PORT EVERGLADES
2014 MASTER/VISION PLAN

ELEMENT 1
EXISTING CONDITIONS ASSESSMENT

PRESENTED BY

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EXISTING CONDITIONS ASSESSMENT

1.1 Introduction

This initial element of the 2014 update of the *Port Everglades Master/Vision Plan* (the Plan) presents an assessment of existing conditions at the Port. The element first provides an overview of the regional setting and Port environs to establish the context of the master planning effort. It then proceeds with updated information relevant to the ultimate Plan recommendations, including:

- Land uses.
- Facility inventory update, including drainage and stormwater management.
- Progress on projects in 2009 5-Year Master Plan.
- Cargo berth and yard capacity analysis.
- On-Port traffic snapshot and parking, including garage utilization.
- Intermodal transportation network.
- Environmental conditions.

The information provided in this element reflects the consultant team's review of existing documents, one-on-one interviews with Port tenants and users and stakeholder meetings, the input of the Port's senior staff, public agency comments, and coordination with the Broward County Administration and municipalities located within the Port Everglades Development District (the Cities of Fort Lauderdale, Hollywood, and Dania Beach).

Figure 1.2-1
CORE SOUTH FLORIDA REGION

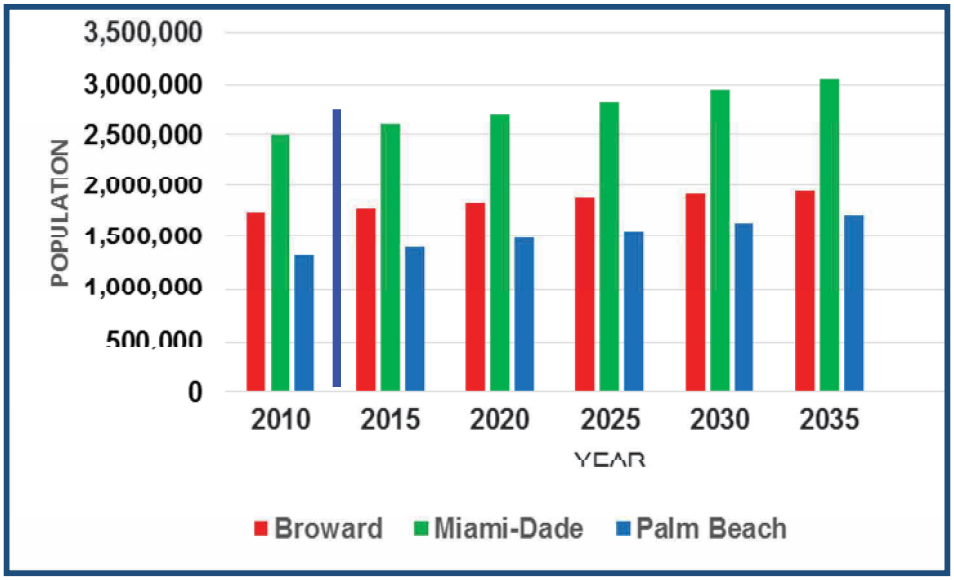
1.2 Master Planning Context: Regional Setting and Port Environs

1.2.1 The Core South Florida Region

Port Everglades lies in Broward County, at the heart of the tri-county South Florida region (see Figure 1.2-1). To the north is Palm Beach County; to the south, Miami-Dade County. The 2010 US Census revealed that more than 5.56 million people, or 29.6 percent of Florida's 18.8 million residents, live in these three core South Florida counties, whose comparative population

is shown in Figure 1.2-2 through 2035, just two years beyond 2033, the 20-year planning horizon of this Master/Vision Plan. The US Census shows this region to be the 8th largest metropolitan area in the country. Not included in these estimates, as the Census does not count them, are the hundreds of thousands of seasonal visitors, often called "snow birds," who swell the regional population during the winter months. Anecdotal counts of these visitors suggest seasonal peaks of anywhere from 800,000 to 1.2 million people.

Figure 1.2-2
SOUTH FLORIDA POPULATION
2010-2035



Sources: Broward County Planning and Environmental Regulation Division *TAZ and Municipal, Forecasts (2012)*, based on University of Florida**,** Bureau of Economic and Business Research, "Population Projections by Age, Sex, Race, and Hispanic Origin for Florida and its Counties 2010-2040," Volume 44, Bulletin 160, December 2011.

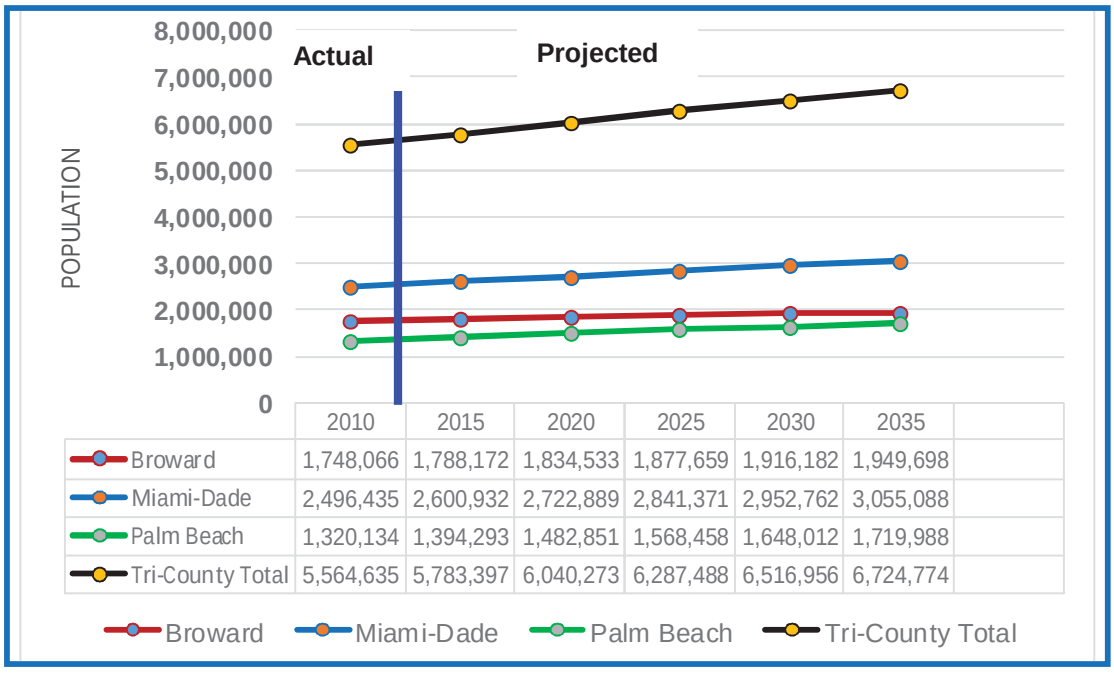
By 2035, as shown in Figure 1.2-3 on the next page, South Florida will be home to approximately 6.7 million people, an increase of 1.2 million residents, or 20.8 percent more than in 2010. This projection is, however, 200,000 people fewer than that identified in the 2009 *Port Everglades Master/Vision Plan*, which anticipated the three South Florida counties would be home to approximately 6.9 million people by 2029, the end of the previous planning period.

Florida had been a rapidly growing state for many years; but this growth slowed considerably as the effects of the global economic downturn hit the state in 2008 and 2009. As reported by the University of Florida**,** Bureau of Economic and Business Research (BEBR), the 2010 Census showed that the state's permanent resident population grew by more than 2.8 million between 2000 and 2010, an increase of 17.6 percent. This increase was not quite as large as those in the previous three decades, but was still comparatively significant with respect to increases elsewhere in the nation.

After the deceleration in population growth experienced in the last few years as a result of the global economic recession and, particularly here in Florida, the housing market collapse, population growth has picked up again, but remains at a much lower level than that seen earlier. While counties in Florida may have different growth rates, BEBR projects Florida's population growth overall to average approximately 234,000 people per year this decade, with about 243,000 people per year from 2020 to 2030, and 198,000 people per year from 2030 to 2040.

The projected trends in the South Florida region are shown in Figure 1.2-3. Of the three counties, Palm Beach is projected to average approximately 1 percent annual growth over the period, with a slight slowdown after 2030; Miami-Dade is projected to average about 0.85 percent annual growth, again with a slight slowdown after 2030; and Broward is projected to average an annual growth of only 0.38 percent.

Figure 1.2-3
SOUTH FLORIDA POPULATION GROWTH
2010-2035



	2010	2015	2020	2025	2030	2035
Broward	1,748,066	1,788,172	1,834,533	1,877,659	1,916,182	1,949,698
Miami-Dade	2,496,435	2,600,932	2,722,889	2,841,371	2,952,762	3,055,088
Palm Beach	1,320,134	1,394,293	1,482,851	1,568,458	1,648,012	1,719,988
Tri-County Total	5,564,635	5,783,397	6,040,273	6,287,488	6,516,956	6,724,774

Sources: Broward County Planning and Environmental Regulation Division *TAZ and Municipal, Forecasts (2012)*, based on University of Florida**,** Bureau of Economic and Business Research, "Population Projections by Age, Sex, Race, and Hispanic Origin for Florida and its Counties 2010-2040," Volume 44, Bulletin 160, December 2011.

The year-by-year specifics of Broward County's projected population growth over the 20-year planning period of this 2014 Plan are discussed in Section 1.2.2.

Three Interdependent Counties. As each of these three South Florida counties has grown, their respective populations and economies have become increasingly linked. For example, Palm Beach residents may work in Miami-Dade or travel there for cultural and recreational activities, or the reverse. Broward residents may have business connections in Palm Beach and friends and family in Miami-Dade. Businesses may have customers in all three counties and travel throughout the corridor to serve them. Analyses in the Broward Metropolitan Planning Organization (MPO)'s *2035 Long Range Transportation Plan* reveal that as many as 1.7 million trips between Broward and Palm Beach or Miami-Dade counties are anticipated by 2035. Eighteen percent of all trips originating in Broward are destined to the two adjacent counties. Work trips alone account for approximately 0.7 million trips a day.[1] The result is that the three counties, despite distinct socioeconomic differences, are interconnected and interdependent. Recognizing the interdependence of these three counties, dispersed in linear fashion along the I-95 axis, the federal government merged them into one Metropolitan Statistical Area (MSA) in June 2003.

In recent years, the South Florida counties have collaborated in the pursuit of regional initiatives, including intermodal transportation planning, economic development strategies, climate change, and other issues that affect their constituencies regardless of county boundaries. These initiatives are discussed elsewhere in this element.

Table 1.2-1 summarizes selected socioeconomic characteristics of the three core South Florida counties and compares them with statewide parameters.

[1]Broward Metropolitan Planning Organization, *2035 Long Range Transportation Plan Update*, Technical Report # 5, Transportation Needs Assessment, December 2009.

Table 1.2-1
SELECTED SOUTH FLORIDA ECONOMIC CHARACTERISTICS

Parameter	County			
	Broward	Miami-Dade	Palm Beach	Florida
Population (2012)*	1,771,099	2,551,290	1,335,415	19,074,434
Share of state population (2012)*	9.3%	13.4%	7.0%	
Statewide population rank (2012)*	2nd	1st	3rd	
Median age (2010)*	39.7	38.2	43.5	40.7
Density: persons per square mile (2012)*	1,484	1,344	678	356
Per capita personal income (2011)*	$42,768	$37,834	$53,500	$39,636
Median household income (2011)*	$51,782	$43,957	$52,951	$47,827
Labor force (2012)**	1,015,805	1,299,265	634,732	9,413,600
Unemployment rate (July 2013)***	6.2%	8.5%	7.7%	7.1%
Average annual wage (all industries) (2011)	$44,479	$46,433	$46,325	$41,570
Predominant industry: Trade, Transportation and Utilities	22.90%	25.50%	19.10%	20.90%
*Source: *Enterprise Florida County Profiles from Florida Legislature, Office of Economic and Demographic Research.*				
***US Department of Labor, Bureau of Labor Statistics, Labor Force Data by County 2012 Annual Averages.*				
****US Department of Labor, Bureau of Labor Statistics, Economy at a Glance (data as of September 24, 2013).*				

For example, Miami-Dade, the most populous county in Florida, with 13.4 percent of the state's 19.1 million people, has the lowest personal per capita income of the three South Florida counties. At $37,834, Miami-Dade's per capita income in 2011 was only 95 percent of the state's $39,636 average, whereas that in Broward County at $42,768, and that in Palm Beach County at $53,500, represented 107.9 percent and 134.9 percent of the state average, respectively. Median household income in the three counties showed similar patterns with respect to the state average.

The three counties also differ from the state and each other in terms of population density, with Broward County, the second most populous in the state and recognized as nearing build-out, having 1,484 persons per square mile. At 1,344 persons per square mile, Miami-Dade County is not too far behind Broward, but Palm Beach County has only half that density, at 678 persons per square mile, and Florida as a whole has slightly more than half the density of Palm Beach County, at 356 persons per square mile.

Broward and Miami-Dade counties both have labor forces of over one million people (57.4 percent and 50.9 percent of their respective populations), while Palm Beach County, which has a somewhat older population, with more retirees, has a labor force of just over 630,000 (47.5 percent of the population). As of July 2013, unemployment rates in Broward and Palm Beach counties averaged 6.2 percent and 7.7 percent, respectively, compared with the state's rate of 7.1 percent, whereas the 8.5 percent in Miami-Dade County was considerably higher than the state's rate. These rates were, however, a significant improvement over those in 2009, which, as the result of the economic downturn; saw the state's unemployment rate at 10.6 percent,

while those of Miami-Dade and Palm Beach counties were even higher, at 11.5 percent and 11.1 percent, respectively. At 9.4 percent, the unemployment rate in Broward County remained slightly lower than the state average. Continuing fluctuations are to be expected even as the economy has been strengthening and hiring picking up.

As Table 1.2-1 notes, the predominant industry across the region -- as well as statewide -- is trade, transportation, and utilities. Employment in this sector alone accounted for approximately 558,300 jobs in the three counties as of December 2012, 35.7 percent of the 1.6 million statewide jobs in this sector.[2]

Together, the three core South Florida counties constitute the state's most populous region and its strongest trade and tourism economic engines. Of the state's $161.5 billion of international trade in Fiscal Year (FY) 2012, 77.3 percent --$124.8 billion -- flowed through South Florida's three seaports – Port Everglades, Port Miami, and the Port of Palm Beach -- and three international airports – Fort Lauderdale-Hollywood International (FLL), Miami International (MIA), and Palm Beach International (PBI) airports.[3]

Of Florida's $85.6 billion in international waterborne tonnage in FY 2012, the South Florida seaports handled $51.5 billion, or 60.2 percent of the total. When only the $45.9 billion of containerized cargo is considered, the three seaports were responsible for $36.0 billion, or 78.4 percent of the total. South Florida's seaports handled 2.1 million TEUs (20-foot equivalent container units) in FY 2012, or 66.5 percent of the 3.1 million TEUs moving through the state's seaports. The three seaports also accommodated 7.8 million revenue cruise passengers, or 55.9 percent of the more than 13.9 million revenue multi-day and single-day cruise passengers cruising from Florida in FY 2012.[4]

In all cases, whether the total value of cargo or the number of TEUs and cruise passengers, the volume of traffic handled by the South Florida seaports has increased since the 2009 plan was prepared, as summarized in Table 1.2-2. The changes in the South Florida seaports' and airports' respective shares of the statewide totals reflect the improving trade and tourism climate in Florida as a whole, giving credence to the popular saying that "a rising tide lifts all boats."

[2]US Department of Labor, Bureau of Labor Statistics, *Economy at a Glance* (data as of July 12, 2013).
[3] Florida Seaport Transportation and Economic Development Council, *The Five-Year Florida Seaport Mission Plan, 2013-2017*
[4] *Ibid.*

Table 1.2-2
COMPARISON OF TOTAL FLORIDA AND
SOUTH FLORIDA CARGO AND CRUISE PARAMETERS
FY 2008 and FY 2012

Parameter	FY 2008			FY 2012		
	Total Florida	South Florida	Percent of Total	Total Florida	South Florida	Percent of Total
International trade (air, sea, pipe, and overland)	$103.5 billion	$90.3 billion	87.2%	$161.5 billion	$124.8 billion	77.3%
International waterborne cargo	$82.5 billion	$46.6 billion	56.5%	$85.6 billion	$51.5 billion	60.2%
Containerized cargo	$37.1 billion	$31.1 billion	83.8%	$45.9 billion	$36.0 billion	78.4%
TEUs	2,895,371	2,047,685	70.7%	3,094,369	2,056,260	66.5%
Revenue cruise passengers	13,208,047	7,789,505	58.9%	13,952,812	7,804,478	55.9%

Source: Florida Seaport Transportation and Economic Development Council, *The Five-Year Florida Seaport Mission Plan, 2013-2017.*

The region's multi-modal transportation system, including the seaports, airports, and the Florida East Coast Railway (FEC) as well as the network of highways and public transportation options, has a stimulating effect on South Florida's dynamic tourism sector. In Broward County alone, which welcomed 12 million visitors in 2012, the tourism industry generated $43.8 million in tourist tax collections.[5] Of the 12 million visitors, at least 2.8 million were from other regions of the world, including Latin America, Europe, Scandinavia, and the UK; many of these international visitors take cruises from Port Everglades and spend time in the region before or after their cruises. Canadians, our neighbors to the north, top the list of international visitors.

In addition to the three core South Florida counties, the Port's hinterland comprises a larger area that stretches across as many as seven counties in the southern portion of the state. For example, entities like seven50 are espousing the concept of a seven-county regional partnership -- adding Monroe, Martin, St. Lucie, and Indian River counties to the three core South Florida counties -- that needs to think regionally to anticipate its economic, social and environmental interdependence, including critical sectors such as transportation, housing and education needs over the next fifty years.

A Global Business Presence. As of 2012, more than 1,000 multinational firms were located in South Florida, employing more than 125,000 people locally and overseeing as many as 600,000

[5]Greater Fort Lauderdale Convention and Visitors Bureau; Broward County 2012 end of year statistics, January 5, 2013.

globally.[6] These companies, which represent 55 nations, in addition to the US, oversee in excess of $200 billion in annual revenues. They include large and small firms across the business spectrum, providing services such as transportation and logistics, technology, accounting, consulting, public relations, and legal. Many firms are often in the region to work with the multinationals and other companies engaging in international business, such as shippers, ocean carriers, cruise lines, airlines, freight forwarders, overnight delivery companies, and varied other service providers.

While US companies dominate the list of multinationals, and foreign investors hail largely from European countries such as Spain, the UK, France, Germany, and Switzerland, more companies are now coming to the area from Latin America. Of the 1,000 multinational firms located in South Florida, 113 are in Broward County.7

The region has also become a hub for iCoast, a cluster of businesses, educational institutions, and organizations involved in e-commerce. Easy access to the region's three international airports and three major seaports is said to be a factor in this growth. Initially, iCoast's geographic scope was focused on Broward, Miami-Dade, and Palm Beach counties. In 2013, the geographic scope was expanded to include Indian River, Monroe, Martin, and Okeechobee counties, an example of the increased regionalization in southeast Florida.

Synergies among the region's seaports and airports, among their respective tenants and users, and among the warehousing, freight forwarding, trucking, and other trade-related companies that support maritime operations make consideration of this regional picture and the intermodal implications of growing regional connections an essential component of this Plan. For example, several ocean carriers call at more than one South Florida port; several cruise lines sail from more than one port and use more than one airport for their passengers' flights; many of the area's freight forwarders, ship chandlers, and others serve two or more of the ports; and the FEC serves all three ports.

[6] WorldCity, *The 2013 Multinational Directory, Who's Here.*
[7] *Op.cit*.

1.2.2 Broward County

Broward County, with its 31 municipalities and unincorporated area, is the state's second most populous county, following Miami-Dade and preceding Palm Beach. As shown in Table 1.2-3, in 2008, when the 2009 plan was prepared, the county was home to 1.8 million people, 9.3 percent of the state's population of 18.9 million. The 2010 US Bureau of the Census data showed a slight decline of approximately 8,000 residents in Broward's population. By 2033, the final 2014 Plan milestone, the county's population is expected to reach 1.9 million people, a 10.7 percent increase since 2010.

Table 1.2-3
BROWARD COUNTY POPULATION GROWTH
MASTER/VISION PLAN MILESTONES

Year	Historic and Projected Population	Historic and Projected Employment
2008	1,756,087	770,781
2010	1,748,066	
2012	1,764,108	790,114
2013	1,772,129	
2014	**1,780,150**	
2015	1,788,172	
2016	1,797,444	
2017	1,806,716	
2018	**1,815,988**	
2019	1,825,260	
2020	1,834,533	868,816
2021	1,843,158	
2022	1,851,783	
2023	**1,860,408**	
2024	1,869,033	
2025	1,877,659	
2026	1,885,364	
2027	1,893,069	
2028	1,900,774	
2029	1,908,479	
2030	1,916,182	
2031	1,922,885	
2032	1,929,588	
2033	**1,936,291**	.

Source: **Population -** (2008) Broward County Planning and Redevelopment Division, 2009; (2010) US Bureau of the Census; (2015, 2020, 2025, 2030, 2035) Broward County Planning and Environmental Regulation Division *TAZ and Municipal Forecasts, 2012; (intervening years) interpolations.* ***Employment -*** *(2012 and 2020) Department of Economic Opportunity Workforce Region 22 data.*

Projections now suggest that the county's growth over the next few years will average about 8,500 people annually through 2025 and 7,000 people for the remainder of the planning period, a comparatively slow growth rate, as previously illustrated in Figure 1.2-3. This growth rate is dramatically lower than the county's historic rate which averaged 20,000 people or more annually between 1970 and 2005.

Employment, which stood at almost 771,000 people in 2008, has been estimated at 790,114 in 2012 and is expected to reach 868,816 by 2020. Beyond that date, projections by various agencies vary, but the consensus seems to be that employment may reach 1 million workers. Because of circumstantial population shifts, population and employment projections at both the state and the county levels are variable; but every attempt has been made in this Plan to utilize the most reliable and consistent sources for the Broward County and regional data.

The population of Broward County became more diverse during the 1990s. In 1990, European ancestry was the most common. By 2000, a significant change occurred when West Indian and Central/South American Hispanics ranked among the top five for the first time. Populations of Puerto Rican, Cuban, Mexican, and Central/South American Hispanic descent have more than doubled since 1990, reflecting the increase in foreign-born residents from Latin America. This

continuing diversity and the cultural ties it represents with South Florida's trading partners are positive factors in enhancing the network of businesses supporting trade and tourism in Broward County and elsewhere in the region, the Port's primary hinterland.

Population growth is expected to be fairly even across the county, although higher growth may occur in the northwest, south-central, and central parts of the county. Redevelopment may also occur in the older eastern portion of the county. Unlike population, however, employment is forecast to grow in a slightly more westward direction, west of I-95.[8]

These trends have twofold Plan significance. Increased quantities of consumer goods will be needed to serve the growing population and more vehicular traffic will be on the local and regional roadways over which Port traffic must also travel.

1.2.3 Port Everglades Overview[9]

Port Everglades, portions of which are located in the cities of Fort Lauderdale, Hollywood, and Dania Beach, and in unincorporated Broward County, encompasses an area of about 2,190 acres adjacent to the Intracoastal Waterway. The jurisdictional area of the Port and the surrounding area are shown in Figure 1.2-4.

With its containerized and non-containerized cargo, liquid and dry-bulk commodities, and cruise activities, the Port is one of the most diversified in Florida. As discussed in Element 2, the Port's cargo and cruise operations are expected to grow significantly over the next several decades.

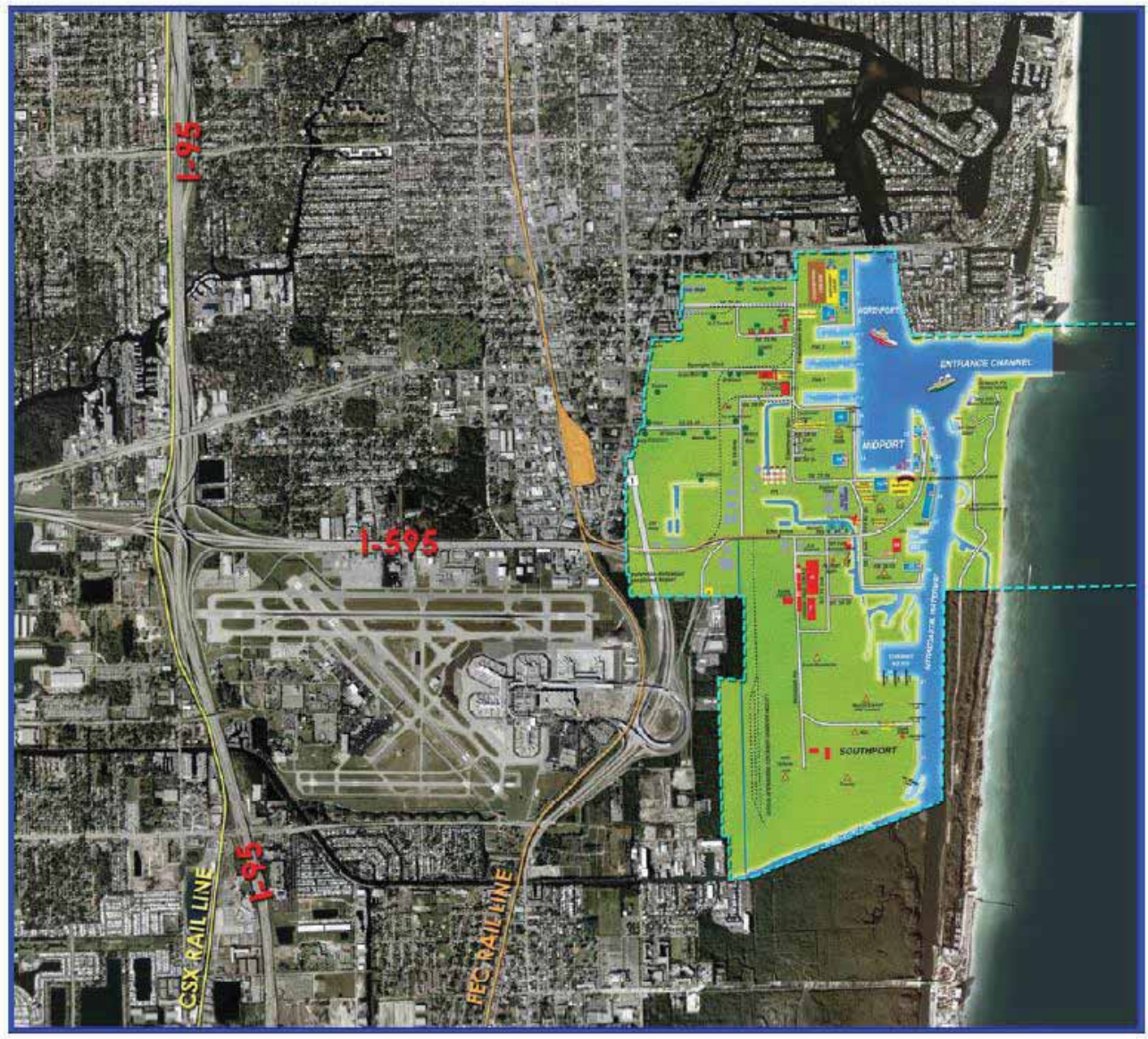
Port Everglades ranks eleventh among the top mainland US container ports, moving more than 923,600 TEUs in FY 11/12, a 4.8 percent increase over the more than 880,999 TEUs moved in FY 010/11 and a gradual return to the record 985,095 TEUs moved in FY 07/08. The Port is pursuing aggressive strategies to deal with the growth projected during the planning period. Since the 2009 plan was published, the Port has proceeded with the extension of its turning notch to create additional berths, the development of an intermodal container transfer facility (ICTF) to increase container-handling capacity, and the US Army Corps of Engineers (USACE) approval for harbor deepening and widening, as discussed later in this element.

In FY 11/12, the Port handled 21.9 million tons of cargo (3.8 million tons of exports and 7.3 million tons of imports as well as 10.8 million tons of domestic cargo, predominantly petroleum). The Port is the primary storage and distribution seaport for refined petroleum product in South

[8] Broward MPO, *2035 Long Range Transportation Plan Update. Technical Report #5*, December 2009.
[9] Unless otherwise indicated, the information in this section is based on FY 11/12 data.

Florida. The Port provides jet fuel to the area's three international airports and smaller regional airports, distributes gas to facilities in a 12-county area, and handles other diverse fuels.

Figure 1.2-4
PORT EVERGLADES JURISDICTIONAL AREA



According to a recent assessment of the Port's economic activities, the Port generates approximately $25.7 billion worth of business activity. More than 201,370 Florida jobs are impacted by the Port, including more than 11,687 people who work for companies that provide direct services at Port Everglades. In addition, $729.3 million of state and local taxes were

generated by activity at the cargo and cruise terminals, including $569,439 million generated by the related users throughout the state.[10]

Port Everglades' Foreign-Trade Zone (FTZ) No. 25, an important contributor to this economic activity, was ranked as the second FTZ in the US for exports in 2012, according to the FTZ Board's 74th annual report to Congress[11] and was cited by the National Association of FTZs as a noteworthy example of successful economic development through the national FTZ program.

Foreign-Trade Zone No. 25 is Florida's oldest and largest, serving 75 businesses in its general-purpose zone, and creating over 500 direct jobs in the local economy at 14 locations within the county. Foreign-Trade Zone No. 25 currently also has five special-purpose subzones at the Port. Non-contiguous sites that are part of Foreign-Trade Zone No. 25 include acreage in Davie, about six miles west of the Port, and farther west in the Miramar Park of Commerce. These off-Port locations help diversify and spread the economic opportunities and jobs generated by Port operations. As discussed later in this element, the on-Port site is proposed to be relocated to an area in proximity to the ICTF.

Port Everglades broke its own two-year-old world record on January 3, 2009, when 49,234 cruise passengers sailed in and out of the Port in a single day. The Port broke its own world record again on Saturday, March 20, 2010, when more than 52,000 cruise guests sailed in and out of the Port.

Port Terminals. Port Everglades is divided into three main areas: Northport, Midport, and Southport, whose current uses are as follows:

- **Northport** accommodates cruise ships and petroleum tankers as well as other break- bulk/neo-bulk, and dry bulk ships.
- **Midport** is the Port's main cruise ship berthing area, but also accommodates both containerized and non-containerized cargo operations.
- **Southport** is the location planned for most of the Port's containerized cargo growth, including the near-dock ICTF that is being built to move international and domestic cargo directly between ship and rail car.

Port Access. The Port is located at the eastern terminus of I-595, which connects with I-95, Florida's Turnpike, and I-75, all components of the National Highway System and the state's Strategic Intermodal System (SIS) as well as with other major arterials such as US 1, US 441 (SR 7), and SR 84 (see Section 1.9). US 1 also connects the Port with FLL, just a few minutes

[10] http://www.porteverglades.net/our-community-role/economic-impact/.
[11] *74th Annual Report of the Foreign-Trade Zones Board to the Congress of the United States,* 2012.

away. The proximity of and quick connection to this airport are important components of the Port's cruise industry growth and reputation.

From the regional highway network, Port Everglades has three points of access:

- **Eller Drive**, which connects with I-595. This southernmost east-west access to the Port is the road most traveled by trucks headed to and from the Southport container facility and by buses and passenger vehicles headed to and from the Port's Midport cruise terminals. The Eller Drive Overpass, currently under construction, will allow vehicles to travel without interruption from the new rail operations emanating from the ICTF.
- **Spangler Boulevard**, which is a continuation of SR 84, and enters the Port from the west, just to the north of the Midport area. This road bisects the predominantly petroleum area of the Port and is heavily traveled by the trucks carrying fuel throughout the region and beyond.
- **Eisenhower Boulevard**, which runs north and south, unlike the other two access roads. Eisenhower Boulevard provides access to the Port from its northernmost edge, SE 17th Street/SR A1A. As the main entrance to the Northport area, this road serves the Greater Fort Lauderdale/Broward County Convention Center, the Northport parking garage, and three of the Port's cruise terminals.

In addition to Eller Drive, Eisenhower Boulevard, and Spangler Boulevard, the Port's major internal roads include SE 14th Avenue, SE 19th Avenue, McIntosh Road, SE 20th Street, and SE 28th Street. Improvements to, and reconfiguration of, McIntosh Road to support the Southport expansion and development, as recommended in the 2009 plan, is under way.

Thousands of trucks and tankers carrying containers and petroleum enter and exit the Port by these roads every day, in addition to vehicles carrying cruise ship provisions, cement, other building materials, and a variety of other commodities. These freight-carrying vehicles are joined on the roadway network by the hundreds of buses and automobiles carrying cruise passengers to and from FLL, local hotels, and elsewhere in the region.

At one time, these Port-related vehicles intermingled with those carrying tourists visiting the nearby restaurants, shops, hotels, and beaches; and, of course, with those carrying area residents. With the security concerns resulting from the events of 9/11, Port access has been restricted and the freedom with which non-Port-related vehicles used the Port as a convenient route has been curtailed. While plans to carve out the Convention Center from the Port's restricted area and construct a "By-Pass Road" along Eisenhower and Spangler Boulevards, had been proposed in the 2009 plan, current efforts now include simply relocating the Port's security gate on Eisenhower Boulevard to the south to facilitate traffic to the Convention Center from 17th Street.

With its continually growing cruise operations, the Port, in conjunction with the Federal Highway Administration (FHWA), the Florida Department of Transportation (FDOT), and the Broward County Aviation Department (BCAD), has studied the development of a People Mover to

transport the large numbers of cruise passengers traveling between the Port and FLL. The Environmental Assessment for the project has now been finalized; but, as discussed later in this element, the project is on hold until funding can be identified.

Port Goals and Objectives. The Port's ultimate goal in this Plan update is to identify the capital projects over the 5-, 10-, and 20-year planning milestones that will enable it to maintain, develop, expand, and modify the Port to meet service area needs, strengthen Broward County's economy, and enhance the region's multi-modal transportation network, while maintaining the Port's commitment to environmental stewardship.

As such, the planning process addresses the following Port objectives:

- Expand container and other marine facilities.
- Improve intermodal connectivity (road and rail) to facilitate the transportation of cargo and provide competitive service.
- Improve cruise facilities to expand operations.
- Expand traffic circulation and parking facilities to support existing and increased cruise growth.
- Encourage FTZ development through facility improvements/relocation.
- Improve the petroleum-receiving system and operations.
- Pursue new trading opportunities and strengthen existing ties.

Building on projects identified in the 2006 and 2009 plans, as for example the ICTF, McIntosh Road, Cruise Terminal 18, and the Turning Notch, the consultant team, with Port staff, tenants, and stakeholders, have used this planning process to identify new opportunities to achieve the Port's goals and objectives.

Local Comprehensive Plans. This *2014 Port Everglades Master/Vision Plan,* like its predecessors, considers components of the *Broward County Comprehensive Plan* and of the comprehensive plans of the Cities of Fort Lauderdale, Hollywood, and Dania Beach in developing consistent goals, objectives, and policies, particularly with respect to coastal management, global warming, transportation, intergovernmental coordination, and capital improvements.

1.3 Land Ownership and Uses

Of the Port's 2,190 acres, 1,742 acres are upland and 448 acres are submerged land. Within the limits of the Port's jurisdictional area, the diverse parcels of land are owned by public entities as well as private companies, as shown in Figure 1.3-1.

The boundaries for both Port-owned land and the Port jurisdictional area are shown in Figure 1.3-2, which identifies the various Port-related uses within the jurisdictional area. Several of these land uses will be modified as the projects under way or planned are implemented. For example, the conservation area will be relocated; the ICTF will take up some of the vacant land, and the warehousing area, including Foreign-Trade Zone No. 25, will be moved.

Figure 1.3-1
PARCEL MAP
Source: Port Everglades

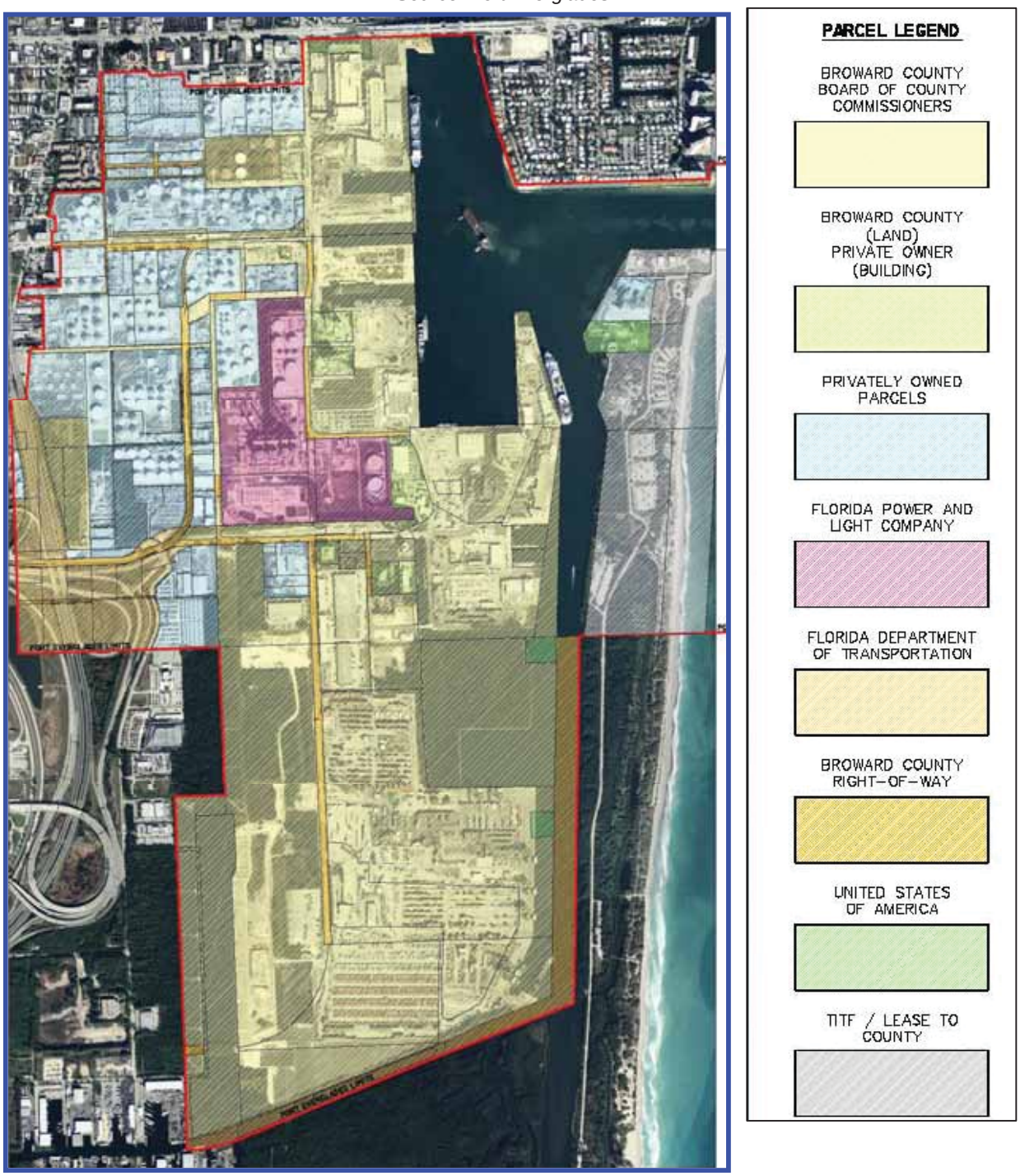
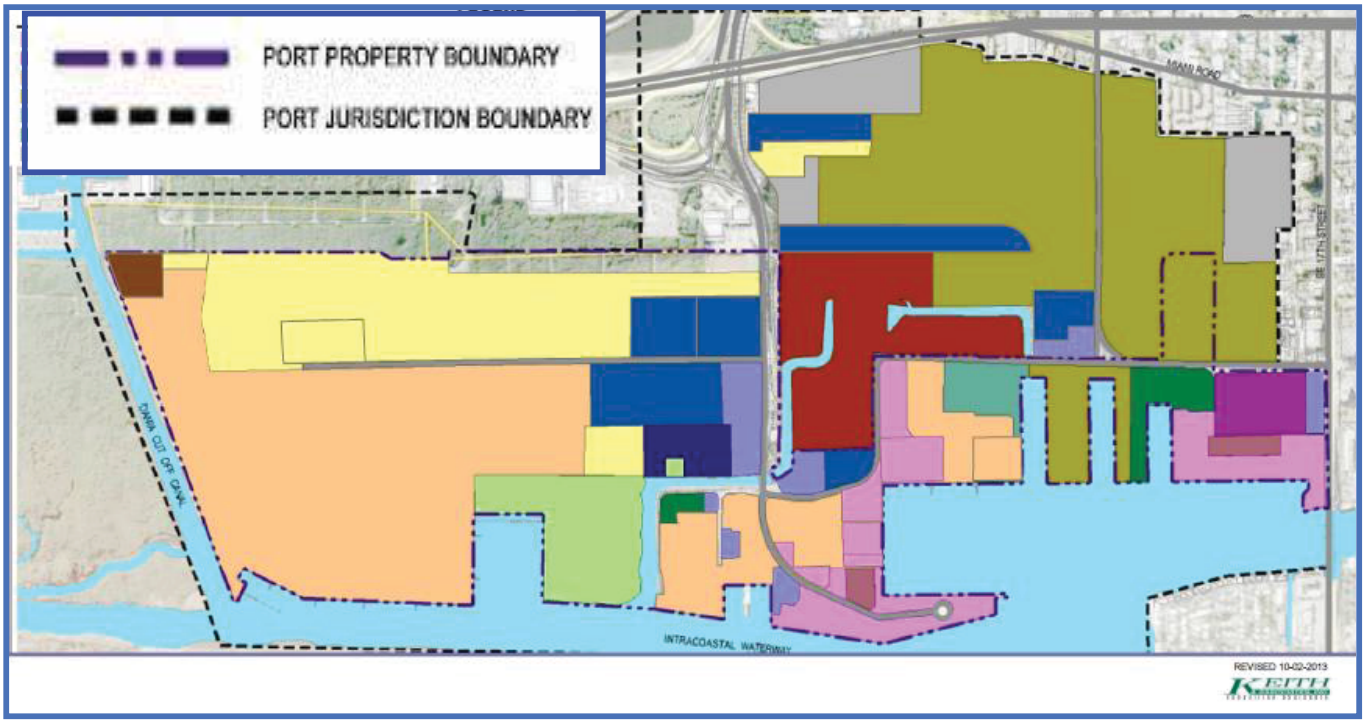


Figure 1.3-2
CURRENT LAND USE MAP
Source*: Port Everglades, as updated by AECOM*



CRUISE AREA
CONVENTION CENTER
CONTAINER YARD
LIQUID BULK, PETROLEUM
CEMENT, DRY BULK
GENERL CARGO AREA
COMMERCIAL OR OTHER
SPOIL AREA
FLORIDA POWER AND LIGHT
CONSERVATION AREA
VACANT LAND
WAREHOUSING
OFFICES
PARKING GARAGES
GOVERNMENTAL AGENCIES

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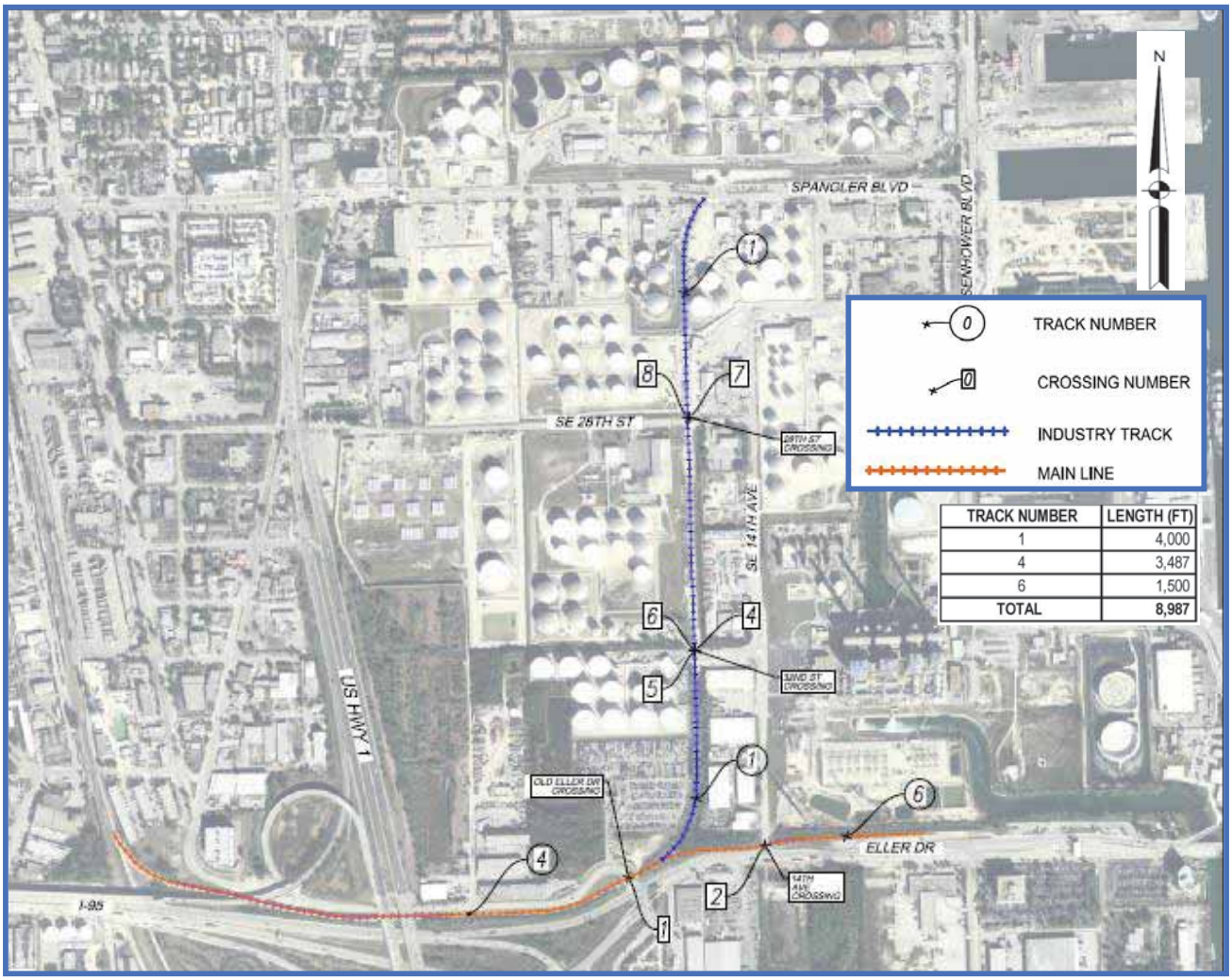
Figure 1.3-3 shows the current rail trackage at the Port. The north spur line running from Eller Drive to Spangler Boulevard was recently reconnected to the FEC railway system in the summer of 2013. Construction is also under way for the ICTF, which is expected to be online in 2014. The rail line serving the ICTF will begin along Eller Drive and proceed into the Southport area.

