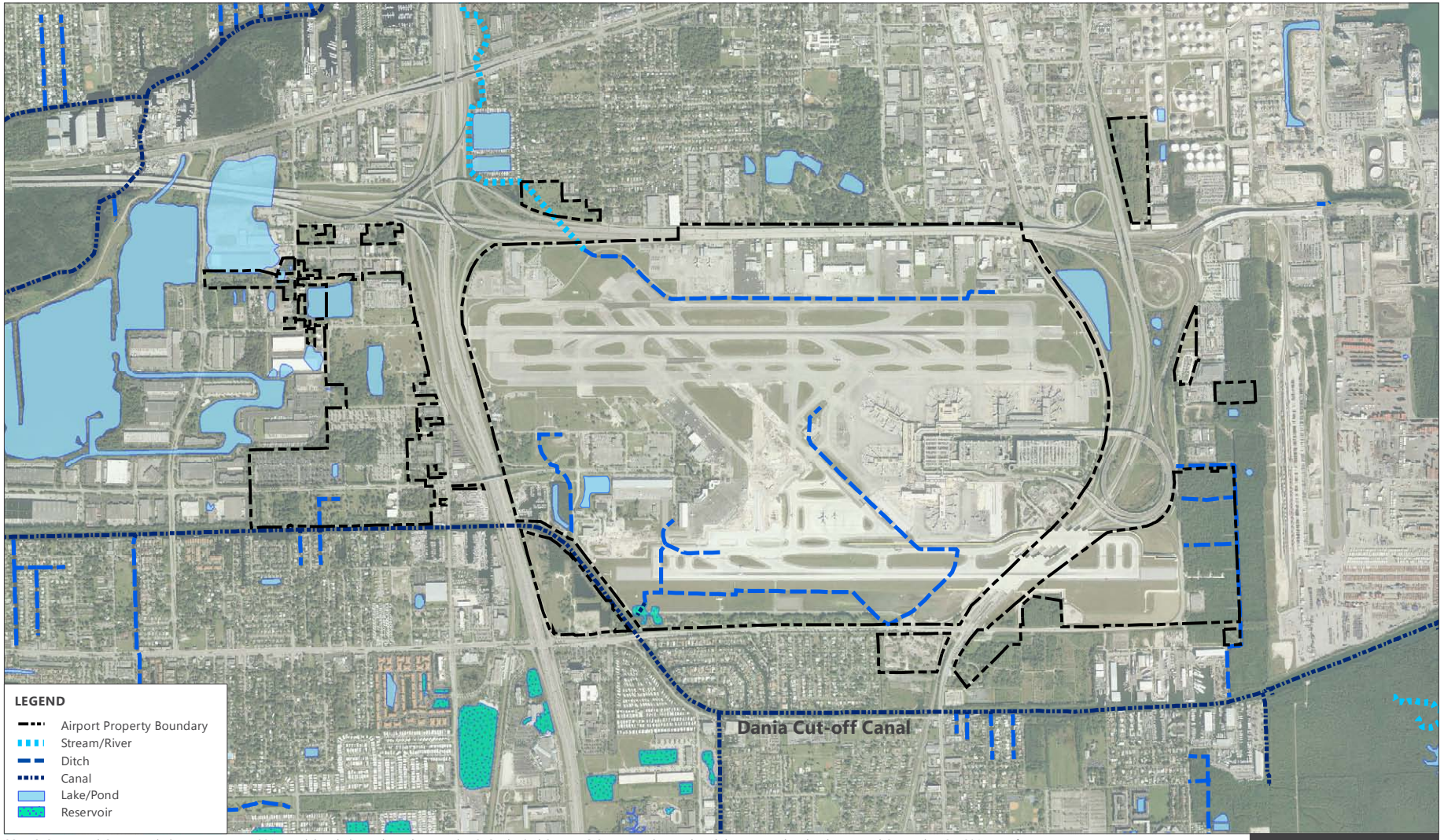
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100-Year Floodplains

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SOURCES: Broward County Aviation Department, 2015 (aerial and airport boundary); and U.S. Geological Survey, GIS Data: Hydrography, nhd.usgs.gov/data.html (accessed September 25, 2015) (surface waters).
PREPARED BY: Ricondo & Associates, Inc., February 2016.

EXHIBIT 2.15-5

NORTH

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Surface Waters

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The deeper Floridian aquifer system underlies all of Florida and several adjacent states. Broward County is actively studying the Floridian Aquifer as an alternative water supply due to the increasing population and the possible loss of traditional resources as a result of saltwater intrusion.

Broward County protects groundwater by protecting recharge areas in designated wellfield zones. The Airport is not located within the footprint of a Broward County Wellfield Protection Program Wellfield Zone of Influence.[41]

2.15.9.5 Wild and Scenic Rivers

There are no wild and scenic rivers near the Airport. The nearest wild and scenic river is the Loxahatchee River, located approximately 70 miles north of the Airport, in northern Palm Beach County.

