



**TAMPA PORT AUTHORITY**

**MASTER PLAN**

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## **I. Introduction and 2000 Master Plan Review**

### **A. Introduction**

This chapter provides the purpose of the 2007 Tampa Port Authority (TPA) Master Plan (MP), an overview of the Port of Tampa (the Port), a financial overview of the TPA's assets, a summary of the TPA's facilities, and a review of the 2000 Master Plan.

### **B. TPA Master Plan Purpose**

The TPA's Master Plan is a core initiative to fulfilling its mission *to develop and manage marine terminals and supporting infrastructure for the benefit of the regional economy*. The MP provides a strategic, market driven roadmap for planning, rehabilitating, modernizing, expanding and managing the TPA's marine terminals and supporting infrastructure to accommodate the projected growth in both the Port of Tampa's (the Port) and TPA's cargo and cruise businesses. The MP, in conjunction with the TPA's financial strategy, is designed to achieve the TPA's mission to *employ sound financial, business and environmental management practices in fulfilling its mission*.

### **C. Overview of the Port of Tampa**

#### **1. Location and History of the Port of Tampa**

The Port of Tampa, Florida, can be described as the waterfront areas of Hillsborough County, Florida, dedicated to the intermodal movement of commercial waterborne cargo and passengers in the foreign and domestic trades of the United States. The Port is centrally located on the west coast of the Florida peninsula. The Port includes facilities on both Old Tampa and Hillsborough Bays (Exhibit I-1).

The Port has continuously evolved since the early days of the 19th Century. Although early explorers recognized the upper end of Tampa Bay as ideal for settlement and the location of a port, it was not until 1823 that the U.S. government established a military outpost, Fort Brooke, at the mouth of the Hillsborough River. A civilian settlement followed the military, and a rudimentary seaport was developed. Supplies for the fort arrived along with necessities for the settlers. The ships left Tampa with the products of the forests: lumber, and hides.

During the last half of the 19th Century a true seaport began to develop. Private interests constructed wharves, mostly for proprietary uses. In the early part of the 20th Century, the Port's channel depths were increasingly inadequate to the larger ships serving the Port. The Port turned to the federal government for assistance in widening and deepening the natural channels. As a requisite for the work, the government insisted upon the construction of public wharves which would be open to all shipping interests at a fair price. Various harbor deepening projects have taken place over the years, the most recent completed in 1985. This project expanded the main ship channels to a depth of 43 feet and widths ranging from 500 to 700 feet.

Henry Plant's railroad with its terminus in Tampa helped to build the port, as did the discovery of phosphate in Polk and eastern Hillsborough County in 1888. Phosphate became the major export from the Port.

Coastwise shipping between Tampa and the large ports in the northeast dominated Port general cargo traffic until well after World War II. For decades, ships supplied the needs of the city and the surrounding area. They returned north with fresh and canned citrus and other agricultural and forest products. This trade disappeared with the construction of interstate highways. Most of the wharves, which had been dedicated to the exclusive use of various steamship companies, became public in the sense they would accommodate any vessel. Many of these wharves have disappeared in the wake of downtown redevelopment.