Figure 1.3-3
CURRENT RAIL TRACKAGE AT PORT EVERGLADES
Source: Broward County Seaport Engineering and Construction Division



1.4 Facility Inventory

1.4.1 Building Assessment

The inventory of capital facilities at the Port is continuously being modified and updated through the implementation of the Port's 5-year Capital Improvement Plan (CIP). The consultant team has been actively engaged in the preparation of past CIPs and will assist in the preparation of a future CIP in Phase II of this planning process.

In the course of this Plan update, the consultant team reviewed the *2011 Operations and Maintenance Activity Biennial Condition Report of Port Facilities* prepared by De Rose Design Consultants as part of the 2011 biennial inspection of building facilities at the Port. This section provides a detailed breakdown of the repair costs associated with each building identified in Volume 1, Section 3 (buildings) of that report, categorizing items into immediate, moderate, and low priority. The following tables sort the buildings based on their capital improvement cost, numbers of items needing repair, and the importance of the repairs needed.

Fifty-three buildings were inspected. The total building repair costs and the average building repair cost are summarized in Table 1.4-1.

Table 1.4-1
BUILDING SUMMARY

Total Building Repair Costs	Total Number of Buildings	Average Building Repair Cost
$4,180,436	53	$78,876.00

Table 1.4-2 and Figure 1.4-1 show the level of investment needed for building repairs. Eighty five percent of the buildings, 32 out of 53, will require less than $25,000 to be repaired. Only 11 buildings will exceed $100,000 in repair costs

Table 1.4-2
BUILDINGS WITH MORE THAN $100,000 IN REPAIR COSTS

Category	Number of Buildings	Total Cost
0-25,000	32	173,943
25,001-50,000	4	122,822
50,001-10,0000	6	493,549
100,001-150,000	5	576,412
150,001-200,000	2	362,318
200,001-300,000	2	488,135
300,001-400,000	1	332,496
>500,000	1	1,630,701
TOTAL	**53**	**4,180,376**

Figure 1.4-1
SUMMARY OF REPAIR COSTS BY CATEGORY

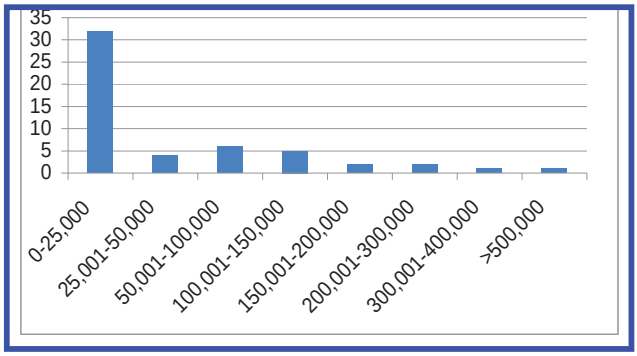


Table 1.4-3 summarizes the total repair cost per discipline, categorized by level of importance. Those repairs categorized as of immediate importance may involve code violations, safety, or similar issues requiring special attention.

Table 1.4-3
REPAIR COSTS BY DISCIPLINE AND LEVEL OF IMPORTANCE

Discipline	Immediate	Moderate	Low	Total
Architectural	$37,825	$1,712,539	$475,646	**$2,226,010**
Civil	$1,356	$254,580	$2,560	**$258,496**
Electrical	$90,305	$54,972	$12,478	**$157,755**
Mechanical	$253,700	$593,400	$109,350	**$956,450**
Structural	$203,640	$236,295	$141,790	**$581,725**
Total	**$586,826**	**$2,851,786**	**$741,824**	**$4,180,436**

Architectural improvements are the most expensive repairs, followed by mechanical and structural. The most expensive immediate needs are mechanical and structural.

Sixteen out of 53 buildings have the highest number of immediate action items (see Figure 1.4-2 for the locations of the buildings mentioned in the following tables.) Most of these high priority buildings are also the buildings with higher repair costs. Table 1.4-4 lists the buildings needing special, that is, immediate attention.

Table 1.4-4
BUILDINGS NEEDING SPECIAL ATTENTION

Building	Immediate Items	Cost
100-Crowley Administration Building	10	$19,447
Building 1	10	$332,496
Building 2	13	$34,120
Building 4	13	$250,153
Building 19	19	$237,982
Building 20 (Midport Parking Garage)	70	$193,988
Building 21	16	$100,599
Building 22/24	29	$117,316
Building 25	21	$94,160
Building 26	12	$168,330
Building 29	15	$89,457
Building 611 (Amman Building)	13	$17,495
FTZ Building A	27	$1,630,701
Old US Customs Building	10	$105,531
Administration Building	21	$76,428
Public Safety Building	14	$91,834

Figure 1.4-2
MAP OF PORT EVERGLADES

Table 1.4-5 lists the buildings with the highest repair costs and identifies the number of items to be addressed; Table 1.4-6 lists the buildings with the most items needing repair.

Table 1.4-5
BUILDINGS WITH HIGHEST REPAIR COSTS

Building	Highest Cost	Number of Items
Building 1	$332,496	40
Building 4	$250,153	56
Building 6	$88,476	21
Building 19	$237,982	53
Building 20 (Midport Parking)	$193,988	110
Building 21	$100,599	65
Building 22/24	$117,316	73
Building 25	$94,160	51
Building 26	$168,330	70
Building 29	$89,457	76
FTZ Building A	$1,630,701	83
FTZ Building F	$116,855	32
Old US Customs Building	$105,531	30
OTD Building	$136,111	31
Public Safety Building	$91,834	52

Table 1.4-6
BUILDINGS WITH MOST ITEMS TO BE REPAIRED

Building	Highest Number of Items	Cost
Crowley Administration Building	31	$19,447.00
Building 1	40	$332,496.00
Building 2	64	$34,120.00
Building 4	56	$250,153.00
Building 19	53	$237,982.00
Building 20 Midport Parking Garage	110	$193,988.00
Building 21	65	$100,599.00
Building 22/24	73	$117,316.00
Building 25	51	$94,160.00
Building 26	70	$168,330.00
Building 29	76	$89,457.00
Building 611 (Amman Building)	62	$17,495.00
FTZ Building A	83	$1,630,701.00
Administration Building	84	$76,428.00
Public Safety Building	52	$91,834.00

The spreadsheets in Appendix B provide a detailed list of buildings, related costs, and number of repair items per category.

1.4.2 Drainage and Stormwater Management

The intent of this section of the Existing Conditions Assessment is to provide an overview of the existing drainage areas within the Port's jurisdictional area, based on documents provided by the Port and to identify stormwater management considerations for future developments.

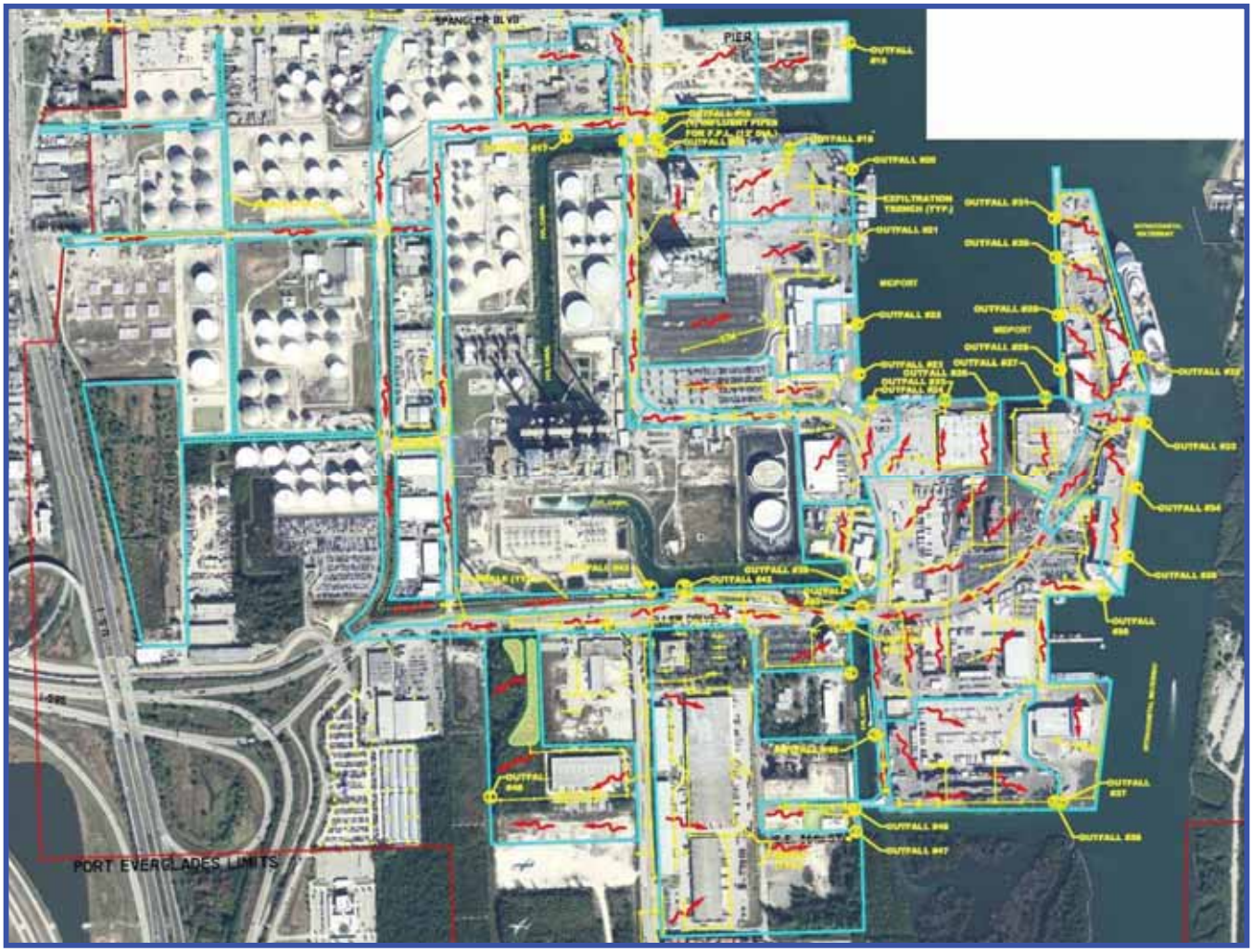
Major Drainage Areas. The Port has three major drainage areas: Northport, Midport, and Southport. These areas are designated by drainage boundary lines that differ from the Port limits. Each major drainage area is further divided into sub-areas or sub-basins with their own stormwater management system comprising inlets, a pipe network, and outfall structure(s). The Port's three major drainage areas are shown in Figures 1.4-3, 1.4-4, and 1.4-5.

Figure 1.4-3
NORTHPORT DRAINAGE AREA
Source: Port Everglades

NOTE:
Tank farms are not included in the Port Everglades drainage areas
LEGEND

Port boundary
Drainage area boundary
Outfall discharge location
Drainage flow patterns

Figure 1.4-4
MIDPORT DRAINAGE AREA
Source: Port Everglades



NOTE:
Tank farms are not included in the Port Everglades drainage areas.

LEGEND

Port boundary

Drainage area boundary

Outfall discharge location

Drainage flow patterns

Drainage pipe

Dry retention area

Sample point location

Figure 1.4-5
SOUTHPORT DRAINAGE AREA
Source: Port Everglades

***NOTE**:*
Tank farms are not included in the Port Everglades drainage *areas.*

Outfalls. The Port's drainage system includes 80 outfalls that discharge to a water body, whether the Dania Cutoff Canal, the Turning Notch, the Intracoastal Waterway, the Florida Power & Light (FPL) Canal, or the Entrance Channel.

Permits. The Florida Department of Environmental Protection (FDEP), South Florida Water Management District (SFWMD) and Broward County's Environmental Protection and Growth Management Department (BCEP&GMD) Planning and Environmental Regulation Division are the regulatory agencies having jurisdiction over all surface water management activities at Port Everglades. Drainage permit coverage, based on the respective major drainage areas, is shown in Figures 1.4-6, 1.4-7, and 1.4-8 and summarized in Tables 1.4-7, 1.4-8, and 1.4-9.

Figure 1.4-6
NORTHPORT DRAINAGE PERMIT IDS
Source: Port Everglades

Table 1 4-7
NORTHPORT DRAINAGE PERMITS

ID	Project Name	Agency	Permit or License No.	Date Issued
N-001	Reconstruction of Spangler and Eisenhower Boulevards	SFWMD	06-00927-S	9/11/89
N-002	Information not provided	-	-	-
N-003	Northport Festival Market Place	BCEP&GMD		11/14/12
N-004	Public Works Expansion	-	-	-
N-005	Chevron Products Company Port Everglades Expansion West Tank Farm	BCEP&GMD	SWM2008-077-0	7/3/08
N-006	Chevron Port Everglades – East Tank Farm Improvements	BCEP&GMD	SWM2008-078-0	7/9/08
N-007	Port Everglades Authority Building 4	BCEP&GMD	SWM2000-204-0	10/31/00
N-008	Broward County Convention Center Hotel	BCEP&GMD	SWM1989-005-4	-
N-009	Marathon Ashland Petroleum	SFMWD	06-04471-P	-
N-010	TransMontaigne North Terminal Expansion	BCEP&GMD	SWM2007-133-O	4/6/10
N-011	Hess Tank 8714 Installation	BCEP&GMD	SWM2007-016-0	-
N-012	Northport Cruise Garage & Ramp	BCEP&GMD	SWM1989-005-5	-

Figure 1.4-7
Midport Drainage Permit IDs
Source: Port Everglades

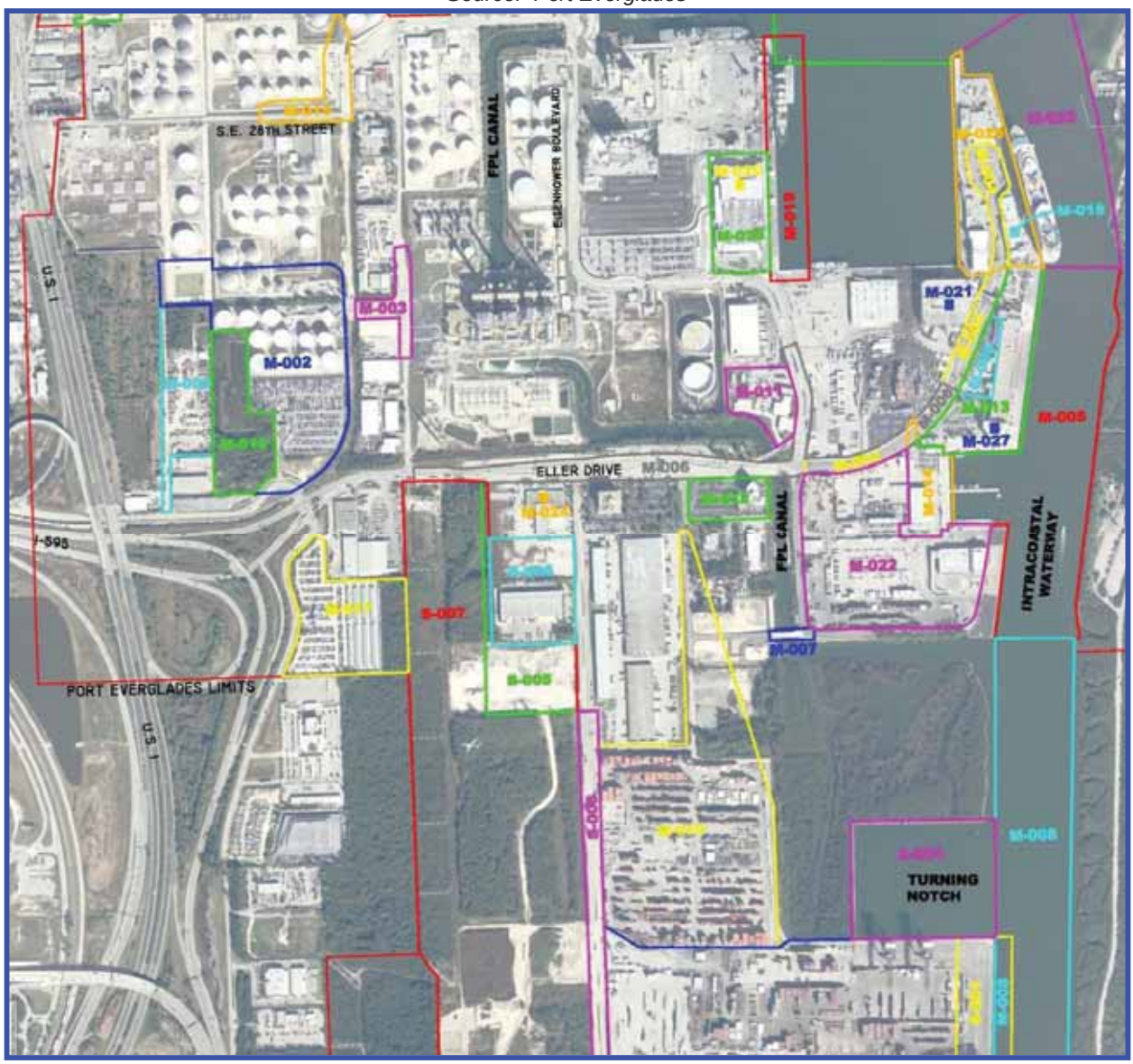


Table 1.4-8
Midport Drainage Permits

ID	Project Name	Agency	Permit or License No.	Date Issued
M-001	Cliff Berry Used Oil Processing Facility	BCEP&GMD	SWM2002-028-0	4/23/02
M-002	Port Everglades – Phillips Property	BCEP&GMD	SWM2005-058-0	5/5/05
M-003	Information not provided	-	-	-
M-004	Midport Roadway Improvements	BCEP&GMD	SWM1998-059-4	6/21/10
M-005	Information not provided	-	-	-
M-006	Eller Drive and Eisenhower/32nd Street Roadway Improvement	FDEP	ES 06-0129187-003	9/21/98
M-007	Bridge over FPL Discharge Canal	BCEP&GMD	SWM1990-079-3	2/12/09
M-008	Information not provided	-	-	-
M-009	Terminal 26	FDEP	SI 06-0167478-008	2/29/12
M-010	Information not provided	-	-	-
M-011	Port Everglades Public Safety Building	BCEP&GMD	SWM2000-206-0	10/31/00
M-012	Port Everglades Port Authority Office	SFWMD	06-00703-S	10/17/85
M-013	Port Everglades Terminal Building 26	SFWMD	06-00703-S	11/2/97
M-014	Midport Cargo Yard Improvements	BCEP&GMD	SWM1993-087-0	3/25/09
M-015	Motiva Enterprises – Rail Car Ethanol Offloading Facility	BCEP&GMD	SWM2011-011-0	5/12/11
M-016	Park 'N Go	BCEP&GMD	SWM2005-058	7/20/11
M-017	Park 'N Fly	BCEP&GMD	06-03740-P	4/17/02
M-018	Port Everglades Terminal Building 25	BCEP&GMD	SWM1991-074-0	5/11/07
M-019	Port Everglades Berths 16-18	BCEP&GMD	DF12-1046	5/8/12
M-020	Port Everglades Terminal 18 P2 Exp. & Terminal 16 Demo.	BCEP&GMD	SWM2008-116-0	-
M-021	Midport Parking Garage	BCEP&GMD	SWM1993-084-0	4/4/10
M-022	Port Everglades – Terminal 29	BCEP&GMD	SWM1990-079-2	1/8/09
M-023	Information not provided	BCEP&GMD	-	-
M-024	Port Everglades Commerce Center	BCEP&GMD	SWM1999-044-0	-
M-025	Berth No. 18 Improvements	SFWMD	06-00703-S (Modification)	6/18/92
M-026	Pier Seven Extensions	SFWMD	06-00703-S (Modification)	11/13/91
M-027	Port Everglades – Building 27	SFWMD	06-00703-S (Modification)	7/28/88

Figure 1.4-8
SOUTHPORT DRAINAGE PERMIT IDS
Source: Port Everglades

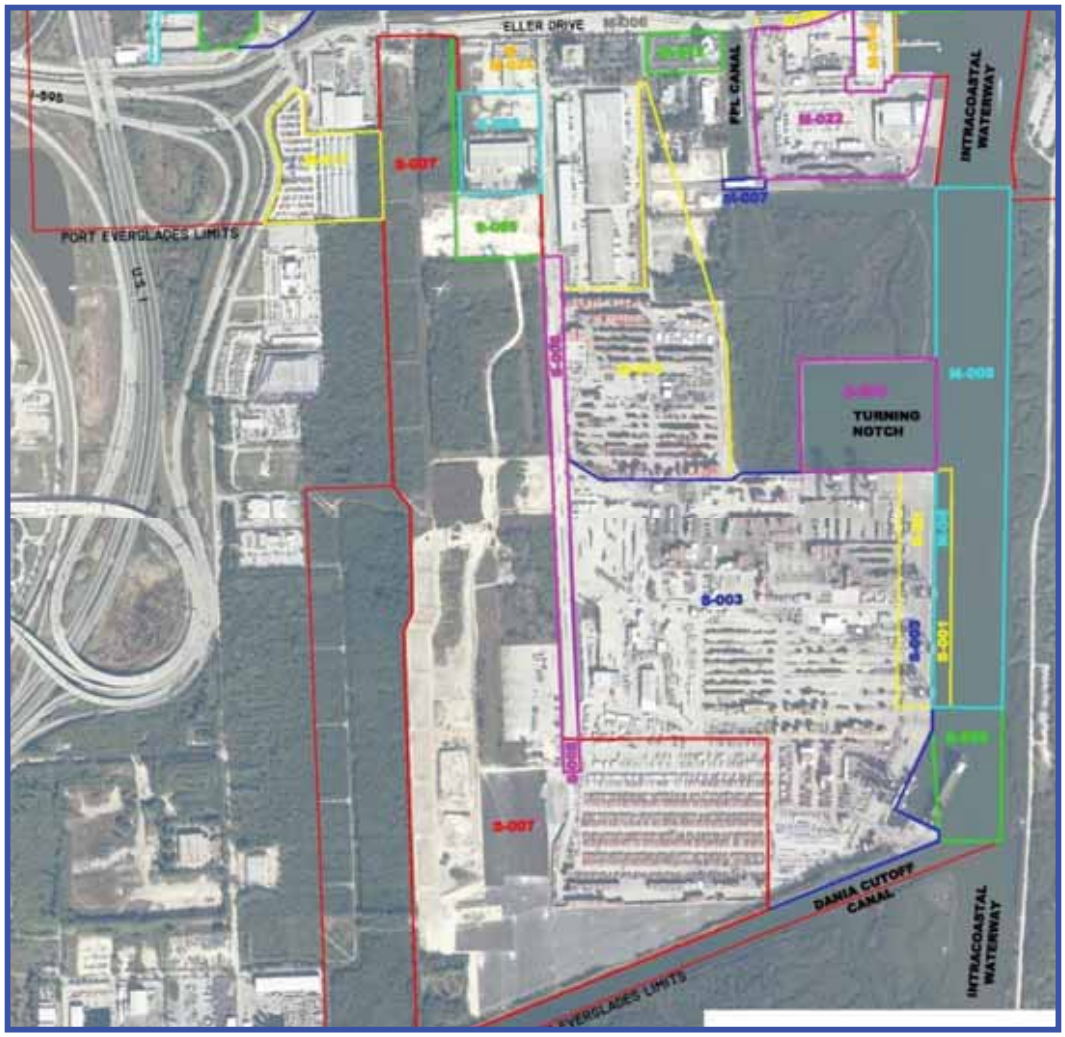


Table 1.4-9
Southport Drainage Permits

ID	Project Name	Agency	Permit or License No.	Date Issued
S-001	Dredge, Fill and Construction	FDEP	060748269	5/4/84
S-002	Port Everglades	SFWMD	06-00927-S	-
S-003	Port Everglades	SFWMD	06-00927-S (Modification)	-
S-004	Port Everglades	USACE	060924019	10/7/88
S-005	Port Everglades Temporary ID Center	BCEP&GMD	SWM2000-191-4	5/10/11
S-006	Port Everglades Commerce Center – Building. 1	BCEP&GMD	SWM2000-132-01	2/14/06
S-007	Southport – Phase VIIA & VIII Container Terminal	BCEP&GMD	SWM2000-191-0	-
S-008	McIntosh Roadway Improvements	BCEP&GMD	SWM2011-058-0	12/28/11

Stormwater Management. All new development at the Port, which may alter the current stormwater conditions, such as increasing the amount of impervious area, shall be subject to review and approval by FDEP, BCEP&GMD, and/or SFWMD. Stormwater management considerations include:

- **Water Quality.** New developments shall provide water quality equal to one inch of run-off over the entire project site or two and a half times the percentage of impervious area of the project site. The greater of the two shall be adhered to.
- **Water Quantity.** New developments at a minimum shall adhere to discharge rates and flood protection criteria, where applicable, to avoid adverse impacts to adjacent properties as well as providing the minimum elevations for the type of new development.
- **Discharge Rate.** Typically, the 25-year, 72-hour storm event and historical discharge rate are used to determine the allowable off-site rate unless otherwise noted by the permitting agency.

Flood Protection.

- **Buildings.** The minimum elevation of a new building floor shall be above the 100-year flood elevation determined in the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map and the 100- year, 72-hour storm event.
- **Roadways.** At a minimum, the elevation of new roadways shall be determined by the 10-year 24-hour storm event.
- **Parking Lots.** At a minimum, the elevation of a new parking lot area shall be determined by the 5-year, 24-hour or 5-year, 1-hour storm event (if exfiltration trench systems will be utilized) unless otherwise noted by the permitting agency.

Stormwater Pollution Prevention. Prior to new development construction, a permit for stormwater discharge throughout the entire duration of construction activities shall be obtained from FDEP. The requirements associated with this permit include providing and adhering to best management practices to prevent pollutant discharge to nearby water bodies downstream from the project site.

Overall, new developments that may impact existing stormwater conditions should be discussed with FDEP, BCEP&GMD, and/or SFWMD, as applicable, via a pre-application meeting to establish project-specific design criteria and ensure conformance to applicable stormwater requirements.

Section 1.10.4 also discusses stormwater management at the Port in the context of the Port's environmental initiatives.

1.5 Progress on Projects in *2009 Port Everglades Master/Vision Plan* 5-Year Capital Improvement Plan

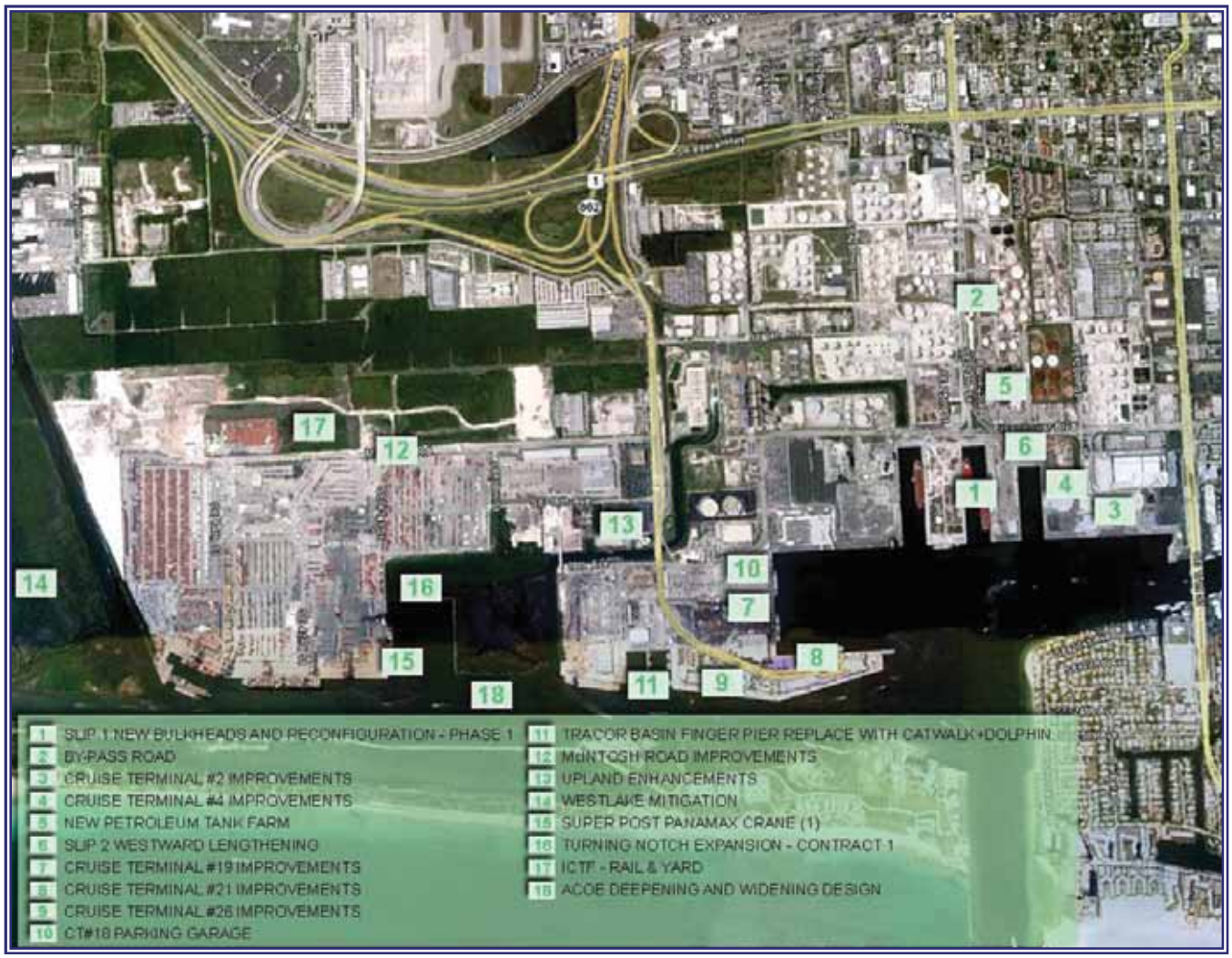
In March 2011, when the Broward County Board of County Commissioners approved the *2009 Port Everglades Master/Vision Plan*, the approval also provided direction to the Port on the implementation of projects identified in the Master Plan's 5-year CIP for FY 2011-2015.

The Port is implementing many of the projects that were identified in the 2009 plan. These projects are listed in Table 1.5-1; their locations are shown on Figure 1.5.1; and their status is described in the following narrative.

Table 1.5-1
2011-2015 5-YEAR MASTER PLAN PROJECTS

Port Area	Project	Status
Northport	Slip 1 New Bulkheads and Reconfiguration - Phase 1	To begin fall 2013
	By-pass Road - Phase 1 (Security Gate Relocation)	Completion spring/summer 2015
	By-Pass Road - Phase 2	Not being implemented
	Cruise Terminal 2 Improvements	Completed
	Cruise Terminal 4 Improvements	Completion end of 2014
	Slip 2 Westward Lengthening	Completion end of 2015
	New Petroleum Tank Farm	Deferred to 2016
Midport	Cruise Terminal 19 Improvements	Completed
	Cruise Terminal 21 Improvements	Completed
	Cruise Terminal 26 Improvements	Completed
	Cruise Terminal 18 Parking Garage	Deferred to 2018 (design in 2016)
	Tracor Basin Finger Pier Replacement with Catwalk-Dolphin	Pier removal completed; catwalk cancelled
Southport	McIntosh Road Improvements	In construction; completion spring 2014
	Upland Mangrove Enhancement	Permitting fall 2013; mangrove planting mid-2014
	Westlake Mitigation	Permitting under way; construction mid-2015
	Super Post-Panamax Crane (2)	Under study
	Turning Notch Expansion	Construction 2016; completion end of 2017
	ICTF	Under construction; completion summer 2014
	USACE Deepening and Widening Design	Feasibility study released June 2013; under review
	USACE Deepening and Widening Construction	Schedule dependent on study completion; target implementation end of 2017

Figure 1.5-1
LOCATION OF PROJECTS IN 2011-2015 5-YEAR CIP



1.5.1 Northport Projects

Several improvements to infrastructure in the Northport area, which were identified in the 2009 plan *as* essential to the Port's petroleum and cruise capacity, are under way; other projects are planned to start in a few years. Still others will be reassessed in Phase II of this 2014 Plan update.

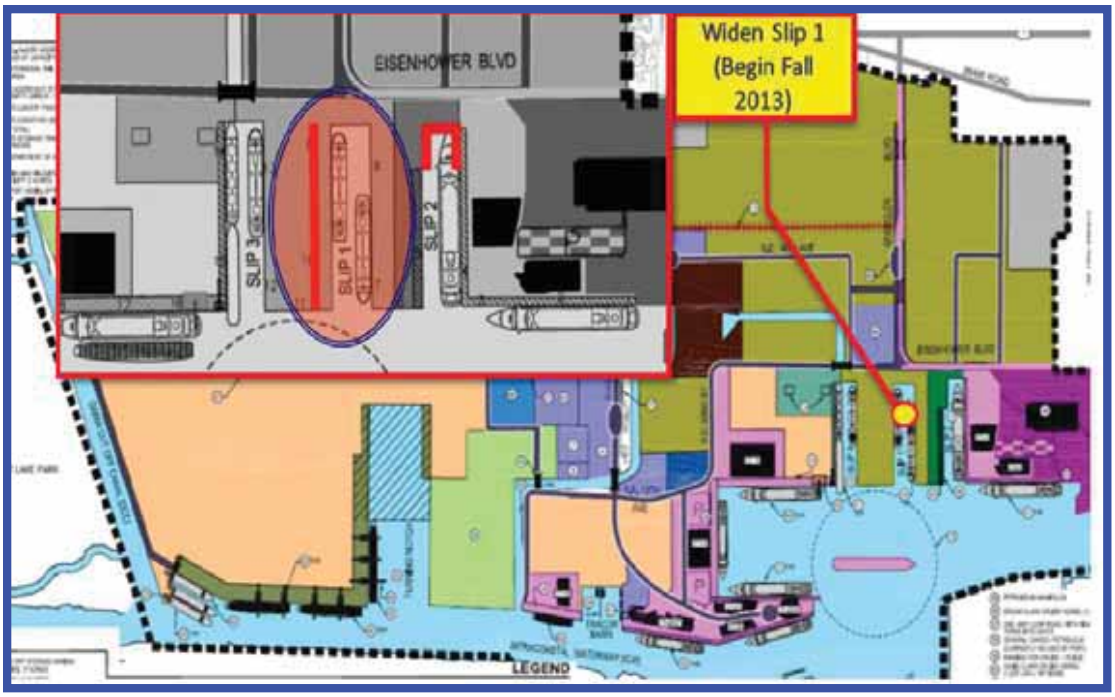
Slip 1 New Bulkheads and Reconfiguration – Phase 1. A bulkhead study[12] performed during the planning process for the 2009 plan, concluded that Berths 9 and 10 in Slip 1 would require new bulkheads in the five-year planning period. The new bulkheads, now scheduled for FY 2015 and 2016 would not, however, be built at the locations of the existing bulkheads, because

[12]Halcrow, *Bulkhead Study Update and Cathodic Protection System Evaluation for Port Everglades Berths 1 through 29*, August 2010.

Slips 1, 2, and 3 in Northport needed to be reconfigured to accommodate future longer and wider petroleum tankers.

Solicitation of a design consultant for the reconfiguration of Slip 1 (see Figure 1.5-2) is planned for the fall of 2013. The slip will be widened from approximately 300 linear feet (LF) to 475 LF in a two-phase process. In Phase 1, Slip 1 will be widened to the south by 125 LF; in Phase 2, it will be widened to the north by 50 LF. The Phase 2 expansion was included in the 2009 20-Year Vision Plan, reflecting the condition of the north side of the slip at Berths 7 and 8; this timing will be revisited in the course of the planning process for this 2014 Plan.

Figure 1.5-2
SLIP 1 WIDENING



By-Pass Road. Both the *2006 Port Everglades Master Plan* and the *2009 Port Master/Vision Plan* identified the operational and infrastructure requirements to allow public vehicular access to the Broward County Convention Center without having to pass through the Port's security gates and yet maintain the Port's security perimeter required by federal and state law. To permit public vehicular access to the Convention Center without passing through the Port security perimeter, a By-Pass Road was proposed and the existing security gate on Eisenhower Drive, near the Convention Center, was to be relocated to the south, essentially "carving out" the Convention Center from the Port. The Port has, however, now decided not to implement the By-Pass Road; but does plan to relocate the security gate to the south to effectively achieve the Convention Center carve-out.

Cruise Terminal 2 Improvements. The renovations to this cruise terminal were required due to changes in defining the Port-secured area from the public space at and around the Convention

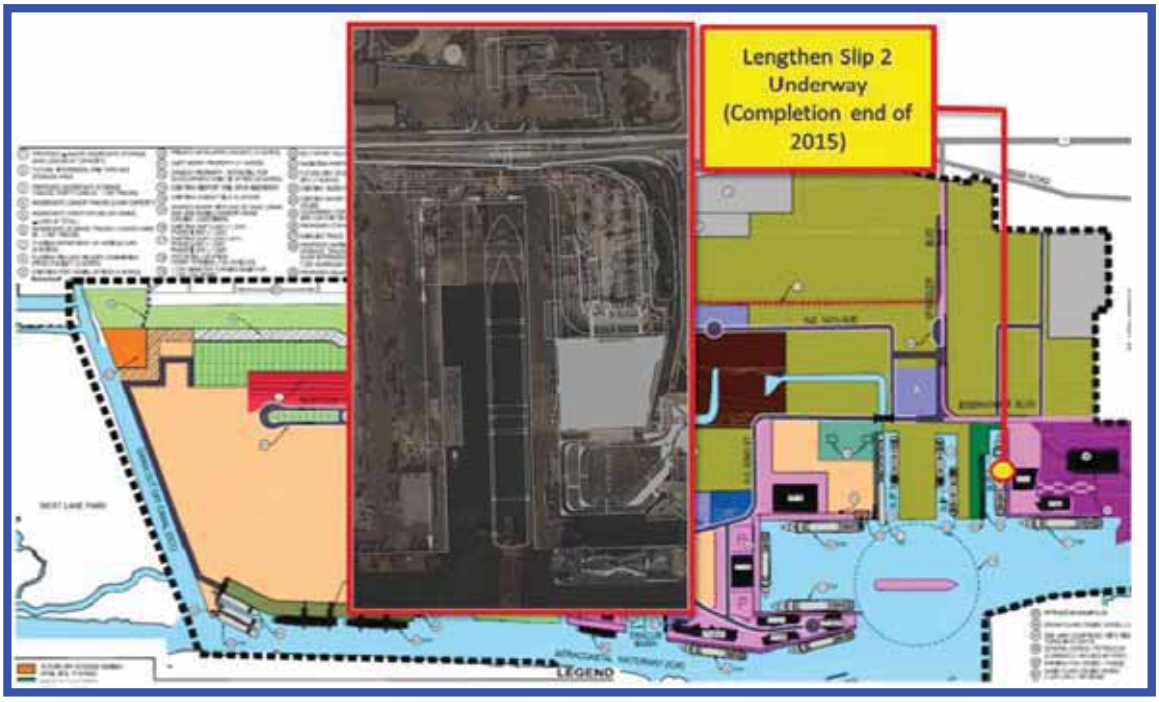
Center. The completed improvements, an example of which is shown in Figure 1.5-3, now allow larger cruise ships to berth at this facility, in accordance with the Port's long-term agreement with Carnival Corporation. The relocation of existing interior walls, resulting in an additional 23,000 square feet of waiting area, permits simultaneous debarkation and embarkation in the terminal. A new security check-in area provides a more efficient passenger-clearing process. Check-in counters have been relocated to improve passenger flow into the expanded waiting area. Upon completion of the debarkation process, passengers waiting to embark are able to access the elevators and escalators leading to the concourse and gangways to board the ship. Ground transportation areas have also been revised to expedite the flow of taxis and buses in the area.