2.15.10 ENVIRONMENTAL CONSIDERATIONS FOR DEVELOPMENT AND EVALUATION OF MASTER PLAN PROJECTS

Based on the identified environmental resources in and near the Airport, **Exhibit 2.15-6** presents a map of environmental constraints—environmental resources that should be considered during the evaluation of proposed master plan projects. The environmental constraints map includes the following resources:

- Parks and recreational areas on and near the Airport
- Historic resources on the Airport (the Link Trainer Building on the west side)
- 100-year floodplains on and near the Airport
- Wetlands on and near the Airport
- Surface water resources near the Airport (the Dania Cut-off Canal)

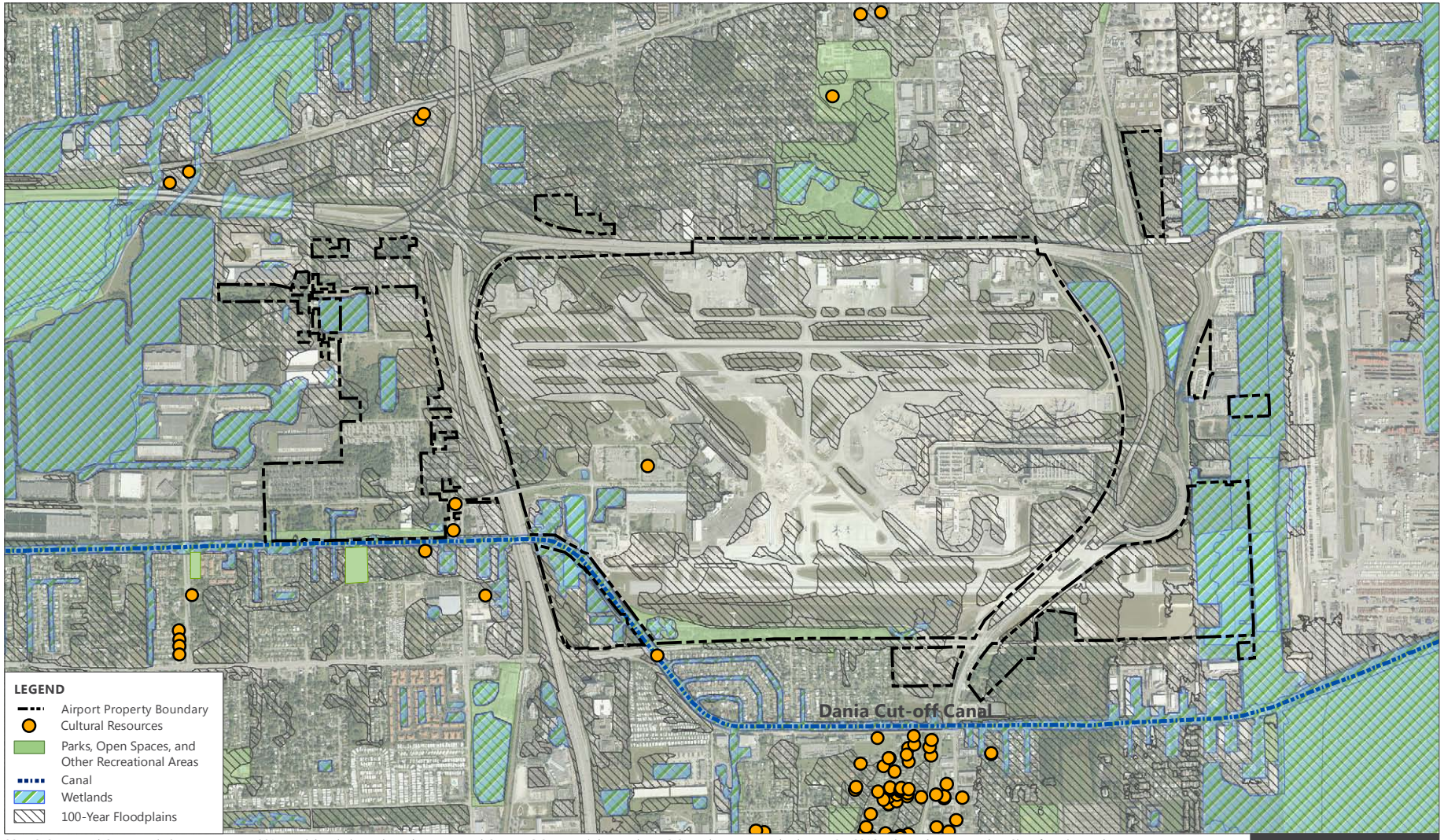
2.16 Sustainability Programs and Policies

In 2005, BCAD and the Clean Airport Partnership (CAP) examined multiple resource areas to define reference conditions (baselines) and to establish impact metrics and recommendations for the development of sustainability programs and performance tracking of reduction initiatives. The project is referred to as FLL's Green Airport Initiative (GAI). This section summarizes the following: the 2004 baseline conditions and BCAD initiatives, in place as of April 2016, for reducing the use of resources relative to air emissions; water and energy consumption; solid waste management; and stormwater management. [42]

41 *Broward County Map of Wellfield Zones*, www.broward.org/POLLUTIONPREVENTION/WELLFIELD/Pages/ZoneOfInfluence.aspx (accessed November 13, 2015).