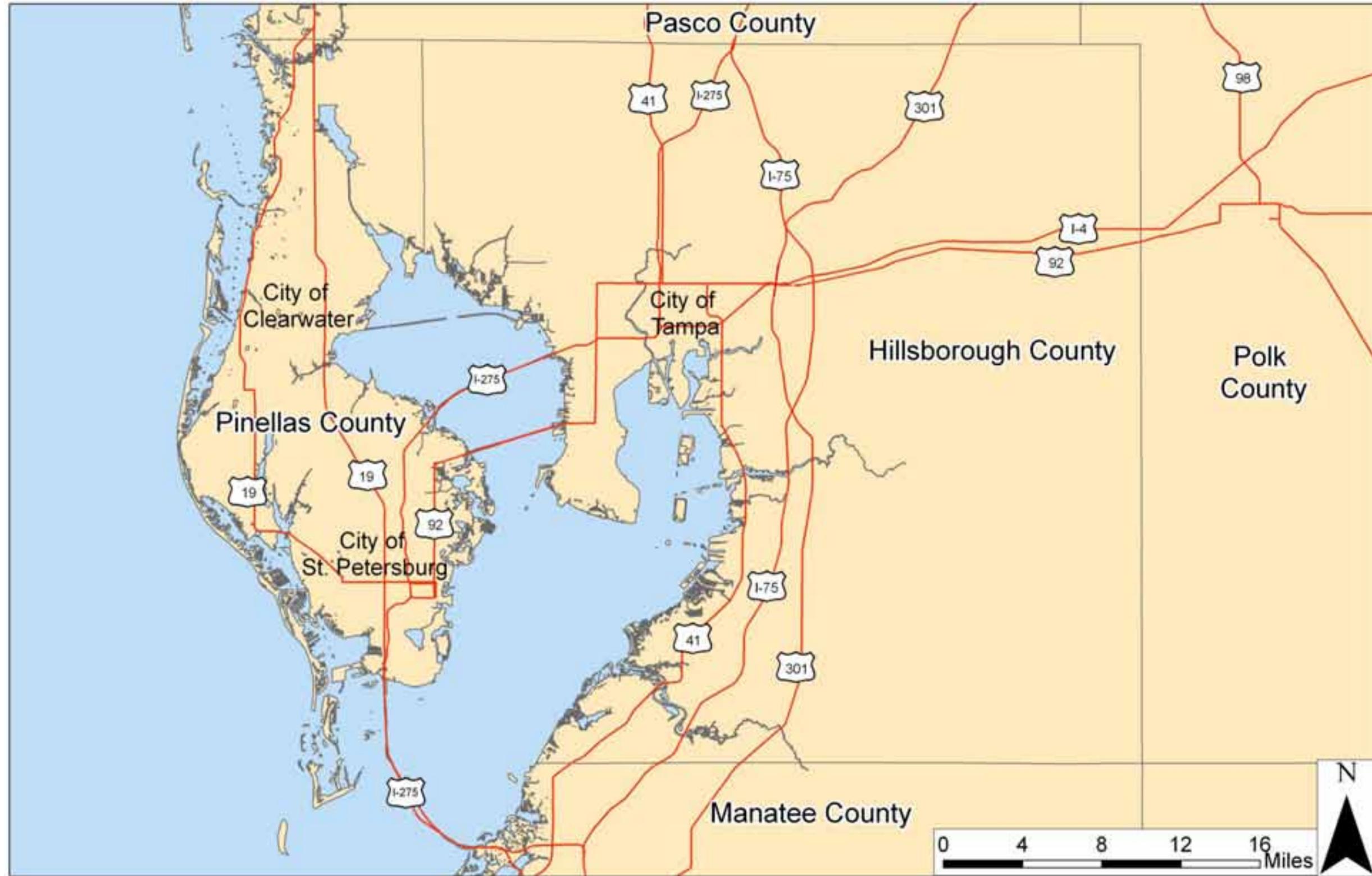
In the 1950's, commercial port activity along the Hillsborough River in downtown was phased out. In the late 1960's and early 1970's, the Port began its shift to the outlying areas on Hooker's Point and East Bay. By the mid 1980's, this shift was virtually complete, and cruise ship activity had largely replaced cargo movements at the southern perimeter of downtown. Credit for this relocation is given principally to the Tampa Port Authority, which was created by the Florida Legislature in 1945. The TPA recognized early that while the obsolete, decaying wharves and facilities required reconstruction, the current sites were inadequate.

The TPA's enabling legislation provides broad powers intended to facilitate port development, without undue encroachment on private interests. These powers include the specific responsibility of planning and implementing plans for the long-range development of facilities and commerce through the Port. Other powers include eminent domain, ownership of land, the ability to borrow money and incur indebtedness, fix and collect port fees, perform port services, enter into contracts and joint agreements, and title to sovereign lands throughout Hillsborough County. The current authority for the TPA is contained in Chapter 95-488, Laws of Florida. The boundaries of the Port District are depicted in Exhibit I-2.

The concept of a public port began to take definition as the TPA gained experience. Shipping was increasing, but private interests did not have the financial ability to provide needed modern facilities. TPA, with its power to issue tax-free bonds with a payback of up to 40 years, filled this need.