Figure 1.5-3
CRUISE TERMINAL IMPROVEMENTS

Cruise Terminal 4. Improvements to Cruise Terminal 4, which are to be completed by November 2014, are necessary to accommodate larger passenger ships and increase the baggage-handling area in the terminal. The project includes moving the terminal entrance from the east side to the west to be serviced by a new passenger intermodal zone, i.e., ground transportation area, on the west side of the terminal.

Slip 2 Westward Lengthening. Slip 2 lengthening to the west (see Figure 1.5-4), which is under design, will increase the slip's length from 900 LF to 1,150 LF to accommodate larger cruise ships. This lengthening, reduced from the originally planned 350 LF to 250 LF, allows sufficient working space for potential future ferry operations and access to the relocated Cruise Terminal 4 intermodal zone. The lengthened portion of the slip will also be widened to 200 feet.

Figure 1.5-4
SLIP 2 LENGTHENING



New Petroleum Tank Farm. This project has been deferred to FY 2016. Its need and potential will be considered again during the planning process for this 2014 Plan update.

1.5.2 Midport Projects

As the heart of the Port's dynamic cruise operations, the Midport area has seen significant renovations to three of its cruise terminals; these renovations, in accordance with the Port's long-term agreement with Carnival Corporation, have expanded the Port's capacity to better serve the larger cruise ships in the industry's fleet.

Cruise Terminal 19 Improvements. Prior to the improvements, which have now been completed, only 60 percent of Cruise Terminal 19 was utilized for cruise operations. To increase the terminal's capacity for cruise operations, the facility was extensively renovated. The check-in, baggage lay-down, and waiting areas have been expanded; new elevators and escalators installed in the core terminal area; new Customs and Border Protection (CBP) facilities added; and an additional passenger-loading bridge installed. Ground transportation areas were also reconfigured for more efficient taxi and bus movements.

Cruise Terminal 21 Improvements. The improvements to Cruise Terminal 21, which have been completed, were designed to accommodate larger cruise ships. Specifically, the landside facilities were expanded to serve the increased passenger volumes and baggage-handling requirements.

The ground floor areas of the terminal were reconfigured to enlarge the security check-in facilities for embarking passengers. A new baggage-screening area was constructed with direct access to buses, separating baggage from passenger movements in addition to providing a secure structure for the equipment. Other improvements were made to increase the passenger circulation space and to improve passenger flow to the ships as well as to the baggage area and CBP.

Cruise Terminal 26 Improvements. The improvements to Cruise Terminal 26, which have been completed, included the renovation of the terminal area to allow its use for passenger embarkation with a new security entry facility, along with check-in and ticketing, located in what was the baggage area. A new baggage area was constructed in the existing warehouse, along with new CBP offices. To provide a more efficient passenger flow, a new concourse, elevators, and escalators were installed to direct debarking passengers to the baggage area and CBP. A second passenger-loading bridge was also installed. The ground transportation area was reconfigured to separate the passenger embarkation and debarkation processes.

Cruise Terminal 18 Parking Garage. This parking structure, to be built directly west of Cruise Terminal 19, was planned to add parking capacity, particularly for Cruise Terminal 18 and other cruise facilities at Midport. It has, however, been deferred for the present to FY 2018. As planned, the new facility would add 1,600 structured parking spaces above a passenger intermodal zone to serve the Port's Midport cruise facilities and provide 400 spaces for employee parking.

Tracor Basin Finger Pier Removal. The Tracor Basin in Midport is used to berth tugboats. Based on findings during the previous planning process, it was determined that the only improvement needed was the removal of the aged existing finger pier. This pier has now been removed. A previously planned catwalk to access the mooring dolphins in the basin was cancelled.

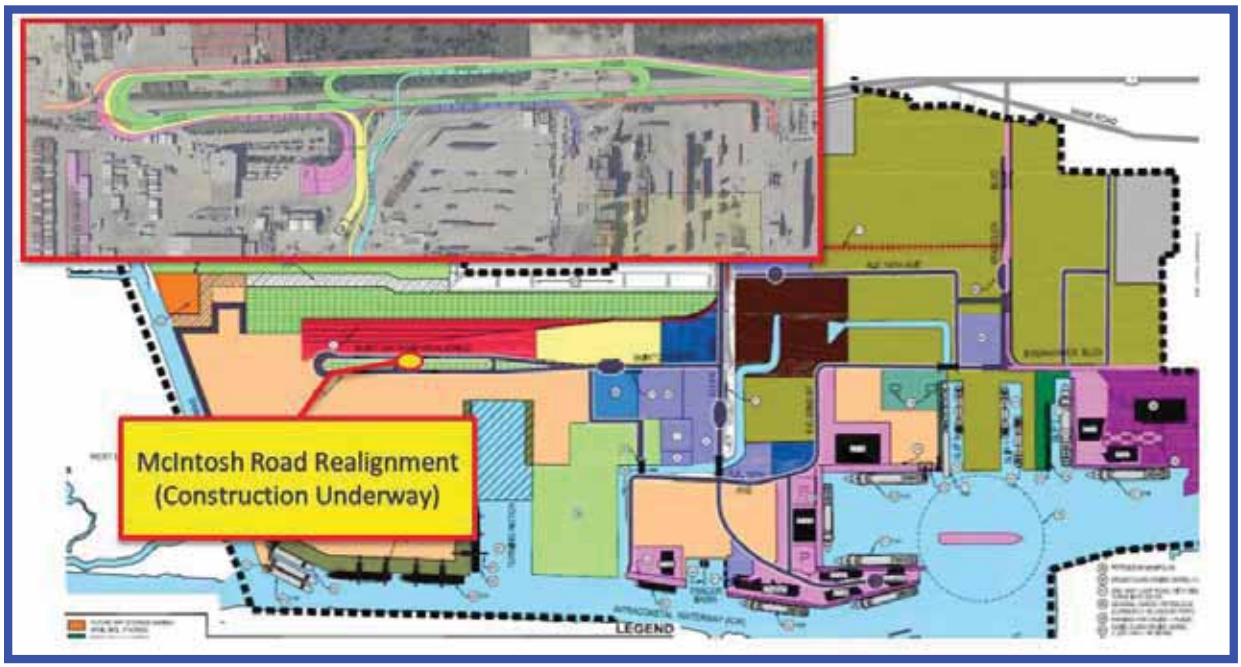
1.5.3 Southport Projects

Southport is the location of several priority projects designed to enable Port Everglades to compete effectively in the changing trade environment created when the new Panama Canal locks open in 2015. These projects include the Turning Notch Extension, the ICTF and its partner the Eller Drive Overpass, the Super Post-Panamax Cranes, and the McIntosh Road Realignment. Figure 1.5-5 provides an overview of the Southport area to show how these and other planned projects interconnect.

Figure 1.5-5
SOUTHPORT OVERVIEW

McIntosh Road Improvements. McIntosh Road, which is undergoing improvements, is the entry road to the Southport container terminals (see Figure 1.5-6). Prior to its improvement, the road alignment required trucks to make left-hand turns into the respective terminals without sufficient queuing space on the roadway. The *2006 Port Everglades Master Plan* and the *2009 Master/Vision Plan* recommended the re-configuration of McIntosh Road to provide only right-hand traffic turns into the cargo terminal facilities at Southport. The new alignment, which is under construction, creates a loop road with through lanes and lanes for de-acceleration, queuing, and acceleration in a new alignment to maximize turning radii and mandate right-hand turns. The new design also provides lanes for making a U-turn at two places, eliminating the need for vehicles to pass through the security gate twice.

Figure 1.5-6
MCINTOSH ROAD SCHEMATIC*



***The location of the ICTF has since been modified from what is shown in this sketch.

Upland Mangrove Enhancement. The Port's upland mangrove enhancement project consists of creating approximately 16.5 acres of mangrove wetlands on an uplands site adjacent to the Turning Notch in exchange for releasing 8.7 acres of the existing conservation easement at the west end of the existing notch. Once the mangroves are planted in the 16.5-acre site, to the north and east on Port property, contiguous with the remaining easement area, the Port will have a one-year waiting period to ensure the mangroves are well-established in their new location and to meet "trending towards success" protocol. After the one-year waiting period, upon successful establishment of mangroves in the new area, the Port will transfer ownership of the total 60-acre site to the state in fee simple; in turn the state will assign the amended conservation easement to the Broward County Audubon Society, provided that they agree to

manage the area for the state. This project is under way and is a critical prelude to the Port's priority Turning Notch extension, which is discussed below. Mangrove creation permits are expected in the fall of 2013; site work should begin in early 2014, and mangrove planting in mid-2014. Section 1.10 discusses this upland enhancement further.

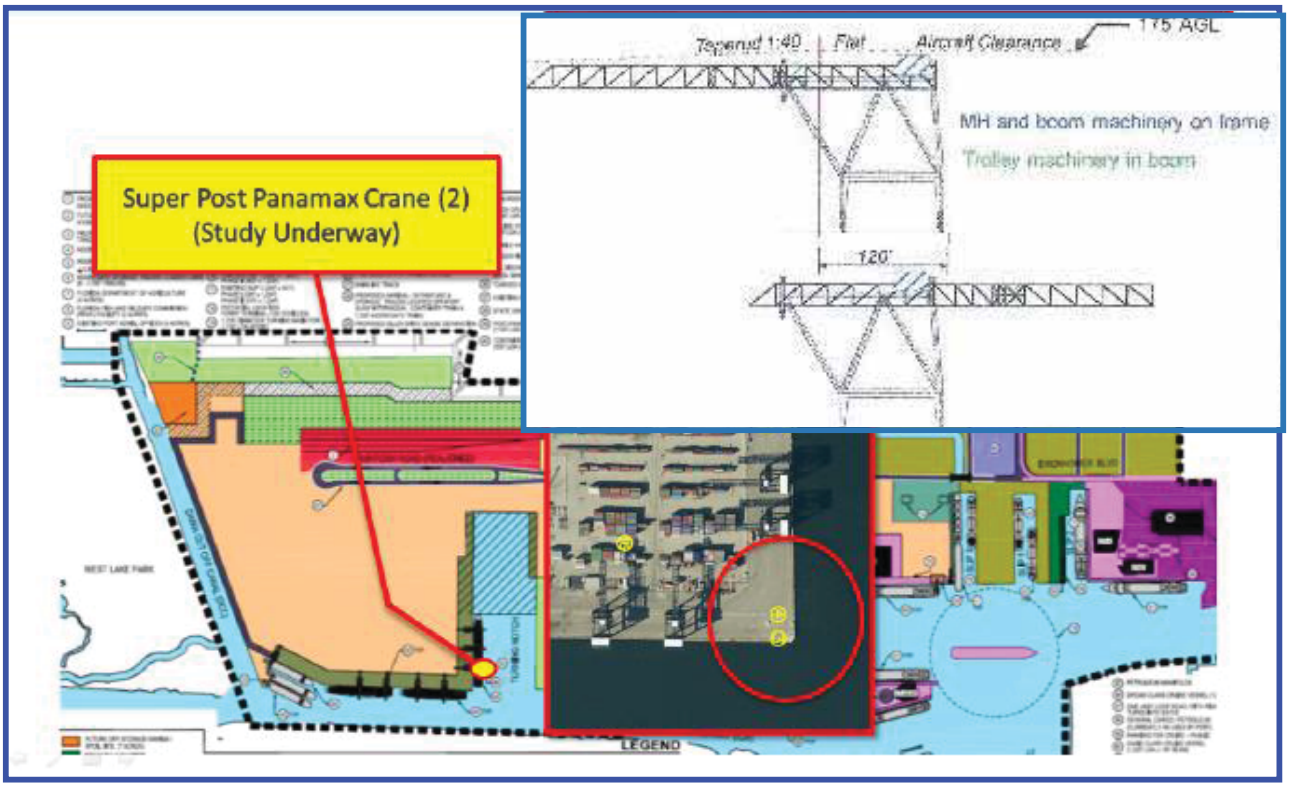
Westlake Mitigation. In addition to easement replacement, the impacts caused by removal of the 8.7 acres of mangroves must be mitigated in accordance with local, state, and federal environmental permitting requirements. The Port proposes to accomplish this mitigation at West Lake Park, and has shared the design and permitting costs of restoration activities at West Lake with the BCAD to provide mitigation credits for impacts associated with needed expansion at the Port, the south runway expansion, and other county projects (see Section 1.10).

Super Post-Panamax Cranes (2). These Super Post-Panamax cranes will be the first of five the Port will purchase over 20 years to handle the forecast container volumes. The sketch shown in Figure 1.5-7 is conceptual as the final rail gauge is yet to be determined. It is, however, expected to be between 120 and 125 feet, although it could go as high as 135 feet. The proposed cranes, specially designed as low-profile to meet the Federal Aviation Administration's (FAA) height restriction of 182.5 feet above mean sea level, will be able to serve 21-row-wide container ships.

The dimensions of the mega-low-profile crane the Port is studying are as follows:

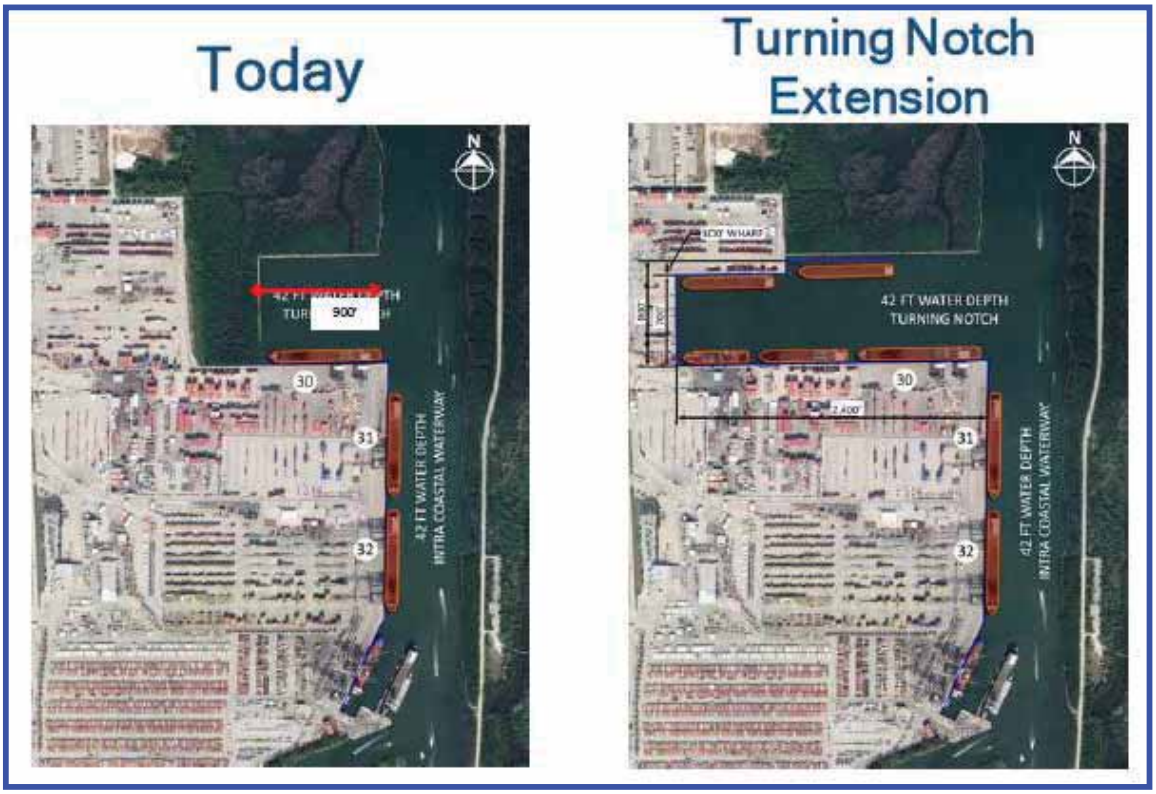
- Crane height = 182.5 feet above mean sea level.
- Overall height from top of rail to the highest point on the crane = 175 feet.
- Estimated back reach from bulkhead = 400 feet.
- Outreach from bulkhead = 200 feet.

Figure 1.5-7
SUPER POST-PANAMAX CRANES



Turning Notch Extension. Extending the Turning Notch to the west at the existing 42-foot water depth is needed to develop additional berth capacity for diverse cargo ships. Work on the Turning Notch is dependent on the completion of the previously described upland enhancement and mitigation. Construction is, however, currently expected to begin in 2016. Figure 1.5-8 shows the transition from today's condition to the future with the extension.

Figure 1.5-8
TURNING NOTCH EXTENSION

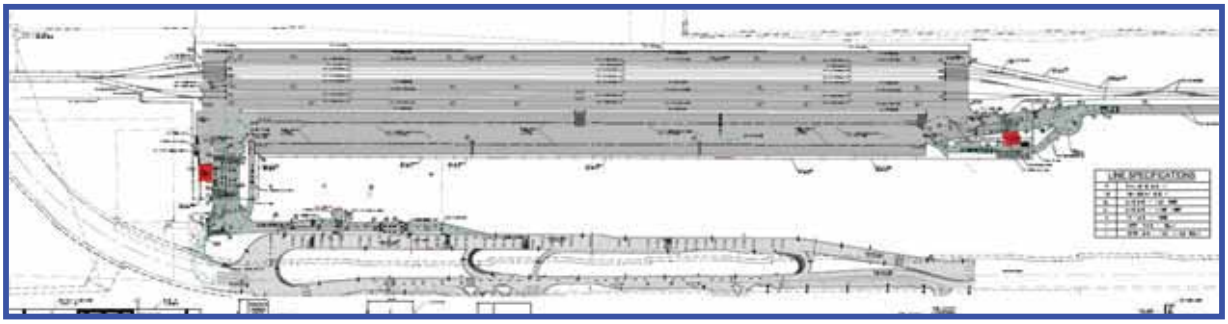


ICTF Rail and Yard. A near-dock ICTF is being constructed in Southport under a public-private partnership (P3) agreement with the FEC to transfer international intermodal containers between ship and rail, and the reverse (See Figure 1.5-9). Currently such containers must be drayed to and from the Port to off-Port rail terminals, either at Andrews Avenue in Fort Lauderdale or in Hialeah in Miami-Dade County. In addition, the ICTF will handle domestic containers.

The 42.5-acre ICTF consists of approximately 21,000 feet of track, which includes three processing tracks that will be supported by cranes and four storage tracks for rail cars. The spur that leads into the ICTF will be double tracked. The ICTF will also have a project cargo track. The paved area of the ICTF will support +/- 504 spaces for trailers and chassis.

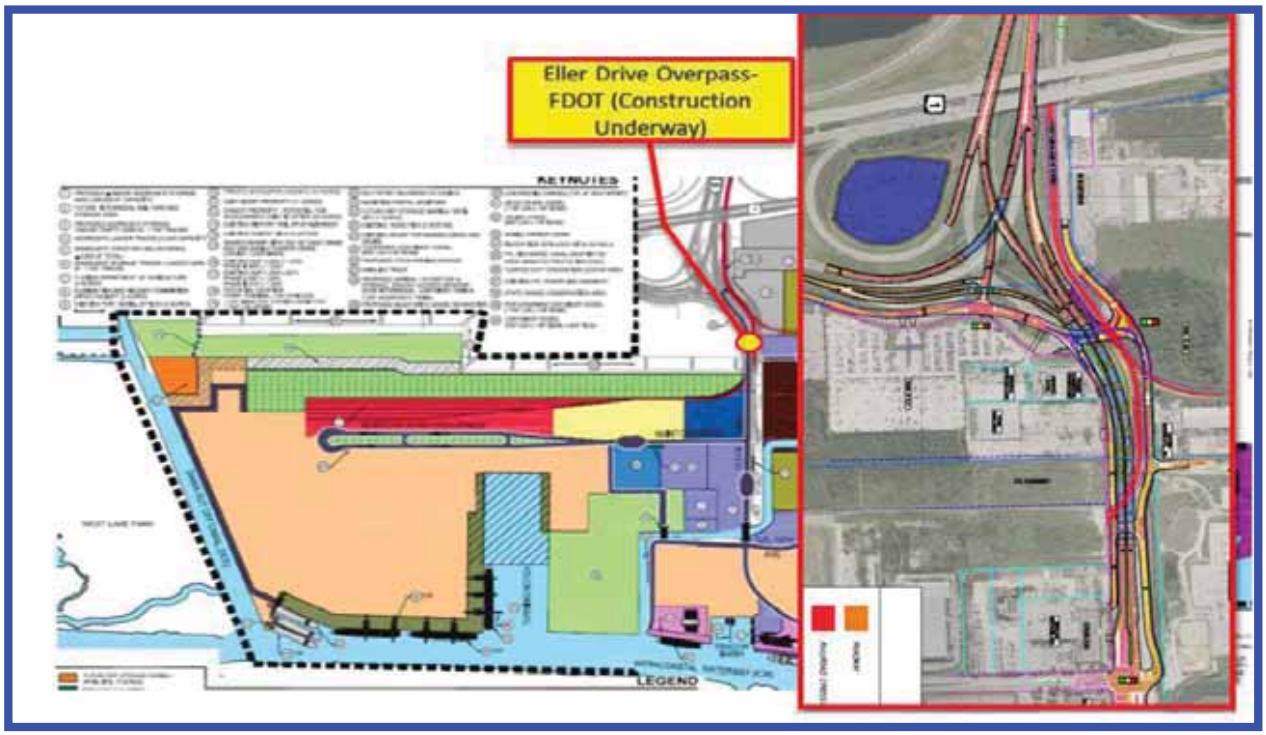
The ICTF will have two gates. The Eller Drive gate will be for domestic cargo and the McIntosh Road gate will be for international cargo.

Figure 1.5-9
ICTF AND MCINTOSH REALIGNMENT



Eller Drive Overpass (an FDOT District 4 project). The ICTF being constructed in Southport requires rail access from an existing rail line located north of Eller Drive. To serve the ICTF, the rail line must go south, crossing Eller Drive. To avoid an at-grade crossing at Eller Drive, FDOT's District 4 is constructing the Eller Drive overpass, which consists of a four-lane bridge over the primary Port entrance. This overpass allows for at-grade rail to Southport and the ICTF, while facilitating unrestricted movement to and from the adjacent highways. Project completion is expected in early 2015. Figure 1.5-10 shows a schematic sketch of the Eller Drive Overpass.

Figure 1.5-10
ELLER DRIVE OVERPASS SCHEMATIC



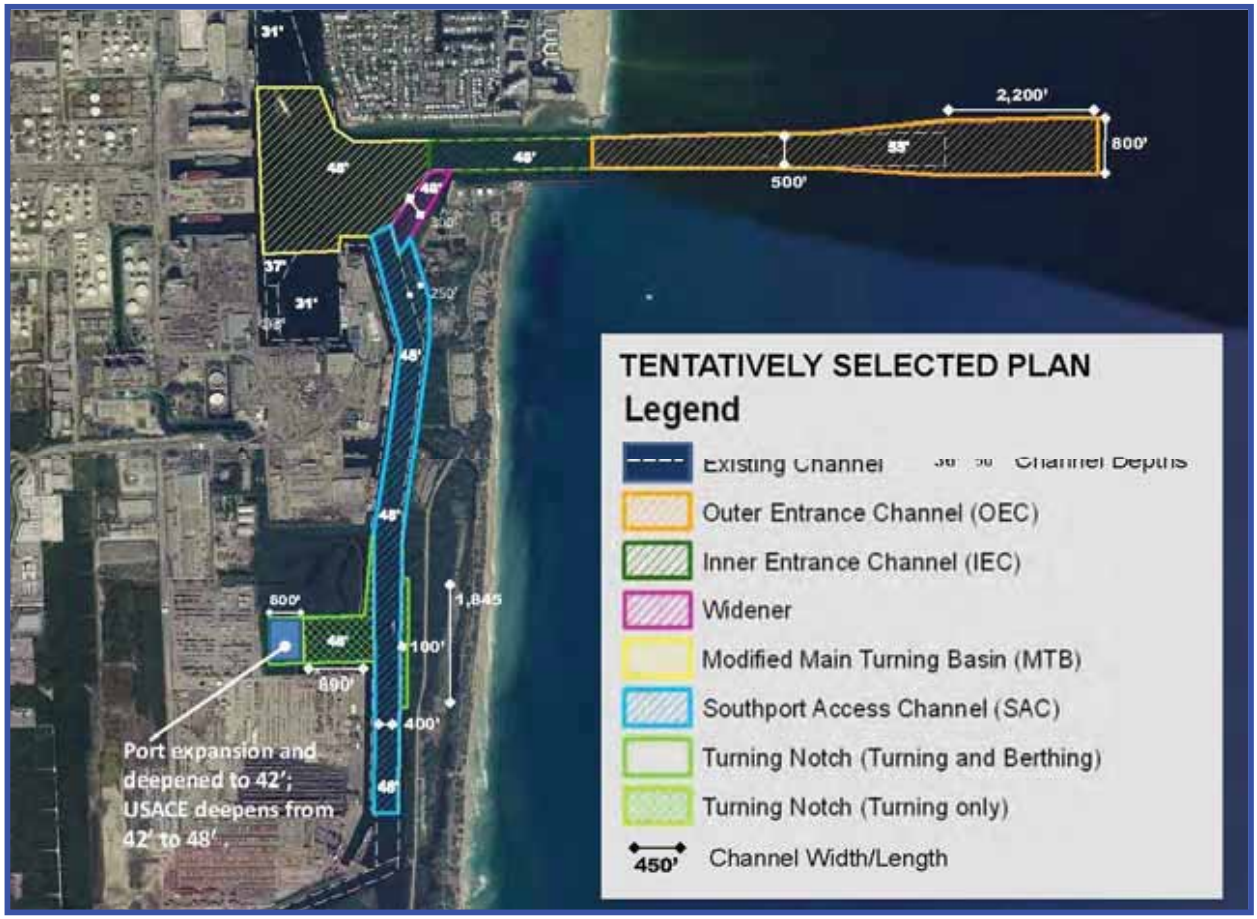
1.5.4 Portwide Projects

USACE Deepening and Widening Program. In June 2013, the USACE released its long-awaited *Draft Feasibility Report and Environmental Impact Statement* concerning the proposed deepening and widening of the Port's harbor and channels. The feasibility study was initiated in 2001 with Broward County's Port Everglades Department the local, non-federal, sponsor for the federal civil works harbor widening and deepening project to be implemented by the USACE.

Finding that the Port's existing federal channel project depth of 42 feet does not provide an adequate, safe depth for large tankers and container ships visiting the harbor; that the next generation of container ships and oil tankers requires significantly more channel depth to operate efficiently; and that a wider and deeper outer entrance channel will greatly improve the safety of navigation, the USACE identified an economically and environmentally sound Tentatively Selected Plan (TSP) to deepen the Port's channel from 42 feet to 48 feet and widen the channel entrance (see Figure 1.5-11). (When constructed, the project will include an additional two feet of over depth, one foot of which is required and one foot of which is allowable, for a total of 50 feet.)

Figure 1.5-11
TENTATIVELY SELECTED PLAN SCHEMATIC

Source**:** *USACE Draft Feasibility Report and Environmental Impact Statement*



As cited in the *Draft Feasibility Study*, the primary objectives for the project were to "(1) decrease costs associated with vessel delays from congestion, channel passing restrictions, and berth deficiencies at the Port; (2) decrease transportation costs through increasing economies of scale for cargo and petroleum vessels at the Port, and (3) increase channel safety and maneuverability for existing vessel use as well as for larger vessels, through the year 2060."[13] The total cost for deepening and widening Port Everglades' navigational channels is estimated at $313 million, which will be paid for through a combination of federal funds, Port user fees, and possibly state funds. No local tax dollars will be used for this project.

The features of the TSP include:

- Outer Entrance Channel - extend, widen, and deepen from 42 to 55 feet.
- Main Turning Basin - deepen from 42 to 48 feet.
- Inner Entrance Channel - deepen from 42 to 48 feet.
- Shoaling area - widen by 300 feet, deepen to 48 feet; and relocate US Coast Guard Station to the east.
- Southport Access Channel - widen by 250 feet at the knuckle; shift channel easterly 65 feet from Berth 26 to 29; deepen from 42 to 48 feet from Berth 23 to south end of Berth 32.
- Turning Notch (Turning and Berthing) - deepen from 42 to 48 feet in eastern 1,200 feet plus minor widening features.
- Turning and Berthing (Turning only) - Port expansion plus USACE deepening to 48 feet.
- Construction of mitigation for unavoidable, minimized impacts to resources associated with project construction.

Following an extensive public comment period lasting through August 13, 2013, the report is undergoing legal, policy, and external technical review, with the final National Environmental Policy Act (NEPA) review anticipated in November 2013. Additional project details are provided in Section 1.10 of this element.

1.6 Neighbors' Plans Influencing Port Development

In addition to the projects that are currently being planned, designed, and implemented by the Port, the consultant team considered plans by the Port's neighbors that could influence future Port development. (Internal, primarily market-based factors, such as changes in the petroleum and natural gas industries, changing trade flows and the new generation of ships that will be coming through the Panama Canal once the new locks are opened in 2015, the availability of crushed rock from local rather than imported sources, and the like, are discussed in Element 2, in the context of the market assessments conducted for the Port's four primary business lines.)

[13]US Army Corps of Engineers, Jacksonville District, *Draft Environmental Impact Statement*, Navigation Improvements Port Everglades Harbor, Broward County, Florida. June 14, 2013.

The major plans by neighbors to be considered in updating the 5-Year Master Plan and 10- and 20- Year Vision Plans for Port Everglades include the following; these are discussed below under the Northport, Midport, and Southport areas, respectively.[14]

1.6.1 Northport

Greater Fort Lauderdale/Broward County Convention Center. The Convention Center and Northport Parking Garage are located in Northport, adjacent to SE 17th Street and Cruise Terminals 1, 2, and 4. Broward County has made significant investments in this Convention Center to create a world-class facility on the water. Facility expansion and the possible addition of a premier hotel are currently being considered.

The Convention Center complex attracts many visitors to Broward County, many of whom have the potential of being cruise passengers at the Port. As such, it represents an opportunity for the Port's cruise growth as well as a job-generating opportunity for all of Broward County.

During the planning process for the 2006 and 2009 plans, boundary revisions dealing with the Convention Center's Development of Regional Impact (DRI) and the Port's security were agreed upon by the Convention Center and the Port. Operational issues dealing with the use of the ground area in and around the Northport garage were, however under discussion, as the Port requires these areas to operate the adjoining cruise terminals efficiently. It was agreed that the length of Berths 2 and 3 would be restricted to 1,321 feet from the southern end of Berth 3. Security infrastructure improvements would also be needed at Cruise Terminals 1, 2, and 4 to complete the "carve out" of the Convention Center from the Port's secured area. Cruise Terminal 1 was also identified for potential demolition so the parcel could be used for Convention Center site development.

In the course of the current planning process, these issues will be revisited in the context of the Port's need for efficient and secure cruise operations in Northport.

1.6.2 Midport

Florida Power & Light - Power Plant and Intake/Outfall Structures. FPL facilities are located in Midport, west of Berths 16, 17, and 18. The power plant, with its four red and white striped towers, has been a fixture in the Port jurisdictional area for several decades and is critical to providing power to South Florida. In July 2013, these towers were demolished as the company initiated its plan to replace the 1960s-era oil-fired power plant with a new, state-of-the-art plant that will run on natural gas by 2016. The new plant is expected to reduce carbon dioxide and total emissions by 90 percent compared to the old plant, yielding significant air and water quality improvements in the Port area. There will, however, be several years of construction in proximity to Port operations.

Cooling water for the power plant is drawn in from Slip 3 through an open canal and is expelled into an open canal that parallels Eller Drive east to SE 19th Avenue, where it crosses under

[14]The conditions discussed in this section reflect the situation through October 2013, the completion date of the Phase I analysis; conditions will be updated in Phase II, as needed.

Eller Drive and exits into the Intracoastal Waterway along the northern perimeter of the protected mangrove preserves. Manatees are attracted to the warm water in the FPL Discharge Canal. To preserve this important resource for the manatees that inhabit or visit this area at certain times of the year, FPL has indicated that it will maintain the flow of warm water during the construction period for the new plant.

1.6.3 Southport

Fort Lauderdale-Hollywood International Airport. The short travel distance between the Port and FLL provides excellent convenience for airlift passengers cruising from the Port at both embarkation and debarkation. Cruise lines are able to provide air and cruise packages that are very cost attractive.

The downside of this proximity, however, is that flight arrival and departure patterns extend over portions of Southport and Midport. The flight paths restrict the height of structures as well as vessels located under the flight paths. Consequently, during the planning process to identify the parameters of the Turning Notch extension, the Port has coordinated with BCAD and with the FAA concerning issues related to the planned development. Over the last several years, the Port, in coordination with BCAD, has worked with the FAA and Air Traffic Control concerning the proposed extension. This coordination resulted in various no-hazard determinations from the FAA related to the Port's existing cranes, varied vessels, and the proposed new Super Post-Panamax cranes. These determinations from FAA would allow the proposed new Super Post-Panamax cranes to operate at the existing Berth 30 and Berths 31 and 32. In addition, with minor modifications, they would allow the existing cranes to be utilized all the way to the west end of the Berth 30 extension.

Like the Port, FLL has been undergoing significant facility expansion and renovation, as discussed later in this element (see Section 1.9). These improvements, once the construction is completed, will have a positive effect on the Port as the new capacity will enhance the synergies between the two facilities, including opportunities for more potential cruise passengers from abroad.

1.7 Cargo Berth and Yard Capacity Analysis

1.7.1 Methodology

The consultant team used a spreadsheet-based capacity analysis model to determine Port Everglades' terminal throughput capacity, which is defined as the amount of cargo a terminal can handle under given operating parameters. For containerized cargo, the capacity is calculated in either lifts or TEUs per year. For break-bulk and dry bulk cargos, the capacity is measured in terms of metric tons.

The total amount of cargo a terminal can handle annually depends on the capacity of two main components: stevedoring operations and container yard operations. Although landside transport (gate and rail) operations can also constrain overall capacity, these elements are relatively easy to enlarge and very rarely constrain the long-term capacity of a port. The

consultant team evaluated each of these terminal-operation components independently to identify elements limiting the overall throughput capacity of Port facilities.

The capacity of the existing rail operations was not considered an issue as currently almost no cargo moves by rail directly at the Port. As mentioned previously, a near-dock ICTF in the Southport area is, however, being constructed to move import and export international cargo and handle domestic cargo. Although this new rail operation was not included as part of Element 1, potential ICTF throughput is considered in Element 2.

Port Everglades serves a unique cargo market that combines vastly different vessel sizes. The Port's substantial Caribbean market, for example, consists of small vessels making short trips to the Bahamas, Jamaica, and other islands, while the international market consists of much larger vessels coming from Europe, Asia, and other parts of the globe.

To analyze the berth capacity at the Port, while taking into account the large array of vessel types served, the consultant team unitized the capacity at each berth into "berth-foot-hours," a measure of the amount of berth resources (time and length of berth) needed to move cargo across the berth. For instance, the container vessel *MSC Catania* called the Port in FY 2012. The vessel is 984 feet long, and the call took 12.8 hours to execute 367 moves. Therefore, this vessel call used (984 feet times 12.8 hours)/367 moves = 34.4 berth-foot-hours per move. A similar methodology was used for bulk cargo vessels (berth-foot-hours per ton).

Many berths at Port Everglades are also split between different types of cargo, or between cargo and cruise activities. In this case, a "percent availability for cargo activity" factor is used for each cargo type at each berth to divide berth capacity among cargo types and account for reduced cargo capacity due to berth occupancy by cruise vessels.

An example of berth sharing is shown in a Google Earth aerial of Berths 16 – 18 in Figure 1.7-1. The length of these three berths combined, based on Port records, is about 1,648 feet. As the figure shows, a large cruise ship is occupying most of the length of the berth. A dock crane is available at Berth 16, visible at the northern edge of the berth and a mobile harbor crane is also available at the berth. Since the cruise vessel leaves only about 350 feet of space for a containership to both dock and tie-up, the cruise vessel is effectively occupying all three shared berths in this instance. For reference, Figure 1.7-2 shows the locations of all berths in Port Everglades.

Figure 1.7-1
BERTHS 16 – 18 SHARED CONTAINER AND CRUISE OPERATIONS

Annual capacity for the currently existing cargo facilities at Port Everglades has been calculated in two six-month increments: during the peak cruise season from November to April, and during the off-peak cruise season from May to October. Since many cargo berths are shared by cruise vessels, the cruise impact on cargo operations is higher during the peak cruise season.

Based on an interview with Port staff, the consultant team also developed a "percent availability for containers" factor for each berth where cargo vessels call. This factor may differ in peak and off-peak cruise seasons for cargo berths sharing calls with cruise vessels.

Table 1.7-1 summarizes the annual percent availability for container, bulk cement, other dry bulk, and steel break-bulk cargo, the four cargo types being considered in this overall capacity analysis.[15] The table also summarizes other uses for each berth (such as cruise or liquid bulk) and impacts due to cruise seasonality. Berths that do not currently handle any of these four types of cargo (e.g., the dedicated petroleum operations at Berths 7 – 10 and 12 - 13) are not included in Table 1.7-1.

[15] These breakdowns are based on interviews with Port staff.

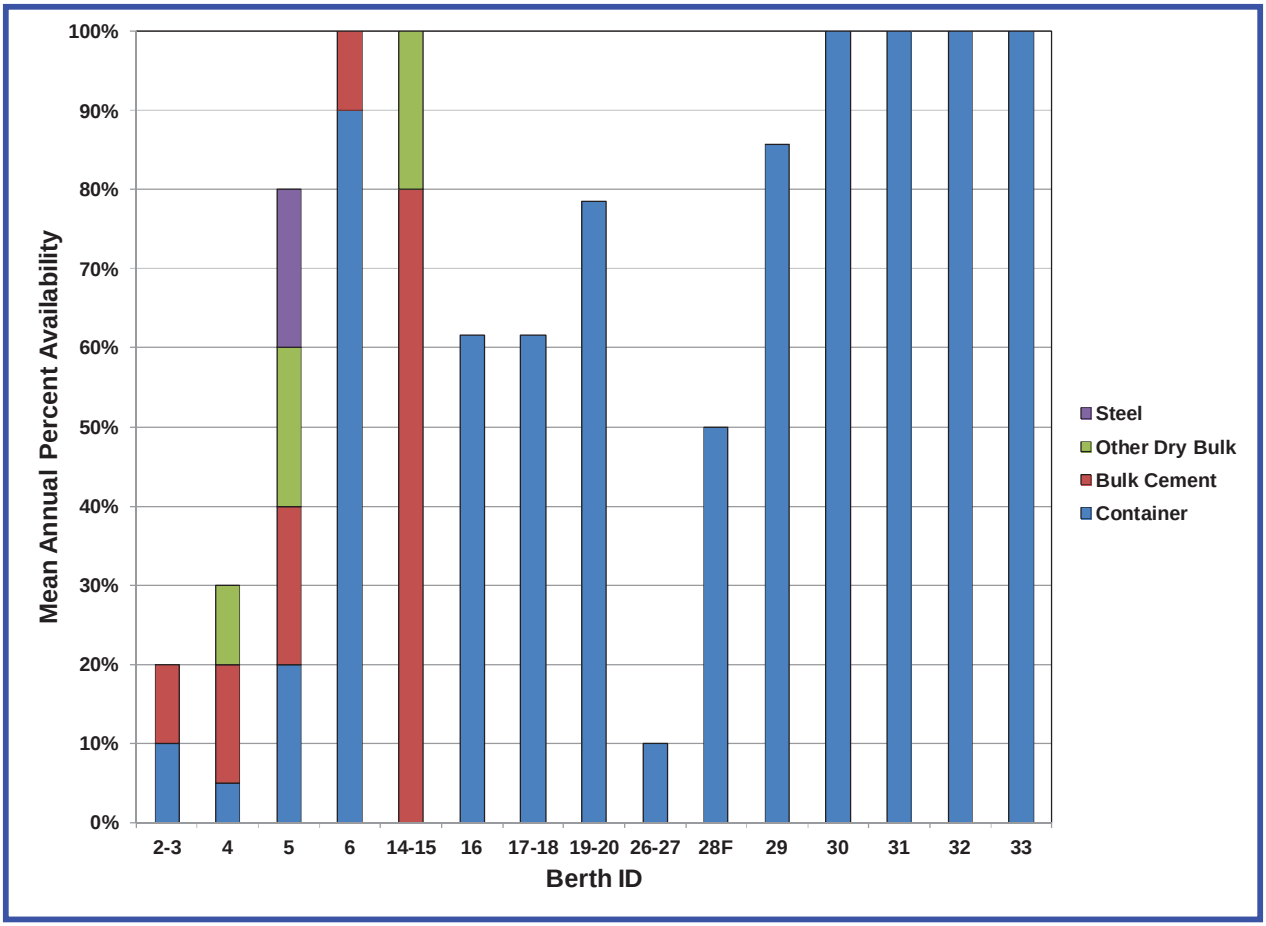
Figure 1.7-2
MAP OF PORT EVERGLADES

Table 1.7-1
SUMMARY OF CARGO ACTIVITY BY BERTH

Berth ID	Average Annual % Available for Relevant Cargoes	Other Uses / Notes	Cargo Operations Impacted by Cruise Seasonality?
2 - 3	10% Containers 10% Cement	Primarily cruise berths	No, only used by cargo as needed/ when available
4	5% Containers 15% Bulk Cement 10% Other Dry Bulk	Primarily cruise berth	Negligible due to low usage by cargo overall
5	20% Containers 20% Bulk Cement 20% Other Dry Bulk 20% Steel Break-bulk	Remaining 20% for petroleum products	No cruise activity
6	90% Containers 10% Bulk Cement	None	No cruise activity
14 - 15	80% Bulk Cement 20% Other Dry Bulk	Historically used as a primary dry bulk berth; now primarily Navy and lay in berth due to reduced market demand; included in capacity total to represent overall Port capabilities regardless of market fluctuations	No cruise activity
16	62% Containers	Shared container / cruise berth	Yes; cruise occupies Berth 16 six days/month in the off-peak season and 4 days/week in the peak season
17 - 18	62% Containers	Shared container / cruise berth	Yes; 16 – 18 form continuous berth; long cruise vessels at 17 or 18 block most cargo ships at 16
19 - 20	79% Containers	Shared container / cruise berth	Yes; cruise occupies 19 - 20 two days/week in the peak season and one day/week in the off-peak season
26 - 27	10% Containers	Primarily cruise berth	Negligible due to low cargo usage (containerized bananas)
28F	50% Containers	Shared with other cargo types; only liquid bulk and lay in used berth in addition to containers in FY2012	No cruise activity
29	86% Containers	Shared container / cruise berth	Yes; 2 days cruise occupancy in peak season, none in off-season
30 - 32	100% Containers	None	No cruise activity
33	100% Containers	Finger piers at 33B/C rarely used due to Crowley transitioning away from Ro/Ro at 33B/33C to Lo/Lo at 33A	No cruise activity

Figure 1.7-3 presents a stacked bar chart of average annual percent availability for container, bulk cement, other dry bulk, and steel break-bulk products, based on Table 1.7-1. For berths with less than 100 percent total, other activities such as cruise or liquid bulk account for the remaining time, as detailed in Table 1.7-1.