42 Michael Baker International, Fort Lauderdale-Hollywood International Airport Sustainable Operations and Green Practices Guidance Manual, February 2016. *Guidance Manual for Sustainable Operations & Green Practices*.

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SOURCES: Broward County Aviation Department, 2015 (aerial and airport boundary); Broward County, GIS Data, gis.broward.org/GISData.htm (accessed February 27, 2016) (city and county parks); City of Dania Beach, www.ci.dania-beach.fl.us/index.aspx?nid=215 (accessed February 29, 2016) (City of Dania Beach parks); and Florida Geographic Data Library, Metadata Explorer, www.fgdl.org (accessed February 27, 2016) (cultural resources, wetlands, and Federal Emergency Management Agency floodplains); Broward County Aviation Department, 2016 (wetlands); U.S. Geological Survey, GIS Data: Hydrography, nhd.usgs.gov/data.html (accessed September 25, 2015) (surface waters).
PREPARED BY: Ricondo & Associates, Inc., February 2016.

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EXHIBIT 2.15-6

Environmental Considerations for Development and Evaluation of Master Plan Projects

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2.16.1 Sustainability Vision and Guiding Principles

BCAD's Vision for Sustainability is "to minimize our impacts on the environment while increasing our operational efficiency, economic viability, and social responsibility."[43]

Guiding principles for sustainability at FLL focus on integrating sustainability into the long-term business strategy, future development, day-to-day management, and operations of the Airport. The following are guidelines developed to support BCAD's vision for sustainability[44]:

- Communicate with stakeholders to ensure they are kept informed and engaged on the priority sustainability issues for the Airport, while working to address their concerns.
- Foster involvement across BCAD to encourage staff-wide participation in the sustainability program by raising awareness and highlighting benefits of the program and its initiatives.
- Report regularly on progress by aligning BCAD's sustainability key performance indicators and metrics with the reporting requirements of the County.
- Support airlines and tenants through jointly exploring and encouraging ways for them to improve their own sustainability performance.
- Improve economic viability through fiscally responsible measures that balance the needs of the community with the demands of the national aviation system.
- Increase operational efficiency throughout BCAD's facilities, infrastructure, and information systems.
- Advance sustainable design and construction initiatives for all airport infrastructure and facilities projects through the implementation of sustainable design and construction guidelines.
- Encourage partnerships that enhance and utilize diverse local businesses, people, and resources.
- Address climate change by striving to meet the County's greenhouse gas emission reduction goals and working with regional partners to cultivate innovative solutions to environmental challenges.
- Protect environmental resources by minimizing and managing negative environmental impacts and partnering with the community on noise mitigation issues so impacts can be addressed while balancing the need to operate a safe and efficient Airport.

2.16.2 AIR EMISSIONS

The GAI evaluated air emissions from the largest sources that operate at FLL. The analysis focused on commercial aircraft operations and the GSE that support them. Aircraft operating at FLL include large commercial jets and smaller commuter aircraft powered by jet engines, as well as turboprop engines, private jets, and piston-engine general aviation aircraft. The air emissions technical report for the GAI focused on strategies to reduce emissions from commercial jets, since their emissions represent the largest portion of the total aircraft emissions inventory.

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[43] Fort Lauderdale-Hollywood International Airport, http://www.broward.org/Airport/Community/Pages/EnvironmentalInitiatives (accessed April 13, 2016).

[44] IBID.

Estimates of emissions from landside vehicles were also developed and evaluated. [45]

2.16.2.1 Emissions Baseline

This section addresses baseline (2004) emissions from aircraft operations, GSE, auxiliary power units (APU), and landside vehicles.

Aircraft

Aircraft are the largest source of nitrogen oxide (NOx) emissions at the airport, contributing 80 percent of the total. Since these emissions are the direct result of aircraft fuel consumption, they are directly related to the number of flight operations at the airport. Overall, air emissions will be expected to grow at a similar rate as aircraft operations. To develop the baseline analysis of aircraft emissions at FLL, the CAP team utilized the landing and take-off (LTO) cycle for each commercial aircraft type in use at FLL by individual airlines.[46] **Table 2.16-1** presents the 2004 levels of aircraft emissions for carbon dioxide (CO_2), NO_x, CO, sulfur oxides (So_x), volatile organic compounds (VOC), and $PM_{2.5}$.