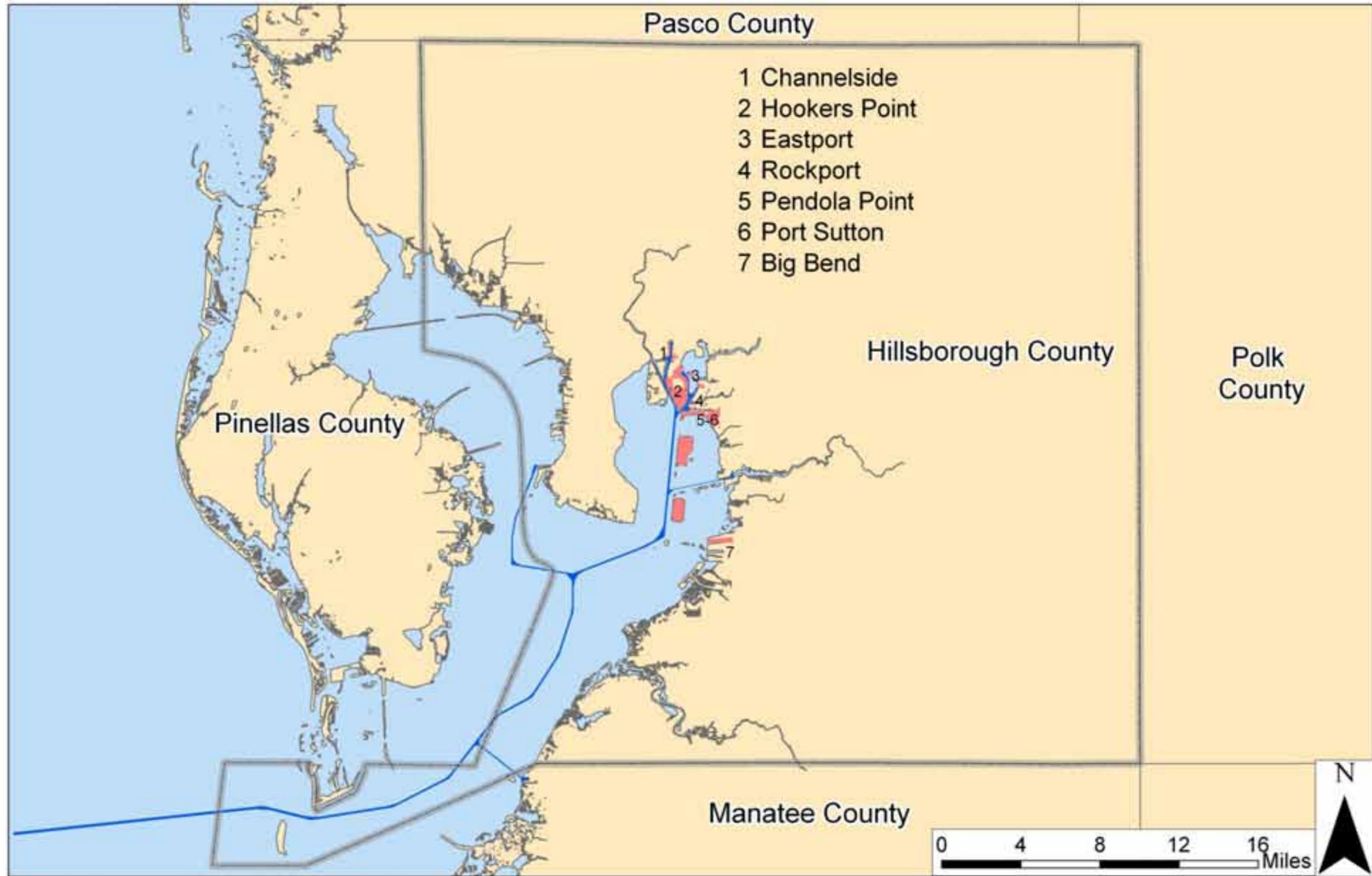
The TPA has acquired considerable waterfront property during the more than 60 years of its existence. Despite its significant land assets, the Port's property only represents about fifty percent of total port-related property. The majority of port-related property is privately owned, principally the phosphate loading facilities and the petroleum terminals which handle the major tonnages of the port. Although the TPA exercises some influence over these facilities, it derives no revenue from them, except for the Harbor Master Fund, and plays a very limited role in the planning and design of these facilities.