Figure 1.7-3
AVERAGE ANNUAL PERCENT AVAILABILITY BY BERTH AND CARGO TYPE



1.7.2 Container Terminal Berth Capacity

At Port Everglades, cargo-handling operations at each terminal vary, based on the existing cargo throughput requirements and available berth and yard space provided by the Port. Because the Port operates a majority of the berths as public berths, any berth can be assigned to any terminal operator based on the need and availability of resources. Preferential berth assignments are provided in the leases, using scheduled hours of operations and days of the week. The Harbor Master's office is responsible for assigning berth slots throughout the Port.

The Port also uses temporary grid assignments to create short-duration agreements with tenants, which allows the Port to reassign available yard space to a new tenant based on the storage needs and availability of resources. These flexible lease arrangements allow the cargo-

handling capacity of each berth and storage yard space to vary based on the respective user's operations.

As with all elements of capacity, berth capacity is not a single fixed number, but a range of plausible values. Higher berth capacity means higher costs (increased equipment and labor) and lower levels of service. For example, some vessels may have to queue in anchorage areas waiting for berth space during periods of higher berth utilization. Berth capacity primarily depends on the following factors.

- Maximum practical berth utilization.
- Amount of cargo handled per vessel call.
- Dock crane productivity.
- Number of cranes assigned per vessel call (if any).

Shipping lines expect a certain level of customer service when calling a terminal; they do not want to queue out at sea for too long waiting for a berth to become available. Conversely, shipping lines work on fairly rigid vessel schedules around the world and filling a berth on a given day of the week may prove difficult to accomplish by changing sailing patterns. Due to the variable nature of vessel arrivals (delays at berth, storms, etc.), and the market-driven need to service vessels in a timely manner, the maximum practical berth utilization is assumed to reach 60 percent at Port Everglades for most container berths; 65 percent maximum utilization in Southport is used due to dedicated container operations at the berths there.

Since operations at Port Everglades vary significantly at different berths and comprise a vast array of ship sizes, mean berth-foot-hour values from FY 2012 are used to analyze capacity at each berth, which incorporates dock crane productivity and assignment for berths using dock cranes, as well as the amount of cargo per call. For instance, berths with dock cranes available will generally have lower berth-foot-hour values, indicating they are able to move containers across the berth more quickly than vessels using ship's gear or truck cranes. Larger vessels will also be able to have more dock cranes assigned per call at berths where they are available.

Figure 1.7-4 shows the mean moves per call trend at Port Everglades for the past ten years. Overall, moves per call is increasing, but only at about ten moves per call each year. The mean moves per call increased by about 10 percent between FY 2008 and FY 2012.

Figure 1.7-4
MEAN MOVES PER CALL OVER 10 YEARS AT PORT EVERGLADES

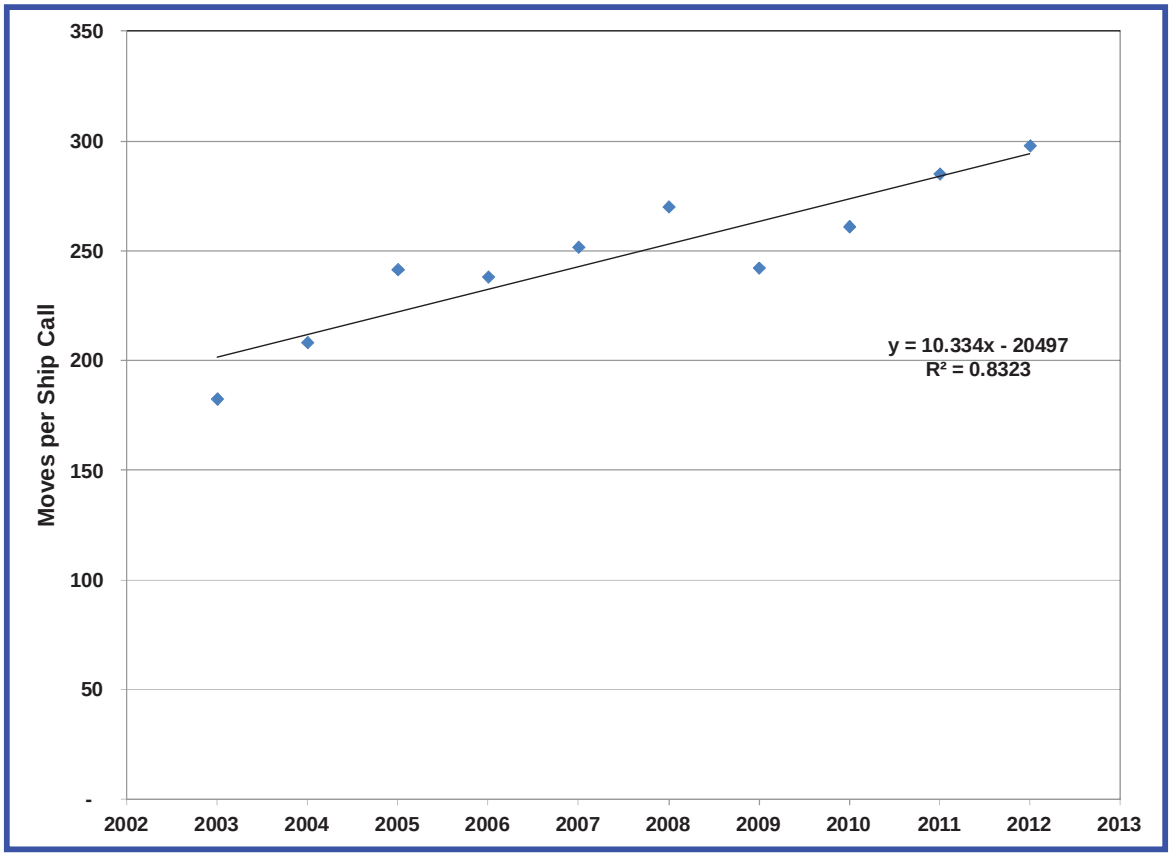
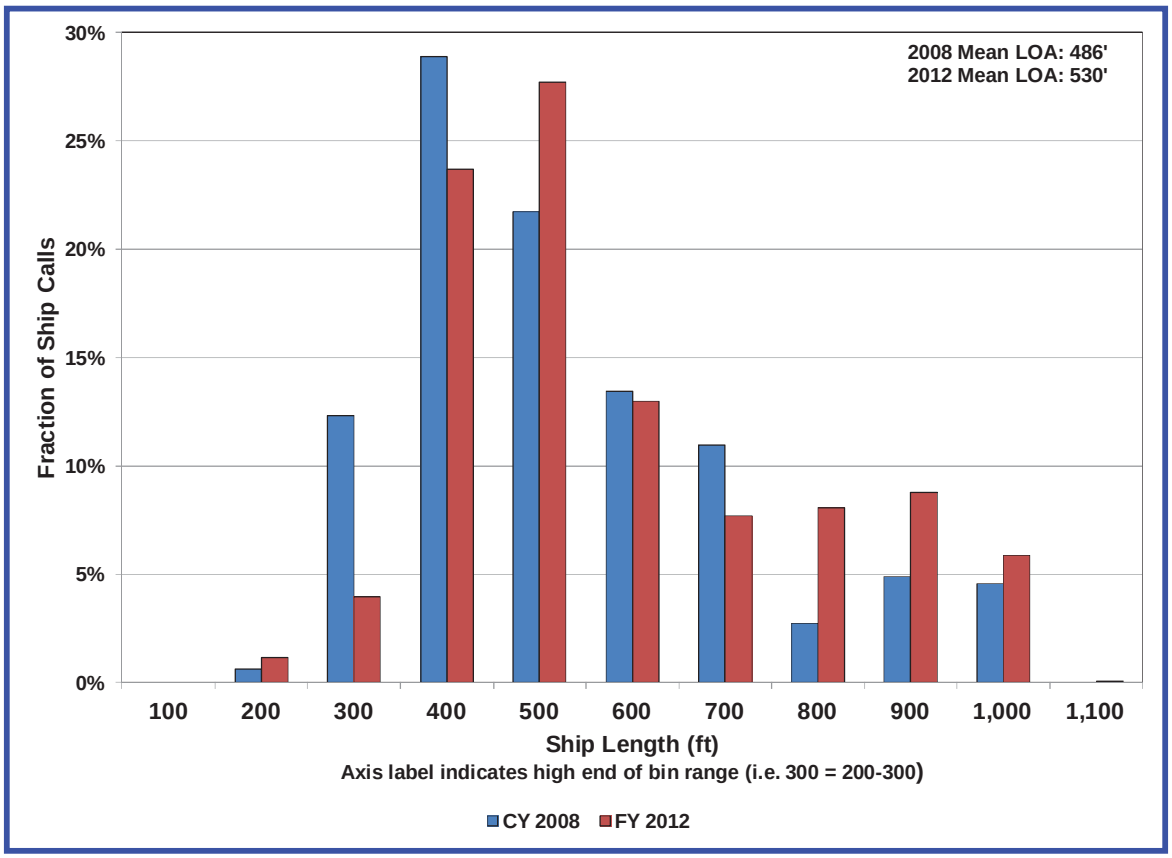


Figure 1.7-5 compares containership lengths in FY 2008 and FY 2012. Mean containership length increased by about 10 percent between these two years, from 486 feet to 530 feet.

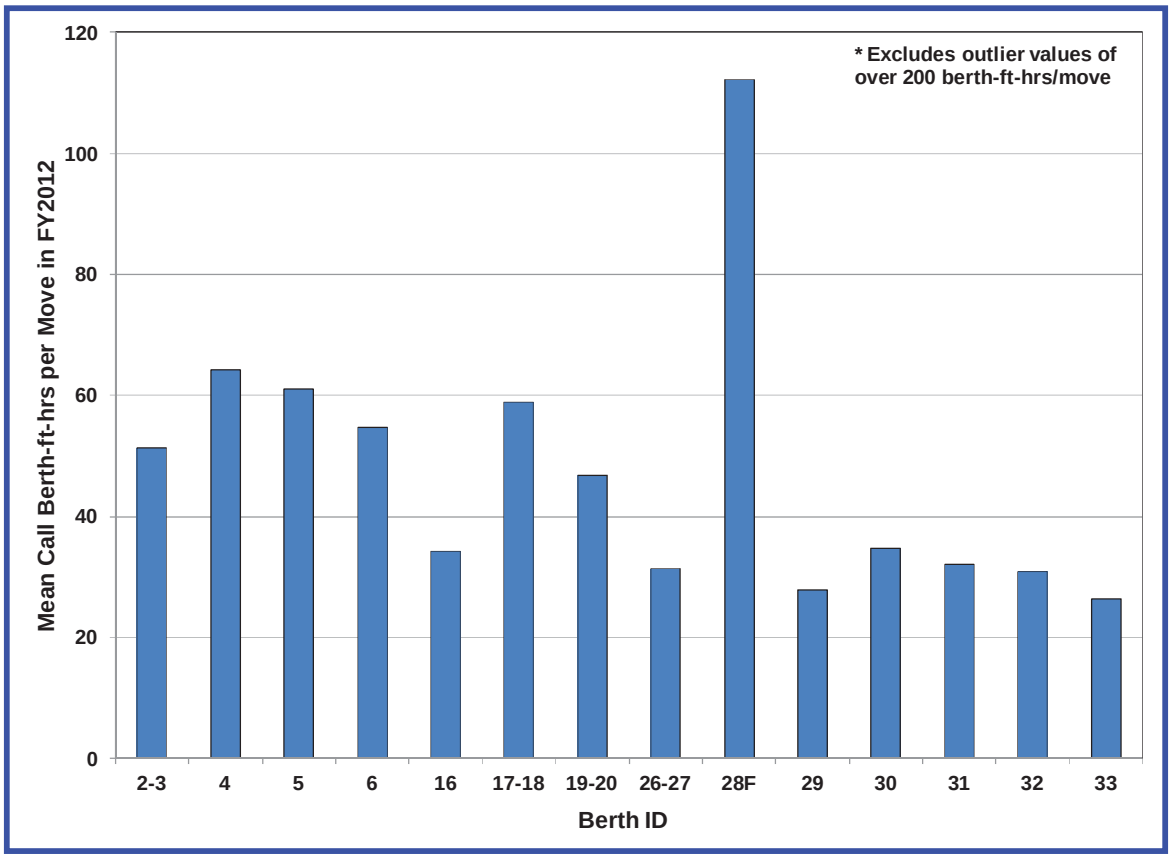
Figure 1.7-5
CONTAINERSHIP LENGTH HISTOGRAM, FY2008 VS. FY2012



Portwide, the mean berth-foot-hour per call value in FY 2008 was 35.6 vs. 35.4 in FY 2012, indicating this metric has been relatively steady in recent years. This makes sense based on Figures 1.7-4 and 1.7-5, which show that the rate of increase of moves per call is about identical to that of containership length, about 10 percent for each. Since these two factors cancel each other out in terms of berth-foot-hour trends, this unit factor is fairly steady overall. Adding more dock cranes at a particular berth is the most effective way to decrease berth-foot-hour factors compared to current operations, along with decreasing non-productive vessel time at berth. Adding dock cranes reduces ship work time, which in turn decreases mean berth-foot-hours per call.

There is also significant variation in berth-foot-hour factors by berth, as shown in Figure 1.7-6.

Figure 1.7-6
MEAN CALL BERTH-FOOT-HOURS BY BERTH NUMBER



Berths 30 – 33 have the lowest berth-foot-hour factors overall due to larger containership calls and the availability of dock cranes to speed ship loading. Berth 16 also has a fairly low factor due to its dock crane. Other berths have smaller vessel calls, often requiring the use of lower-productivity ship's gear or truck cranes, resulting in more vessel time on berth for each container move and thus higher berth-foot-hour factors per call.

Table 1.7-2 summarizes off-peak cruise season container berth capacity for each berth serving containerships at Port Everglades, based on current operating conditions, while Table 1.7-3 presents peak cruise season container berth capacity calculations. Both tables include a seasonal peaking factor used to represent annual variations in container volumes based on FY 2012 data. This factor is calculated by dividing peak-month throughput by mean-month throughput for each six-month period (peak and off-peak cruise seasons).

Table 1.7-2
OFF-PEAK CRUISE SEASON BERTH CAPACITY (CURRENT OPERATIONS)

Berth ID	Length (ft)	% Availability for containers	May - Oct berth-hours available for containers	May - Oct berth-ft-hrs available for containers	Max utilization of available berth-ft-hrs	Max container berth-ft-hrs from May - Oct	FY 2012 mean berth ft-hrs/box	Seasonal peaking factor (peak/mean month)	May - Oct capacity (moves)	May – Oct FY 2012 moves	% Capacity
a	b	c	d = 365/2*c	e = b*d	f	g = e*f	h	i	j=g/h/i	k	l=k/j
2-3	1,125	10%	438	492,750	60%	295,650	51.30	107%	5,400	98	2%
4	900	5%	219	197,100	60%	118,260	64.24	107%	1,700	952	56%
5	900	20%	876	788,400	60%	473,040	61.02	107%	7,200	2,590	36%
6	380	90%	3,942	1,497,960	60%	898,776	54.70	107%	15,400	3,797	25%
16	350	80%	3,516	1,230,600	60%	738,360	34.16	107%	20,200	9,189	45%
17-18	1,298	80%	3,516	4,563,768	60%	2,738,261	58.90	107%	43,400	5,268	12%
19-20	1,300	86%	3,754	4,880,571	60%	2,928,343	46.78	107%	58,500	1,375	2%
26-27	1,337	10%	438	585,606	60%	351,364	31.45	107%	10,400	308	3%
28F	400	50%	2,190	876,000	60%	525,600	112.21	107%	4,400	142	3%
29	800	100%	4,380	3,504,000	60%	2,102,400	27.84	107%	70,600	21,238	30%
30	900	100%	4,380	3,942,000	65%	2,562,300	34.80	107%	68,800	57,681	84%
31	1,000	100%	4,380	4,380,000	65%	2,847,000	32.02	107%	83,100	41,830	50%
32	1,000	100%	4,380	4,380,000	65%	2,847,000	30.85	107%	86,200	57,220	66%
33	800	100%	4,380	3,504,000	65%	2,277,600	26.34	107%	80,800	62,955	78%
Total									556,100	264,642	48%

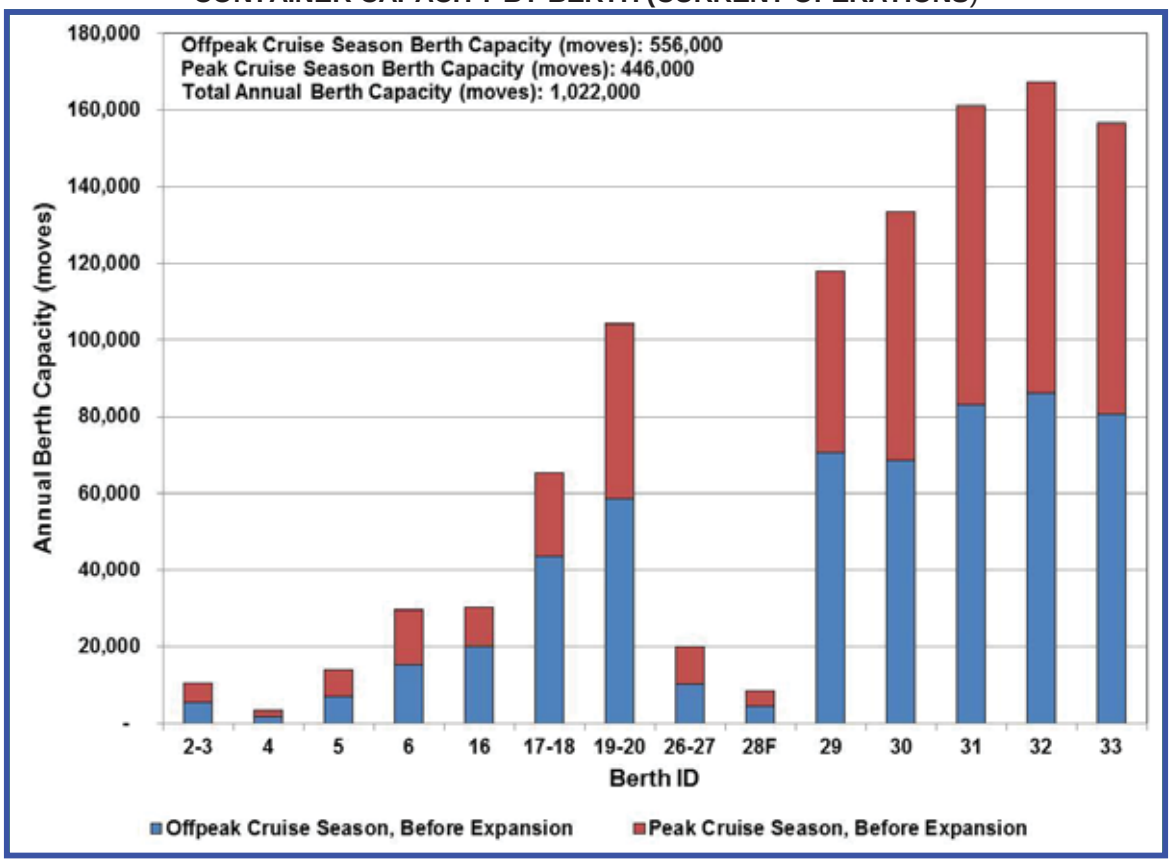
Table 1.7-3
PEAK CRUISE SEASON BERTH CAPACITY (CURRENT OPERATIONS)

Berth ID	Length (ft)	% Availability for containers	Nov - Apr berth-hours available for containers	Nov - Apr berth-ft-hrs available for containers	Max utilization of available berth-ft-hrs	Max container berth-ft-hrs from Nov - Apr	FY 2012 Mean berth- ft-hrs/box	Seasonal peaking factor (peak/mean month)	Nov - Apr capacity (moves)	Nov - Apr FY 2012 moves	% Capacity
a	b	c	d = 365/2*c	e = b*d	f	g = e*f	h	i	j=g/h/i	k	l=k/j
2-3	1,125	10%	438	492,750	60%	295,650	51.30	114%	5,100	839	16%
4	900	5%	219	197,100	60%	118,260	64.24	114%	1,600	1,580	99%
5	900	20%	876	788,400	60%	473,040	61.02	114%	6,800	1,130	17%
6	380	90%	3,942	1,497,960	60%	898,776	54.70	114%	14,400	4,070	28%
16	350	43%	1,877	657,000	60%	394,200	34.16	114%	10,100	11,272	112%
17-18	1,298	43%	1,877	2,436,531	60%	1,461,919	58.90	114%	21,800	4,976	23%
19-20	1,300	71%	3,129	4,067,143	60%	2,440,286	46.78	114%	45,800	17,463	38%
26-27	1,337	10%	438	585,606	60%	351,364	31.45	114%	9,800	748	8%
28F	400	50%	2,190	876,000	60%	525,600	112.21	114%	4,100	-	0%
29	800	71%	3,129	2,502,857	60%	1,501,714	27.84	114%	47,300	21,787	46%
30	900	100%	4,380	3,942,000	65%	2,562,300	34.80	114%	64,600	55,600	86%
31	1,000	100%	4,380	4,380,000	65%	2,847,000	32.02	114%	78,000	40,885	52%
32	1,000	100%	4,380	4,380,000	65%	2,847,000	30.85	114%	81,000	64,710	80%
33	800	100%	4,380	3,504,000	65%	2,277,600	26.34	114%	75,900	71,190	94%
Total									466,300	296,251	64%

Figures 1.7-7 and 1.7-8 summarize annual container berth capacity at Port Everglades, before and after the extension of the Turning Notch at Berth 30. Both of these capacity charts analyze the berth independently of backland constraints, i.e., they represent the maximum throughput across the berth assuming limitless container yard capacity. (See Section 1.7-4 for container yard capacity calculations; the lower of annual container yard and berth capacity values yields overall container throughput capacity.)

Figure 1.7-7 is a stacked bar chart of the current annual container capacity at each container berth, summing peak and off-peak cruise season capacity.

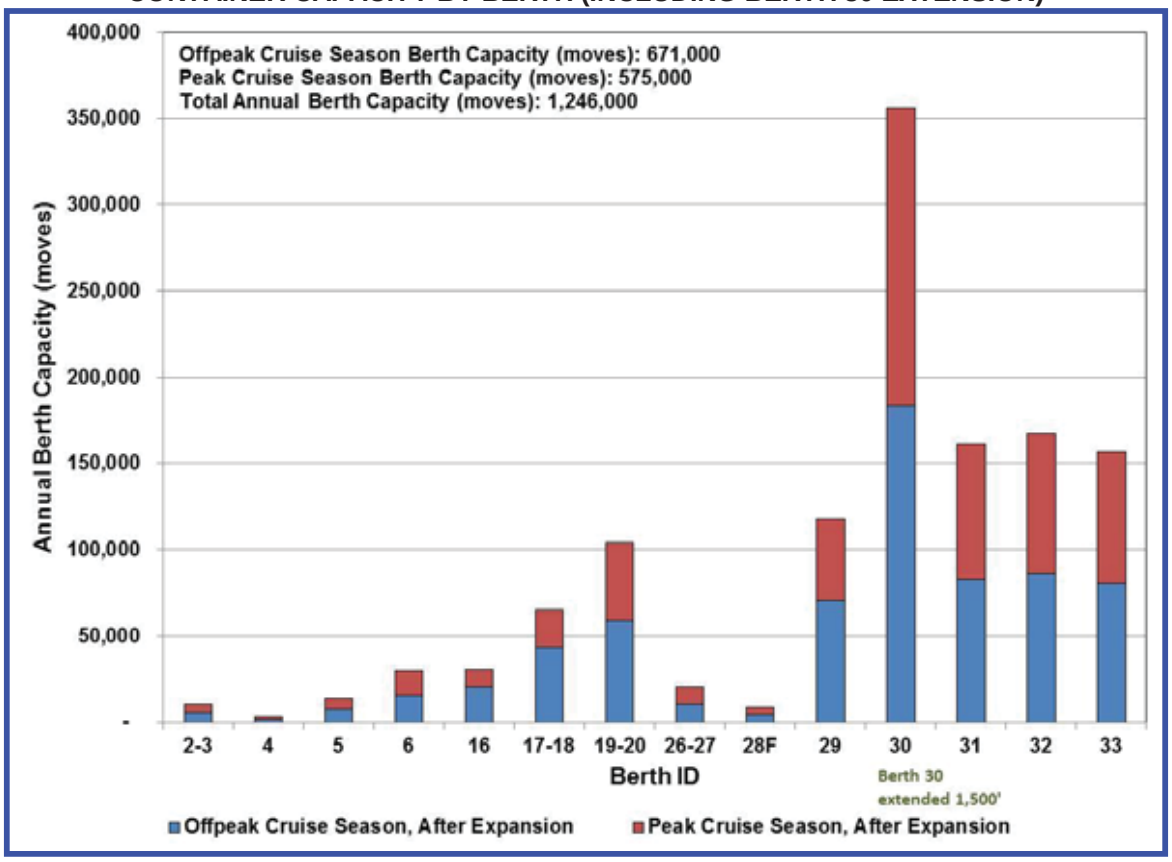
Figure 1.7-7
CONTAINER CAPACITY BY BERTH (CURRENT OPERATIONS)



The consultant team estimates that the current facilities at Port Everglades have about 1.02 million annual moves worth of container capacity, or about 1.70 million annual TEUs. The dedicated container terminals at Southport (Berths 30 – 33) contribute most of this capacity with a combined capacity of 618,000 annual moves, or 1.03 million annual TEUs, assuming 1.66 TEUs per move.

The consultant team also considered the planned extension of Berth 30 by 1,500 feet. Figure 1.7-8 summarizes container capacity by berth, including this extension.

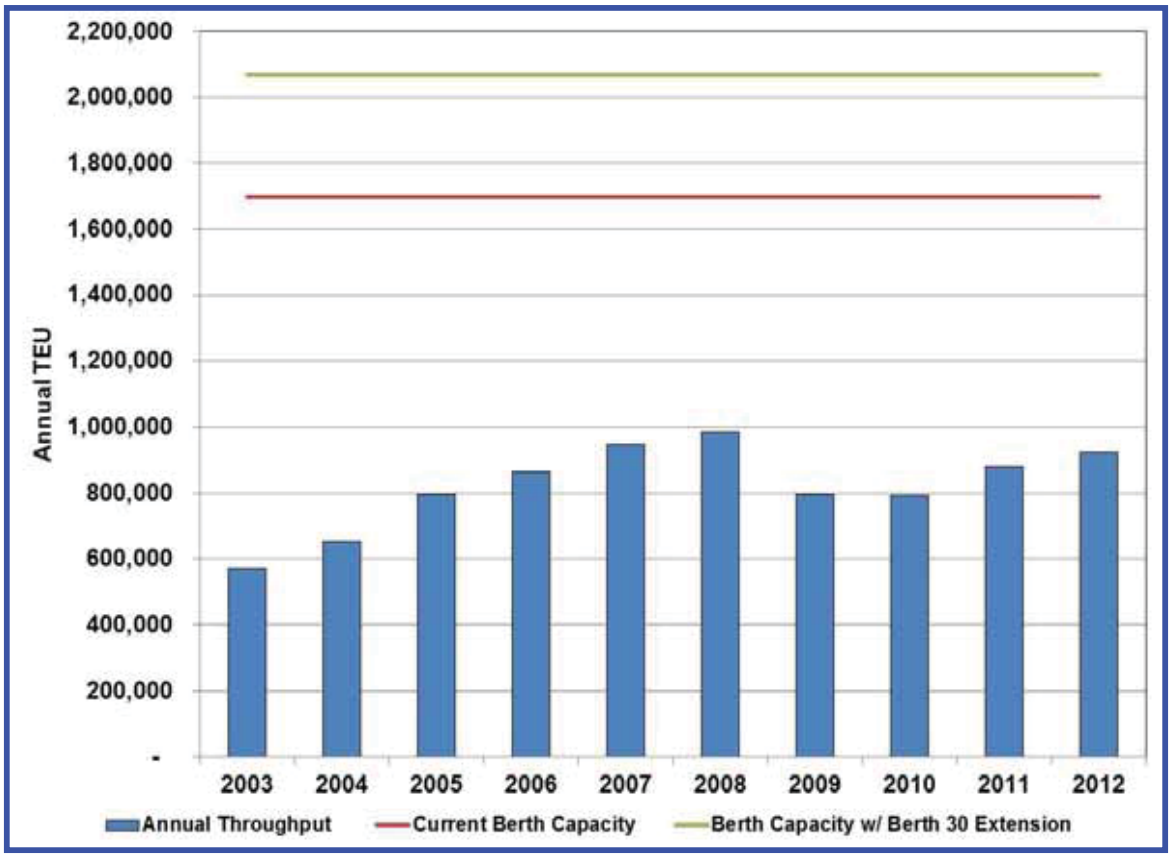
Figure 1.7-8
CONTAINER CAPACITY BY BERTH (INCLUDING BERTH 30 EXTENSION)



Adding 1,500 feet of relatively high capacity container length to Berth 30 results in an additional 223,000 moves of annual capacity, for a total portwide container capacity of 1.25 million annual moves, or 2.07 million annual TEUs.

Figure 1.7-9 shows how Port Everglades' container berth capacity before and after the extension of Berth 30 compares to actual throughputs over the past 10 years.

Figure 1.7-9
PORT EVERGLADES CONTAINER BERTH CAPACITY VS. THROUGHPUT IN TEUS

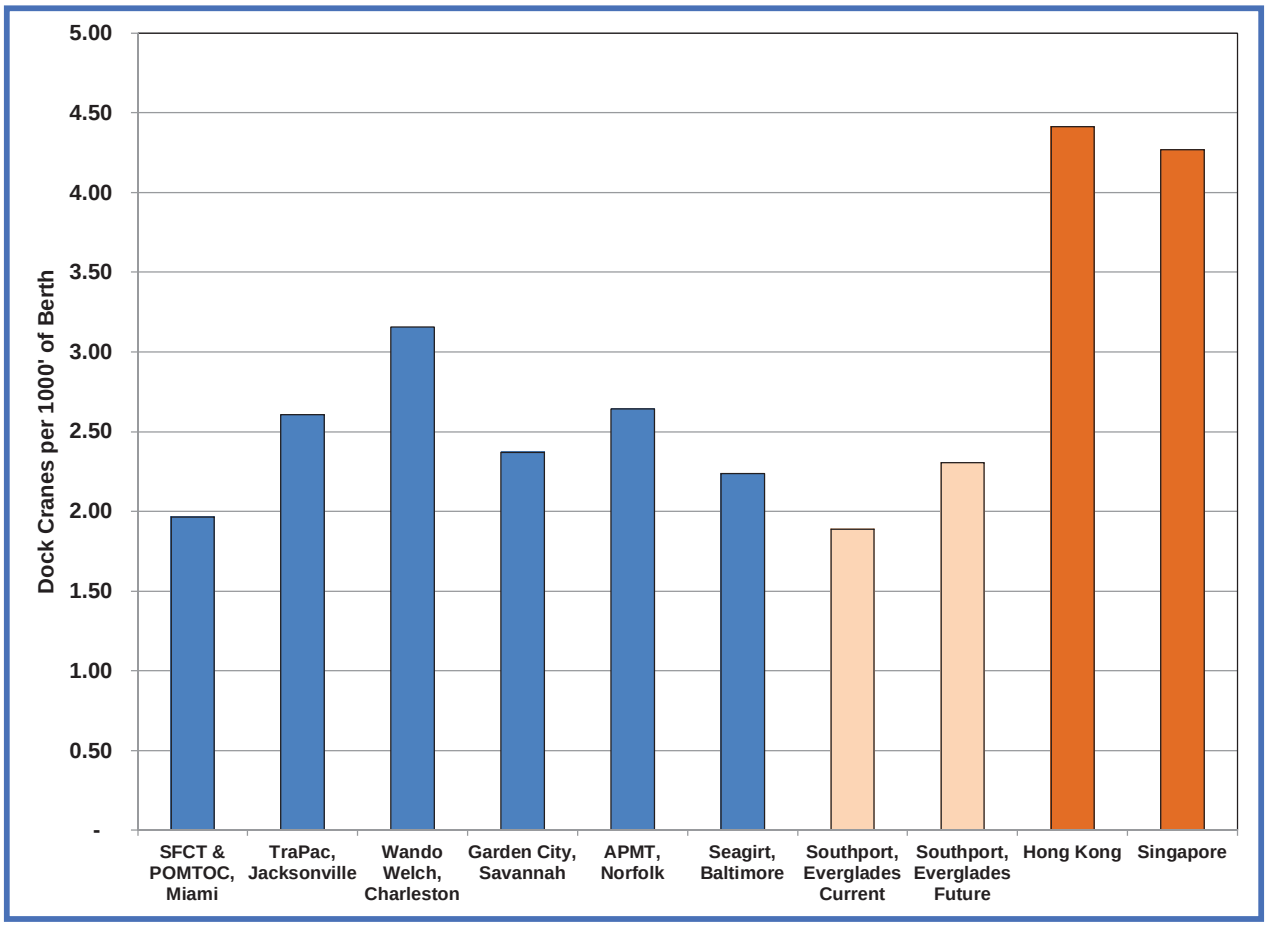


Overall, the Port operated at around 54 percent of its total container berth capacity in FY 2012, and will operate at about 45 percent of its projected capacity after the extension of Berth 30. The Port can effectively berth only one large (1,000 feet) ship at a time (on Berths 31-32) in their current configuration. The extension of the Turning Notch will allow a large ship to tie up at Berth 30, effectively doubling the Port's capacity to handle large container ships. The Turning Notch project is, therefore, appealing not just from an annual capacity standpoint, but in its ability to help market the Port to carriers using large ships.

Capacity estimates are based on today's operations, which are somewhat limited by crane availability. Southport currently has seven dock cranes on 3,700 feet of berth, with plans to add another five.

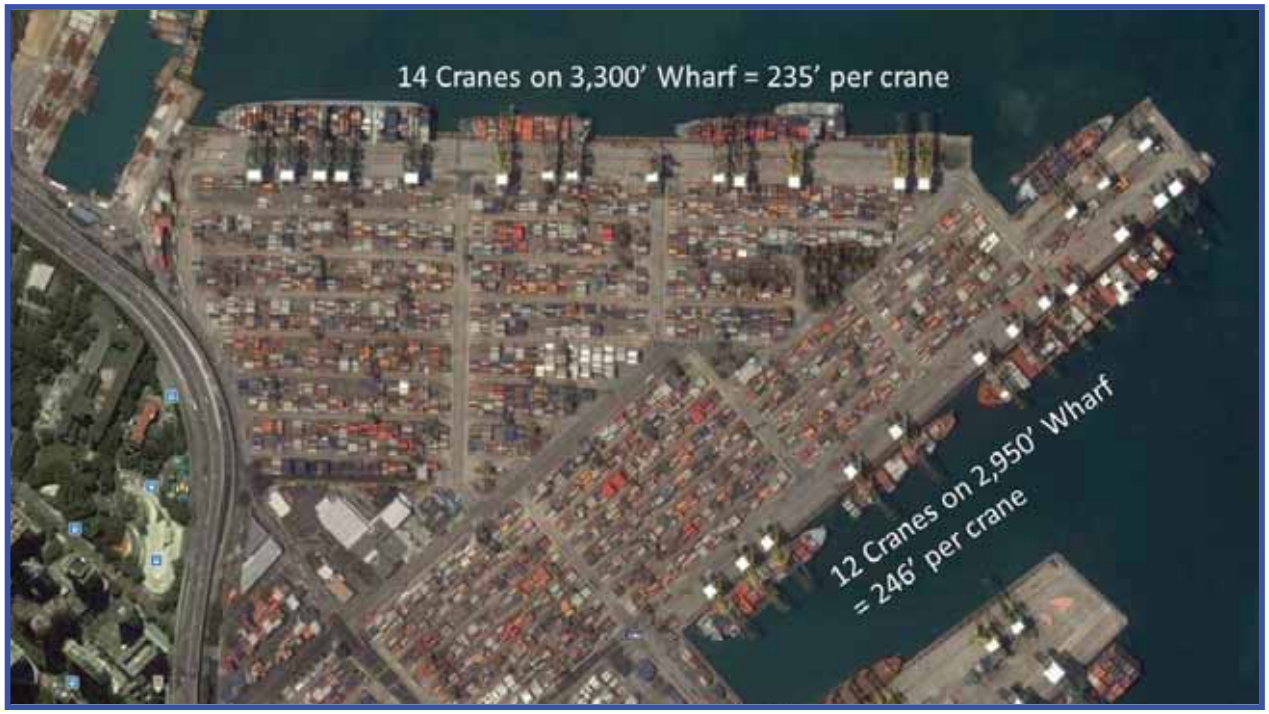
Figure 1.7-10 compares dock crane density in Southport to other container terminals in the South Atlantic region. Adding five dock cranes gives Southport a similar dock crane density to neighboring ports, although there is still space for even more cranes. The maximum possible crane density is, however, significantly higher than even that of the highest South Atlantic ports, as data from Hong Kong and Singapore illustrate.

Figure 1.7-10
PORT EVERGLADES SOUTHPORT VS. NEIGHBORING PORT DOCK CRANE DENSITY



Worldwide, many ports operate at dock crane densities even higher than those in Figure 1.7-10. For instance, Figure 1.7-11 is an aerial photo of a container terminal at the Port of Singapore.

Figure 1.7-11
PORT OF SINGAPORE CRANE DENSITY



The terminal shown in Figure 1.7-11 has 26 cranes on 6,250 feet of berth, or about 4.2 dock cranes for every 1,000 feet of berth. This goes to show that Port Everglades could add significantly more dock cranes in order to increase berth capacity. More available dock cranes to be assigned per vessel call results in reduced vessel work time, which in turn decreases the number of berth-foot-hours required per call.

For instance, if a 500-foot long vessel were assigned two dock cranes working at 20 moves per hour and performed 300 moves, this would yield a call duration of about 300 moves (2 cranes times 20 moves per hour) = 7.5 hours, and thus 500 feet times 7.5 hours per 300 moves = 12.5 berth-foot-hours per move for the call. If the same vessel were instead assigned three dock cranes at 20 moves per hour, the work duration reduces to 5 hours and yields 8.3 berth-foot-hours per move. The future case analysis, based on today's dock crane availability, therefore yields a conservative berth capacity value, although still well in excess of current volumes.

1.7.3 Bulk Cement, Other Dry Bulk, and Steel Break-bulk Terminal Berth Capacity

The consultant team determined annual berth capacity for bulk cement, all other dry bulk products, and steel break-bulk cargos at Port Everglades. As with the containerized capacity analysis, the berth-foot-hour methodology was used, based on average rates per ton from FY 2012 data.

Based on Table 1.7-1, there are no significant seasonality impacts due to berth sharing between ships carrying bulk/break-bulk products and cruise vessels; therefore, percent availability factors for each cargo type do not differ in the peak and off-peak cruise seasons.

Table 1.7-4 summarizes annual berth capacity for cement at each berth used for significant volumes of cement unloading. Berths 14 – 15 have been included in this cement-capacity analysis, based on their heavy usage in FY 2012 data. According to interviews with Port staff, this berth is no longer used for significant dry bulk cargo activity due to a market downturn and is primarily used by Navy and lay-in vessels. Nevertheless, presuming this berth would be returned to operation in the case of a change in market conditions, the consultant team included Berths 14 – 15 in the overall bulk capacity analysis to accurately reflect the Port's capacity regardless of current market fluctuations.

For bulk and break-bulk cargos, an overall portwide berth-foot-hour factor was used rather than a berth-specific factor due to the much smaller overall number of vessel calls for each cargo type compared to containership calls. For instance, FY 2012 data showed 92 total cement vessel calls, with some berths handling 10 or fewer total cement vessel calls annually. Two outlier vessel calls with over 20 berth-foot-hours/ton were omitted from the mean factor of 3.77 berth-foot-hours/ton to more accurately represent actual capacity vs. data anomalies.

Table 1.7-4
BULK CEMENT BERTH CAPACITY AT PORT EVERGLADES

Berth ID	Length (ft)	% Availability for cement	Annual berth-hours available for cement	Annual berth-ft-hrs available for cement	Max cement utilization of available berth-ft-hrs	Max cement berth-ft-hrs per year	FY 2012 mean berth ft-hr/ton	Annual capacity (tons)	FY 2012 tons at berth	% Capacity
a	b	c	d = 365*c	e = b*d	f	g = e*f	h	i = g/h	j	k = j/i
2-3	1,125	10%	438	492,750	60%	295,650	3.77	78,000	62,891	81%
4	900	15%	657	591,300	60%	354,780	3.77	94,000	88,933	95%
5	900	20%	876	788,400	60%	473,040	3.77	125,000	68,387	55%
6	380	10%	438	166,440	60%	99,864	3.77	26,000	16,684	64%
14-15	1,226	80%	3,504	4,295,904	60%	2,577,542	3.77	684,000	348,824	51%
Total	4,531	44%	5,913	6,334,794	60%	3,800,876	3.77	1,007,000	585,719	58%

Overall, the Port operated at around half its capacity for cement loading in FY 2012, though presumably it is operating at less than this in FY 2013, based on the reported reduction in overall demand.

Table 1.7-5 summarizes the Port's non-cement dry bulk berth capacity. As with cement, Berth 14 – 15 is included in the capacity summary, based on FY 2012 throughputs. The FY 2012 data in Table 1.7-5 refers to eleven total vessels calls: one alumina sand, three ash, three bauxite, two gypsum, and two slag.

Table 1.7-5
OTHER DRY BULK BERTH CAPACITY AT PORT EVERGLADES

Berth ID	Length (ft)	% Availability for dry bulk	Annual berth-hours available for dry bulk	Annual berth-ft-hrs available for dry bulk	Max dry bulk utilization of available berth-ft-hrs	Max dry bulk berth-ft-hrs annually	FY 2012 Mean berth-ft-hr/ton	Annual Capacity (tons)	FY 2012 tons	% capacity
a	b	c	d = 365*c	e = b*d	f	g = e*f	h	i = g/h	j	k = j/i
4	900	10%	438	394,200	60%	236,520	1.99	119,000	87,512	74%
5	900	20%	876	788,400	60%	473,040	1.99	238,000	221,512	93%
14-15	1,226	20%	876	1,073,976	60%	644,386	1.99	324,000	30,313	9%
Total	**3,026**	**17%**	**2,190**	**2,256,576**	**60%**	**1,353,946**	**1.99**	**681,000**	**339,338**	**50%**

Based on FY 2012 operating conditions, the Port is operated at around 50 percent of its non-cement dry bulk capacity.

Table 1.7-6 summarizes the Port's steel break-bulk berth capacity. Only one berth handled steel products in FY 2012.