Ground Support Equipment and Auxiliary Power Units

In 2004, GSE and APU emissions represented approximately 15 percent of total No_x emissions at FLL. GSE are used to provide a wide variety of services to aircraft, as they are needed to move, service, load, and fuel the aircraft. To compute the emissions of GSE, the CAP team collected data on the makeup of GSE fleets and operating practices for the major airlines operating at FLL.

APUs are small jet engines, installed on aircraft, which are used to provide 400 hertz (Hz) power and air conditioning to an aircraft when its main engines are shut down. As with GSE, APU emissions were computed based on the specific equipment type used on individual aircraft, as well as the run time.

Table 2.16-1: Baseline Aircraft Emissions—2004

	EMISSIONS (POUNDS/YEAR)
Carbon Dioxide (CO_2)	2,564,252
Volatile Organic Compounds (VOC)	325,232
Nitrogen Oxides (NO_x)	1,882,551
Sulfur Oxides (So_x)	192,906
Particulate Matter ($PM_{2.5}$)	20,965

SOURCE: Clean Airport Partnership, Inc., *Environmental Footprint for FLL Operations* (revised), Table 4-1, September 2005.
PREPARED BY: Ricondo & Associates, Inc., April 2016.

45 Clean Airport Partnership Inc. and Environmental Consulting Group, Inc., *Task 9: Reduce Harmful Air Emissions*, October 2007.

46 Clean Airport Partnership, Inc., *Environmental Footprint for FLL Operations* (revised), Section 4.2, page 32, September 2005, p. 32.

Table 2.16-2 illustrates the 2004 levels of GSE and APU emissions for carbon dioxide (CO_2), NO_x, CO, So_x, VOC, and $PM_{2.5}$.

Table 2.16-2: Baseline Ground Support Equipment and Auxiliary Power Unit Emissions—2004

	EMISSIONS (POUNDS/YEAR)
Carbon Dioxide (CO_2)	2,904,741
Volatile Organic Compounds (VOC)	119,765
Nitrogen Oxides (NO_x)	358,914
Sulfur Oxides (So_x)	45,825
Particulate Matter ($PM_{2.5}$)	7,117

SOURCE: Clean Airport Partnership, Inc., *Environmental Footprint for FLL Operations* (revised), Table 4-4, September 2005.
PREPARED BY: Ricondo & Associates, Inc., April 2016.

Landside Vehicles

Landside vehicles include cars, trucks, limousines, shuttle vehicles, and buses that travel to and from the Airport. The following comprise the footprint for landside vehicle group types that were analyzed during the GAI Project (2005–2007).[47]

Fleet: During the study period, FLL's fleet consisted of 27 40-foot diesel-powered buses that serve the Rental Car Center. The remote parking and employee parking lots are served by 15 40-foot diesel buses and 10 30-foot diesel buses. Three diesel trams shuttle passengers from parking garages to the terminal areas.

Employee-Owned Vehicles: During the study period, employee-driven vehicles generated between 80,000 and 100,000 vehicle trips average per month. Between 3,200 and 3,400 employees enter or exit the parking lot on an average day, with approximately 2,400 vehicles parked in the lot during the peak noon period.

Taxis: There were approximately 850 taxis permitted to serve Broward County, with about 600 holding permits to serve FLL. These FLL-permitted taxis were estimated to generate between 37,000 and 47,000 thousand vehicle trips on a monthly basis.

Broward County Bus Transit: The Broward County Mass Transit Department generated approximately 3,100 to 3,500 monthly trips through FLL on a monthly basis during the GAI's study period.

To determine the landside footprint, data from BCAD's 2006 EIS analysis associated with FLL's capacity enhancement program was used. This analysis found that "roadways and parking" generated 366,000 pounds per

47 Clean Airport Partnership, Inc., *Environmental Footprint for FLL Operations* (revised), Section 4.4.1, September 2005, p. 38.

year of NOx emissions and 490,000 pounds per year of VOC emissions. This represents about 5% of total NOx emissions at FLL and 24% of total VOC emissions.[48]

2.16.2.2 Emission Reduction Initiatives (as of April 2016)

The following lists a summary of BCAD's emission reduction initiatives for FLL.[49]

Rental Car Center - The RCC is a nine-story building designed to bring most of the rental car companies at FLL under one roof.

- Reduces emissions by eliminating nearly 4 million miles of bus travel with the use of a common shuttle for all companies.
- Reduces road congestion in the terminal area.
- Has conserved several million gallons of fuel (3 million as of April 2016) since the facility opened in 2005.

Pay-On-Foot Program - The POF reduces emissions from cars idling at tollbooths by allowing drivers to pay their parking fees at machines in the parking garages prior to exiting. POF machines are located on each level of the Cypress Garage and in the elevator vestibules of the Hibiscus Garage, including near the pedestrian bridge to Terminal 1.

Cell Phone Lot - The 48-vehicle cell phone lot, opened in the fall of 2006, allows individuals to wait for their passengers for up to 30 minutes, reducing emissions, idling time, and gas use.