Exhibit I-1  
Tampa Bay Location



Source: Moffatt & Nichol

Exhibit I-2  
Port District Boundaries



Source: Moffatt & Nichol

The TPA Board of Commissioners comprises seven members. Three commissioners are appointed by the governor of the State of Florida for 4-year terms. The remaining two commissioners include the Mayor of the City of Tampa and a member of the Hillsborough County Board of Commissioners. This board of commissioners employs a port director, who in turn has a staff comprised of various departments. Each of these departments is staffed by employees, most of whom are Hillsborough County Civil Service employees.

The TPA derives its revenue from land rental, various fees for the use of public port facilities, waterfront facility licensing fees, and harbor master fees assessed against commercial vessels entering port. It also has the power to levy property taxes up to 0.5 mills of the County's assessed valuation in Hillsborough County to defray the cost of capital improvements and administrative expenses. While TPA has never levied the entire 0.5 mill, these *ad valorem* revenues have been essential to the TPA's rehabilitation, modernization and expansion of the port facilities, supporting infrastructure and navigation works to that are critical to fulfilling its mission.

## **2. Navigational Features**

### **a) Tampa Bay**

The Port of Tampa, Florida, is situated on Hillsborough Bay and on the east side of Old Tampa Bay, 232 nautical miles north of Key West, Florida, and 383 nautical miles southeast of Mobile, Alabama.

Tampa Bay extends northeasterly from the Gulf of Mexico for about 40 miles and is 6 to 7 miles wide. It has two arms which roughly form a "Y," with Tampa Bay proper constituting the stem, Old Tampa Bay is the westerly branch, and Hillsborough Bay, the easterly branch. Hillsborough Bay is about 8 miles long and 4 to 5 miles wide, and Old Tampa Bay, 12 miles long and 2.5 to 6 miles wide. The two bays are separated by the Interbay Peninsula. Access to Tampa Bay from the Gulf of Mexico is between Mullet Key on the north and Anna Maria Key on the south, a distance of about 4.5 miles; Egmont Key lies offshore in the northern half of the opening.

From the Gulf of Mexico, deep-draft vessels enter Tampa Bay through Egmont Channel, which passes between Mullet and Egmont Keys. The main ship channel extends from Egmont Channel through Tampa Bay via Mullet Key Cut and Tampa Bay Channel to just south of Gadsden Point, the southerly tip of the Interbay Peninsula. There the channel forms divides into Port Tampa and Hillsborough Bay Channels; the former extends northwesterly into Old Tampa Bay to the Port Tampa terminals and turning basin, and the Weedon Island Channel and turning basin, with the latter extending northeasterly through Hillsborough Bay to the Tampa waterfront.

Three additional channels extend eastward from the Hillsborough Bay Channel -- the Big Bend Channel, the Alafia River Channel, and the Port Sutton Channel. The Port Manatee Channel extends southeast from the main ship channel 4 miles northeast of the Sunshine Skyway Bridge to Port Manatee. The Intracoastal Waterway (Caloosahatchee River to Anclote River, Florida) crosses lower Tampa Bay.

The City of Tampa is at the head of Hillsborough Bay at the mouth of the Hillsborough River, about 41 miles from the Gulf entrance. The Hillsborough River flows southward through the city into the turning basin at the north end of Seddon Channel. The head of navigation in the river is the City Water Works Dam, 10 miles above the mouth. A part of the waterfront at Tampa is on the triangular-shaped Harbour Island at the northern end of Hillsborough Bay. Each of the island's three sides is coursed by dredged channels. At the southern tip of the island, the Hillsborough Bay Channel divides into Seddon and Sparkman Channels on the west and east sides, respectively. These channels are interconnected by Garrison Channel on the north side of the island. Seddon Channel is extended northward by a shallow-draft channel in the lower reaches of Hillsborough River. Sparkman Channel is extended northward by Ybor Channel to the industrial section of the city. Two turning basins -- the Hillsborough at the mouth of the Hillsborough River and the Ybor at the entrance to Ybor Channel -- are at the west and east ends of Garrison Channel at its junction with Seddon and Sparkman Channels, respectively. Davis Island, a bulkheaded artificial fill of about 832 acres, lies immediately west of Seddon Channel, and a mainland extension terminating at Hooker's Point lies adjacent to the east side of Sparkman Channel.