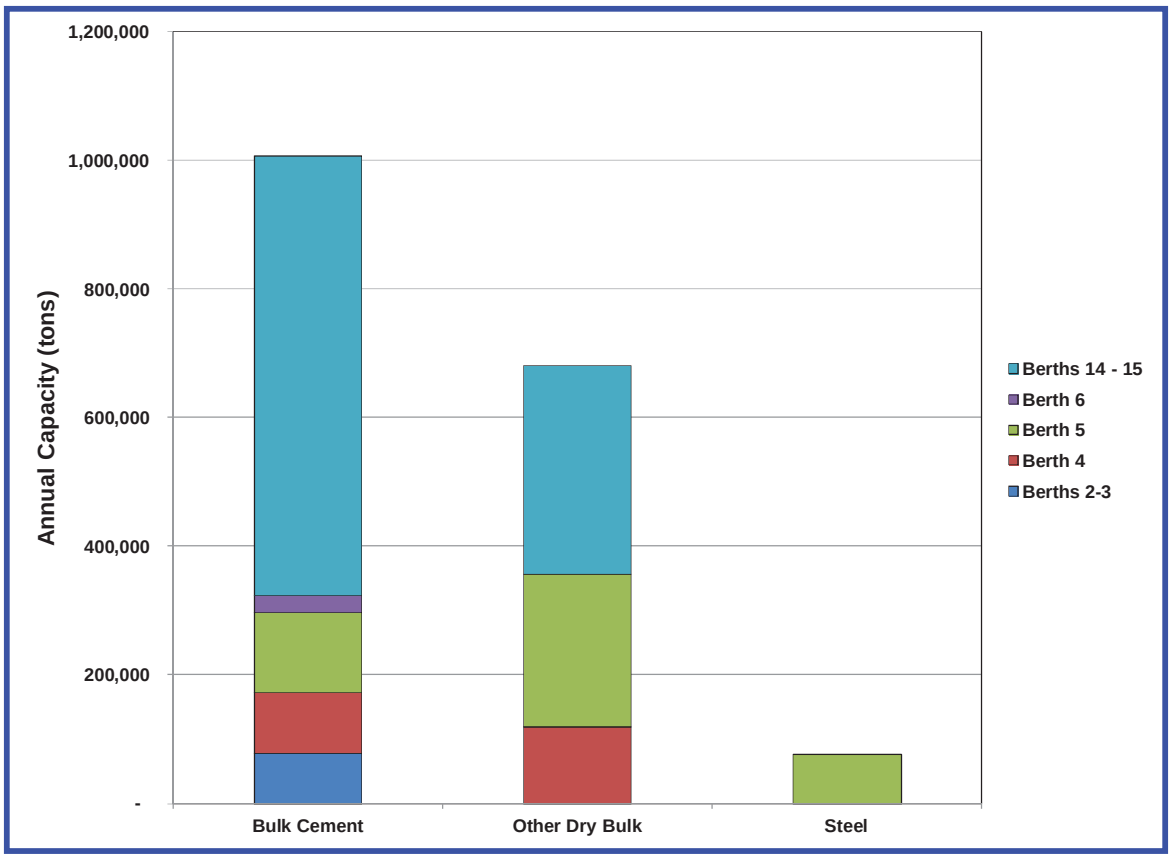
Table 1.7-6
STEEL BREAK-BULK BERTH CAPACITY AT PORT EVERGLADES

Berth ID	Length (ft)	% Availability for steel	Annual berth-hours available for steel	Annual berth-ft-hrs available for steel	Max steel utilization of available berth-ft-hrs	Max steel berth-ft-hrs annually	FY 2012 Mean berth-ft-hr/ton	Annual capacity (tons)	FY 2012 tons	% Capacity
a	b	c	d = 365*c	e = b*d	f	g = e*f	h	i = g/h	j	k = j/i
5	900	20%	876	788,400	60%	473,040	6.25	76,000	53,055	70%

The Port is using about 70 percent of its steel product capacity at Berth 5, based on FY 2012 operating conditions.

Figure 1.7-12 summarizes the annual capacity for each cargo type by berth in terms of annual tonnage.

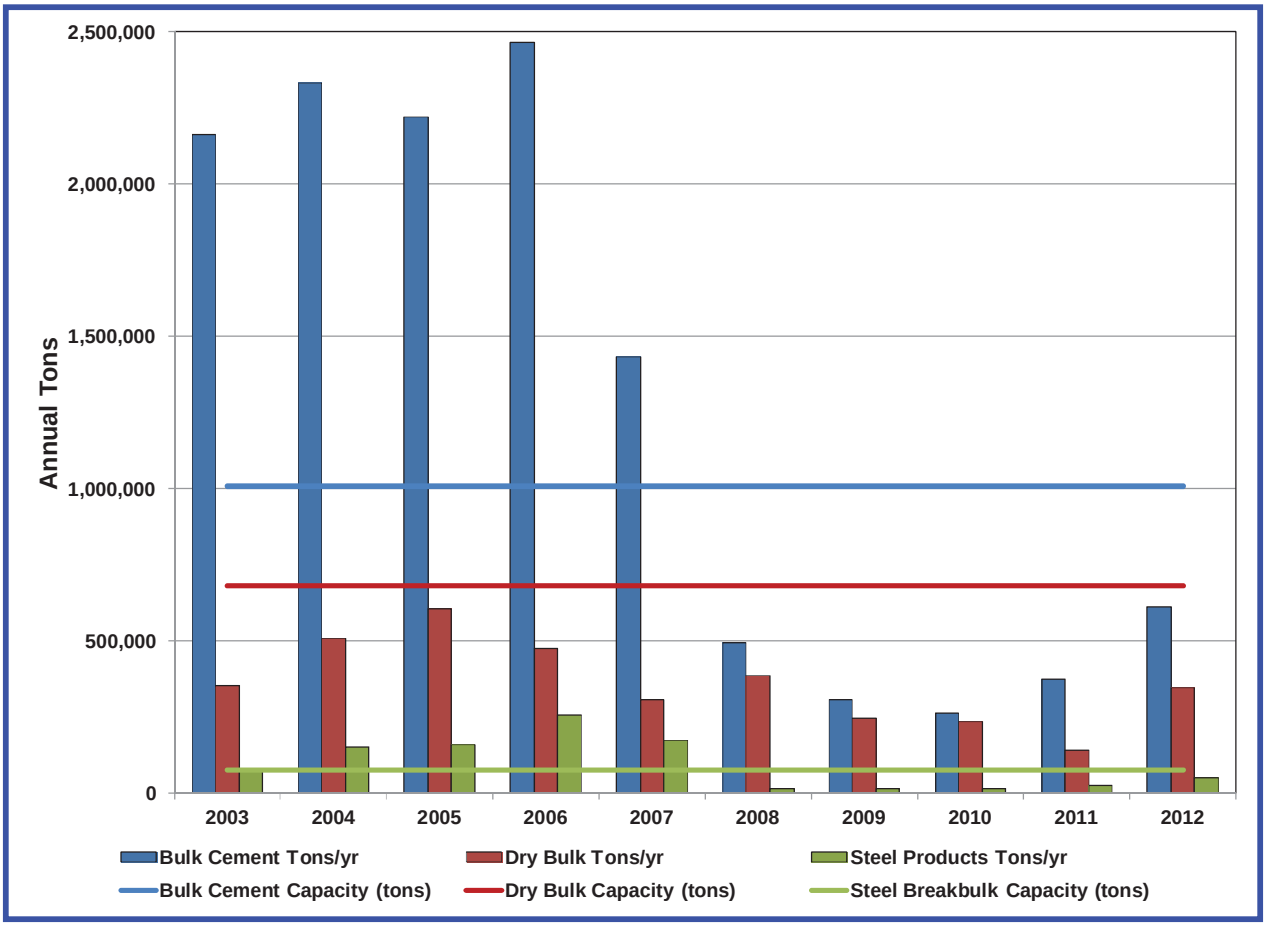
Figure 1.7-12
ANNUAL CAPACITY BY PRODUCT TYPE



Overall, bulk cement has the highest capacity at around 1 million annual tons, followed by other dry bulk products at 680,000 annual tons and steel products at under 100,000 annual tons. With all berth-sharing arrangements, however, the percent availability factors for each type of cargo are highly dependent on market demand. The consultant team used factors based on current berth usages and sharing arrangements, but these can change over time, effectively shifting capacity from one cargo type to another. For instance, a reduction in market demand for cement and other dry bulk products would free up availability at Berth 5 for an increase in steel products throughput.

Figure 1.7-13 compares dry bulk and steel break-bulk cargo capacity to actual throughputs over the past 10 years.

Figure 1.7-13
CURRENT ANNUAL CAPACITY VS. HISTORICAL THROUGHPUTS BY PRODUCT TYPE



Capacity estimates by product type, based on FY 2012 operating conditions, are higher than actual throughputs for the previous five years. Current bulk cement and steel break-bulk capacities are, however, lower than actual throughputs for 2003 to 2007. This is because the Port makes berths available for each cargo type as it is in demand. Since cement and steel are not in as high demand in recent years, the number of physical berths and total berth hours to serve these products has been reduced accordingly. If need be, capacity can be shifted from other cargo types to bulk products to meet demand; for instance, a shared container and bulk cargo berth could be dedicated to bulk activity only.

1.7.4 Container Terminal Storage Yard Capacity

Yard capacity is defined as the amount of cargo that can be handled in the cargo-storage yard under given operating parameters. For containerized cargo facilities, yard capacity primarily depends on the following factors:

- Type of cargo-storage operations.

- Cargo storage-dwell times and inventory peaking factors.
- Stacking height and width.

In North America, the general trend is to operate in the lowest density mode possible to minimize the labor cost associated with sorting and stacking activities. As market demand increases, operators will shift to modes that increase the storage density in the container yard, rather than turn away business if the terminal storage area cannot be expanded.

The most effective way to increase storage density is to switch from a wheeled operation to a grounded (stacked) operation. Many US operators choose to handle as many containers on wheels as possible because no labor costs for gate service are incurred in a wheeled operation. Community truckers also favor wheeled operations because they typically receive faster service than with a grounded operation. Wheeled operations, however, take up a large amount of yard space compared with grounded operations. Currently at Port Everglades, a majority of the existing container terminal operators use top-pick handlers to move loaded containers and side-pick handlers to move empties. The existing grounded operations use a fairly low-density stacking pattern to limit sorting operations and contain labor costs.

As terminal throughput increases, many of the existing Southport container terminal tenants have expressed interest in upgrading their terminal operations to use rubber-tired gantry (RTG) cranes to handle loaded import and export containers and further increase density of container storage modes in the yard. RTGs are more effective at sorting and selecting individual containers from dense storage piles. Terminal operators will continue to use top-pick or side-pick handlers for empty containers because empties of the same size are generic, do not typically require random selection patterns, and can be stored in high-density piles sorted by shipping line.

Cargo-storage dwell time is another factor that impacts yard capacity. Decreases in cargo dwell time mean that containers move off the terminal faster, allowing a faster rate of flow through the terminal, increased turnover of static storage, and a higher overall container yard capacity. Ports and terminal operators can reduce container dwell time through demurrage (fees charged for containers that exceed a given dwell time) to discourage excessive dwell time practices. The peaking factor, defined as peak/mean inventory ratio, reflects the fluctuations in inventory due to simultaneous ship loading and unloading plus gate operations. A seasonal peaking factor can also be used to reflect changes in cargo flows during peak operating periods. The container yard needs the capacity to handle the peak inventory of each type of container listed.

AECOM assumed no change in the container dwell times or inventory peaking factor for the planning period to obtain yard capacity results in line with current market and operational practices. Additional increases in yard capacity may be realized through reducing average dwell times in the container operations. Specific examples include reducing the import load dwell times closer to the industry norm of 2 to 4 days and empty dwell times to 4 to 6 days. Possible modifications to the Port's demurrage and tariff can be used to improve the average dwell times.

Taller container stack heights require increased labor for sorting and, therefore, cost more to operate. Terminal operators will increase stack heights and operate denser terminals as market demand drives their economics, but they can do this only up to a physical limit. The use of 1-over-5 RTGs (machines capable of moving one container over a 5-high container stack) is not the absolute limit, but a sensible practical limit based on current practice worldwide.

Based on terminal interviews, the consultant team assumed that terminals will eventually implement 1-over-5 RTGs as needed to meet throughput demand. The actual maximum stacking height will be a fraction of the theoretical, machine-rated maximum due to terminal operator needs. The operator's needs vary by container-move type. For example, due to the unscheduled nature of truck arrivals, loaded import containers destined for gate trucks require more random access than block-stored loaded export containers destined for the vessel. On average, inbound loaded import containers will be stacked lower than loaded export containers to account for the random nature of the truck arrival patterns.

Port Everglades is also somewhat unique in that the container storage areas are segregated by operator, each of whom determines their own yard storage and equipment methods. Figure 1.7-14 identifies the current parcels in Southport, the location of the Port's primary container operations. Florida International Terminal (FIT), King Ocean, MSC, and Sea Freight all operate top-pick based terminals with a small number of containers on wheels. Most of these areas consist of large pick stacks for empties and exports, and low-storage density narrow pick stacks for imports, which require selectivity for gate service. Crowley, the largest tenant in terms of acreage, operates an entirely wheeled operation with the exception of empties stored in large pick stacks.

Current yard capacity in Southport is calculated for each of these individual terminals based on the parcel sizes given in Figure 1.7-14. For future operations, Southport yard capacity is calculated for two cases: Case 1 assumes the current mode (wheeled and pick combination) does not change; Case 2 assumes the Port will be able to have tenants switch to a high-density mode of operations such as RTGs. Both future cases also incorporate the reduction in stacking area due to the extension of the Turning Notch, along with adding stacking area in the current Foreign-Trade Zone parcel (21.87 acres), two parcels of 19.9 and 8.5 acres, and the two grid parcels (5.0 and 5.1 acres). Midport and Northport yard capacities are calculated for basic top-pick/wheeled operations using acreages from the *Port Everglades 2012-2013 Facilities Guide & Directory;* these capacities are assumed to remain unchanged in the future as these are small, discontinuous yards for which top-pick operations are already optimal.

Figure 1.7-14
CURRENT SOUTHPORT PARCELS

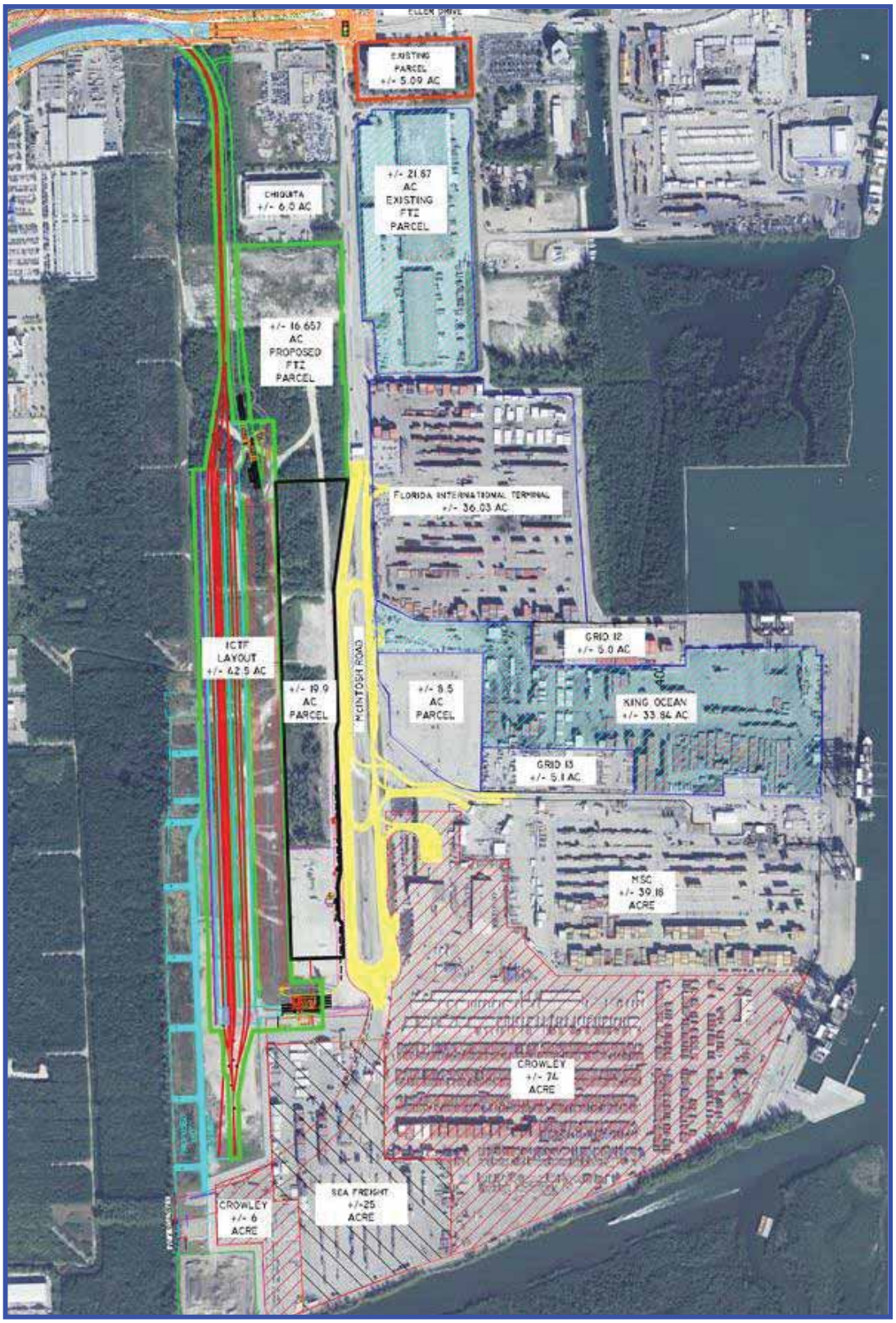


Table 1.7-7 describes the primary inputs to the container yard capacity analysis, including dwell times, stacking heights for grounded containers, the fraction of containers grounded, inventory peaking factors by cargo type for each category of terminal operations, and terminal acreages. Inputs for each current Southport terminal are listed individually, followed by the combination of these five terminals for current Southport operations overall.

Next is a potential future capacity case for a uniform Southport area with RTGs. The future Southport total acreage is based on the current uses plus the 19.9- and 8.5-acre parcels and the 5.0- and 5.1-acre grid parcels; it is assumed the FIT area lost due to the Turning Notch extension will be reclaimed through addition of the current Foreign-Trade Zone parcel.

Midport and Northport operations are listed next; these modes are not expected to change significantly in the future. A 50 percent net-to-gross ratio is used for these terminals due to their irregular and discontinuous shapes. A standard industry net-to-gross value of 70 percent is used for the Southport area, which is a large continuous area of container stacking.

Table 1.7-7
CONTAINER YARD CAPACITY INPUTS

	Crowley Southport	Sea Freight Southport	MSC Southport	King Ocean Southport	FIT Southport	Southport Current Overall	Southport Future w/ RTGs	Midport	Northport
Gross acreage	80	25	39	34	36	214	253	51	9
Net-to-gross ratio	70%	70%	70%	70%	70%	70%	70%	50%	50%
Net acreage	56	18	27	24	25	150	177	26	5
Import load % grounded vs. wheeled	0%	90%	90%	90%	90%	70%	90%	0%	0%
Export load % grounded vs. wheeled	0%	90%	90%	90%	90%	70%	90%	100%	100%
Empty % grounded vs. wheeled	100%	100%	100%	100%	100%	100%	100%	100%	100%
Import load height (mean stack height)	2.5	2.5	2.5	2.5	2.5	2.5	3.5	2.5	2.5
Export load height (mean stack height)	2.5	2.5	2.5	2.5	2.5	2.5	3.5	2.5	2.5
Empty height (mean stack height)	3.0	3.0	3.0	3.0	3.0	3.0	3.5	3.0	3.0
Import load dwell time (days)	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
Export load dwell time (days)	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
Empty height dwell time (days)	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Peak/mean import inventory	125%	125%	125%	125%	125%	125%	125%	125%	125%
Peak/mean export inventory	115%	115%	115%	115%	115%	115%	115%	115%	115%
Peak/mean empty inventory	110%	110%	110%	110%	110%	110%	110%	110%	110%

In a container terminal, different storage layouts yield different densities, defined as the number of twenty-foot ground slots (TGS) per acre of net container yard. Table 1.7-8 outlines the typical average slot density assumptions for different storage modes used to estimate TGS counts.

Table 1.7-8
SLOT DENSITY ASSUMPTIONS

Storage Mode	TGS per Net Acre
Wheeled	50
Pick - Imports	60
Pick – Exports and Empties	115
RTG	100

The consultant team calculated the total acres required to handle a nominal throughput of import loads, export loads, and empties. This number is then compared to the actual acres available at the Port to obtain total storage capacity. Table 1.7-9 shows an example calculation of the acres required to handle a nominal throughput of 1,000 container moves.

Table 1.7-9
CURRENT OPERATION PEAK IMPORT ACRES REQUIRED CALCULATION

a	Nominal volume to determine ratio of storage required (lifts/peak week)	1,000
b	TEU per container	1.66
c	Import load fraction	35%
d	Import load dwell time (days)	4.3
e=a*c*d/7	Mean import population (containers)	215
f=e*b	Mean import TEU	357
g	Peak/mean import inventory	125%
h=f*g	Peak import TEU	446
i	Fraction of imports grounded	90%
j	Mean import grounded height	2.5
k	Max wheeled utilization	90%
l=h/j*i	Local import TGS required (stacked containers)	161
m=h*(1-i)/b/k	Wheeled slots required for imports	30
n	Grounded import TGS per net acre	115
o	Wheeled slots per net acre	50
p = l/n	Net grounded import acres required	1.4
q = m/o	Net wheeled acres required	0.6
r = p+q	Total import acres required to support nominal volume	2.0

Table 1.7-10 summarizes current and future container yard throughput capacities given the inputs in Tables 1.7-7 and 1.7-8.

Table 1.7-10
CURRENT AND FUTURE YARD CAPACITY

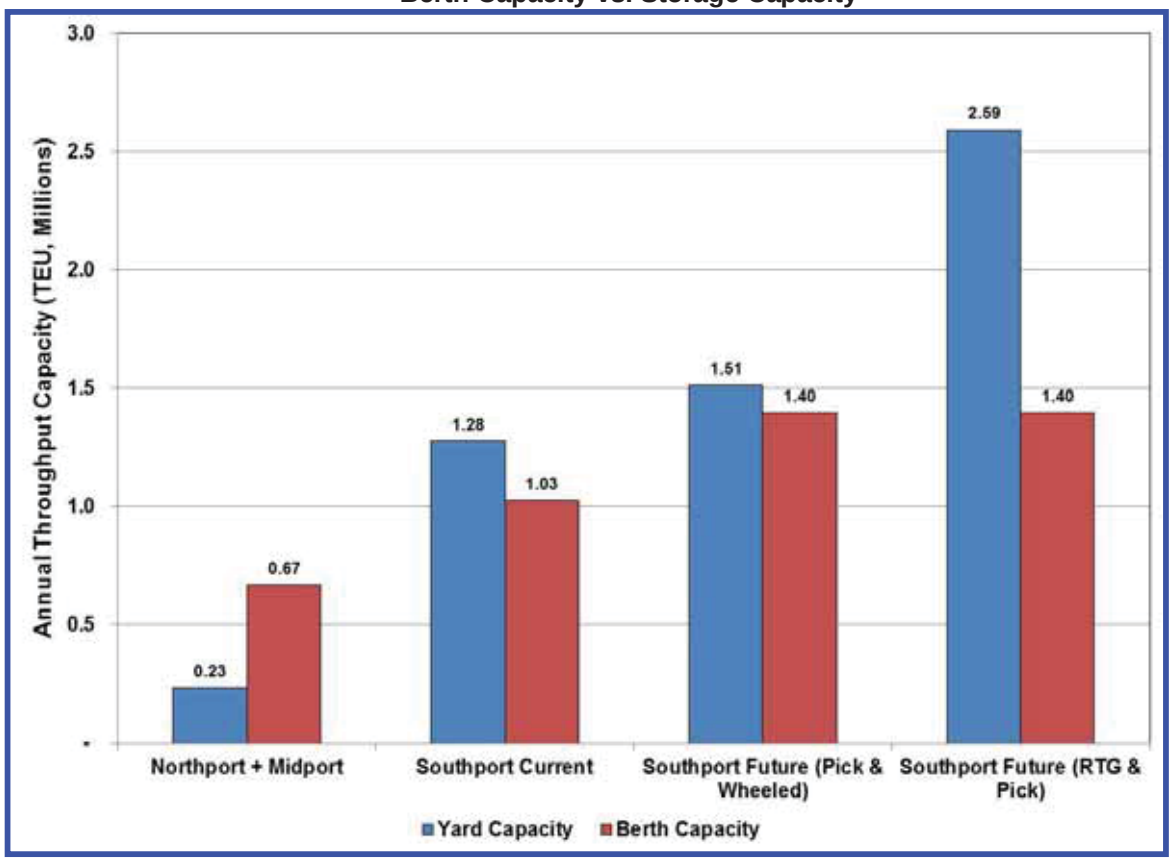
	Yard Throughput Capacity (Annual Moves)	Yard Throughput Capacity (Annual TEU)	TEU/gross acre/year at Yard Capacity
Midport Total	120,000	199,000	3,900
Northport Total	21,000	35,000	3,900
Southport			
Crowley Southport	183,000	303,000	3,790
Sea Freight Southport	110,000	182,000	7,280
MSC Southport	172,000	285,000	7,270
King Ocean Southport	148,000	246,000	7,270
Florida International Terminal Southport	158,000	262,000	7,270
Southport Current Total	**771,000**	**1,278,000**	**5,520**
Southport Future (Maintain Wheeled & Pick Mode)	**909,000**	**1,508,000**	**5,970**
Southport Future (Converted to RTG & Pick Mode)	**1,562,000**	**2,593,000**	**10,270**

Port Everglades currently has about 234,000 TEUs of annual container storage capacity outside of Southport; this is not expected to change significantly in the future unless these yards are eliminated completely. In Southport, Crowley has the highest capacity due to having the most acreage, but actually runs the least dense operation, with all loads stored on wheels. The remaining facilities have similar densities due to similar operating modes (small, low-density pick import stacks, large high-density export and empty pick stacks, and a small percent of containers on wheels).

The Southport future case, maintaining the current operating mode, increases through utilization of existing parcels, which increases total the storage area from 214.1 acres to 252.6 acres, after taking into account the area lost due to the extension of Berth 30. The additional area comes from the two existing 19.9- and 8.5-acre parcels, and the addition of a stacking area in the current Foreign-Trade Zone parcel. The Southport future RTG operation case shows that, with the same future acreage as the current mode, an RTG operation can increase yard throughput capacity by about 650,000 annual moves, a 70 percent increase.

Figure 1.7-15 compares the storage capacities in Table 1.7-10 to the berth capacities given in Figure 1.7-8. Overall capacity is the lower of the two.

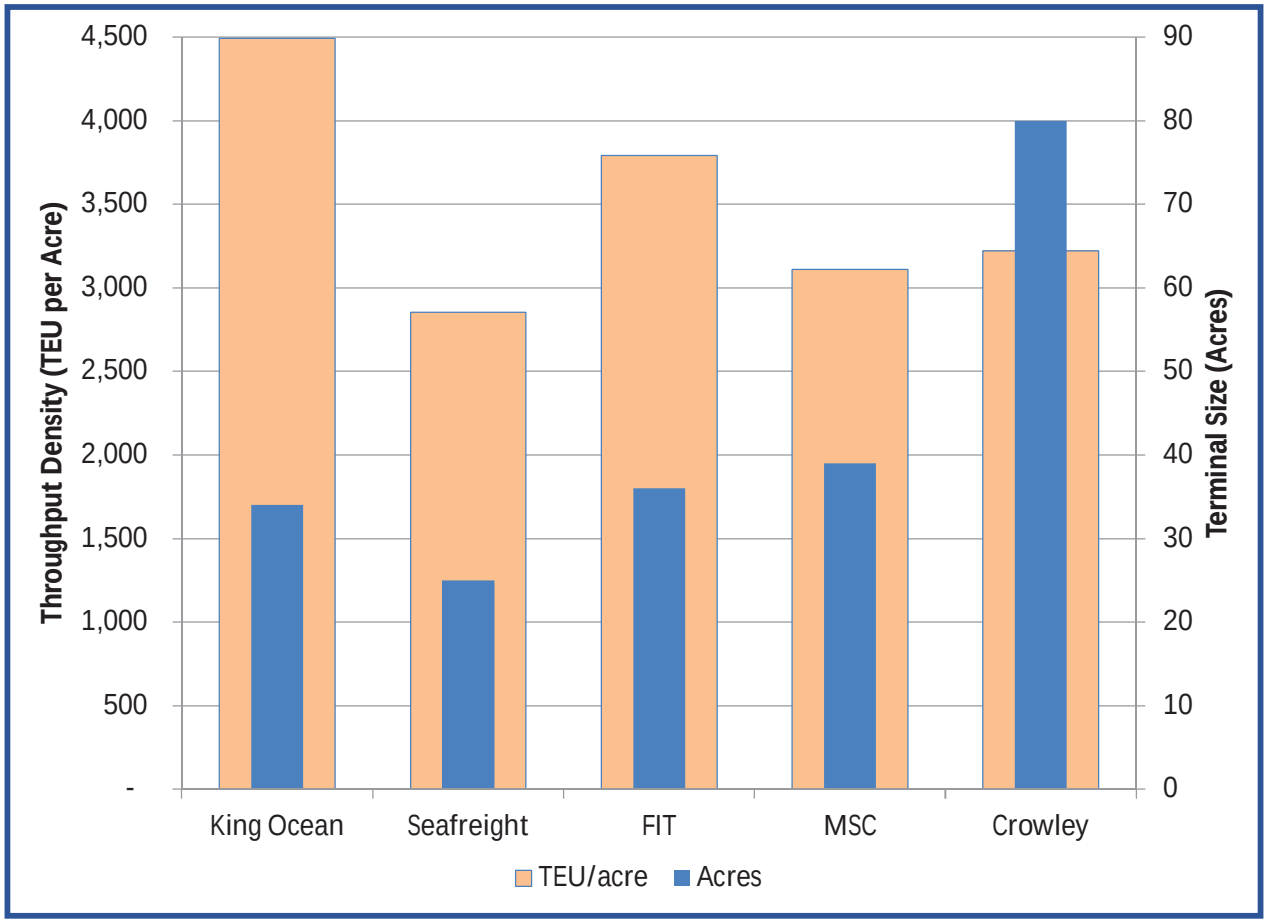
Figure 1.7-15
Berth Capacity vs. Storage Capacity



Outside of Southport, Port Everglades has about 230,000 TEUs of annual capacity, compared to a throughput in FY 2012 of about 183,000 TEUs. In Southport, berth capacity is currently the limiting factor to overall terminal capacity. If, however, Port Everglades can implement RTG and pick operations across the Southport container storage areas over time, yard capacity will significantly exceed berth capacity based on current operating parameters. Berth capacity may be further improved in the Southport area when the five new dock cranes come online, resulting in improved ship turn times on average with more cranes assigned per call.

The overall portwide statistics do not apply uniformly to each operator. Southport is divided among five tenants who each control dedicated parcels of land. The current range of throughput density varies by 50 percent between them, from King Ocean at 4,500 TEUs per acre per year, to Seafreight at just under 3,000 TEUs per acre per year, as shown in Figure 1.7-16.

Figure 1.7-16
PARCEL SIZE AND THROUGHPUT DENSITY OF SOUTHPORT TENANTS



One of the major challenges the Port faces is the fact that the container tenants with the biggest ambitions to attract new cargo from Asia in big ships (FIT and MSC) do not have the largest terminals, and may have difficulty expanding their container yard capacity in a timely fashion to convince their potential customers that they can accommodate any significant volume of new cargo.

1.7.5 Bulk Cement, Other Dry Bulk, and Steel Break-bulk Terminal Storage Capacity

As with berth capacity, storage capacity was estimated for bulk cement, other dry bulk products, and steel break-bulk products. Storage capacity depends primarily on static storage capacity and average product dwell time. Average dwell time is the typical amount of time that cargo remains on the terminal waiting to be retrieved for inland delivery or placed upon a vessel for export. The primary function of dwell time is to determine the average number of times the static capacity of the terminal can be used over a course of the year, or turned over for additional storage. As the average dwell increases, the number of times that a terminal is available for cargo storage decreases. Mathematically, this can be summarized using the following formula:

Static storage turns per year = 365 days per year / average dwell time

For instance, an average dwell time of 30 days would be the equivalent of turning the static storage capacity of a terminal property over approximately 12.2 times per year. For reference, Table 1.7-11 summarizes typical average dwell times and the corresponding static storage turnover.

Table 1.7-11
AVERAGE DWELL TIME IMPACTS ON STORAGE TURNOVER

Average Dwell Time (days)	Annual Theoretical Static Storage Turnovers
10	36.5
15	24.3
30	12.2
45	8.1
60	6.1
90	4.1
120	3.0

Table 1.7-12 summarizes steel break-bulk storage capacity. Interviews indicated about 35,000 tons of static storage capacity are available over 15 acres on Berth 5 (see Figure 1.7-2), the primary steel-handling berth at Port Everglades.

Table 1.7-12
ANNUAL STEEL BREAK-BULK STORAGE CAPACITY

	Steel Break-bulk Cargos	Berth 5
a	Type of cargo	Rebar, Coils
b	Terminal acres (acres)	15
c	Storage type	Outdoor/Decked
d	Total static storage capacity (tons)	35,000
e	Dwell time (days)	30.0
f =365/e	Annual storage turnovers	12.2
g =d*f	**Annual steel storage capacity (tons)**	**426,000**
h =g/b	**Unit throughput capacity (tons/acre) [g/b]**	**28,387**

Based on Table 1.7-12, Port Everglades has backland capacity to handle about 426,000 annual tons of steel products. For reference, the peak steel product throughput at Port Everglades over the past 10 years was 256,000 tons in FY 2006. Steel products should not be constrained by backland availability.

Table 1.7-13 summarizes the consultant team's annual cement storage capacity calculations. Port Everglades has two sets of cement silos (see Figure 1.7-2). The silos at Berth 14 were reported to have 44,000 tons of static capacity, while the Berth 15 silos were given as 65,000 tons of static capacity. A dwell time of 15 days was used to estimate maximum annual storage throughput. For comparison, the peak cement throughput for the past 10 years of 2.47 million tons in FY 2006 corresponds to a dwell time of 16.1 days with the current static storage capacity.

Table 1.7-13
ANNUAL BULK CEMENT STORAGE CAPACITY

		Berth 14	Berth 15	Total
a	Storage type	Silos	Silos	Silos
b	Total static storage capacity (tons)	44,000	65,000	109,000
c	Dwell time (days)	15.0	15.0	15.0
d=365/c	Annual storage turnovers	24.3	24.3	24.3
e=b*d	**Annual cement storage capacity (tons)**	**1,070,667**	**1,581,667**	**2,652,333**

Port Everglades has more than sufficient cement storage capacity for current throughputs of less than 1 million annual tons.

Finally, annual storage capacity for dry bulk cargos, excluding cement, was determined. In FY 2012, these products included gypsum, sand, bauxite, ash, and slag. Interviews indicated about 100,000 tons of storage for various dry bulk or aggregate products. Since storing multiple product types requiring separate storage piles can reduce overall storage capacity, two cases were analyzed: one case with 100,000 total tons of storage and a reduced case with 50,000 total tons for various types of bulk products combined (see Table 1.7-14).

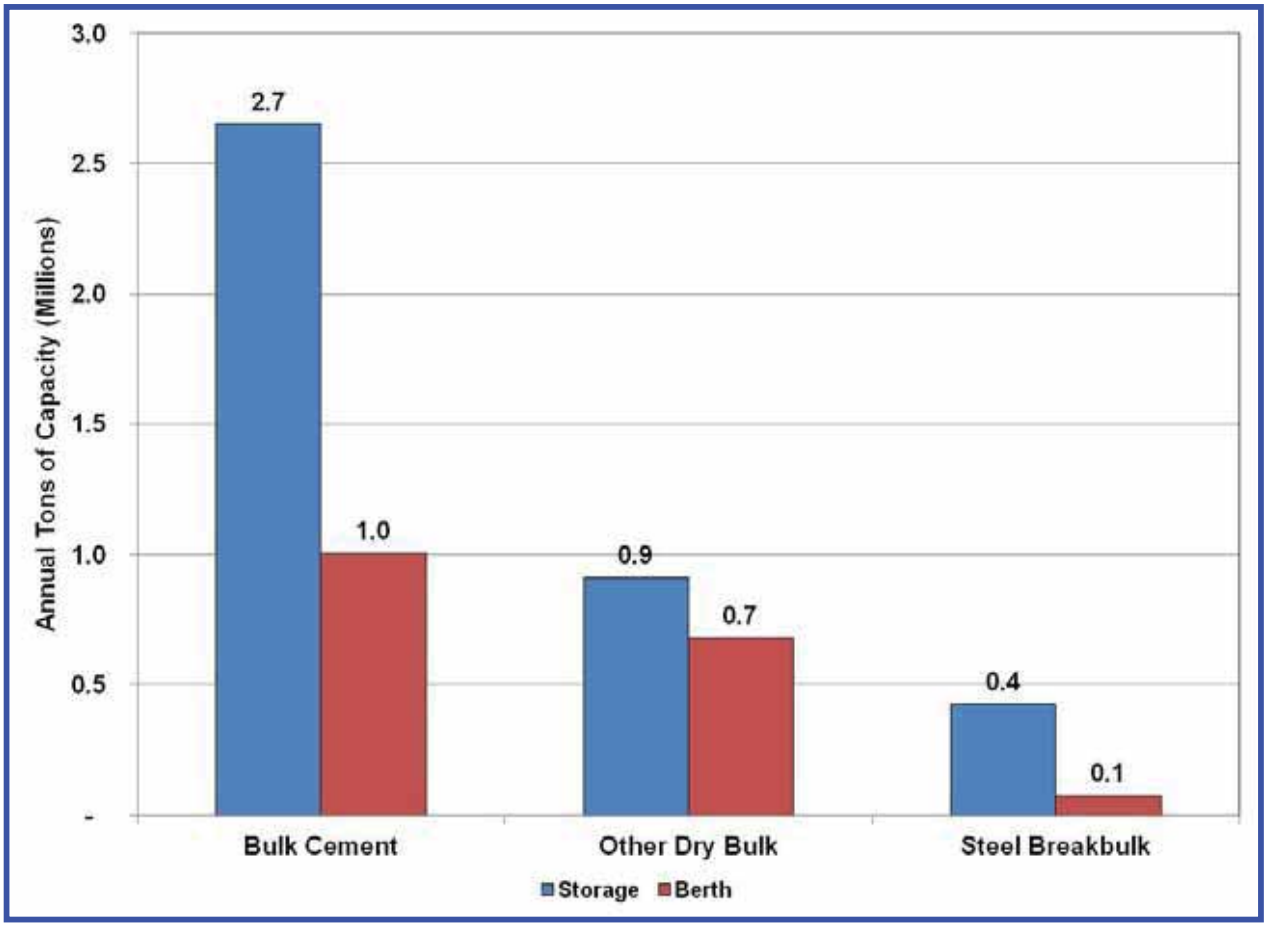
Table 1.7-14
ANNUAL NON-CEMENT DRY BULK STORAGE CAPACITY

	Dry Bulk (other than cement)	Low	High
a	Type of cargo	Various	Various
b	Storage type	Indoor/Shed	Indoor/Shed
c	Total static storage capacity (tons)	50,000	100,000
d	Dwell time (days)	20	20
e=365/d	Annual storage turnovers	18.3	18.3
f =e*c	**Annual dry bulk storage capacity (tons)**	**912,500**	**1,825,000**

Volumes of bulk products other than cement have varied from 142,000 to 607,000 tons over the past 10 years. Port Everglades should not be constrained by the ability to store these products.

Figure 1.7-17 compares annual storage capacity to annual berth capacity for bulk cement, other dry bulk, and steel break-bulk product types.

Figure 1.7-17
BERTH CAPACITY VS. STORAGE CAPACITY



Overall, Port Everglades should have sufficient backland capacity to handle berth capacity based on current berth operating parameters for primary bulk and break-bulk cargos.

1.8 On-Port Traffic and Parking

1.8.1 Traffic Counts

This traffic analysis for the *2014 Port Everglades Master/Vision Plan* consists only of assembling existing data as a basis for the future evaluation of projected roadway/traffic volumes through the Port's security gates for the existing, 5-, 10-, and 20-year milestones. The Port receives quarterly traffic counts through Broward County Traffic Engineering Division from a company named Hi Star. The most current counts utilized at the time of this analysis were from March 2013. The data included three days of counts; however, only the first day of counts -- March 1, 2013, a Friday -- was used to provide a snapshot of traffic through the Port; security gates.

Because the traffic counts are taken for only a three-day period, and not for the whole month, these data are provided simply as an example of the traffic flowing through the Port on a given day; they do not take into account specific events on that day, whether the presence of cargo or cruise ships, construction, or other activities that would affect the counts. For example, construction of the Eller Drive Overpass, re-construction of the FEC railroad spur into the Port, and possible unforeseen events such as weather and traffic accidents may have contributed to vehicular percentages that appear to be somewhat different than would have been expected for the respective gates.

Excerpts from these data from March 2013 are provided in Tables 1.8-1, 1.8-2, 1.8-3, and 1.8-4.

Table 1.8-1
LOCATION: MCINTOSH ROAD S/O ELLER DRIVE

	Direction: N		Direction: S		Combined Total	
24-Hour Totals	1,492		1,463		2,955	
	Hour	**Volume**	**Hour**	**Volume**	**Hour**	**Volume**
Peak Volume	AM 0500	73	AM 0700	131	AM 0600	204
	PM 1500	198	PM 1300	153	PM 1400	351
	Daily 1500	198	Daily 1300	153	Daily 1400	351
Truck Percentage	19.00		20.00		19.50	

As to be expected, since McIntosh Road is used predominantly by Southport container operators, the data show a comparatively high percentage of trucks.

Table 1.8-2
LOCATION: ELLER DRIVE E/O GATE

	Direction: E		Direction: W		Combined Total	
24-Hour Totals	5,853		2,107		7,960	
	Hour	**Volume**	**Hour**	**Volume**	**Hour**	**Volume**
Peak Volume	AM 0800	744	AM 1100	145	AM 0930	889
	PM 1200	664	PM 1200	264	PM 1200	928
	Daily 0800	744	Daily 1200	264	Daily 1045	1,008
Truck Percentage	3.00		8.00		5.50	

The Eller Drive data show a significant volume of vehicles passing through the security gate, particularly in the eastbound direction, which is consistent with this road's being the primary access point for the Port's traffic. The difference in eastbound and westbound traffic would lead one to conclude that vehicles entering Eller Drive may exit a different gate.

Table 1.8-3
LOCATION: SPANGLER BOULEVARD W/O MIAMI ROAD

	Direction: E		Direction: W		Combined Total	
24-Hour Totals	3,337		2,452		5,789	
Peak Volume	**Hour**	**Volume**	**Hour**	**Volume**	**Hour**	**Volume**
	AM 0600	269	AM 1100	182	AM 0830	451
	PM 1200	190	PM 1600	171	PM 1400	361
	Daily 0600	269	Daily 1100	182	Daily 0830	451
Truck Percentage	5.00		4.00		4.50	

The Spangler Boulevard data show a more balanced entry and exit pattern; the percentage of trucks is comparatively low, however, given that most of the fleet of petroleum trucks use this gate to enter the Port. These percentages may simply reflect the day on which the counts were taken.

Table 1.8-4
LOCATION: EISENHOWER BOULEVARD S/O SE 17 STREET

	Direction: N		Direction: S		Combined Total	
24-Hour Totals	1,910		2,179		4,089	
Peak Volume	**Hour**	**Volume**		**Volume**	**Hour**	**Volume**
	AM 1100	153	AM 1100	179	AM 1100	332
	PM 1200	209	PM 1300	225	PM 1230	434
	Daily 1200	209	Daily 1300	225	Daily 0730	434
Truck Percentage	7.00		6.00		6.50	

Unlike the data for Spangler Boulevard, the data for Eisenhower Boulevard show an unexpectedly high percentage of trucks, as this security gate is used primarily by automobile visitors to the Port and the Convention Center coming off of 17th Street.