Bus and Taxi Holding Lot - In August 2006, FLL implemented a program to reduce the queuing of buses and taxis at the ground transportation areas through the use of bus and taxi holding lots, where drivers turn off their engine until they are dispatched back into operation, thus reducing emissions, idling time, and gas use.

Biodiesel and Hybrid Electric Buses - FLL operates biodiesel and hybrid-electric bus fleets. The current fleet includes 56 biodiesel vehicles, three biodiesel trams, and five hybrid-electric vehicles, thus reducing emissions and the dependency on fossil fuels.

2.16.3 WASTE REDUCTION

Terminal concessionaires, aircraft passengers, and employees generate large quantities of solid waste that must be collected and disposed of through landfills, incineration, or other means. In addition to the pollution and resources associated with collecting and trucking this waste to disposal, land area necessary for landfill operations are a finite resource.

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48 Clean Airport Partnership, Inc., *Environmental Footprint for FLL Operations* (revised), Section 4.4.2, September 2005 p. 40.

49 Fort Lauderdale-Hollywood International Airport, http://www.broward.org/Airport/Community/Pages/EnvironmentalInitiatives (accessed April 13, 2016).

2.16.3.1 Baseline Solid Waste Generation

The GAI's approach to evaluating solid waste generation and recycling practices was first to divide the Airport by land use types and then to quantify the different types of waste that are generated from each land use type. The largest amount of waste generation is within the terminal area, which includes the concourses and the airfield. The other remaining areas are the north and west sides of the Airport, which are occupied mainly by fixed-based operators (FBOs). Waste generated at FLL was calculated using three categories: municipal solid waste (MSW), hazardous and nonhazardous waste, and special wastes. Construction waste was not included in the baseline calculations.[50]

Municipal Solid Waste

For the GAI Environmental Footprint Report, MSW included:

- Putrescible wastes, such as from food preparation
- Paper
- Cardboard
- Metal
- Glass
- Plastics

Airport Recycling Specialists (ARS) collects waste from the MSW at FLL's terminals, the Rental Car Center, and from the portion of the airfield that is associated with tenants inside the terminal, with the exception of restaurant waste and "special waste," and it is taken to their onsite recycling facility for sorting. ARS reported an average recycling rate of 38 percent. Special waste, waste that comes from international flights, is the only component of airfield MSW that is not collected by ARS. Special waste, primarily paper and mixed food wastes, is placed in separate onsite dumpsters and hauled directly to an incineration facility in Miami-Dade County. Incinerating waste from international flights is a requirement of U.S. Customs.[51]

Other tenants at the airport, including facilities owned by BCAD, FBOs, and other private tenants, have independent service for waste disposal, mostly through Waste Management, Inc.

Table 2.16-3 presents the category breakdown of the average annual MSW generated at FLL.

50 Clean Airport Partnership, Inc., *Environmental Footprint for FLL Operations* (revised), Section 3.3 and 3.4, September 2005.

51 Ibid.

Table 2.16-3: Municipal Solid Waste

LOCATION	ANNUAL MUNICIPAL SOLID WASTE (POUNDS)1/
Terminal and Airfield (Domestic Aircraft)	6,258,105
Airfield (International Aircraft)	233,600
West Side	5,087,490
North Side	9,582,356
Total per Year	21,161,551

NOTE:

1/ Based on three-year average of BCAD Annual Statistical Report data.

SOURCE: Clean Airport Partnership, Inc., *Environmental Footprint for FLL Operations* (revised), Table B-2, September 2005.
PREPARED BY: Ricondo & Associates, Inc., April 2016.

Hazardous and Nonhazardous Waste

Hazardous waste and nonhazardous waste are primarily found in the north and west sides of the Airport and waste disposal is from multiple companies. Hazardous wastes, primarily located in the north side of the Airport, include:

- Antifreeze
- Diesel and Jet Fuel
- Waste Oil
- Solvents
- Batteries

Nonhazardous waste, primarily found on the west side of FLL, is all other waste that does not fall into either the MSW or the hazardous waste category; it comprises mostly "contaminated" water from maintenance facilities.

The baseline combined annual total hazardous (9,359 pounds) and nonhazardous (134,944 pounds) waste generated at FLL is 144,303 pounds.

2.16.3.2 Solid Waste Impact Metrics

Municipal Solid Waste

The Environmental Footprint Report assumes that MSW generation is generally related to the number of passengers; however, it also took into consideration material recycling. The impact metric considered appropriate for FLL's GAI baseline and ongoing performance monitoring is "MSW per passenger." For the calculation, average annual MSW (minus the amount of material recycled) is divided by the average annual passengers. The average MSW and

passenger statistics from years 1995 to 2004 were used in the baseline, with the net amount of generated MSW calculated at 1.78 pounds/passenger.[52]

The metric developed for hazardous and nonhazardous was based on the total amount of waste produced, with a goal to reduce the total amount of both hazardous and nonhazardous waste produced regardless of the growth in passengers. On this basis, the hazardous and nonhazardous waste impact metric calculation would be the current year hazardous plus nonhazardous waste, divided by the 2004 year waste (144,303).