Port Tampa is on the westerly side of the Interbay Peninsula on Old Tampa Bay, about 18 nautical miles via the deep-draft channels from the Tampa waterfront at Hookers Point. Port Tampa has a number of slips and waterfront facilities designed to accommodate oceangoing vessels.

Weedon Island, located west of Port Tampa across Old Tampa Bay, and Big Bend, located east of Gadsden Point across Hillsborough Bay, have privately maintained channels leading to power plant terminals. TPA is currently developing a new berth at Big Bend for a new customer. TPA's Big Bend property is referred to as Port Redwing.

## **b) Tampa Harbor**

The original project for improvement of Tampa Bay was adopted by the River and Harbor Act of June 14, 1880. A succession of acts, the most recent ones of which were dated August 15, 1985, March 28, 1988, and November 28, 1990 for the improvement of Tampa Harbor, have been adopted. The authorized project provides for a channel from the Gulf of Mexico to various Port areas. The project is about 67 miles long, including 10 miles in Hillsborough River and 3.6 miles in Alafia River.

## **c) Berths and Terminals**

The Port of Tampa includes both publicly-owned and privately-owned berths and marine terminal facilities (Exhibit I-3). Publicly-owned facilities are those administered by the Tampa Port Authority. Most of these berths are available for public use. The backlands are typically leased to private interests that have berthing rights conveyed via lease agreements. Private facilities are those both owned and operated by private interests. In some cases the privately-owned and operated facilities are available for public use. Detailed berth information is available in the U.S. Army Corps of Engineers (USACE) Report: *The Port of Tampa and Port Manatee, Florida*, Port Series No. 17, 1996.

### **3. Political Jurisdiction and Future Land Use**

TPA facilities are located on Old Tampa and Hillsborough Bays. These facilities are primarily located within the City of Tampa. The only facilities existing and/or proposed that are located in Hillsborough County are the Pendola Point/Port Sutton and Port Redwing/Big Bend areas (Exhibit I-4).

Those TPA properties located within the City of Tampa primarily have future land use designations of industrial (Exhibit I-5). The TPA properties located within the County also primarily have future land use designations of industrial (Exhibit I-6). The existing and planned activities associated with the Port of Tampa are expected to be consistent with the permitted uses within the respective future land use categories of the City of Tampa and Hillsborough County.

### **4. Environmental Setting**

#### **a) Tampa Bay Water Quality**

The water quality of Tampa Bay has been a key environmental concern for several decades. It has been the subject of numerous studies and several major environmental initiatives by local, state, and federal agencies. The issue of highest concern regarding Bay waters has been the level of nutrients, particularly nitrogen. High levels of nitrogen have been found to cause excessive growth of planktonic algae in the warm waters of the Bay, which in turn has contributed to a dramatic reduction in seagrass habitats due to the absorption of sunlight. In addition, high nutrient levels have contributed to massive growths of attached marine algae, which have in the past periodically caused severe odor problems in bayfront residential areas.