Table 1.8-5 summarizes the 24-traffic counts and the truck percentages for the four security gates analyzed. Over the 24-hour period on March 1, 2013, almost 20,800 vehicles passed through these security gates. The Eller Drive gate saw the most traffic, while the Spangler Boulevard gate was the next busiest. McIntosh Road had the highest percentage of trucks by far.

Table 1.8-5
SUMMARY OF TRAFFIC COUNT DATA

	Direction: N	Direction: S	Combined Total
24-Hour Counts			
McIntosh Road	1,492	1,463	2,955
Eller Drive	5,853	2,107	7,960
Spangler Boulevard	3,337	2,452	5,789
Eisenhower Boulevard	1,910	2,179	4,089
Total	**12,592**	**8,201**	**20,793**
Truck Percentages			
McIntosh Road	19.00	20.00	19.50
Eller Drive	3.00	8.00	5.50
Spangler Boulevard	5.00	4.00	4.50
Eisenhower Boulevard	7.00	6.00	6.50

Appendix C contains the complete array of traffic counts taken over the three-day period at the four security gates.

1.8.2 Existing Parking Conditions

The Port has two structured parking facilities: one at Northport and one at Midport as well as two surface parking lots.

Northport Garage. The Northport garage, which has a capacity of 2,350 spaces, serves the Greater Fort Lauderdale/Broward County Convention Center and Cruise Terminals 1, 2, and 4. As discussed previously, it is envisioned that the Convention Center will be "carved out" from the Port's secured area by moving the security gate to the south on Eisenhower Boulevard, leaving the parking facility in public space. The existing parking structure will be used primarily by Convention Center visitors and staff after a new parking structure, west of Cruise Terminal 4, is operational. It is also possible that the planned expansion of the Convention Center with hotel facilities will require the demolition of Cruise Terminal 1.

The new structured parking facility, the design of which is scheduled for FY 2017 in the Port's current 5-year CIP is to be located directly west of Cruise Terminal 4. This proposed facility, with approximately 1,680 spaces, is anticipated to serve Cruise Terminals 2 and 4, and would be accessed only by vehicles that have passed through the Port's security gates.

Midport Garage. The Midport garage serves the Midport cruise facilities, including Cruise Terminals 18, 19, 21, 22/24, 25, and 26 as well as the Port offices within the facility. These terminals are all used for multi-day cruises. This facility has a capacity of 1,950 spaces.

Surface Lots. The Port also has 404 at-grade parking spaces in a surface lot west of Cruise Terminal 19 and 600 at-grade parking spaces west of Cruise Terminal 18.

The Port has proposed an additional structured parking facility in the Midport area, although its construction has been deferred, with design now scheduled for FY 2016 and construction in FY 2018. This proposed facility, with approximately 1,200 spaces, will be located above a passenger intermodal area to serve the Port's cruise terminals.

1.8.3 Parking Facility Utilization.

The Port has provided parking facility utilization information for FY 2012 and for FY 2013 year-to-date for four locations: the Northport garage, the Midport garage, and the Terminal 18 and Terminal 19 surface parking sites. The utilization of each of these facilities is summarized in Table 1.8-6. Actual utilization charts by month are provided in Appendix D.

Table 1.8-6
SUMMARY OF PARKING UTILIZATION DATA

Parameter	Parking Facility				Total Spaces
	Midport	Northport	T-18 Surface Lot	T-19 Surface Lot	
Parking Capacity	1,966	2,350	600	404	5,320
Peak Month Overnight	December. 2012	Mach 2013	June 2013	December 2012	
Average Peak Month Overnight	1,443	573	456	196	2,668
High Peak Month Overnight	1,832	717	554	374	3,477

As noted above, the Northport garage has 2,350 spaces available. Both FY 2012 and FY 2013 data show increased use during the peak season of mid-November to mid-April. Data from FY 2013 reveal an average increase during the peak cruise season of approximately 200 vehicles. Overall usage of this facility is, however, well below 50 percent of the available capacity including during the peak cruise season.

The Midport garage, with 1,966 spaces, is also more heavily utilized during the peak season of mid-November through mid-April. There appears to be a reduction in usage of approximately 100 vehicles between FY 2012 and FY 2013 during the peak season. Overall, the garage averaged about 76 percent utilization during the season.

The surface parking west of Cruise Terminal 18 has a maximum capacity of 600 spaces. Again this facility, like all of the others, experienced increased usage during the mid-November through mid-April season. In FY 2013, the peak usage of this facility extended from mid-November to the end of July with capacity exceeding 100 percent on occasion during mid-November and mid February. Overall, except for those days when the facility was used to or even beyond capacity, it averaged between 50 and 67 percent utilization.

The surface lot west of Cruise Terminal 19 has 404 spaces. During FY 2012, this facility appears to have been minimally used. During FY 2013, however, it showed an increase in usage during the peak season of mid-November to mid-April with strong spikes of almost full capacity over a few days in early December and mid-February. Other than those spikes, however, the facility rarely saw more than 40 to 60 percent utilization.

1.9 Intermodal Transportation Network

The highway network, freight and passenger railroad systems, international airports, waterways and intelligent transportation systems (ITS) affecting Port Everglades are discussed in this section. Each of these modes is essential to the Port's intermodal connectivity and its role as a hub on Florida's SIS, the statewide high-priority transportation network authorized by the Florida Legislature in 2003, and described in Section 339.62, 339.63, and 339.64, Florida Statutes. The section concludes with an overview of the regional transportation planning and particularly the freight planning that is intrinsic to the efficient movement of goods and people at Port Everglades and throughout South Florida.

1.9.1 The Strategic Intermodal System in Broward County

The SIS comprises corridors such as highways, freight and passenger rail, and waterways; hubs such as seaports, airports, and other terminals; and connectors between the hubs and the internal corridors. Together, they encompass a statewide transportation infrastructure that promotes the efficient movement of commerce by seamlessly linking multiple modes of transport.

Figure 1.9-1 shows the SIS components relevant to Port Everglades. These include:

- **Highway connectors:** I-95 to SR 84 to Spangler Boulevard to Port entrance and I-595 east straight into the Port entrance (Eller Drive).
- **Rail connector:** FEC spurs from the seaport property to FEC lines.
- **Waterway connector:** Port Everglades harbor channel and turning basins connecting to the Atlantic Coast shipping lane.

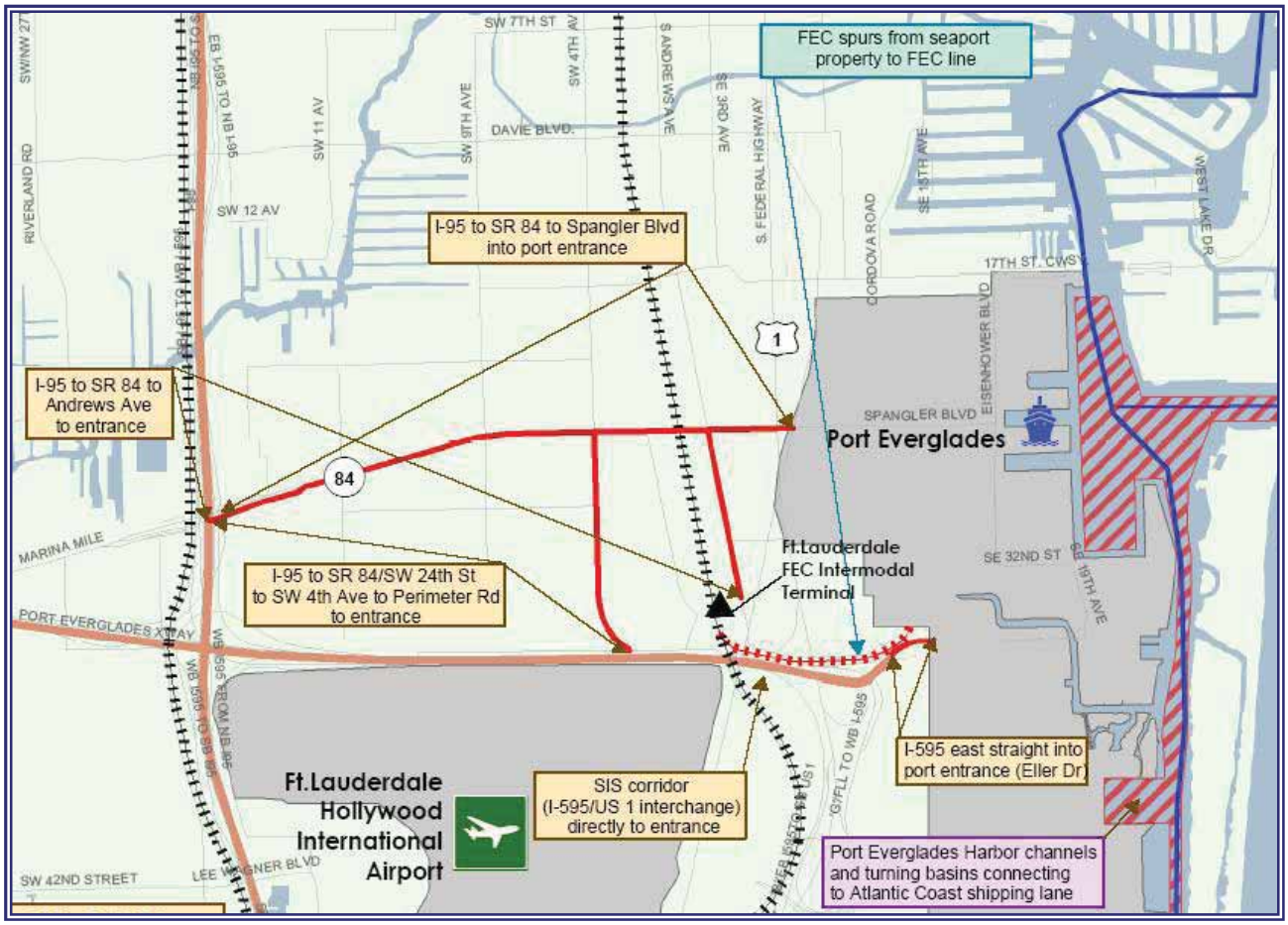
Also important to Port Everglades are the SIS connectors to FLL and to the FEC terminal on Andrews Avenue:

- **FLL connector:** SIS corridor (I-595/US 1 interchange) directly to passenger entrance and I-95 to SR 84/SW 24th Street to SW 4th Avenue to Perimeter Road to air cargo entrance.
- **FEC terminal connector:** I-95 to SR 84 to Andrews Avenue entrance.

In January 2010, FDOT published an update to the SIS that set the stage for the system to be more strategic, more intermodal, more systemwide, and more involved with its modal partners.[16] An addition to the SIS during this update that is particularly relevant to Port Everglades is the recognition of hub-to-hub connectors, such as that for drayage between the Port and the

[16] Florida Department of Transportation, *Florida's Strategic Intermodal System Strategic Plan*, adopted January 29, 2010.

Andrews Avenue rail terminal or movements between the Port and FLL.[17]



In recent years, strong interest has been expressed in expanding Florida's trade and logistics infrastructure by integrating the essential components -- road, rail, warehouses, distribution centers, and even manufacturing -- into one concentrated facility. To reflect this concept, which

Figure 1.9-1
SIS COMPONENTS RELEVANT TO PORT EVERGLADES

Source: http://www.dot.state.fl.us/planning/sis/atlas/

has taken hold elsewhere in the country as well, in 2012 the Florida Legislature created a new type of SIS facility -- the **Intermodal Logistics Center** (ILC) -- to

[17] Florida Department of Transportation, *2010 SIS Strategic Plan: Changes to Designation Criteria, adopted January 29, 2010.*

facilitate goods movement through the state's seaports and enhance Florida's competitiveness. As defined by the legislation, an ILC "is a facility or group of facilities serving as a point of intermodal transfer of freight in a specific area physically separated from a seaport where activities relating to transport, logistics, goods distribution, consolidation, or value-added activities are carried out and whose activities and services are designed to support or be supported by conveyance or shipping through one or more SIS seaports."[18] While inland ports also fit this definition, other types of ILC, as appropriate to a given seaport, may also be recognized as an SIS facility.

In South Florida, Palm Beach County has been the location for several proposed ILCs. In Miami-Dade County, Florida East Coast Industries (FECI), a sister company to the FEC, is promoting the development of the South Florida Logistics Center, a 400-acre complex being built in phases adjacent to Miami International Airport and the FEC's Hialeah facility. The project is intended to facilitate freight movements between PortMiami and potentially Port Everglades on the FEC, complementing the ICTF development at both seaports.

1.9.2 Highway Network

I-95 Corridor. The highway corridor of most consequence to Port Everglades is the I-95 spine that runs the length of the Atlantic Coast, from Florida to Maine. The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), passed by Congress in 2005, designated a portion of this I-95 spine, the Atlantic Commerce Corridor from Miami to the Georgia border, as High Priority Corridor 49. This designation acknowledged the importance of Florida's I-95 corridor to regional, state, and national commerce. Despite the importance of this corridor, however, little funding has materialized under the SAFETEA-LU program or under its successor the Moving Ahead for Progress in the 21st Century Act (MAP-21).

Much of I-95 in the region is at gridlock status during a "rush hour" that has grown into an all-day affair. Depending on the exact location and time of day, currently average daily traffic on I-95 comprises nearly 300,000 vehicles in South Florida, more than 18,000 of which at any given time may be trucks.[19] The portions of I-95 in the heavily traveled urban areas are operating at level-of-service (LOS) "F."[20] This traffic is projected to increase through 2035 as new residents and businesses move into the region and cross-county commuting accelerates (see Figure 1.9-2).

[18]Section 311.101(2), Florida Statutes.

[19] Florida Department of Transportation, *Florida Traffic Online, 2012*.

[20]This determination is based on the measure of a highway's operating conditions, where LOS "A" describes free-flow vehicular movements, LOS "E" means that vehicles are occupying the maximum capacity of a roadway, and LOS "F" means gridlock.

To ameliorate traffic congestion on this heavily traveled interstate, FDOT is implementing the 95 Express program and has also activated ramp signals on eight northbound entrance ramps in Miami-Dade County. The 95 Express is a two-phased congestion management plan designed to improve regional mobility for commuters in Miami-Dade and Broward counties. In Phase 1, a 6.2-mile section of northbound I-95, from SR 112 to the Golden Glades Interchange in Miami-Dade County, was restriped to add a new lane which, along with the original high- occupancy-vehicle (HOV) lane, was converted to managed toll lanes, using congestion pricing. Phase 2 construction began in November 2011 with completion expected in late 2014. This phase is extending the existing express lanes north from the Golden Glades Interchange to Broward Boulevard. The existing HOV lanes are being converted to two express lanes in each direction, with installation of tolling and ITS equipment in the median area along I-95 throughout the project limits.

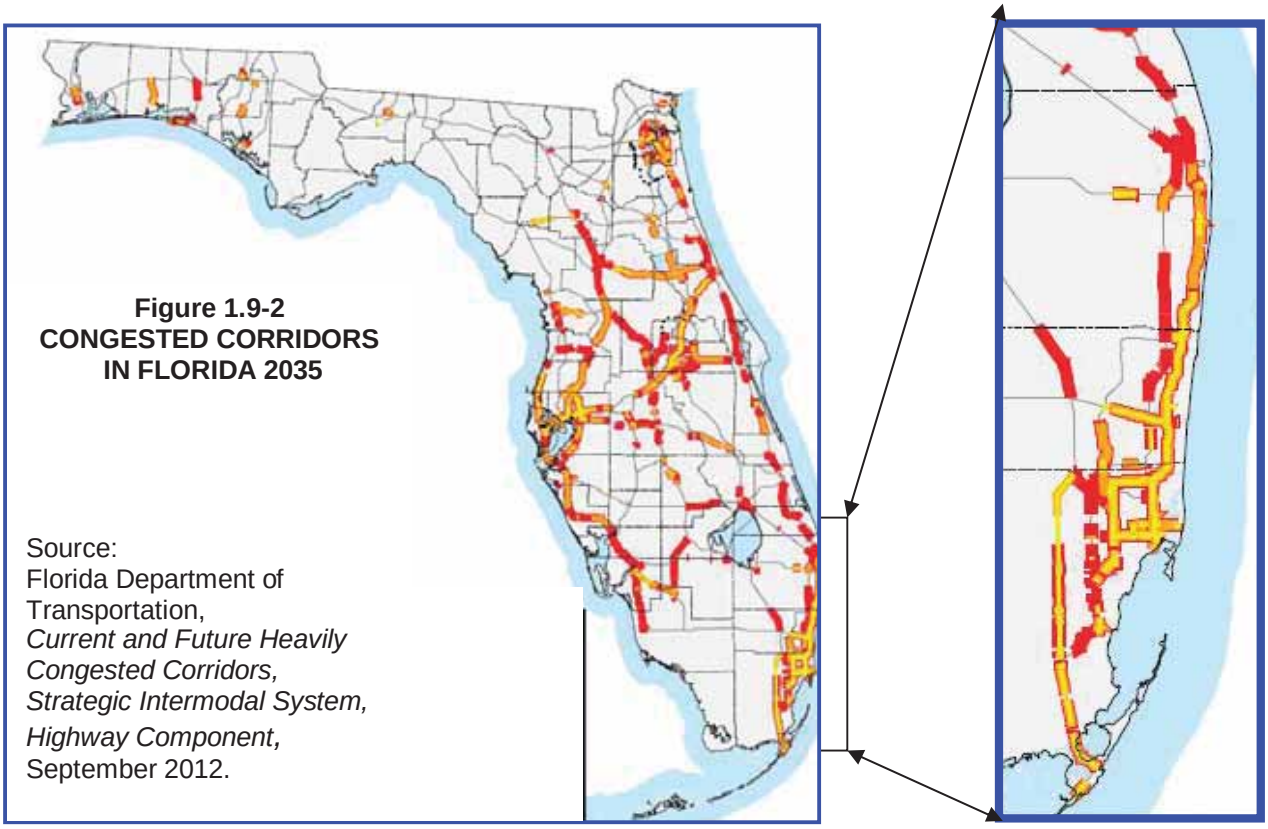
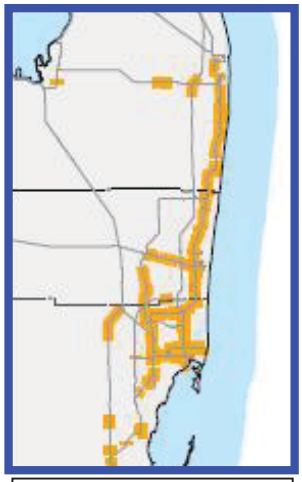


Figure 1.9-2
CONGESTED CORRIDORS IN FLORIDA 2035

Source:
Florida Department of Transportation,
Current and Future Heavily Congested Corridors, Strategic Intermodal System, Highway Component,
September 2012.

Southeast Florida 2012



Southeast Florida 2022

NOTES

[1]2022 System includes lanes added as a result of constructing the SIS Ten-Year Plan through 2022 with SIS Funds.

[2]2035 System includes lanes added as a result of constructing the SIS Ten-Year Plan through 2022 with SIS Funds and the SIS Cost Feasible Plan through 2035.

Heavy congestion in Urban Areas means traffic is either moving bumper to bumper or is stop and go during peak periods (Level of Service E or worse).

Heavy congestion in Non-Urban Areas means passenger and truck traffic is heavy during peak periods and changing lanes is very difficult (Level of Service D or worse).

Traffic data is as of 2011 by the FDOT Transportation Statistics Office

LEGEND

- Heavily Congested Corridors as of Year 2012
- Heavily Congested Corridors as of Year 2022[1]
- Heavily Congested Corridors as of Year 2035[2]
- Existing SIS/ESIS Facilities
- Planned SIS/ESIS Facilities

Major Roadways in the I-95 Corridor. In addition to I-95 itself, facilities within the corridor in Broward County include I-595, I-75, Florida's Turnpike, SR 869 (the Sawgrass Expressway), and US 27; the FEC rail and its freight rail terminal, CSX Transportation (CSXT), and the South Florida Rail Corridor (SFRC); the Intracoastal Waterway and shipping lanes; the Port and FLL. Several major interstate, state, and local roads – including I-595, SR 84, US 1, and I-75 -- connect with or approach I-95.

Florida's Turnpike. The only significant north-south facility that complements I-95 is Florida's Turnpike, which parallels it several miles to the west. The Turnpike generally traverses residential suburban districts and supports commuting and general regional access. The Turnpike has typically played a relatively small role in regional commerce. As I-95 has become more and more congested throughout the day, however, reports are that more trucks are using the Turnpike for their longer distance journeys.

I-595. I-595, which is undergoing significant reconstruction, is of particular relevance to efficient transportation access to Port Everglades. It is the key east-west SIS corridor that leads into Eller Drive, the Port's primary access, and accommodates traffic between the Port and I-95, Florida's Turnpike, and I-75.

In 1994, FDOT initiated a *Master Plan Study* to develop realistic improvements for I-595 and to address the future mobility needs of the corridor (see Figure 1.9-3). As part of a three-phase master planning process, numerous alternatives were evaluated and presented to the Broward County MPO and FHWA, both of which approved an I-595 Locally Preferred Alternative (LPA) focusing on improvements between I-75 and I-95.

After several years of study and refining design components for the corridor, a P3 was initiated to proceed with the design and construction of the following roadway improvements:

Figure 1.9-3
I-595 PROJECT IMPROVEMENTS MAP

- Three at-grade reversible express toll lanes to/from the I-75/Sawgrass Expressway from /to east of SR 7. These will be operated as managed lanes with variable tolls and will reverse directions in peak travel times.
- Continuous connection of the SR 84 frontage road between Davie Road and SR 7.
- Additional auxiliary lanes.
- Improvements to the I-595 / Florida's Turnpike interchange.
- Bus rapid transit in the corridor.
- Provisions for future transit options.

Construction began in the summer of 2009 and is scheduled for completion in 2014, an accelerated program resulting from the P3 project delivery method.

US 27. US 27 which extends about 72 miles on the diagonal from SR 826 (the Palmetto Expressway) in Miami-Dade County to Lake Okeechobee in Palm Beach County, continuing on through the state and beyond, is used by commercial as well as residential and tourist interests. With the anticipated flourishing of ILCs in Palm Beach County, US 27 has been the subject of several studies. The most recent of these is the *US 27 Transportation Alternatives Study* published in January 2013 by FDOT.[21] The study considers the US 27 corridor from the perspective of all modes; and identifies a range of options for development to satisfy the diverse needs of those using the corridor. Among these options are freight-focused alternatives that include parallel freight rail, inland port concepts, the ILCs, improved SIS integration, and truck-only lanes. In conjunction with this study, FDOT is also conducting the *US 27 Multimodal Planning and Conceptual Engineering (PACE) Study*, to explore the technical and economic feasibility of the diverse options for corridor development.[22]

The options investigated in these studies include a highway-only alternative and a highway plus parallel rail alternative, based on estimates of future traffic growth, including that from the ILCs and anticipated changing trade flows. As US 27 is one of the highway routes truckers serving Port Everglades may use, the expansion of this highway would be beneficial, but the lack of a feasible rail connection between the Port and US 27 limits the benefit the Port would derive from adding a parallel rail corridor.

Despite the importance of these major roadways in the I-95 corridor, conditions on I-95 itself have the predominant effect on operations at the region's major transportation hubs in each of the three counties and on the timeliness of truck movements between Port Everglades and their commodity origins or destinations.

[21] Florida Department of Transportation, *US 27 Transportation Alternatives Study,* prepared by CDM Smith, January 2013.

[22] Florida Department of Transportation, *US 27 Multimodal Planning and Conceptual Engineering (PACE) Study.*

1.9.3 Railroads: Freight and Passenger Systems

Two rail corridors exist in South Florida. The first is the rail freight corridor owned and operated by the FEC. The second is the shared freight/passenger SFRC -- the former 81-mile CSXT right-of-way between approximately Miami International Airport and West Palm Beach – purchased by FDOT in 1988. The CSXT railroad has operating rights over this corridor and Amtrak and Tri-Rail operate their passenger services on it.

FEC Railway. The FEC, which is owned by Fortress Investment Group, operates between Jacksonville and Miami, over a distance of 351 miles. Paralleling the Atlantic coast the length of the state, the FEC right-of-way provides the most direct rail route between Jacksonville and South Florida and serves Florida's most densely populated markets (see Figure 1.9-4). From Jacksonville, the FEC provides connecting rail service with two Class I railroads: the Norfolk Southern (NS) and the CSXT. It is the sole rail service provider to Port Everglades as well as to PortMiami and the Port of Palm Beach.

Freight moves to and from South Florida and within the state through the FEC's Bowden Yard rail center in Jacksonville. In addition to its short-line rail service linking South Florida with the NS and the CSXT in Jacksonville, the FEC provides connecting branch line service between Fort Pierce (Mile Post 242 on the FEC line) and South Bay on the South Central Florida Express (SCFE) rail line. This branch line service is operated under a trackage lease arrangement with the SCFE, which has a reciprocal Car Haulage Agreement between Fort Pierce and Jacksonville on the FEC system.

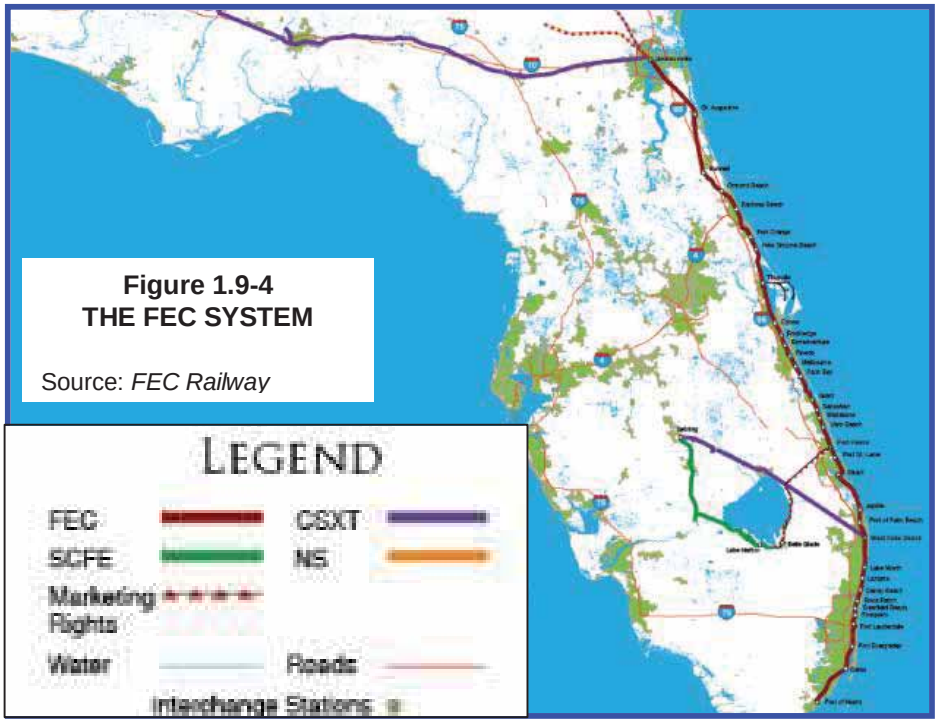


Figure 1.9-4
THE FEC SYSTEM

Source: *FEC Railway*

Bowden Yard is the northernmost rail service point on the FEC system and includes a switching yard and the FEC's Jacksonville intermodal transfer facility, located at the north end of the yard. Intermodal trains are initiated and terminated at this location and all of FEC's interline rail service passes through it:

- The NS interchanges all interline traffic at Bowden Yard for run-through[23] service between Jacksonville and Miami under a Car Haulage Agreement.
- The CSXT and FEC maintain an Interline Service Agreement, wherein CSXT makes deliveries and pickups at the Bowden Yard, and FEC reciprocates with deliveries and pickups at CSXT's yard.

The FEC maintains ownership of the rail right-of-way, which includes a 100-foot minimum width the entire length of their mainline system. More recently, segments of double track have been added to increase rail capacity and keep pace with rail traffic growth. As traffic grows, additional double track will be required.

Consolidated intermodal trains operate daily between Jacksonville and the South Florida points carrying domestic and international traffic. The FEC maintains intermodal facilities in its Hialeah yard in western Miami-Dade County and at its Andrew Avenue facility in Broward County, in proximity to Port Everglades. Both of these facilities are on the SIS, as is the entire length of the rail line. With the construction of the ICTF at Port Everglades, which will handle both domestic and international cargo, alternatives for the future use of the Andrews Avenue facility are being explored; these are not known at present.

Approximately 700 road/rail grade crossings occur between Miami and Jacksonville on the FEC mainline. Of these grade crossings, 210 lie between the FEC's Hialeah facility and the Port of Palm Beach.

Among the diverse commodities the FEC carries in trailers-on-flatcars and containers-on-flatcars as well as in tanker cars and hopper cars are aggregate and cement, farm products, food and beverages, lumber and wood, pulp and paper, chemicals, petroleum products, automobiles, and scrap metals. Truck drayage in support of intermodal service is provided by affiliates in Atlanta, Jacksonville, and Miami. Inaugurating passenger service in the FEC corridor has been studied for several years; the status of these initiatives is discussed later in this section.

During the construction of the new south runway at FLL, the FEC played a vital role in the transport of the tons of crushed limestone needed as fill for the project. A one-mile-long rail spur was built on South Perimeter Road to accommodate the two 80-car trains a day carrying this material.

CSX Transportation. CSXT -- the largest rail network in the eastern United States -- is the core business unit of CSX Corporation. CSXT provides rail freight transportation over a network of more than 23,000 route miles in 23 states, the District of Columbia, and two Canadian provinces (see Figure 1.9-5). From its headquarters in Jacksonville, CSXT maintains an extensive rail network within Florida, which reaches from Jacksonville to Homestead, in south

[23] "Run-through means traffic is moved as delivered and is not switched or reloaded.

Miami-Dade County. This rail network extends south from Jacksonville through Orlando to Tampa. From a point east of Tampa, the CSXT rail line moves southeastward across the state and into Palm Beach County. Starting in Palm Beach, the CSXT line parallels the FEC right-of-way south through Fort Lauderdale to its terminus in Opa-locka (known as the CSX Hialeah yard).

Despite the proximity of the CSXT rail line to the FEC line, the CSXT has no rail access rights into the ports themselves. Also, there is no freight intermodal interchange point between the FEC and CSXT south of Jacksonville. The two railroads do have the capability for the direct interchange of carload and aggregate traffic in West Palm Beach and Miami; but existing track structures are not adequate for the interchange of intermodal flatcars.

Figure 1.9-5
THE CSX SYSTEM
Source: http://www.csx.com/index.cfm/customers/maps/csx-system-map/

Between Palm Beach and Miami, several distinct services operate within the same rail right-of-way, that is, on the SFRC owned by FDOT. The SFRC, which parallels I-95 for most of its length, carries Tri-Rail commuter trains, Amtrak passenger trains, and CSXT freight trains.

A recent federal TIGER grant will advance a project by the state, the FEC, the CSXT, and Tri-Rail to connect the FEC and Tri-Rail in Hialeah and West Palm Beach. The crossovers would potentially allow some freight trains leaving Miami to switch to the Tri-Rail tracks, which have a third of the crossings on the FEC tracks. Grade crossings on the SFRC right-of-way that CSXT uses between West Palm Beach and Miami number approximately 75 compared with the 210 identified on the FEC. Presumably, freight from Port Everglades would also be able to use both corridors in the future.

CSXT maintains freight service operating rights over this segment to continue serving customers within the Palm Beach, Broward, and Miami-Dade county markets. The CSXT carries primarily bulk commodities, such as aggregates for the construction industry elsewhere in the state as well as carloads of consumer goods beyond state borders, using the portions of its track to the north and west of Lake Okeechobee.

The CSXT rail system includes a westerly extension through Tallahassee and into Mobile and New Orleans, where it connects with other western rail carriers. It also extends in a

northwesterly direction from the state line through Atlanta to Chicago and northward along the I-95 highway, with service to markets as far north as New York and New England.

As part of an initiative to improve freight service and bring commuter rail to Central Florida, where the I-4 corridor is experiencing growing congestion, FDOT and CSXT have collaborated with Orange, Seminole, Volusia and Osceola counties and the city of Orlando, to advance SunRail, a commuter rail transit project that will run along a 61-mile stretch of existing rail freight tracks in the four-county area. The 31-mile first phase of SunRail will serve 12 stations and is expected to begin operations by 2014.

To balance freight and passenger needs, this Central Florida plan is to serve the needs of both commuters and freight shippers. On Nov. 8, 2012, ground was broken on the long-planned Winter Haven Intermodal Rail Terminal. The project will be built in two phases. Phase 1 comprises construction of the rail terminal on 318 acres, with five 3,000-foot loading tracks and two 10,000-foot arrival and departure tracks that will be spanned by three electric rail-mounted gantry cranes to unload and load trains. The facility is slated to open by May 2014.

Phase 2 of the project will be a business park on an adjacent 930-acre property to be developed for warehouse-distribution and light manufacturing. Together, the two properties will form the Winter Haven Integrated Logistics Center, intended to attract intermodal business between Chicago and the Northeast and Orlando, Tampa, and South Florida. This ILC is of particular interest to Port Everglades in terms of how it will affect the movement of goods through the state.

Norfolk Southern Railway Company. A third carrier, NS, operates rail service in Florida, but does not own right-of-way farther south than Jacksonville (see Figure 1.9-6). As noted earlier, NS provides direct service to South Florida under its Car Haulage Agreement with the FEC.

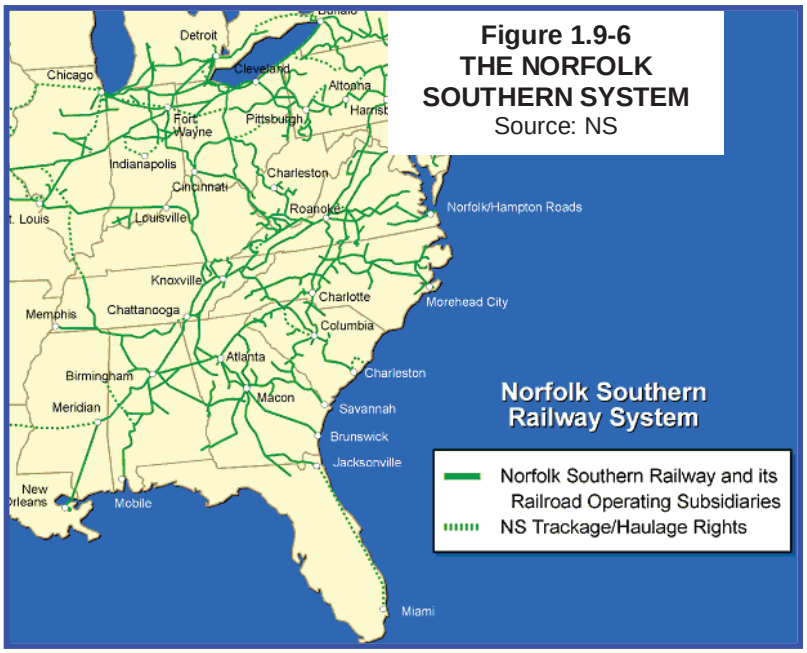


Figure 1.9-6
THE NORFOLK SOUTHERN SYSTEM
Source: NS

Jacksonville is the NS's primary market service area in Florida and their rail service interchange point with the FEC. All NS rail interchange service into and out of Florida is classified through their Atlanta rail hub. From this hub, NS connects to its eastern United States rail network

and assembles rail traffic for westward movement and connection to western Class I rail carriers.

Amtrak. Amtrak is the long-distance passenger rail operator in South Florida. Amtrak operates four long-distance trains through Florida:

- The ***Auto Train*** (daily Lorton, Va.-Sanford.
- The ***Silver Meteor*** (New York-Orlando-Miami).
- The ***Silver Star*** (daily New York-Orlando-Tampa-Miami).
- The ***Sunset Limited*** (tri-weekly Los Angeles-Orlando via New Orleans, Pensacola and Jacksonville although Sunset Limited *service* has been suspended east of New Orleans).

According to Amtrak, boardings and alightings from their Fort Lauderdale and Hollywood stations totaled more than 95,700 passengers in FY 2012. Also in FY 2012, the *Auto Train* carried over 264,000 passengers, removing over 130,000 vehicles from highways connecting Florida with the Northeast.

Long-term plans for Amtrak service expansion in the region, such as service between West Palm Beach and Jacksonville on the FEC, rather than as currently on the CSXT tracks, have been impacted by funding constraints. Independently of the FECI's All Aboard initiative for passenger service between Orlando and Miami, which is discussed later in this section, FDOT has been working with Amtrak to revive passenger service on the FEC. FDOT had set aside $118 million to help pay for infrastructure costs for Amtrak to provide long-distance passenger service between Miami and Jacksonville as a potential match for federal money. Although federal funding has not materialized, the project is still under discussion.

1.9.4 Airports

South Florida is the location of the most concentrated aviation activity in the state. In addition to Broward County's Fort Lauderdale-Hollywood International Airport, Palm Beach International Airport and Miami International Airport provide scheduled air carrier service in the region. These three major airports, all of which are hubs on the SIS, connect the region with domestic and international markets. Seaport-airport synergies are essential to the continued success of these operations because of the significant number of passengers who come from all regions of the US and countries around the globe to cruise from Port Everglades as well as from PortMiami.

Supporting the region's air carrier airports is a strong system of general aviation airports that provide facilities for business, recreational, flight training, and other types of aviation activities.

Fort Lauderdale-Hollywood International Airport. With more than 300 departure and 300 arrival flights a day, FLL is ranked 21st in the US in total passenger traffic and 13th in domestic origin and destination passengers. In FY 2012, as shown in Table 1.9-1, FLL enplaned and deplaned 23.6 million passengers and shipped more than 88,000 tons of air cargo. The

passenger count increased slightly over the 23.1 million passengers in 2008; but the air cargo decreased significantly, a trend that the airport has been experiencing for the last few years.

Approximately 28 domestic and foreign-flag airlines serve FLL, offering non-stop service to more than 65 US cities and 42 international destinations in Europe, Central and South America, and the Caribbean as well as Canada and Mexico in North America. According to FLL, international passengers represented 15.3 percent of the total passengers carried in 2012, which is comparable to the 15.5 percent of the total in 2008.

Table 1.9-1
FLL PASSENGER, CARGO, AND AIRCRAFT OPERATIONS
2008 AND 2012

Operational Parameter	2008	2012	Percent Change 2008-2012
Total Passengers	23,135,951	23,569,103	1.9%
Cargo (tons)	137,826	88,033	-36.1%
Aircraft Operations	291,060	262,860	-9.7%

Source: *FLL Annual Statistical Report, 2008 and 2013*

The airport further reports that it contributes more than $2.7 billion in annual economic impact to Broward County. It is the largest employer in the county, with approximately 8,900 jobs on the airport and 28,100 related off-airport jobs.

To serve the forecast future increase in enplanements at FLL, the BCAD's FLL Airport Improvements and Renovations Program involves the expansion of both the south runway and Terminal 4. The new south runway is being extended to 8,000 feet and Terminal 4 is being enlarged from 10 to 14 gates. Construction of the new runway, a rendering of which is shown in the photo to the left, is expected to be completed by the fall of 2014.

According to a BCAD representative, the FLL Airport Master Plan (2010) does not have any projects planned that would conflict with the future corridor planned for construction of the people mover to convey cruise passengers between Port Everglades and FLL. This project is discussed later in this section.

1.9.5 Transit Systems

While transit is not typically a factor in port operations, the expansion of transit systems in Broward County and throughout the region has a role to play in reducing congestion on the major access roads to Port Everglades used by truckers carrying freight to and from the Port and thus benefits their operations. As mentioned previously, in May 1988, the state of Florida, through FDOT, purchased the CSXT railroad corridor between West Palm Beach and Miami (the former Seaboard Air Line railroad, built in the 1920s). This corridor, the SFRC, parallels I-95, with abutting rights-of-way in many areas. It extends from West Palm Beach, south approximately 76 miles to the vicinity of the 7th Avenue passenger station in downtown Miami. FDOT's purchase also included approximately five miles of the Homestead line in Miami-Dade

County. The primary purpose of this purchase was to retain this strategic corridor for future transportation uses. CSXT and Amtrak retained rights to operate common carrier freight services and long-distance intercity passenger service, respectively.

Tri-Rail. Tri-Rail -- the commuter rail service linking the three South Florida counties over the SFRC -- began operations in 1989 between West Palm Beach and Miami over 66 miles of the 76-mile main line. Originally started as a traffic mitigation program during the lengthy reconstruction of I-95 in the region, Tri-Rail today, under the jurisdiction of the South Florida Regional Transportation Authority (SFRTA), carried 4 million passengers in 2012, regaining the ridership that it last had in 2008.[24] Tri-Rail now operates 50 trains a day stopping at 18 stations over 70.9 miles. Since the system was recently double-tracked, and trains added, growth has been in the double digits. The Tri-Rail system serves as a connecting link with the local transit services in South Florida, including Broward County Transit (BCT)

Broward County Transit. BCT operates a countywide network of fixed route bus service with several transit centers across the county providing connections between routes. BCT also oversees a special transportation service offering mobility to the transportation-disadvantaged.

New Transit Initiatives. Several contemporary regional and local studies explore ways to improve transit alternatives in the South Florida region.

Automated People Mover and Intermodal Center (SunPort Project). As noted earlier, FDOT, the Port, and FLL have studied options for developing an Automated People Mover and Intermodal Center to serve as a transportation hub and connection for local residents, Port and FLL employees, and the increasing number of cruise passengers who fly into FLL for cruises from the Port. In 2009, after years of study, the FHWA released the project's final draft Environmental Assessment (EA) for public comment and the Port and airport staff held a public hearing on June 25, 2009. After the public hearing, the draft EA was revised to address public comments and subsequently submitted to FDOT and FHWA on September 11, 2009.

Phased project implementation will depend on the FHWA's Finding of No Significant Impact (FONSI), Board approval to proceed with the next step of the project, and the identification of external funding sources. Until funding is identified, however, the FONSI cannot be issued. Consequently, at this time, the EA document has been placed on hold until a funding plan for the project can be developed. Once funding is identified, Broward County and FDOT can restart the process to obtain the FONSI from FHWA.

Station locations at both Midport and Northport were incorporated into the *2006 Port Everglades Master Plan.*

South Florida East Coast Corridor Transit Analysis. The *South Florida East Coast Corridor* (SFECC) is an FDOT initiative in partnership with local planning and transit agencies to

[24] http://www.palmbeachpost.com/news/news/state-regional/tri-rail-ridership-hits-14-million-for-2012/nTqb5/

introduce passenger service for commuters along FEC's 85-mile rail corridor between Miami and Jupiter (see Figure 1.9-7). In addition to the FEC, this complex project involves

- Two FDOT districts.
- Three counties.
- Three MPOs.
- 28 municipalities.
- SFRTA.
- Multiple transit agencies.

Figure 1.9-7
SFECCTA STUDY AREA
Source:
http://www.sfeccstudy.com

integrated passenger services along the corridor, including direct connections to Tri-Rail and other transit systems. As with all projects of this magnitude, amassing the funding for project implementation and operation is a challenging effort. Nevertheless, the project is moving forward as FDOT is refining the System Master Plan to identify and evaluate initial phases for implementation, start-up infrastructure, stations, and preliminary costs. This work will culminate in the endorsement of an LPA. Outreach with elected officials is ongoing and periodic updates are presented at meetings of the MPOs, SFRTA, Southeast Florida Transportation Council (SEFTC) and other public agencies. The next round of workshops will start in 2014 as the project enters the NEPA phase. MPO endorsement of the LPA is anticipated in 2015.