2.16.3.3 Current Waste Management Initiatives (As of April 2016)

The following lists a summary of BCAD's waste management initiatives for FLL: [53]

Recycling: An onsite sorting and separating facility processes approximately 7-million pounds of solid waste per year from tenants, terminals, the Rental Car Center, offices, and county facilities. In 2015, 200 tons of plastic, glass, paper, and cardboard were recycled. The balance of waste is sent to a local facility where it is used to generate electricity. FLL's maintenance facilities also recycle waste oil, florescent bulbs, spent solvents, tires, batteries, and unused paints.

Best Management Practices for Hazardous Waste Management: BCAD has developed BMPs for the maintenance staff to follow according to State standards for staff to follow in the use, storage, and disposition of hazardous materials and wastes. Staff also recycle fluorescent bulbs, waste oil, unused paints, tires, batteries, and spent solvents.

The following summarizes hazardous waste management policies within the Guidance Manual for Sustainable Operations & Green Practices:[54]

- Establish purchasing guidelines to encourage waste reduction.
- Buy durable, concentrated, reusable, recycled and high-quality products.
- Track material usage to eliminate unnecessary purchases.
- Consider length or warranty and available repair services when purchasing equipment.
- Modify processes to incorporate reusable products.
- Implement a regular maintenance program for equipment and do not purchase new equipment if cost of repair is reasonable.
- Reduce printing requirements by relying solely on electronic documents when possible.

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52 Clean Airport Partnership, Inc., *Environmental Footprint for FLL Operations* (revised), Section 3.5, September 2005, p. 28.

53 Fort Lauderdale-Hollywood International Airport, http://www.broward.org/Airport/Community/Pages/EnvironmentalInitiatives (accessed April 13, 2016).

54 Michael Baker International, Fort Lauderdale-Hollywood International Airport Sustainable Operations and Green Practices Guidance Manual, February 2016. *Guidance Manual for Sustainable Operations & Green Practices*.

- Rent equipment if it will be used infrequently rather than purchasing it.
- Donate or recycle items when possible.
- Substitute less toxic material for toxic materials such as vegetable-based inks, water-based glue, markers and paints.
- Use plastic can liners made of recycled HDPE
- Start your own Recycling Program.Use lightweight packaging to conserve materials.

2.16.4 WATER CONSERVATION

Potable and non-potable water usage was examined to establish a baseline and to develop conservation recommendations in order to improve the efficiency of FLL's water use within the Final Report produced for Task 4 of the GAI.[55]

2.16.4.1 Baseline Water Use

Non-Potable Water

Water for use at FLL for irrigation comes from shallow wells drawing from the Biscayne Aquifer. Of the 1,380 acres of land for FLL operations, only 320 acres are defined as pervious. Currently, only terminal area landscaping is irrigated using non-potable water. The SFWMD Consumptive Use Permit (CUP; Permit #06-00431-W) allows BCAD to use groundwater from the Biscayne Aquifer landscape irrigation. The permit modification in 2006 allows BCAD an annual allocation of 63.21 million gallons for irrigation of 52.47 acres.[56]

Potable Water

Broward County's Office of Environmental Services (OES) provides the potable water for use at the Airport. FLL used 65 million gallons of water from October 2005 through September 2006, with an additional 142 million gallons billed to 141 sub-metered Airport users. Sub-metered users include food service establishments, rental car companies, airlines, BCAD, FAA, Broward County Animal Control, Lauderdale Small Boat Club, and others.[57] The main sources of potable water use at FLL include:

- Terminal Building Amenities (bathrooms, restaurants, other food service operations, etc.)
- Aircraft Washing
- Fire Training Exercises
- Chillers
- Tenant and BCAD Operations

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[55] Miller Legg, *Task 4: Protecting Water Quality and Reducing Water Use*, September 2007.

[56] Clean Airport Partnership, Inc., *Protecting Water Equality and Reducing Water Use*, Final Report, September 2007, p. 14.

[57] Clean Airport Partnership, Inc., *Protecting Water Equality and Reducing Water Use*, Final Report, September 2007, p. 17.

- Potable water is also used to irrigate the Greenbelt area.

2.16.4.2 Water Use Impact Metrics

Non-Potable Water

The SFWMD CUP permit conditions require quarterly monitoring reports documenting total groundwater withdrawn on a monthly basis during a three-month period. According to the October 2006 Quarterly Withdrawal Report, approximately 9 million gallons of non-potable water (groundwater) was utilized. Based on this information, the non-potable impact metric was established as the current year total divided by the 2006 year total.

Potable Water

The GAI Footprint Report identified "metered water use per passenger" as the appropriate impact metric for potable water use by FLL and its tenants, which can readily be computed from billing data and tracked annually. For 2004, FLL potable water consumption was 14.1 gallons per passenger.[58] Based on this information, the potable impact metric was established as the current year water use/passenger divided by the 2004 water use/passenger.