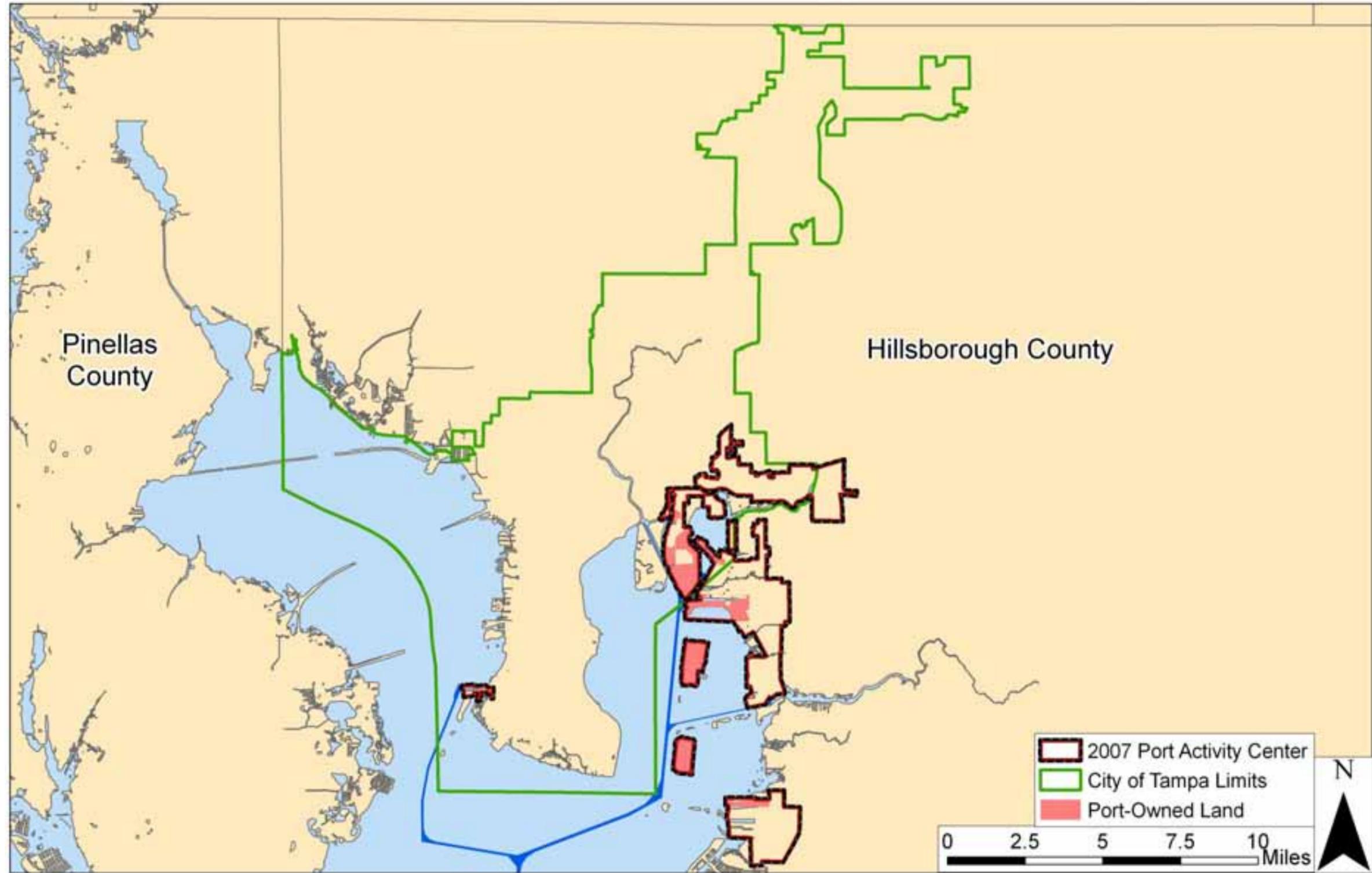
In past years the improper treatment of domestic waste was estimated to contribute over 40% of the nitrogen flowing into the Bay. During the 1970's and 1980's major federal funding programs allowed the introduction of advanced forms of waste treatment, which dramatically reduced point sources of nutrients to the Bay. Wastewater treatment plants are now estimated to contribute about 9% of the Bay's nitrogen load. As a result of these reductions in nutrients, phytoplankton levels in the Bay were reduced in the late 1980s and water clarity improved.