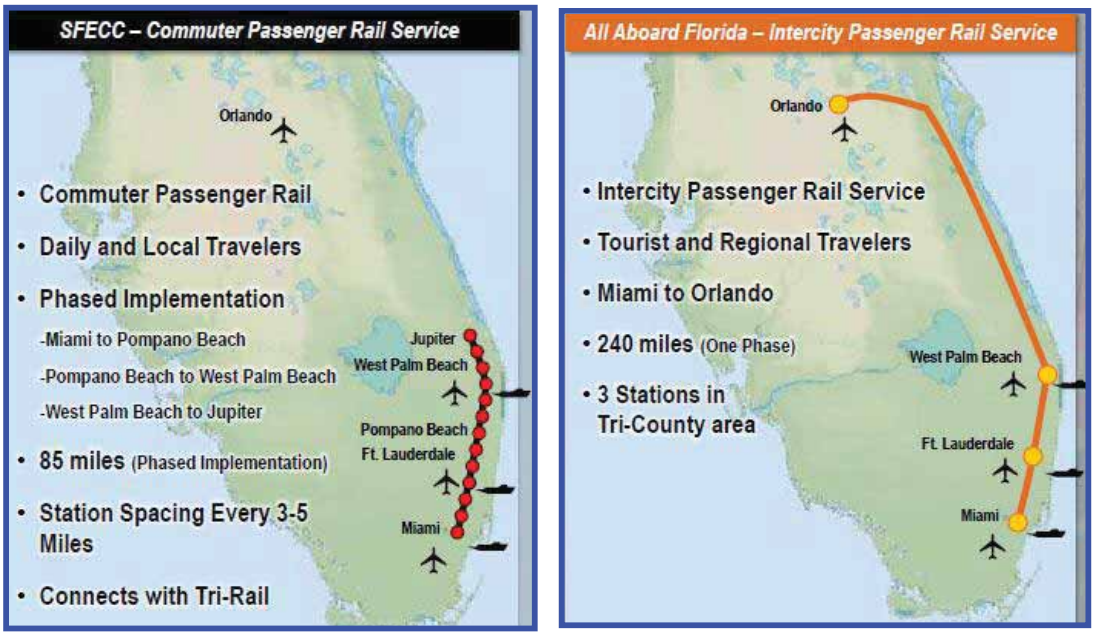
The study process has considered both freight and transit capacities to meet the growing needs of the region. At the same time, the three South Florida seaports are focused primarily on intermodal freight capacity, since opportunities for highway expansion are limited and roadway congestion is projected to increase. Any alternative selected must, therefore, reflect a balance between the movement of freight and people on the FEC line and be coordinated with Port Everglades' ICTF development and the eventual SunPort People Mover and Intermodal Center.

All Aboard Florida. A parallel and more recent initiative for intercity passenger service along the FEC corridor *is All Aboard Florida.* The new route, which will be owned, operated, and maintained by FECI, will feature passenger service along the existing FEC corridor between Miami and Orlando with intermediate station stops in downtown Fort Lauderdale and West Palm Beach.

At present, 16 trains a day from Miami and from Orlando are planned. The project is scheduled to be completed by the end of 2015.

Figure 1.9-8 shows the differences between the SFECC and the All Aboard Florida projects.

Figure 1.9-8
COMPARISON OF SFECC AND ALL ABOARD PROJECTS
Source: http://www.sfeccstudy.com



1.9.6 Inland Waterways (Marine Highway Program / Short-Sea Shipping)

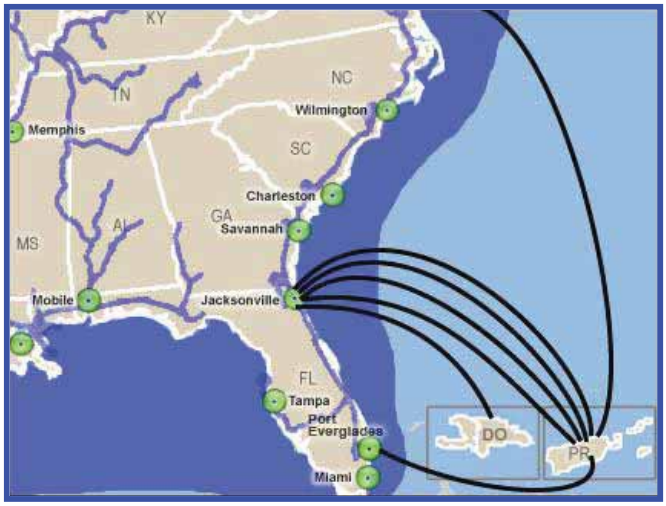
A long-discussed alternative to moving freight by road or rail is the concept of short-sea shipping, the coastwise movement of containers or trailers which offers shippers, truckers, and intermodal companies the opportunity to shift intermodal cargo to the waterborne mode. This concept took on new life when the Energy Independence and Security Act of 2007, as amended in Section 405 of the Coast Guard and Maritime Transportation Act of 2012, required the US Secretary of Transportation to establish a short-sea transportation program to mitigate landside congestion. Subsequently, the Transportation Secretary designated 18 marine highway

Domestic Short-Sea Shipping: *Freight operations using the nation's coastal waters, lakes, and rivers to transport goods in containers or on trailers between US ports as an alternative to road or rail transport*.

corridors -- including Corridor M-95 and Corridor M-10, which encompass Florida's Atlantic and Gulf coasts, respectively -- and directed more than $110 million toward marine highway projects within those corridors. Two Florida seaports were able to benefit from project funding through the Marine Highway Program; overall, however, the program has failed to make significant inroads into the nation's shipping options.

Florida's lengthy coastlines – with the state's SIS Atlantic and Gulf coast waterways -- offers particular opportunities to utilize the concept effectively were specific policy issues to be resolved and the appropriate infrastructure built. A study sponsored by FDOT's seaport office, looked at opportunities for increased cargo transport on the state's commercial intracoastal and navigable waterway system.[25] The study concluded that scheduled coastal shipping was limited to only a few carriers, but operations in open water that could be characterized as "short-sea" operations, were conducted more regularly. The latter occur particularly in the domestic trade between Florida (the Port of Jacksonville as well as Port Everglades) and Puerto Rico (see Figure 1.9-9) as well as between Florida's west coast ports and Texas or Mexican Gulf ports.

Figure 1.9-9
Short-Sea Shipping Operations
Source*: Maritime Administration*



Constraints to the use of the inland waterways, such as the Atlantic Intracoastal Waterway that serves the three South Florida seaports, involve both infrastructure limitations and the appropriateness of specific cargos. Generally speaking, water depths are not adequate in portions of the waterways and dedicated terminals that complement landside truck or rail operations are lacking. Also, only cargos that are not time-sensitive, present a "critical mass," and can be regularly scheduled are suitable for this mode of transport.

Short-sea shipping is currently more prevalent on the West Coast of the US, particularly the Northwest. As all-water services bring more cargo through the East Coast ports, including Florida, short-sea shipping may become more interesting to truckers and others charged with moving goods across the congested road and rail networks on this side of the continent. FDOT, as it updates its *Seaports and Waterways System Plan,* may take a fresh look at the opportunities for more productive utilization of the state's resources for marine highway shipping.

[25]Wilbur Smith Associates, CH2MHILL, and others, *Florida Intracoastal and Inland Waterway Study*, May 2003.

1.9.7 Intelligent Transportation Systems

ITS is the application of computers, electronics, communications, and other technologies in managing transportation systems more efficiently and safely and providing mobility options. In its efforts to alleviate highway congestion and promote more efficient traffic flows, FDOT is partnering with other states, as part of the I-95 Corridor Coalition, to develop innovative ITS solutions to their mutual traffic concerns.

South Florida's seaports, which have benefited from on-port and off-port ITS improvements implemented in recent years, are actively collaborating in this exchange of information technology to achieve faster, better, and cheaper freight movements. ITS applications for seaports include closed circuit television monitoring, security command centers, fences and lighting, electronic gates, computerized access systems, Portal VACIS and STAR gamma ray units to detect stolen vehicles and heavy equipment, dynamic message systems, and the latest in radio-frequency identification (RFID) technology. They also include operational procedures ranging from staged provisioning of ships to new inspection methods to detect explosives and other agents.

FDOT District 4 has championed ITS as a key tool for optimizing traffic operations and has promoted the transportation systems management and operations (TSM&O) program throughout the state. SMART SunGuide is the District's interactive real time ITS to more effectively manage the highways. The system includes closed-circuit television cameras, electronic message signs, traffic detectors, and traveler information services such as 511. A website provides I-95, I-75, and I-595 (monitored and maintained by I-595 Express, LLC) traveler information for Broward, Palm Beach, Martin, St. Lucie and Indian River counties.

FDOT District 4 and District 6 (which has PortMiami in its jurisdiction) are expanding the use of technology to facilitate freight mobility, productivity, and safety. Among such uses is the virtual freight network (VFN) concept. As described in the *South Florida Regional Freight Plan*, VFN is an integrated system of public- and private-sector information systems and technologies linked via information-sharing protocols to improve freight mobility as, for example, by providing real-time information about disruptive incidents and alternate routes for a trucker to follow. As it is developed, the VFN will include corridor-specific applications, system-wide applications, and hub-access operations, all of which will benefit operations at Port Everglades as well as regional and local traffic.[26]

Two other state-of-the art concepts using ITS to improve the efficiency of freight movements and reduce environmental impacts include the following:

[26] Kimley-Horn and Associates, Inc, *South Florida Regional Freight Plan*, March 2010.

- **Electrified truck stops.** Truck drivers must rest 10 hours for every 14 hours they drive to comply with federal requirements. To do so, they usually rest and sleep in their truck cabs, leaving their engines to idle. To reduce extended truck idling, electrified truck stops (ETS) are being located along major long-haul truck corridors. An ETS typically consists of an external heating, ventilation, and air conditioning unit at each truck parking space. Three freeways that serve South Florida are part of a study of 15 truck corridors conducted by the Texas Transportation Institute: I-95 (from Boston), I-75 (from Detroit and Chicago), and Florida's Turnpike (from Chicago). The only location in South Florida recommended in the study for an ETS is in Broward County: the Seminole Truck Stop on US 27 in Weston.[27] Florida's Turnpike has, however, installed 20 units at the Canoe Creek Service Plaza in Osceola County and 20 units at the Okahumpka Service Plaza near Wildwood.
- **Virtual container yards.** The virtual container yard (VCY) concept is an internet-based matching service for empty containers to reduce the transport of empty containers once goods have been delivered to their destination. The idea is that the empty containers can be delivered to an exporter who needs them for an outgoing shipment rather than being transported back and forth from the port.

Having prepared an *ITS Intermodal Plan* in the mid 2000s, Broward County has implemented many ITS projects that facilitate travel across the roadways essential to the mobility of Port Everglades' users. In addition to traffic management and traveler information systems, such projects include the dynamic message signs that are in place along the I-595 and the I-95 corridors. Cognizant of the importance of clear signage to maintain efficient vehicular circulation throughout its facilities, the Port has implemented a comprehensive portwide signage program.

1.9.8 Freight Planning

The National and State Context. Freight planning has recently moved front and center at the national, state, regional, and local levels and 2012 was a banner year in advancing initiatives to improve freight mobility and connectivity. In July 2012, the national transportation bill, MAP-21, was signed into law. Among the provisions of this law are requirements for developing a national freight network. Even before this law was promulgated, however, the Florida Legislature signed House Bill 599 into law. This bill not only required the newly created Florida Office of Freight, Logistics, and Passenger Operations (FLP) to prepare the policy element of a *Florida Freight Mobility and Trade Plan* by July 2013 to develop a statewide freight logistics and transportation system, but also included several other provisions designed to enhance the state's global opportunities and competitiveness. The legislation:

- Increased the minimum funding for the Florid Seaport Transportation and Economic Development Program from $8 million to $15 million.

[27] Texas Transportation Institute, *National Deployment Strategy for Truck Stop Electrification, 2007.*

- Created a Strategic Port Investment Initiative setting aside $35 million annually from the Transportation Trust Fund for eligible projects.
- Created the new ILC Support Program, with funding up to $5 million annually for eligible projects.
- Designated ILCs as part of the SIS:

The creation of FLP and the programs it is implementing have had a ripple effect across Florida as regions and counties throughout the state have initiated efforts to integrate the diverse needs of those using the statewide transportation system, including the trade and logistics sector.

Predating even these two landmark bills, however, the seminal *Florida Trade and Logistics Study,* commissioned by the Florida Chamber Foundation and FDOT, presented a vibrant picture of what Florida's trade and logistics sector means to the state's economy and outlined steps to position Florida as a global hub for commerce and investment into the next decades.[28] To achieve this goal, the study identified global trade opportunities for Florida over the next few decades, and recommended statewide strategies to maximize these opportunities and achieve a statewide, multimodal system of trade gateways, logistics centers, and transportation corridors.

As cited in the *Florida Trade and Logistics Study*, these strategies include*:*

- Capture a larger share of the containerized imports originating in Asia and serving Florida businesses and consumers, about half of which enter the nation through seaports in other states today.
- Expand export markets for Florida businesses by filling the import containers with Florida goods and using more efficient logistics patterns to attract advanced manufacturing and other export related industries to Florida.
- Emerge as a global hub for trade and investment, leveraging Florida's location on north-south and east-west trade lanes to become a critical point for processing, assembly, and shipping of goods to markets throughout the eastern United States, Canada, the Caribbean, and Latin America.

The opportunities and strategies identified in the study are consistent with and supportive of Port Everglades' vision.

The second phase of the study *Florida: Made for Trade, Florida Trade and Logistics Study 2.0* (TL 2.0) was released in mid-October 2013.[29] Building on what the initial study identified as "Florida's once-in-a-generation opportunity to transform the state's economy to become a global hub for trade, logistics and export-oriented manufacturing activities," the TL 2.0 study promotes private-sector job growth and economic activity through the creation of a trade,

[28] Florida Chamber Foundation and Florida Department of Transportation, *Florida Trade and Logistics Study*, prepared by Cambridge Systematics, Inc., December 2010.

[29] Florida Chamber Foundation and Florida Department of Transportation *Florida: Made for Trade, Florida Trade and Logistics Study 2.0,* Research support provided by Cambridge Systematics, Inc., October 2013.

logistics and manufacturing talent pipeline, centers of excellence, and a merchant marine training institute.

Specifically, the study identifies seven trade-enhancement strategies to be accomplished through coordinated statewide actions. Among those most relevant to the Port are:

- Continue the recent strategic emphasis on trade and logistics, including its identification as a statewide targeted industry.
- Make strategic investments to ensure Florida is "best in class" in all aspects of global trade and investments.
- Ensure an ongoing, strategic presence for Florida at the national level where Florida can shape federal decisions on trade agreements, trade regulations, customs and other trade-related business processes, and transportation policies and investments.
- Enhance regional partnerships across Florida to target export market opportunities and advance economic development, workforce, transportation, and land use decisions that maximize the global opportunities for each region of the state.

Regional and County Perspectives.

Southeast Florida Transportation Council. As stated earlier, the urbanized areas encompassing parts of Miami-Dade, Broward, and Palm Beach counties were merged into one MSA in June 2003. Because of the size and complexity of this MSA, the three MPOs in the region retained their individual designation; but tasked themselves with developing and implementing a coordinated planning process to achieve:

- A long-range transportation plan (LRTP) covering the tri-county region.
- Regional project prioritization and selection process.
- Regional public involvement process.
- Performance measures to assess the effectiveness of regional coordination.

After several years of preliminary initiatives, the MPOs from the three counties created the SEFTC to serve as a forum for policy coordination and communication. Since its inception and signing of an interlocal agreement among the three MPOs in 2005, the SEFTC has adopted:

- Regional goals and objectives.
- Regional corridors of significance criteria.
- Regional LRTPs (2030 and 2035).
- Lists of priority projects -- both funded and unfunded -- on the regional transportation network.

The defined corridors of regional significance include

- Interstate and expressways (urban or rural principal arterials operating as interstate and expressway facilities).

- Major regional arterials (urban or rural principal arterials that cross county lines).
- Minor regional arterials (urban or rural principal arterials with two or more connections to the interstate and expressways facilities).

Regional goals and objectives identified in the SEFTC's 2035 LRTP include:

- **Mobility.** Provide an efficient and reliable transportation system for regional passenger and freight operations.
- **Accessibility.** Provide multimodal access to major regional passenger and freight activity centers.
- **Connectivity.** Provide an integrated multimodal transportation system throughout the region.
- **Environment.** Protect the region's environment.
- **Safety and Security.** Provide for a safer and more secure transportation system for the regions residents, businesses and visitors.
- **Quality of Life.** Preserve and enhance the quality of Life and promote energy conservation.[30]

Given the cross-county intermodal connectivity required for Port Everglades to move goods and people efficiently and cost effectively, this regional planning initiative is constructive and the identified goals are consistent with the Port's vision.

South Florida Regional Freight Plan. The *South Florida Regional Freight Plan,* a collaboration among FDOT and the ports of Miami-Dade, Broward, and Palm Beach counties published in March 2010, "paves the way for consistency, consensus, and coordination within the region for freight planning efforts."[31] By identifying regional priorities, the plan enhances the region's ability to compete for federal funding. A key objective of the freight plan is to integrate freight planning into the regional planning process as the freight element of the Regional LRTP

2035 Broward County Long Range Transportation Plan. The 2035 LRTPs of the respective MPOs are critical elements in regional plan development, as the regional plan represents a compilation of the local plans and includes only facilities and projects falling on the regional network. The *2035 Broward County LRTP* also includes coordination between the Broward, Miami-Dade and Palm Beach MPOs as well as other transportation agencies in the tri-county area to create a transportation plan that will provide travel choices for regional transportation users. The document includes a strong focus on transit and encourages land uses that encourage transit system development; but it also addresses intermodal freight planning supporting many of the access factors relevant to the efficient movement of goods and people between Port Everglades and various origins and destinations:

[30] Kittelson and Associates, Inc., *2035 Southeast Florida Regional Transportation Plan.*

[31] Kimley-Horn and Associates, in conjunction with Cambridge Systematics, *South Florida Regional Freight Plan*, March 2010.

- Connections between facilities, such as Port Everglades and FLL.
- Roads and railroads providing access to intermodal facilities, especially to the Port and FLL.
- Links between intermodal facilities and major highway and rail corridors, such as between the Port/FLL and I-95.
- Intermodal transfer facilities.
- Mode crossing, such as highway-rail grade crossings.

Work on the Broward MPO's 2040 LRTP began in January 2013; the plan is expected to be adopted in January 2015

Urban Freight and Intermodal Mobility Study (2007/2008). An early entry into freight planning initiatives, the Broward County MPO's *Urban Freight and Intermodal Mobility Study (2007/2008)* sought to better incorporate freight into the county's transportation program. With a special focus on Port-related freight and the Port's intermodal access and needs, the study looked at the county's freight system in the context of global trends. It also looked at other freight-oriented areas in the county and identified potential improvements.

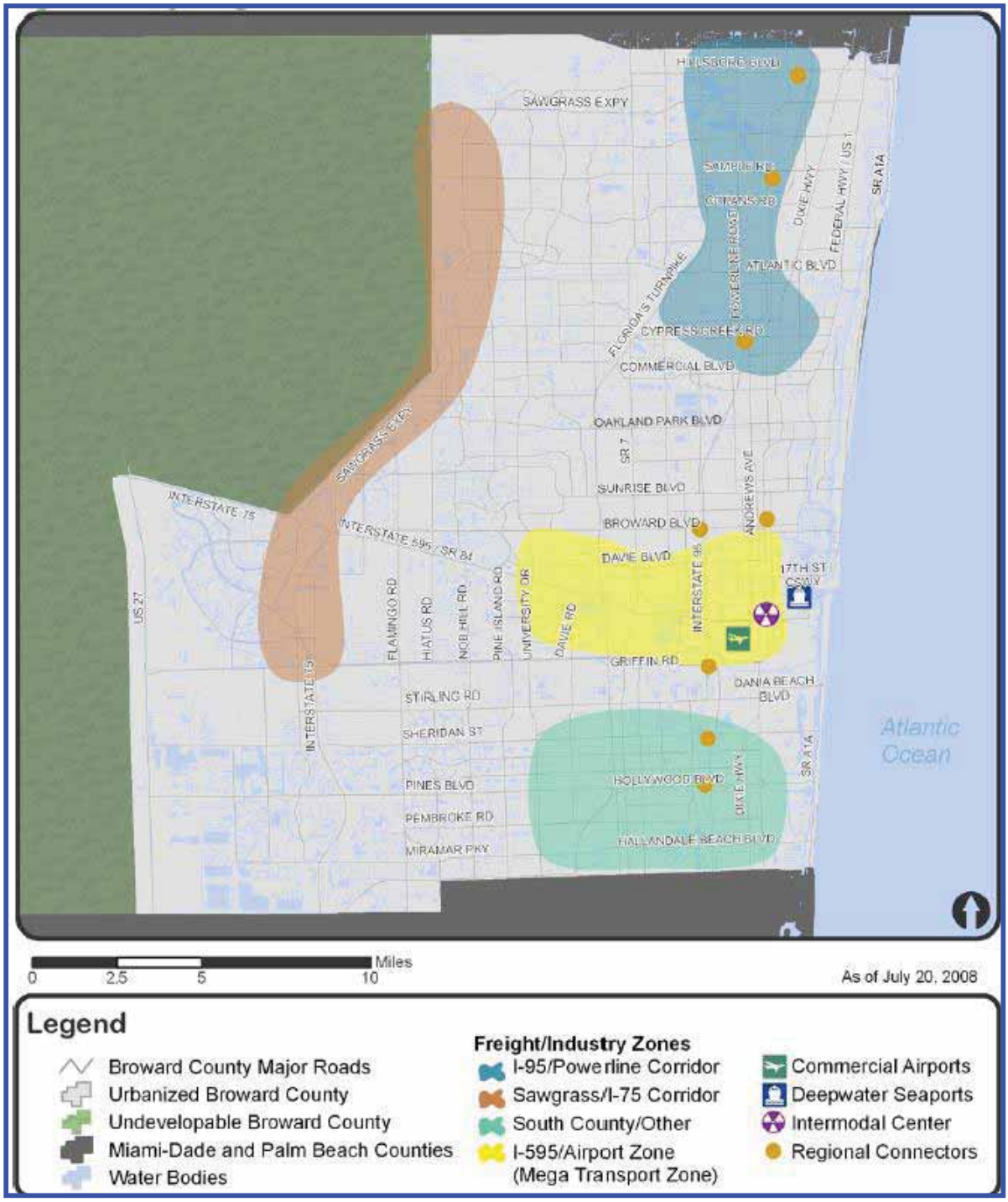
Warehousing and Distribution Facilities. South Florida, particularly Miami-Dade and Broward counties, is home to a large number of warehousing, distribution, and other trade-related enterprises. As noted in an earlier section of this element, employment in the trade, transportation, and utilities sector accounted for approximately 558,300 jobs in the three counties as of December 2012, 35.7 percent of the 1.6 million jobs in this sector statewide.[32]

Figure 1.9-10 from the *Broward MPO 2035 LRTP* supporting documents shows the four primary freight and industrial zones in Broward County; these include:

- The I-95-Powerline Road corridor.
- The Sawgrass-I-75 corridor.
- The South County area (Miramar Commerce Parkway industrial area).
- The I-595 - Airport / Seaport Mega-Transport Zone.

[32] US Department of Labor, Bureau of Labor Statistics, *Economy at a Glance* (data as of July 12, 2013).

Figure 1.9-10
FREIGHT AND INDUSTRIAL ZONES IN BROWARD COUNTY
Source: *Broward County MPO 2035 LRTP*



Warehousing and distribution centers, with significant truck activity, are concentrated in several other areas of the region, with perhaps the heaviest concentration located in the Airport West area of Miami-Dade County, as shown in Figure 1.9-11 on the next page, taken from *the South Florida Regional Freight Pla*n. To the north and south of Broward County, these concentrations include:

Miami-Dade

- West of Miami International Airport, south of Okeechobee Road (US 27), and between the Palmetto Expressway and the Homestead Extension of Florida's Turnpike.
- Along NW 37th Avenue.
- To the west of Opa-locka Airport.

Palm Beach

- Along I-95 at Yamato Road.
- North of Palm Beach International Airport.
- Along the I-95 corridor from 45th Street to North Lake.
- In the two railroad corridors.

Like most metropolitan areas, Broward County is dependent upon trucks for the movement of the majority of its freight. At Port Everglades, these trucks not only transport goods loaded and unloaded from the cargo ships calling at the Port, but also carry the diverse commodities needed to provision the Port's many cruise ships. For example, as many as 30 to 35 trucks are required to provision one ship; and several trucks are needed to carry the various waste products removed from a ship on its return from a cruise.

Access to the major truck activity centers in the county, shown in Figure 1.9-12, on the following page, involves the use of the local street network as well as the major highways. Thus, the connectors between these centers and the state system, what is called "the last mile," need to be included in any effort to expedite the movement of goods within the region. The business connections between the warehousing and distribution facilities in one county and the seaport in another are what contribute to the regional synergies in South Florida and the dynamism of its trade and maritime community.

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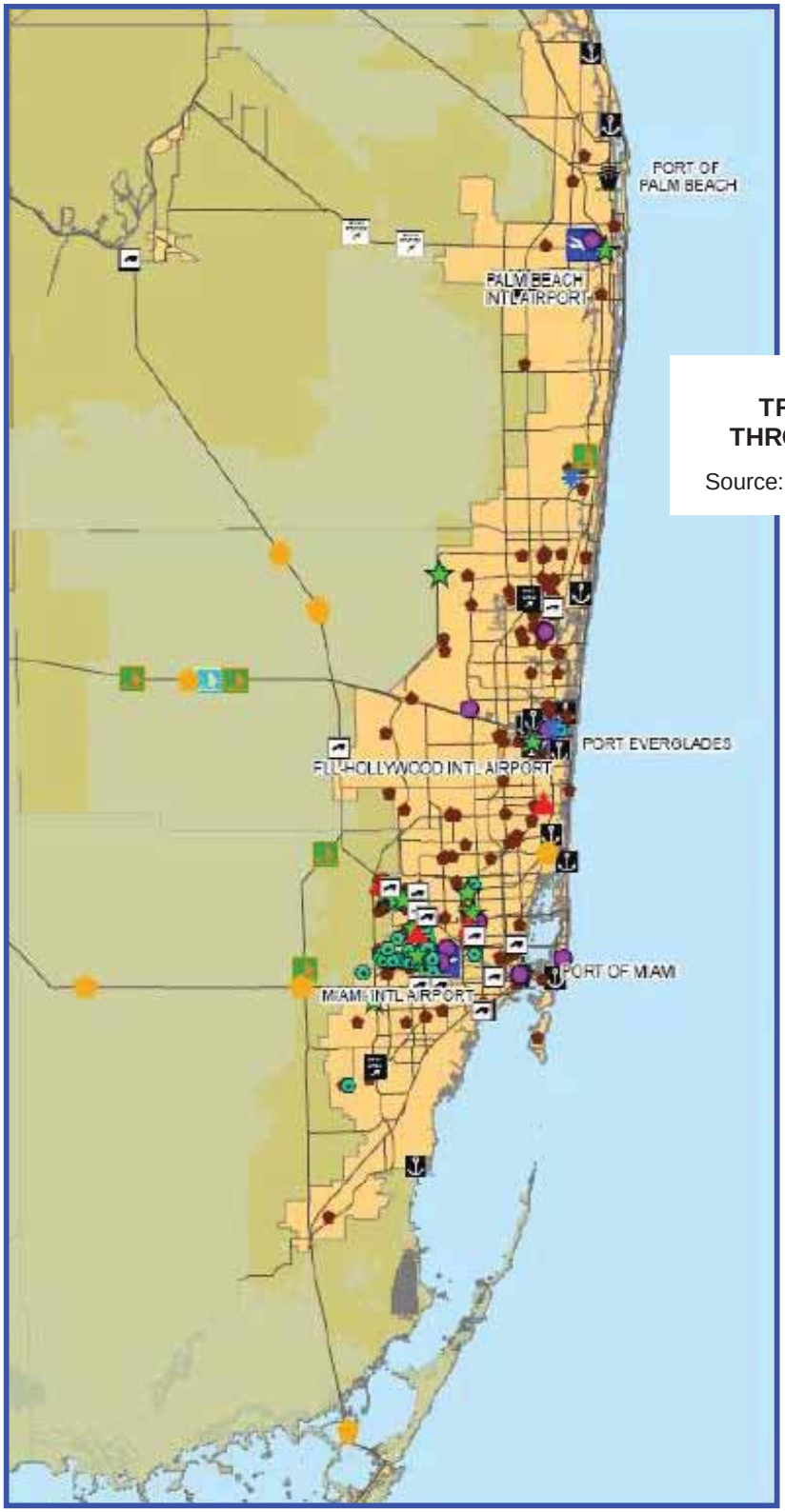


Figure 1.9-11
TRUCK ACTIVITY CENTERS THROUGHOUT SOUTH FLORIDA

Source: *South Florida Regional Freight Plan*

Figure 1.9-12
TRUCK ACTIVITY CENTERS IN BROWARD COUNTY
Source: *South Florida Regional Freight Plan*

Truck Activity Centers
- Turnpike Plaza
- Rest Areas with Facilities
- Rest Areas without Facilities
- Wayside Parks
- Weigh Stations
- Welcome Centers
- Truck Stops & Plazas
- Warehouses
- Trucking Companies
- Rail Roads
- Freight Forwarding
- Air Cargo Service
- Importers/Exporters
- Marinas

In support of the regional freight planning initiatives, FDOT District 4 has taken its freight and goods movement planning, one step further, identifying freight activity centers, regional freight mobility corridors, and the freight distribution routes that connect these corridors with limited access facilities to create a comprehensive freight transportation network. These landside freight mobility initiatives are the essential complement to the visionary waterside cargo planning Port Everglades is conducting with this Plan update.

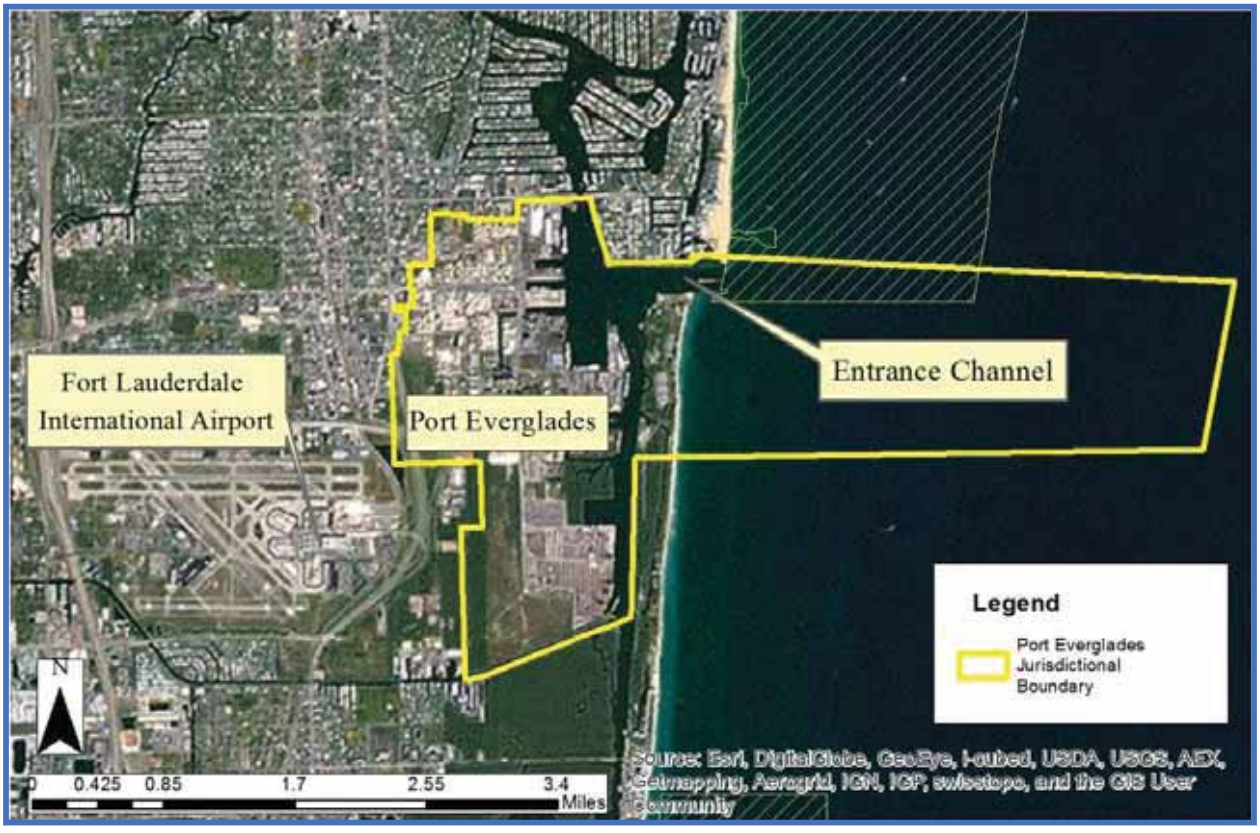
1.10 Environmental Conditions

This section addresses the environmental conditions and planning considerations associated with the Port's ongoing operations and future development. Specific areas addressed include wetlands, listed species and designated critical habitat, wildlife habitat, estuarine systems, dredged material disposal areas, hard-bottom habitat, a former landfill, water quality and stormwater management, proposed maintenance and new construction dredging programs, and the Port's overall environmental protection program as well as an initial look at the potential impact of rising water levels resulting from climate change.

1.10.1 Habitat and Species Overview

Port Everglades, through its entrance channel, serves as the primary access to the Atlantic Ocean for marine interests in Broward County, including commercial carriers and recreational boaters (see Figure 1.10-1). The Port was established in 1928 when a permanent inlet was created between Lake Mabel and the ocean. Prior to the opening of the channel, Lake Mabel was a local freshwater lake system, which exhibited fresh water vegetation dominated by maiden cane, saw grass, arrowhead, and pickerel weed.

Figure 1.10-1
PORT EVERGLADES VICINITY AND JURISDICTIONAL BOUNDARY
Source: *Map—SWC, 2013*



Wetland Resources. The creation of Port Everglades' ocean inlet, together with the completion of the Intracoastal Waterway to Miami in 1912, completely transformed this fresh water habitat to its current marine wetland environment. Today, the dominant plant species in and around the Port include salt-tolerant plants such as red, white, and black mangroves. These wetland plants serve as important habitat for marine life such as mollusks, crustaceans, fish and their juvenile offspring, various marine organisms including nourishing algae, and numerous resident and migrating bird species.

The mangroves surrounding this area provide valuable natural habitat; thus they are a protected wetland resource in Broward County. The USACE, FDEP, SFWMD, and BCEP&GMD regulate any dredging and filling activity within the area. It is the purpose and intent of these agencies to ensure there will be no net loss in the function and value of existing wetland habitats. Therefore, any adverse impacts to existing mangroves are regulated by avoidance as the first priority, minimization as the second priority, and mitigation as the third priority.

Seagrasses. The waters surrounding Port Everglades also provide habitat for several species of seagrasses, including *Halophila johnsonni* (Johnson's grass, a federally listed endangered species), *Halophila decipiens* (Paddle grass), and *Halodule wrightii* (Cuban shoal grass) (see detailed seagrass discussion later in this section). Adverse impacts to seagrasses are regulated in the same manner as mangroves and other coastal wetland plants by federal, state, and county environmental protection agencies.

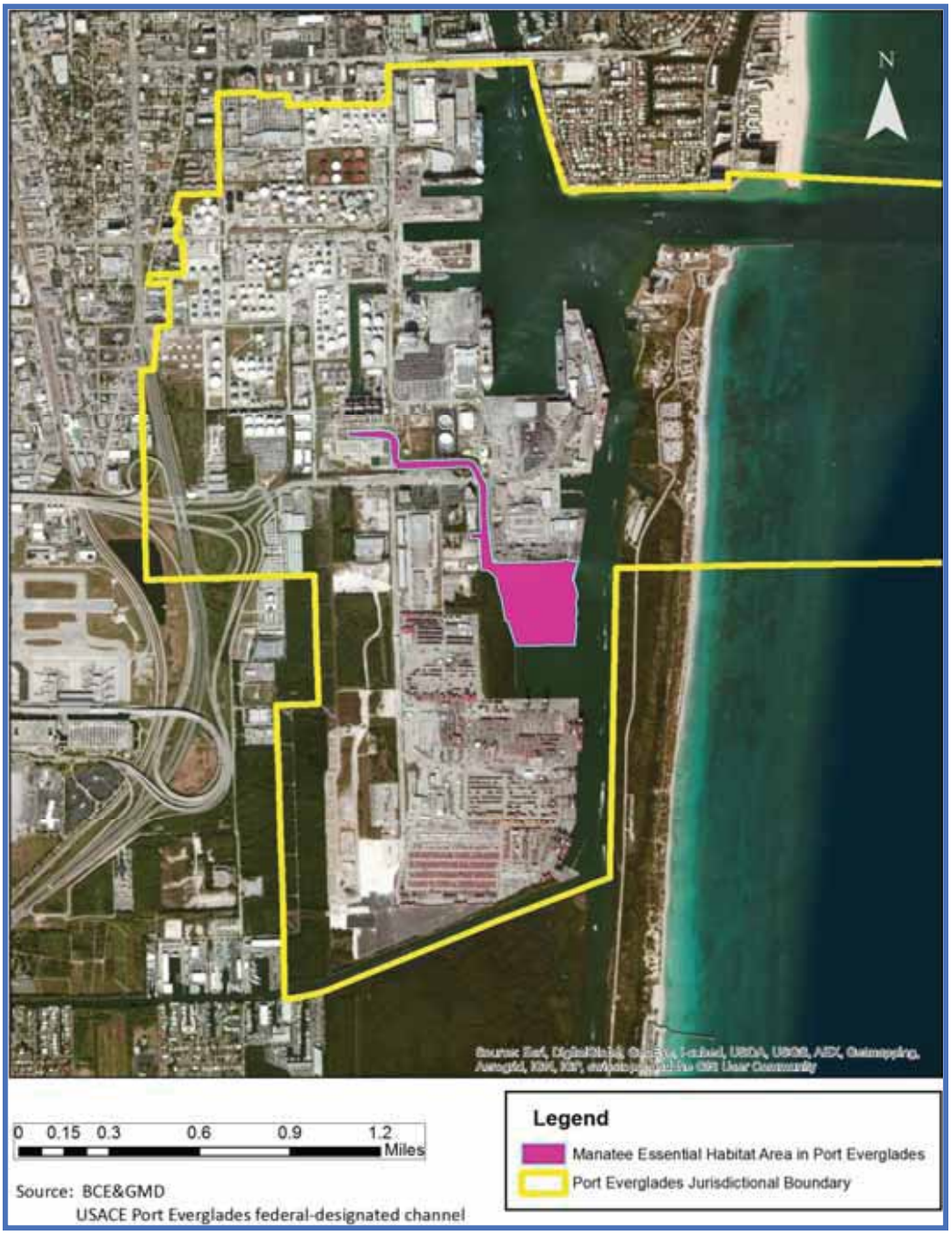
Corals. The Port's outer entrance channel acts as habitat for coral species such as *Siderastrea siderea* and *Stephanocoenia intersepta*. The hard-bottom areas further offshore exhibit live growth, with turf algae being the most dominant, followed by macro-algae, sponges, octocorals, scleractinians, zonathids, and tunicates. This marine habitat is also regulated by federal, state, and county environmental protection agencies. In addition, two *Acropora* coral species were listed in 2006 as threatened under the federal Endangered Species Act and critical habitat was designated in 2008, a part of which includes the outer edge of the Port's entrance channel (see detailed *Acropora* coral discussion later in this section). The National Oceanic and Atmospheric Administration (NOAA) is currently in the process of elevating these two coral species from threatened to endangered, and listing seven more species of corals found in South Florida; critical habitat will then be established for the newly listed species as well.

Manatee Habitat. The waters surrounding Port Everglades also serve as habitat for the West Indian manatee. The Florida Manatee Sanctuary Act of 1978 established the entire state of Florida as a "refuge and sanctuary for the manatees" and allowed for the enforcement of boat-speed regulations in manatee-designated protection zones. The West Indian manatee is protected federally by both the Marine Mammal Protection Act of 1972 and the Endangered Species Act of 1973.

The "manatee season" extends from November 15 through March 31 and marks the primary migratory period for manatees from northern winter waters to the warmer waters along Florida's southern coast to avoid sustained cold fronts. Port Everglades serves as a corridor route for hundreds of manatees that seek the warm water that comes from the FPL power plant located at the Port and is one of about two dozen manatee wintering sites designated as manatee

protection zones. To protect the manatees, this area was designated Manatee Essential Habitat (1989 Comprehensive Plan Volume 4, 13A-42). In addition, Broward County's Comprehensive Plan prohibits the construction of new marinas or expansion of existing marinas, docking facilities, and boat ramps, except those related to law enforcement, within Manatee Essential Habitat Areas (1997 Comprehensive Plan, Policy 13-A.3.1, Ordinance Number 96-39). Figure 1.10-2 shows the manatee essential habitat within the Port.

Figure 1.10-2
MANATEE ESSENTIAL HABITAT WITHIN PORT EVERGLADES
Source: *Map—SWC, Boundary data—BCE&GMD 2013*



Listed Species. The following listed species have been reported in the Port Everglades area.

- West Indian manatee (*Trichechus manatus*).
- Johnson's seagrass (*Halophila johnsonii*).
- Three species of sea turtles—loggerhead (*Caretta caretta*), green (*Chelonia mydas*), and leatherback (*Dermochelys coriacea*).
- Wood stork (*Mycteria americana*).
- Small-toothed sawfish (*Pristis pectinata*).
- Brown pelican (*Pelecanus occidentalis*).
- Least tern (*Sterna antillarum*).
- Peregrine falcon (*Falco perigrinus*).
- White ibis (*Eudocimus albus*).

Manatees congregate in the vicinity of the Port at locations such as the FPL discharge canal and Intracoastal Waterway next to the existing conservation easement. Manatees also utilize portions of West Lake Park south of the Port property.

Other species of concern that could be present in the area include the Mangrove rivulus (*Rivulus marmoratus*), American alligator (*Alligator mississippiensis*), American crocodile (*Crocodylus acutus*), Eastern indigo snake (*Drymarchon corais couperi*), Gopher tortoise (*Gopherus polyphemus*), Gopher frog (Rana capito), American oystercatcher (*Hamaetopus palliates*), Black skimmer (*Rhynchops niger*), Florida burrowing owl (*Athene cunicularias*), Florida sandhill crane (*Grus canadensis pratensis*), Kirtland's warbler (*Dendroica kirtlandii*), Limpkin (*Aramus guarauna*), Little blue heron (*Egretta caerulea*), Piping plover (*Charadrius melodus*), Roseate spoonbill (*Ajaia ajaja*), Snail kite (*Rostrhamus sociabilis plubeus*), Snowy egret (*Egretta thula*), Southeastern American kestrel (*Falco sparverius paulus*), Tricolored heron (*Egretta tricolor*), Elkhorn coral (*Acropora palmata*), and Staghorn coral (*Acropora cervicornis*).