2.16.4.3 Current Water Conservation Initiatives (As of April 2016)

BCAD is currently utilizing low-flow toilets and urinals and water-conserving automatic shutoff faucets within the restrooms at FLL. During future proposed terminal expansion or renovation projects, newer technology, lower-flow systems will be installed. A water system captures rainwater and condensate from air conditioning units in two 35,000 gallon cisterns. A filtration system cleans the water for use in the toilets, urinals, and provides make-up water for the cooling system.

The following summarizes water conservation policies within the Guidance Manual for Sustainable Operations & Green Practices[59]:

- Take advantage of water conservation information offered by the South Florida Water Management District and the Broward County Water Resources Division
- Use automatic shutoff controls for sinks and other rinse areas to reduce consumption.
- Use dry washing techniques when possible.
- Use high-pressure washing to reduce the amount of water required.
- Use Florida Friendly landscaping.
- Use rain sensor controlled irrigation to reduce overwatering of landscape.
- Perform an irrigation system audit for efficiency and to check for leaks.

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58 Clean Airport Partnership, Inc., *Protecting Water Equality and Reducing Water Use*, Final Report, September 2007, p. 11.

59 Michael Baker International, Fort Lauderdale-Hollywood International Airport Sustainable Operations and Green Practices Guidance Manual, February 2016.

- Link to South Florida Water Management District website.
- Link to Broward County website showing multiple ways to conserve water in your area.
- Reuse water where possible (rain barrels).
- Check for leaks.
- Replace old water guzzling toilets with low flow toilets.
- Plant non-fruit and nut bearing plants on bare ground.
- Minimize the use of pesticides and insecticides, if possible.
- Do not use or minimize the use of fertilizers.

2.16.5 ENERGY CONSERVATION

Electricity is the primary utility used at FLL, and it is supplied by Florida Power Light Company (FPL). Many restaurants and tenant spaces are provided with separate meters and are billed directly by the utility companies. Electric power use was examined to establish a baseline. To determine a baseline for electrical use and associated air quality impacts, the kilowatt hour (KWH) unit, which measures the amount of electricity used over time, was employed.[60]

2.16.5.1 Baseline Electrical Use

Lighting and air conditioning systems are the two services using the majority of the electricity at the Airport. In general, in air-conditioned buildings at the Airport, lighting consumes 30 to 35 percent of the electricity. In non-air-conditioned areas and parking garages, lighting consumes as much as 95 percent of the electricity. The remaining electricity at the Airport is consumed by computer systems, including flight information systems, plug loads, exterior lighting, and aircraft systems requiring power while parked at the gate. The 12 major FPL accounts at the airport consumed approximately 83,563,928 KWH in fiscal year 2005 (July 2004 – June 2005).[61]

2.16.5.2 Power Consumption Impact Metric

The analysis of electric utility bills concluded monthly use was influenced by both outside temperature and the number of passengers using Airport services. The baseline impact metric used for the baseline was KWH consumed per passenger. Passenger statistics were used for years 1995 to 2004 to calculate the amount of electricity per passenger to be 8.33 KWH.[62]

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60 Clean Airport Partnership, Inc., Environmental Consulting Group, Inc., Labell Consulting Inc., et al, *Environmental Footprint for FLL Operations* (revised), September 2005.

61 Clean Airport Partnership, Inc., *Environmental Footprint for FLL Operations* (revised), Section 6.6, September 2005, p. 59.

62 Ibid, p. 64.

2.16.5.3 Current Energy Efficiency Initiatives

The following presents a summary of BCAD's energy conservation initiatives for FLL.[63]

High-Efficiency Heating, Ventilation, and Air Conditioning System—The Airport has increased the energy efficiency of the heating, ventilation, and air conditioning (HVAC) system by replacing older units with new, higher-efficiency models and replacing and upgrading 55 air handler units in Terminals 2, 3, 4, and the commuter terminal. BCAD is currently upgrading the existing HVAC controls for Terminals 2, 3, and 4 to include a state-of-the-art control system. Chillers and towers in Terminals 3 and 4 have also been upgraded.

LEED Standards for New Projects—The LEED Green Building Rating System, developed by the U.S. Green Building Council (USGBC), provides standards for environmentally sustainable construction. Broward County joined the USGBC in September of 2002 with more than 10 employees that are LEED-accredited professionals in the County.

LEED concepts, such as the use of recycled building materials, energy efficient lighting and HVAC systems, low-flow water devices, and reflective roof coatings have been incorporated into the terminals and the Rental Car Center.

High-Efficiency Lighting—High-efficiency lighting is currently being installed in the terminals and other buildings. The standard T12 fluorescent lamps and ballasts are bring upgraded to T8 fluorescent lamps and electronic ballasts. Incandescent luminaries/lamps have been replaced or retrofitted with compact fluorescent lamps. In addition, BCAD is reviewing plans to replace existing lighting in the parking garages with more energy-efficient lighting.