Figure 1.10-3 shows the locations of reported listed species sightings in the vicinity of Port Everglades and Table 1.10-1 provides a summary of the listed species reported to occur or likely to occur in the Port Everglades area.

Figure 1.10-3
REPORTED SIGHTINGS OF LISTED SPECIES IN VICINITY OF PORT EVERGLADES
Source*: Map—SWC 2013*

Table 1.10-1
LISTED SPECIES POTENTIALLY PRESENT IN THE VICINITY OF PORT EVERGLADES
Source*: Map—SWC 2013, data—see notes at bottom of table*

Species		Designated Status[A]		Reported Sightings within Port Everglades Area
Common Name	**Scientific Name**	**Federal**	**State**	
FISH				
Mangrove rivulus	*Rivulus marmoratus*	-	SSC	No
Smalltooth sawfish	*Pristis pectinata*	E	Prohibited[B]	Yes
REPTILES AND AMPHIBIANS				
American alligator	*Alligator mississippiensis*	T (S/A)	SSC	No
American crocodile	*Crocodylus acutus*	T	E	No
Eastern indigo snake	*Drymarchon corais couperi*	T	T	No
Gopher tortoise	*Gopherus polyphemus*	T	T	No
Gopher frog	Rana capito	-	SSC	No
Loggerhead sea turtle	Caretta caretta	T	T	Yes
Green sea turtle	Chelonia mydas	E	E	Yes
Leatherback sea turtle	Dermochelys coriacea	E	E	Yes
BIRDS				
American oystercatcher	*Hamaetopus palliates*	-	SSC	No
Black skimmer	*Rhynchops niger*	-	SSC	No
Brown pelican	*Pelecanus occidentalis*	-	SSC	Yes
Florida burrowing owl	*Athene cunicularias*	-	SSC	No
Florida sandhill crane	*Grus canadensis pratensis*	-	T	No
Kirtland's warbler	*Dendroica kirtlandii*	E	E	No
Least tern	*Sterna antillarum*	E	T	Yes
Limpkin	*Aramus guarauna*	-	SSC	No
Little blue heron	*Egretta caerulea*	-	SSC	No
Piping plover	*Charadrius melodus*	E	T	No
Roseate spoonbill	*Ajaia ajaja*	-	SSC	No
Snail kite	*Rostrhamus sociabilis plumbeus*	E	E	No
Snowy egret	*Egretta thula*	-	SSC	No
Southeastern American kestrel	*Falco sparverius paulus*	-	T	No
Tricolored heron	*Egretta tricolor*	-	SSC	No
White ibis	*Eudocimus albus*	-	SSC	Yes
Wood stork	*Mycteria americana*	E	E	Yes
MAMMALS				
West Indian manatee	*Trichechus manatus*	E	E	Yes
INVERTEBRATES				
Elkhorn coral	*Acropora palmata*	T[C]	FT	No
Staghorn coral	*Acropora cervicornis*	T[C]	FT	No

Notes on Table 1.10-1 follow on next page:

A. SSC = Species of Special Concern; T = Threatened; E = Endangered; T(S/A) = listed as Similar in Appearance to a Threatened Taxon (American crocodile); all statuses were verified August 2013 with Federal Register 50 CFR Part 17 and Endangered and Threatened Species Management and Conservation Plan FY 2010-11 Progress Report, Appendix A. Listed Wildlife Species in Florida, as of June 30, 2011.
B. The smalltooth sawfish is protected by Florida Administrative Code Rule 68B-44.008 as a "prohibited" species.
C. This species is proposed by the National Marine Fisheries Service to be elevated from Threatened to Endangered (Federal Register No. 2012-29350, published December 7, 2012).

1.10.2 Turning Notch Expansion and Related Issues

Wetlands. As mentioned earlier, mangroves are the dominant wetland plant species at Port Everglades. The Port presently contains a 48-acre, mangrove-dominated wetland conservation easement issued to FDEP located to the west and north of the existing Southport Turning Notch. The Port is in the process of implementing a project to extend the Turning Notch berthing area into an 8.7-acre part of the easement, requiring removal of the mangrove habitat in this area. To compensate for this loss, the Port will create a new, on-site 16.5-acre mangrove conservation area that will offset the release of the 8.7-acre easement sub-area. The newly created mangrove habitat will include planting of more than 70,000 mangroves and other native plant species.

Much of the new mangrove area will be contiguous to the existing unaltered portion of the conservation easement and the rest will be hydrologically connected by way of the FPL discharge canal. Habitat creation and enhancement work to create the new 16.5-acre mangrove area to be deeded to the State of Florida will take place on uplands, within mangrove wetlands, and within the discharge canal that is connected to the Intracoastal Waterway. The creation sites are being designed based on the successful elevations utilized previously for habitat creation conducted in John U. Lloyd Beach State Park and West Lake Park.

Permit applications have been filed with FDEP, USACE and BCEP&GMD for the 16.5-acre mangrove habitat creation/conservation easement offset as well as for some on-site compensatory mitigation. The balance of the mitigation credit required for the project will come from West Lake Park. On June 27, 2013, FDEP issued permit No. 06-0314301-001 for the project. The BCEP&GMD license was issued on September 11, 2013. The USACE permit is still pending, but is expected soon.

The project will combine this newly created and restored habitat and open waters of the discharge canal with the un-released conservation easement, for a total of approximately 61.03 acres, which will be deeded to the State of Florida consistent with a 2010 agreement between Broward County and FDEP. The conservation easement offset and mitigation activities will include:

- Removal of exotic and nuisance vegetation along the northern and eastern shorelines of the discharge canal. This area will then be converted into approximately 0.95 acres of mangrove planters with transitional buffers.
- Restoration of mangrove habitat and installation of mangrove planters in approximately 0.40 acres at the north side of the un-released conservation easement.

- Enhancement of portions of the un-released conservation easement by removal of exotic and nuisance vegetation along the perimeter and implementing a five-year maintenance and monitoring program
- Restoration of approximately 0.10 acres within the existing manatee lagoon by removing docks and exotic and nuisance vegetation, and creating transitional buffer habitat.
- Enhancement of tidal flushing within the un-released conservation easement by removing sediment plugs and excavating tidal channels.

Figure 1.10-4 shows the area of these conservation easement changes.

West Lake Park Mitigation. Port Everglades, in partnership with FLL and the Broward County Parks and Recreation Department, has funded the design and permitting of a comprehensive environmental restoration and enhancement project at West Lake Park, located directly south of the Port, to provide mitigation for wetland impacts resulting from improvements to airport and seaport facilities. The project plans includes the following elements:

- Installation of culvert connections to increase flushing of a mangrove forest approximately 1,500 acres in size.
- Installation of tidal flushing channels.
- Construction of a rip-rap/crib structure for shoreline stabilization adjacent to the mangrove edge, along approximately 3 miles of the Intracoastal Waterway, and for approximately 1.5 miles along the Dania Cut-off Canal.
- Scraping down and/or removal of exotic vegetation from approximately 63 acres of upland soil to create mangrove, mudflat, tidal flats and pools, seagrass, and maritime hammock habitat, along with exotic removal in smaller areas throughout the park.

The entire project will result in the creation of approximately 24.2 acres of mangrove habitat, 7.0 acres of mud flats/tidal pools, 8.6 acres of tidal channels, 8.0 acres of seagrass habitat, 13.4 acres of marine hammock, 1.9 acres of structural habitat (rip-rap/crib structure), and 2.0 acres of supplemental structural restoration (along the Dania Cut-off Canal). The proposed project will also enhance 32 acres of existing mangroves by way of rip-rap replacement, and preserve 23.3 acres of mangrove habitat through out-parcel acquisition. Permits for this ambitious environmental restoration project have been issued by SFWMD (Permit No. 06-04-16-P, issued April 14, 2004), USACE (Permit No. SAJ-2002-00072 [IP-LAO] issued March 2, 2006), and the BCEP&GMD (License No. DF03-1117, issued August 12, 2004).

Application of mitigation credits to specific projects that cause wetland impacts will require specific amendments to these permits. The removal of the existing 8.7-acre mangrove area to expand the Turning Notch requires a total compensatory mitigation of approximately 5.38 functional gain units as assessed utilizing Florida's Uniform Mitigation Assessment Method (UMAM). The FDEP permit for the Port's habitat creation and restoration project allocates up to 3.811 onsite mitigation credits, leaving a balance needed of approximately 1.569 credits. According to the current credit table accepted by the USACE, which is the most conservative, the West Lake Park project has 26.91 remaining mangrove mitigation credits available to the

Port for this project, which is more than ample to provide the approximately 1.569 credits still needed for the Turning Notch project.

Figure 1.10-4
CONSERVATION EASEMENT CHANGES
Source*: Map—SWC 2013*

Landfill Area. A landfill area utilized for clean fill and brush disposal on the Port is currently utilized as container storage yards. This landfill was closed and deemed inactive by the BCEP&GMD and a no-further-action order was issued on the basis that no construction is to be done on the site and it would not be rezoned or redeveloped as a high population density use. The closure letter, dated October 28, 1992, indicates that soil contamination still existed which could not be attributed to saltwater intrusion, consisting of manganese, biochemical oxygen demand (BOD), ammonia, and phosphorus. More recent monitoring found little to no remaining contamination. All monitoring wells have either been locked to prevent vandalism or been properly abandoned.

The entire former landfill area is within the land planned for removal as part of the extension of the Turning Notch to the west. As part of this extension, all contaminated soil will be removed and disposed of at a facility appropriately licensed by the state of Florida.

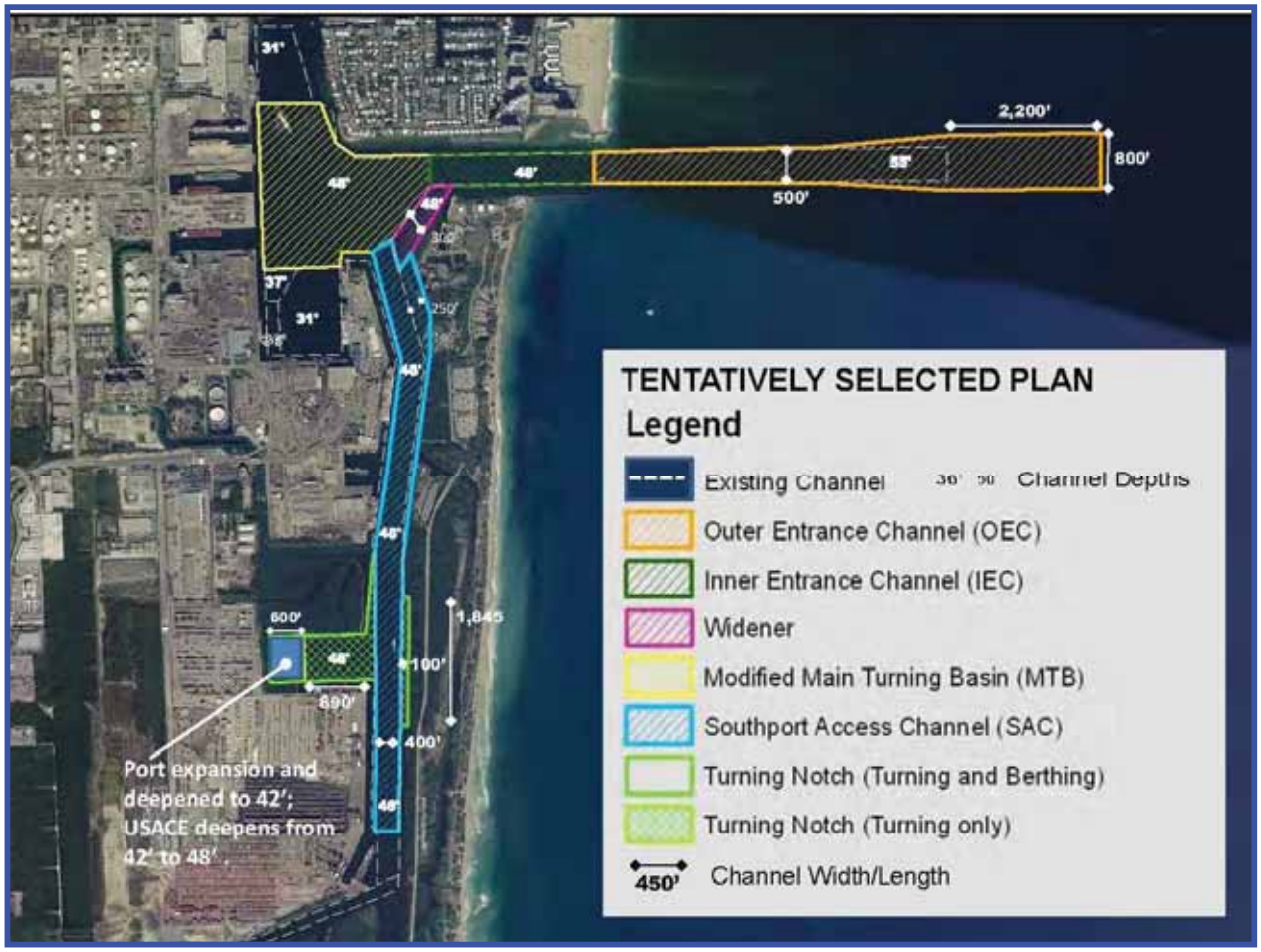
1.10.3 USACE Deepening and Widening Project Considerations

As discussed in Section 1.5-4 of this element, the USACE, in conjunction with Port Everglades, initiated feasibility and environmental impact studies in 2001 for the deepening and widening of the Port's harbor and channels. On June 28, 2013, the USACE released draft versions of these studies with the objectives of obtaining federal funding and the associated permits for the project. In these documents, the USACE has evaluated different alternatives to meet program objectives and address the environmental impacts and costs associated with each alternative.

In evaluating project alternatives, the USACE stated it has made every effort through an interagency planning process to first avoid and then minimize environmental impacts while still accomplishing project objectives. The USACE has held a series of coordination meetings with the regulatory agencies and other affected parties, as well as public meetings, to solicit input and provide incremental updates on the progress of their work. The structural measures evaluated were grouped into six different plans based on structural characteristics, environmental impacts, and economic benefits. A no-action plan was also considered throughout the process. The USACE has had a number of additional meetings with resource agencies to formulate and screen design alternatives.

The Tentatively Selected Plan (TSP) presented in the draft USACE documents is Alternative 2E, an optimization of Plan 2 which is focused on container ship constraints and also addresses potential petroleum vessel constraints. The TSP is shown in Figure 1.10-5. Features of the current TSP include:

Figure 1.10-5
TENTATIVELY SELECTED PLAN
Source*: USACE Draft Feasibility Study, 2013*



a. Extending the Outer Entrance Channel (OEC) 2,200 feet seaward with an 800-foot width, and deepening the existing 500-foot wide OEC from 45 feet to 55.

b. Deepening the Inner Entrance Channel (IEC) from 42 feet to 48 feet.

c. Deepening the Main Turning Basin (MTB) from 42 feet to 48 feet.

d. Widening the rectangular shoal region southeast of the MTB (Widener) by approximately 300 feet and deepening it to 48 feet.

e. Widening the Southport Access Channel (SAC) in the proximity of Berths 23 to 26 (the knuckle) by approximately 250 feet and relocating the United States Coast Guard (USCG) facility, a General Navigation Feature (GNF), easterly on USCG property.

f. Shifting the existing 400-foot wide SAC approximately 65 feet to the east near Berth 26 to the south end of Berth 29 to transition from the knuckle area widening to the existing Federal channel limits.

g. Deepening the SAC from approximately Berth 23 to the south end of Berth 32 from 42 feet to 48 feet.

h. Deepening the Turning Notch (TN), including a portion of Port Everglades' planned extension, from 42 feet to 48 feet, with nearby widening including (1) widening the eastern edge of the SAC 100 feet along a 1,845 stretch parallel to the SAC and (2) widening the western edge of the SAC for access to the TN from the existing federal channel near the south end of berth 29 to a width of about 130 feet at the north edge of the TN.

i. Other General Navigation Features (GNF).

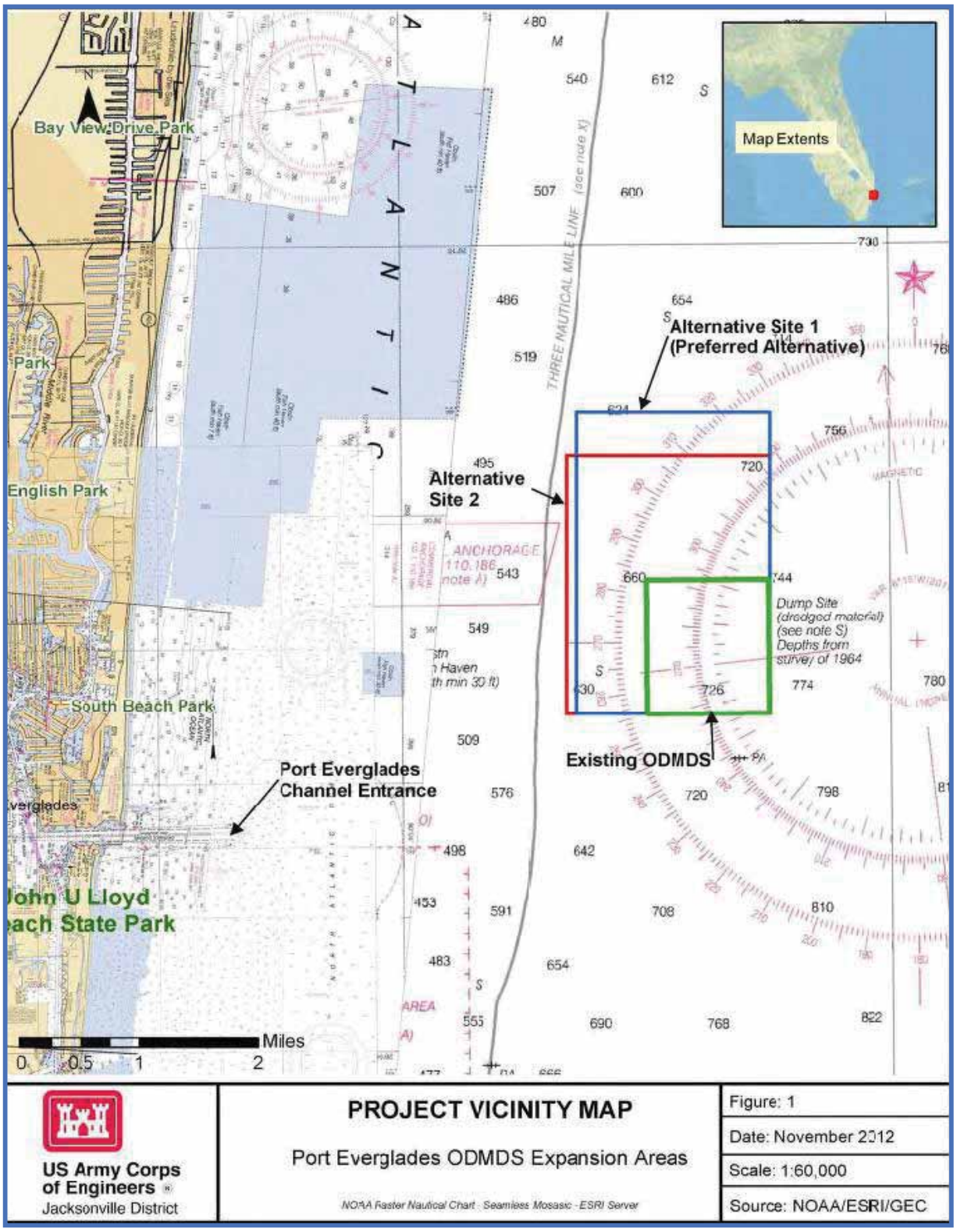
j. Environmental mitigation.

Dredged Material Disposal Areas. In addition to reviewing project alternatives, the USACE has also evaluated disposal options for the dredged material. The project is expected to generate approximately 5.47 million cubic yards of dredged material. Limited areas are available to the Port for the disposal of dredged materials. The current offshore dredged material disposal site (ODMDS), established by the Environmental Protection Agency (EPA) in 2005, is not anticipated to have adequate capacity for the amount of material that would be generated by the proposed project and the EPA is in the process of evaluating an expanded site.

Separate from the USACE feasibility study, EPA released a draft Environmental Assessment (EA) on September 1, 2013, and the comment period extends to November 1, 2013. Final adoption is expected prior to completion of the USACE feasibility study. The USACE and EPA have initiated NEPA coordination. The USACE states, however, that, if the ODMDS is not expanded, the maximum amount of dredged material will be deposited in the existing ODMDS and further alternatives explored for disposition of the remaining material.

Figure 1.10-6 shows the existing ODMDS and proposed expansion.

Figure 1.10-6
EXISTING OFFSHORE DISPOSAL MATERIAL DISPOSAL SITE AND PROPOSED EXPANSION
Source: *EPA Draft Environmental Assessment on the Expansion of the Port Everglades Harbor Ocean Dredged Material Disposal Site (ODMDS), Broward County, FL, 2013*



Critical Habitat for *Acropora* Corals. In May 2006, the National Marine Fisheries Service (NMFS) listed Elkhorn and Staghorn coral as "Threatened" under the Endangered Species Act and designated critical habitat for these coral species in December 2008. The "essential feature" required for the conservation of the species was identified as a substrate of suitable quality and availability, in water depths from the mean high water line to 30 meters, to support successful larval settlement, recruitment, and reattachment of fragments (50 Federal Register (FR) 73-72210). "Substrate of suitable quality and availability'' was defined by the rule as consolidated hard bottom or dead coral skeleton that is free from fleshy macroalgae cover and sediment cover. As such, all submerged land with suitable substrate around Port Everglades, from the mean high water line to 30 meters in depth, is designated as critical habitat for *Acropora* coral except for the federally designated and permitted harbor and entrance channel, which is specifically exempted in the rule. Studies described below have found Acropora corals only to the north of the channel. Figure 1.10-7 shows the harbor and entrance channel, Acropora critical habitat, and the only locations where Acropora corals have been found in the vicinity of the Port.

Figure 1.10-7
PRESENCE OF *ACROPORA* CORAL CRITICAL HABITAT IN THE VICINITY OF PORT EVERGLADES
Sources: Map—SWC 2009; *Acropora* Coral Colony Survey Data—Olsen Associates, Inc. 2008; *Acropora* Coral Critical Habitat Data Layer—NMFS 2009.

The Port expansion project presented in the USACE *Draft Feasibility Study and Environmental Impact Statement* would cause impacts to both the exempted area as well as designated critical habitat for these listed *Acropora* coral species. Therefore, Dial Cordy and Associates Inc. (DC&A), as a consultant to the USACE, conducted a benthic assessment within the proposed project area (direct area of impact) and in the buffer zone (indirect area of impact) to assess existing benthic conditions and the presence of *A. cervicornis* and *A. palmata*.

Figure 1.10-8 shows the area and survey points of the DC&A study that include both the delineated direct area of impact (yellow line) and the indirect area of impact (black line). The surveying methods included an integrated towed video survey followed by SCUBA diver investigation where potential *Acropora* colonies were identified and, for the final survey, SCUBA divers directly assessed if *Acropora* colonies exist in the identified potential sites (red circles in Figure 1.10-8.

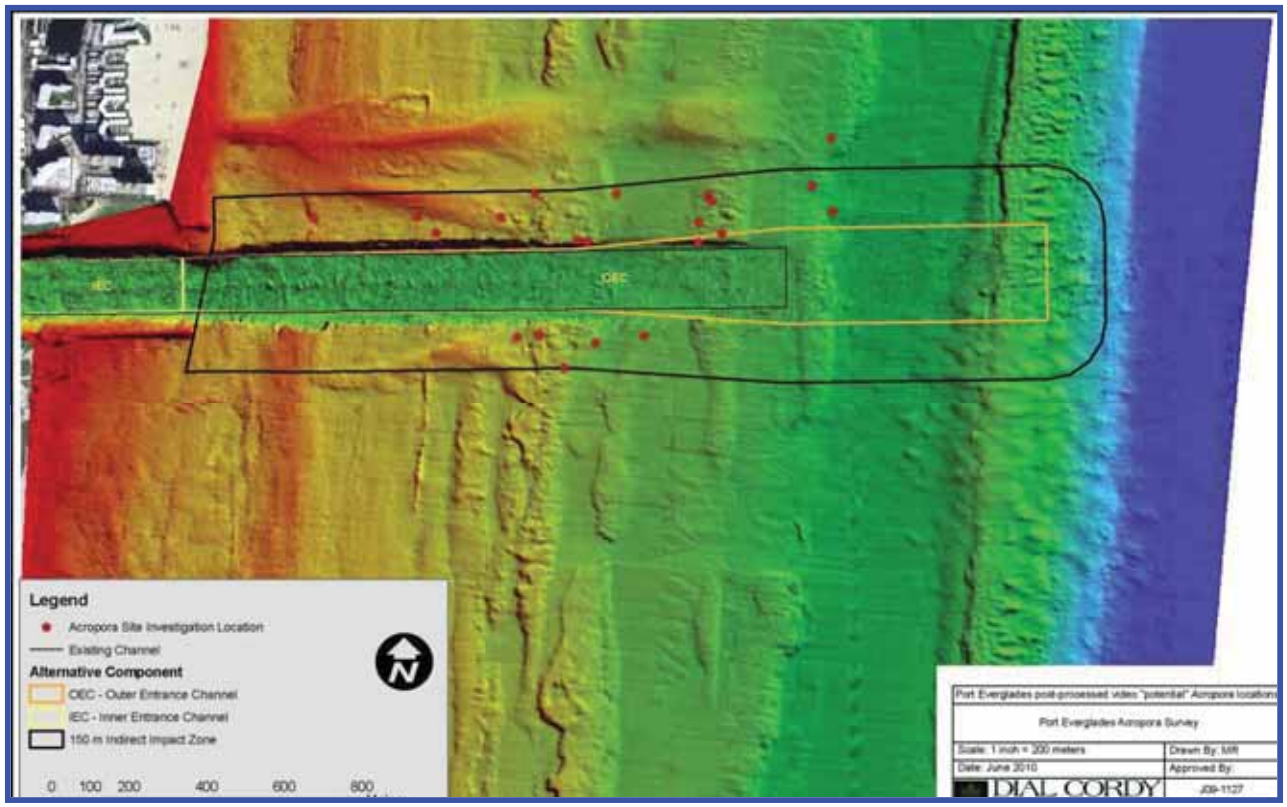
According to the October 2010 *Port Everglades Feasibility Study Acropora Coral Survey* Final Report, impacts are projected to the first, second and third reefs through which the channel bisects. Direct impacts to 15.35 acres and indirect impacts to 91.3 acres of critical habitat were measured. Even though essential features of critical habitat would be affected, no *A. cervicornis* or *A. palmata* colonies were positively identified in either the direct or indirect impact areas.

The closest surveyed *Acropora* colonies in the vicinity were found in 2008 during a sand bypass study conducted by Olsen Associates, Inc. They were located about 0.25 miles northwest of the entrance channel (see Figure 1.10-7).

Monitoring of the effects from Port actions to *Acropora* corals and their critical habitat will continue and every effort made to ensure that these species are protected to the extent practicable.

Figure 1.10-8
PORT EVERGLADES ACROPORA SURVEY
Source: DC&A, 2010

Acropora potential colonies were identified within the survey area through indirect study methods, identified by red dots, and follow up dive surveys conducted at these locations. Ochre line delineates outer entrance channel. Black line delineates indirect impact zone.



Seagrass Mapping and Assessment. The seagrass species *Halophila johnsonii* has a very limited habitat that ranges from Vero Beach to northern Biscayne Bay. It is federally listed as threatened under the Endangered Species Act. The NMFS listing took place on September 14, 1998 (63 FR 49035) and the designation of critical habitat pursuant to Section 4 of the Endangered Species Act was published on December 2, 1998 (64 FR 64231). The final rule for critical habitat designation for *H. johnsonii* was published April 5, 2000 (FR, Volume 65, No. 66). The academic community is currently evaluating whether this seagrass species is native to South Florida, and the results of this evaluation could affect its listing status.

To assess submerged aquatic vegetation near the project site, DC&A, as a consultant to the USACE, conducted seagrass baseline and impact assessments and compiled data over an 11-year assessment period (1999 through 2009). According to these surveys, *H. johnsonii* is found in the Dania Cut-off Canal and is within the footprint of the proposed federal dredging expansion project at Port Everglades.

Surveillance studies encompassed 62 transects that were mapped with geographic positioning systems (GPS). SCUBA divers classified the quality of the seagrass beds and the quantity of coverage.

All seagrass assessments found three seagrass species—*Halophila decipiens, Halophila johnsonii, and Halodule wrightii.* The 2009 seagrass distribution in and near Port Everglades is shown in Figure 1.10-9 and the 1999-2000 distribution is shown in Figure 1.10-10.

In their 2009 report titled *Seagrass Mapping and Assessment Port Everglades Harbor Final Report***,** DC&A drew the following conclusions from comparing and contrasting the data from the different survey years (1999, 2000, 2006, and 2009):

- During the nine-year period, northernmost seagrass beds have reduced in coverage area, while the seagrass beds southward of the channel have increased in density and coverage area (see Table 1.10-2).
- Seagrass species distribution has remained the same, yet *H. wrightii* cover has diminished since 1999 and 2000.
- The dominant seagrass in this area over time has been *H. johnsonii*.
- Overall, *H. johnsonii* is found in shallower water, followed by mixed beds of *H. johnsonii* and *H. decipiens*, to deeper zones where beds of *H. decipiens* can be found.
- Seagrass mixed beds have decreased since 1999, while monospecific seagrass beds of *H. decipiens* and *H. johnsonii* have increased in size within the study area.
- Overall, seagrass coverage has increased by more than three acres over the nine years.

Figure 1.10-9
2009 SEAGRASS DISTRIBUTION IN PORT EVERGLADES HARBOR
Source: *DC&A, 2009*

Figure 1.10-10
1999-2000 SEAGRASS DISTRIBUTION IN PORT EVERGLADES HARBOR
Source*: DC&A, 2009*

Table 1.10-2
COMPARISON OF SEAGRASS ACREAGE BY SPECIES
1999, 2000, 2006 and 2009
(DC&A 2009)

Bed Type	1999-2000 Acres	2006 Acres	2009 Acres
H. decipiens	3.29	4.47	6.58
H. johnsonii	2.85	2.80	4.68
H. wrightii	0.61	0.00	0.00
Mixed *H. johnsonii/H. decipiens*	0.00	1.08	0.46
Mixed *H.decipiens/H.johnsonii/H. wrightii*	1.96	0.09	0.26
Totals	**8.71**	**8.44**	**11.98**

1.10.4 Environmental Initiatives

The Port is preparing an Environmental Inventory Report, the draft of which is anticipated for release in the fall of 2013. This report will document the Port's environmental issues and initiatives, including identifying all responsible parties. This document, when finalized, will provide the foundation of a long-term coordinated environmental initiative that will allow tracking of progress, compliance monitoring, and implementation recommendations.

Stormwater Management. FDEP, SFWMD and the BCEP&GMD have jurisdiction over all drainage and water management activities at Port Everglades. All new development on Port properties is required to provide water quality storage equal to 1 inch over the site or 2½ times the percentage of impervious area, whichever is greater. As shown in Section 1.4-2, the Port's drainage system includes 80 outfalls that discharge to a water body, including the Dania Cutoff Canal, Turning Notch, Intracoastal Waterway, the FPL discharge canal, or the Port entrance channel. The 25-year, 72-hour storm event and historical discharge rates are used to determine allowable off-site discharge unless otherwise specified by the permitting agency. At a minimum, roads and parking areas are maintained at the 10-year flood elevation and new building floors must be above the 100-year flood elevation determined by FEMA.

Water Quality. The Port's mission in regard to water resources is to protect the quality of the waters within the surrounding area. The Port is in the process of updating the overall Port Everglades Stormwater Pollution Protection Plan and also preparing a database of all National Pollutant Discharge Elimination System (NPDES) authorizations within the Port jurisdictional area as most tenants manage their own stormwater systems and permits. This will provide a framework for tracking the different water quality monitoring projects that are taking place, and ensuring that all protection measures are fully and correctly implemented. In addition, the updated plan will involve a full update of all best management practices (BMPs).

The BMPs currently followed include:

- Requirement of dock inspections and spill kits.
- Usage of sediment traps where applicable to prevent clogging of the drainage system with debris and other materials that may prevent the efficient movement of stormwater.
- Monitoring of water quality discharges at Port maintenance facilities.

- Regularly patrolling by Port personnel of the docks for cleanliness before and after ship arrivals to prevent both liquid and solid substances from entering the waters. If procedures are not followed, cleanup of the area is the responsibility of the vessel operator.
- A requirement that spill containment kits are available dockside and on board which include absorbents, absorbent booms, a dustpan, and a bag designed to collect oil and other absorbent materials in the event of a spill.
- Utilization of a series of BMPs to pre-treat and protect the quality of the water before it is discharged from the dock area.
- Continued monitoring of water quality discharges at its maintenance facilities and other areas are required. These areas are typically monitored monthly with quarterly sampling during a qualifying rain event and are assessed annually, based on the results from each quarter.

Air Quality. The Port has an air quality program that represents its commitment to reducing the amount of air emissions from Port, tenant, and other user operations. Initiatives include exchanging vehicles and other operating equipment that are highly dependent upon diesel fuel for more dependable and less polluting fuel sources, improving ground transportation and rail capabilities, implementing procedures for improving the Port's energy efficiency and performance, and actively participating in air quality legislation related to the Port industry.

The Port continues to actively participate in state and federal organizations concerned with air quality and research on alternative fuel sources. The Port also participates in legislation and makes policy recommendations as a department of the Broward County government as well as a member of the American Association of Port Authorities.

Further opportunities to reduce the amount of air emissions from operations at the Port, such as the potential use of shore power for cruise ships docked at Port berths, will be explored in Phase II.

Wildlife. The Port is committed to addressing the protection of wildlife within its property and along the waterways. This commitment includes implementation of species protection plans, adherence to special construction techniques and/or guidelines that address wildlife concerns, and participating in scientific programs associated with resource protection.

Port Everglades has established a number of policies and procedures to help increase awareness of and further protect the West Indian manatee; these include:

- **Florida Manatee Sanctuary Act.** Port Everglades was instrumental in having a commercial exemption clause removed from the Act. As a result, speed restrictions within designated protection areas now apply equally to all watercraft.
- **Manatee signage.** The Port has worked with the Florida Inland Navigation District and state and county agencies to increase the number of manatee warning signs in and around the Port.

- **Manatee nursery area.** An area located within the FPL discharge canal was designated as a manatee nursery area; boaters and the general public are restricted from access. The boundary of this restricted access area has recently been moved to the opening of the discharge canal, adding further protection.
- **Manatee studies.** The Port has helped fund studies on manatee migration and feeding habits within sanctuary areas. Data obtained from these studies have helped in the enhancement and creation of manatee habitats and in the continuing efforts to protect manatees.
- **Notification to Port tenants of manatee season.** The Port provides a letter to relevant Port tenants prior to manatee season advising on special measures to avoid impacts to manatees.
- **Manatee protection for dredging and blasting.** The Port was an active participant in establishing the *Broward County Manatee Protection Plan* (2007), which is utilized during all dredging projects, including when blasting is required. An incidental benefit of maintenance dredging is that deepening the facility reduces opportunities for manatees to become trapped between the bottom of vessels and the sea bed. Whenever possible, dredging projects are scheduled outside of the winter manatee season and when that is not possible, the contractor is required to have trained monitoring staff maintain an intensive manatee watch while the project is ongoing. Since this program was initiated, no reported deaths or injuries to manatees have occurred during a Port Everglades dredging project.
- **Manatee protection in the event of a fuel spill.** There is an established notification protocol between Port Everglades, the USCG and other involved regulatory agencies in the event of a fuel spill.
- **Manatee lagoon improvement**. Some years ago, the Port obtained the necessary permits to deepen a shallow lagoon located within the existing mangrove estuary south of Berth 29. This area now offers refuge and protection for manatees during the complete range of the tidal cycle.
- **Lagoon protection at the John U. Lloyd Beach State Park.** The very successful mitigation program for the original creation of the Port's Turning Notch, implemented in the early 1990s, included the following additions and improvements at John U. Lloyd Beach State Park and vicinity:
    - Installation of floating boat barriers at the manatee lagoon to prevent boats from entering the area.
    - Construction of an award-winning environmental educational facility.
    - Removal of exotic plant species.
    - Planting of 6,500 native upland plants to beautify the landscape.
    - Creation of 23 acres of wetlands, involving the planting of 160,000 red mangroves.

- Construction of 7,300 lineal feet of rip-rap.
- Creation of access channels into mitigation areas for fish migration to the mud flats for foraging.
- Construction of an observation boardwalk that allows the public to observe wetland habitats.

The Port also has installed grates in culverts and stormwater outfalls to exclude manatees and to prevent any entrapments.

As noted, many steps are being taken to protect the West Indian manatee during dredging projects and from routine boating traffic in the canals. In addition to implementation of Standard Manatee Conditions for In-Water Work (2011) established by the US Fish and Wildlife Service, the Port's dredge protection plan includes these guidelines to ensure manatee protection:

- Contractors are informed of manatee permit stipulations and life history traits prior to construction.
- A safety zone in which all work ceases upon sighting of a manatee is established.
- Manatee observers are utilized to monitor the presence of manatees within safety zones.
- Manatee warning signs are placed on all waterborne equipment.
- All water traffic proceeds at slow speed.
- Appropriate agencies are contacted in the event of injury or death to manatee individuals.
- Installation of fenders on the sides of vessels, which provide adequate space at berth to prevent wedging of manatees between the dock and hull of a vessel.

The Port also continues to protect the endangered sea turtle species that utilize the nearby waters and beaches. The Port recently conducted a pilot test of high-mast light alternatives and found that it was possible to reduce the number of fixtures, decreasing light spill yet still maintaining adequate lighting to meet Occupational Safety and Health Administration (OSHA) work safety standards. This change also has the additional benefit of increasing energy efficiency. Further investigation of lighting attenuation is under way.

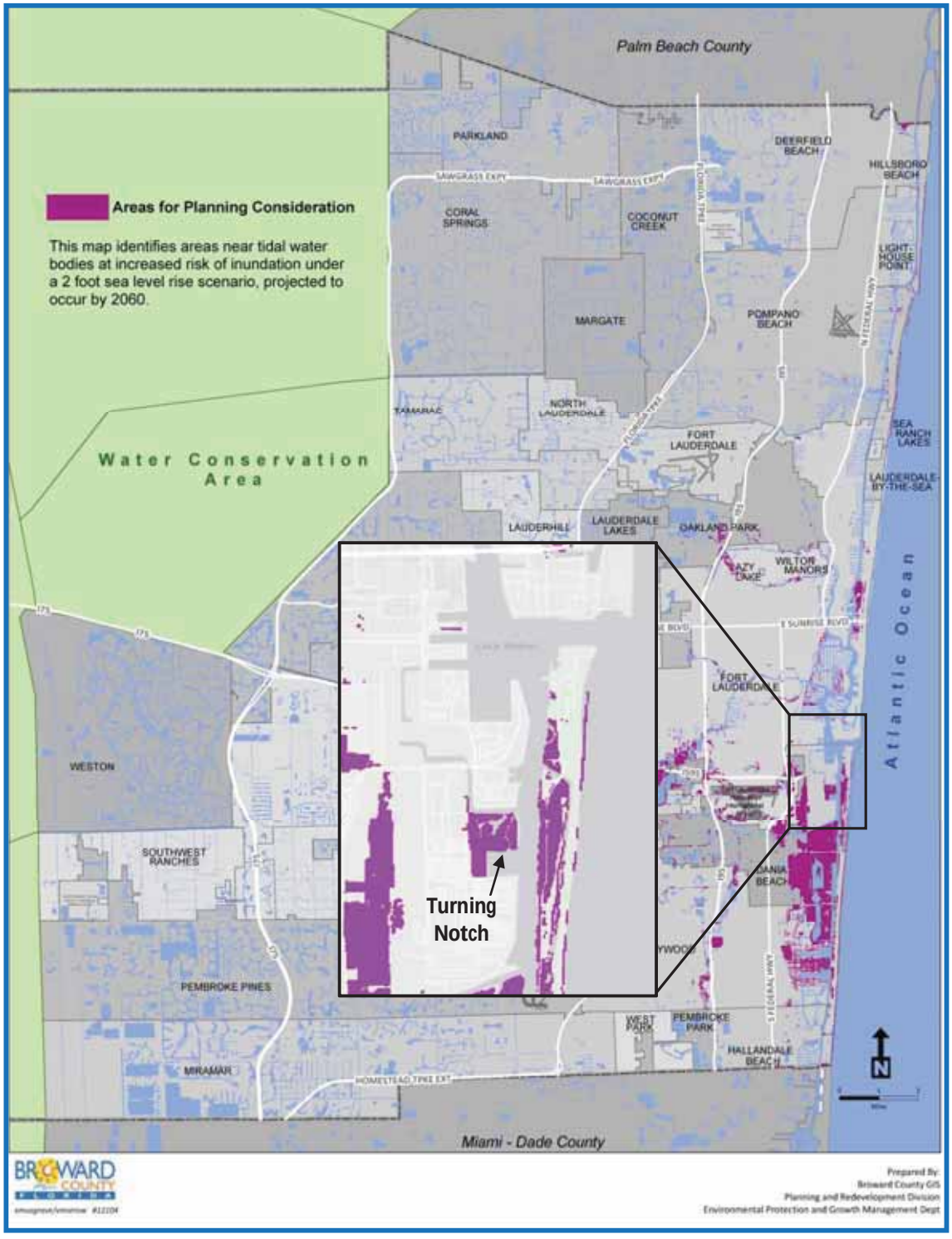
The Port will also continue to participate in the Broward County Reef Tire Removal Program, a joint venture between county, state, and federal entities which will remove from nearby coastal waters approximately 700,000 tires that were originally intended to form artificial reef habitat. This tire removal program is also included as potential mitigation for the proposed federal harbor deepening and widening project. In addition, the Port continues to allow scientific studies to take place at the Port regarding wildlife, and limits public access to environmentally sensitive areas to prevent environmental degradation.

Climate Change Initiatives. To proactively address climate change and sea level rise, BCEP&GMD has identified priority areas for planning consideration where two feet of sea level rise could occur as soon as 2060 (see Figure 1.10-11, modified to better show the Port area).

The mangrove area currently under the conservation easement around the Turning Notch in Southport and West Lake Park to the south are identified as potential vulnerable areas.

The mangrove creation area associated with the Turning Notch will involve lowering elevations to accommodate mangrove growth, which would add this property to Broward County's priority planning area. A gradual sea level rise is not, however, anticipated to cause significant effects to this protected habitat, either on the Port or at West Lake Park, which would provide some of the mitigation credit for the mangrove impacts. Also, as the property is to be deeded to the State for conservation and will be protected, no structures or infrastructure will be located there.

Figure 1.10-11
BROWARD COUNTY PRIORITY PLANNING AREAS FOR SEA LEVEL RISE
Source*: BCEP&GMD, modified by SWC 2013*



The Port is addressing climate change through initiatives to decrease carbon emissions and to reduce use of fossil fuels through transportation improvements, including greater utilization of

rail transport. In addition, the Port has been actively involved in the preparation of the Broward County Climate Change Element drafted by BCEP&GMD; this document is currently being reviewed for incorporation into the Broward County Comprehensive Plan and will comply with all required planning initiatives.