The following summarizes water conservation policies within the Guidance Manual for Sustainable Operations & Green Practices.[64] Simple energy-efficiency methods and practices include the following:

- Install energy efficient equipment/appliances during equipment/appliance replacement.
- Ensure equipment (including computers) is turned off when not in use.
- Enable the "sleep mode" feature on your computer, allowing it to use less power during periods of inactivity.
- Service HVAC systems and change all air filters regularly.
- Use programmable thermostats to reduce heating and cooling requirements when the building is unoccupied.
- Set the thermostat of your water heater between 120°F and 130°F.
- Set your refrigerator temperature between 38°F and 42°F and your freezer between 0°F and 5°F.
- Use energy efficient light bulbs (LED, energy saving incandescent, CFL, LED flood, etc.) and appliances..

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63 Fort Lauderdale-Hollywood International Airport, http://www.broward.org/Airport/Community/Pages/EnvironmentalInitiatives (accessed April 13, 2016).

64 Michael Baker International, Fort Lauderdale-Hollywood International Airport Sustainable Operations and Green Practices Guidance Manual, February 2016.

2.16.6 STORMWATER POLLUTION PREVENTION

FLL is a large air transport facility that is approximately 1,380 acres, which includes Airport-related operations that potentially impact the water quality of stormwater runoff. These activities include commercial aircraft operations, private storage (airplanes and helicopters), and aircraft maintenance. About 77 percent of the Airport property is impervious, and stormwater generally falls onto runways, ramp areas, and other impervious areas on the site and runs off through retention/detention ponds, drainage ditches, and culverts and into canals that lead to the ocean.[65]

Stormwater runoff at FLL is primarily treated by biological action on pollutants in swales and detention and/or retention ponds. This type of treatment is designed to handle "first flush" runoff, which has the highest concentration of pollutants. There are, however, no additional controls or backup systems to treat stormwater runoff. Even though there are spill cleanup procedures in place, there remains a potential that fuel spills or other contaminating substances could enter the stormwater discharge system, exceeding the capability of the natural attenuation designed into the system.[66]

2.16.6.1 Stormwater Impact Metrics

The Environmental Footprint Report addresses impact metrics for point source and nonpoint source releases of contaminants within FLL.[67]

Point Source Releases

An impact metric for point source stormwater contamination is based on the total quantity of material spilled. Using 2004 as the baseline, the impact metric would be based on 217 gallons spilled. Annual performance monitoring would be calculated by dividing the current year quantity released by the 2004 quantity released.

Nonpoint Source Releases

The Environmental Footprint Report recommended an annual stormwater sampling program to include all seven outfall locations with the averaged data used as the impact metric.

2.16.6.2 Current Stormwater Pollution Initiatives

The following lists a summary of BCAD's emission-reduction conservation initiatives for FLL.[68]

Stormwater Pollution Prevention Program—BCAD has a very active and aggressive Stormwater Pollution Prevention Program (SWPPP) at FLL, which allows staff to work with facilities and tenants to protect the stormwater system.

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65 Clean Airport Partnership, Inc., *Environmental Footprint for FLL Operations* (revised), Section 2.3, September 2005.

66 Clean Airport Partnership, Inc., *Environmental Footprint for FLL Operations* (revised), Section 2.3, September 2005.

67 Ibid.

68 Fort Lauderdale-Hollywood International Airport, http://www.broward.org/Airport/Community/Pages/EnvironmentalInitiatives (accessed April 13, 2016).

FLL's Environmental Compliance Group oversees SWPPP compliance through inspections, stormwater sampling, analysis and report preparation, and updating of the SWPPP document.

The following summarizes stormwater management policies within the Guidance Manual for Sustainable Operations & Green Practices[69]:

Possible source areas for stormwater pollution present at FLL include:

- Areas used for maintenance, cleaning, or storage of aircraft, ground vehicles, or equipment
- Areas used for materials/chemical storage
- Areas used for fuel-servicing activities or other operations in support of Airport fuel system
- Areas used for waste storage
- Runway operations

Stormwater pollution can be minimized or prevented by:

- Reducing the sources of potential contaminants
- Reducing the exposure of contaminant sources to rainfall
- Managing contaminated runoff
- Potential BMPs to reduce stormwater pollution:
- Post proper signage near storm drains to inform employees to never eliminate liquid waste in stormwater drains.
- Perform maintenance of vehicles, machinery and aircrafts indoors to minimize rainwater interaction with spills and contaminants.
- Use alternative dry cleanup methods (for example: rags and mops) to clean machinery.
- Use spill pans for all activities where fluid leaks may occur.

69 Michael Baker International, Fort Lauderdale-Hollywood International Airport Sustainable Operations and Green Practices Guidance Manual, February 2016.

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