Exhibit I-3  
Port of Tampa Berths and Terminals



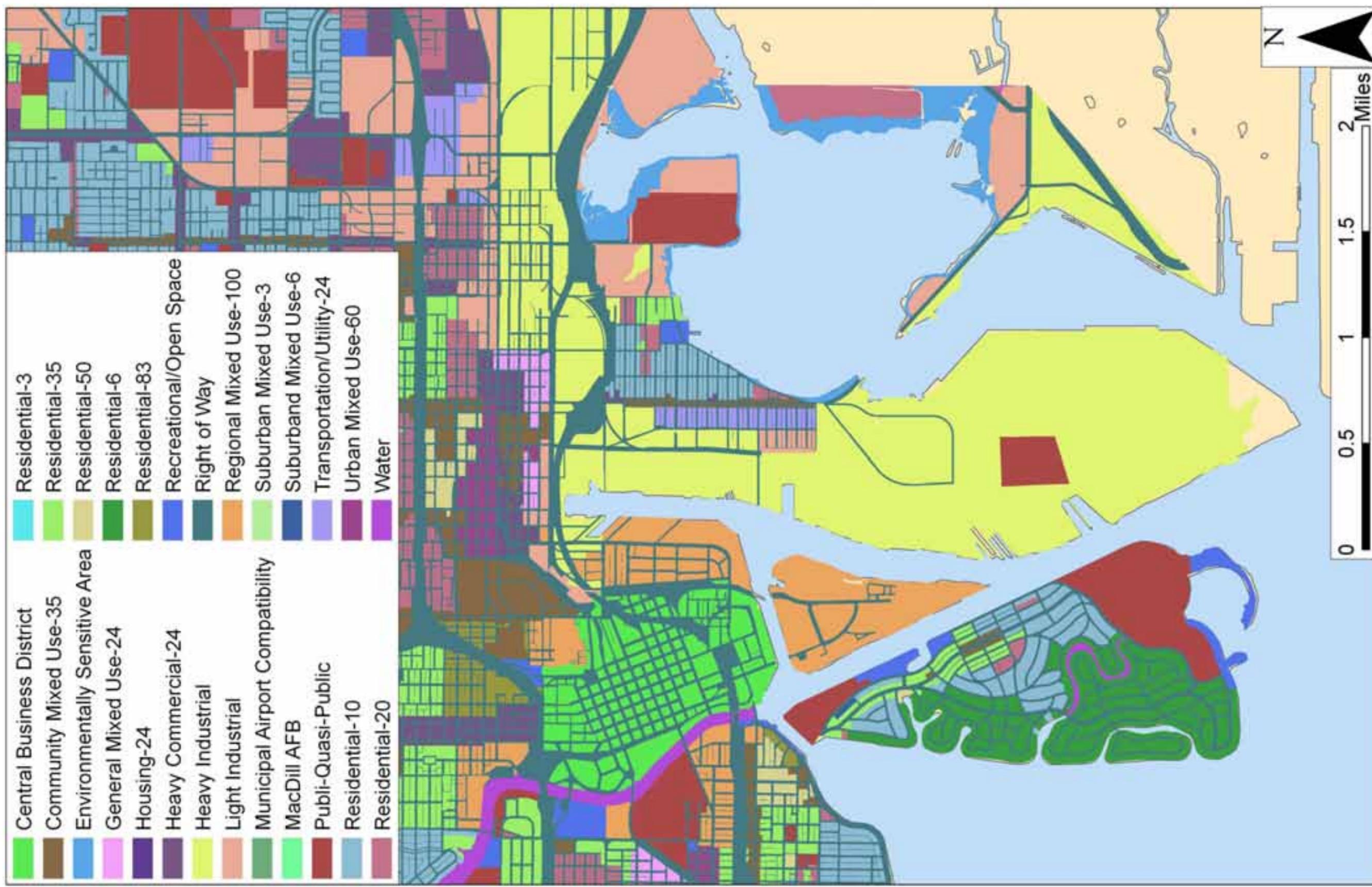
Source: Moffatt & Nichol

Exhibit I-4  
Port of Tampa Political Jurisdictions

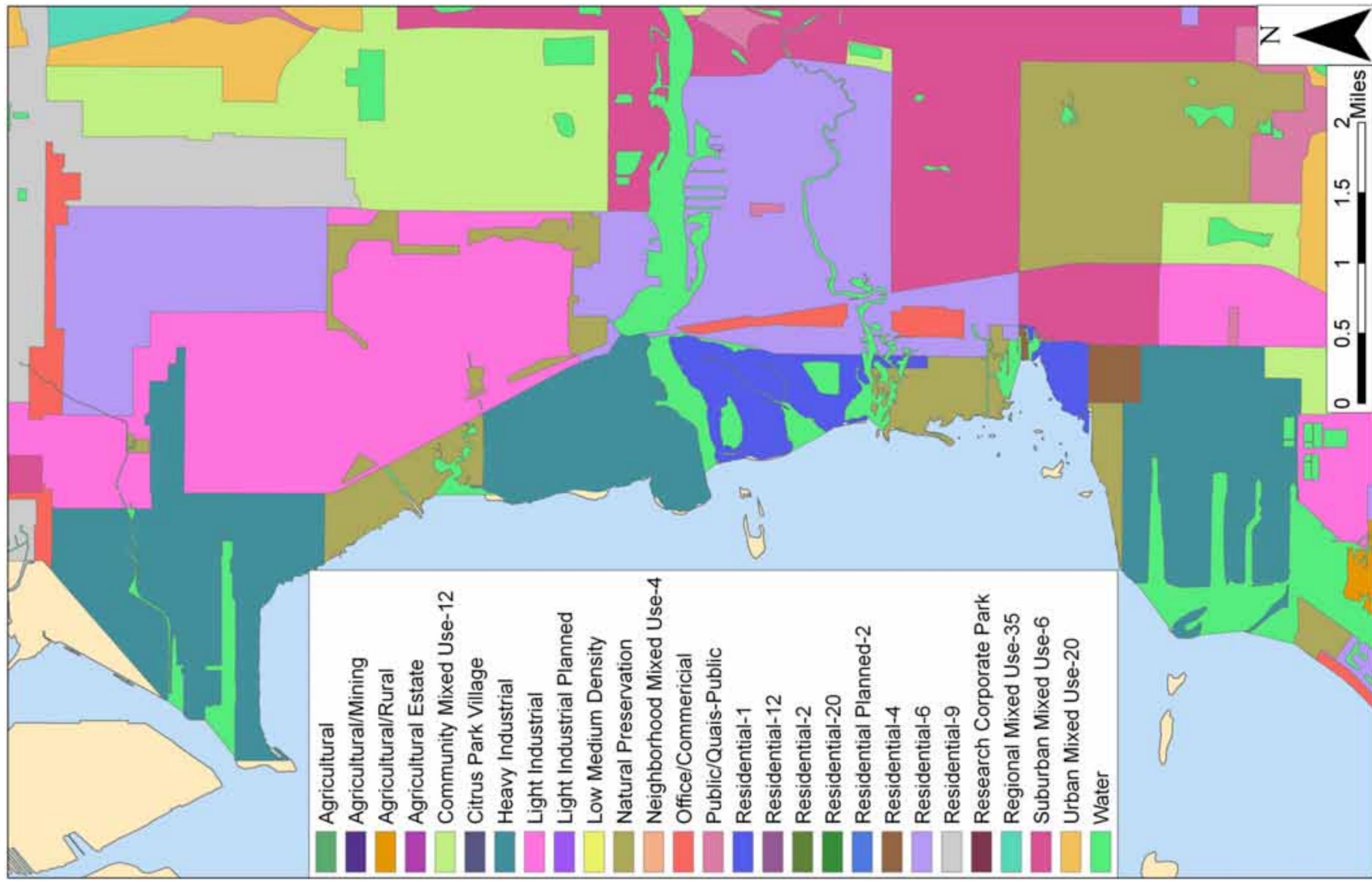


Source: Moffatt & Nichol

Exhibit I-5  
City of Tampa Future Land Use



**Exhibit I-6  
Hillsborough County Future Land Use**



In more recent years the attention of concerned scientists has turned to non-point sources of nutrients, primarily storm water runoff. It is now understood that storm water runoff contributes over 50% of the total nitrogen loading entering the Bay. The Tampa Bay National Estuary Program (TBNEP) has clearly delineated this problem. In the “Charting the Course” restoration plan for the Bay, the TPNEP established as an objective of maintaining the nitrogen loadings to the Bay at the average levels for the years 1991-1993.

Programs such as the Tampa Bay Estuaries Program Nitrogen Management Consortium have made significant strides in reducing nitrogen loading the bay by developing wasteland associations for point and non-point discharges. This has led to improvements in water clarity and seagrass restoration throughout the bay.

A water quality concern generally restricted to deep port waters is low levels of dissolved oxygen in port berths and channels. High levels of planktonic growth, caused by the nutrient load of the Bay, results in high levels of respiration by microscopic plants and animals which, during night and other low-sunlight periods results in rapid uptake of available oxygen. Levels approaching anoxic conditions are commonly reached, particularly in summer months, contributing to the very low animal populations found in these areas. The Port has addressed this issue by encouraging regulatory efforts to place dredged material in defunct channel cuts or berth areas. This lessens the depths and abates anoxic conditions, thus encouraging seagrass growth.

### **b) Tampa Bay Sediments**

The sediments of Tampa Bay are generally uncontaminated although studies have identified several “hot spots” in the Bay which have relatively high levels of heavy metals and pesticides. This contamination is generally localized, but that part of the Port in upper Hillsborough Bay is one of the areas which exhibit elevated levels of sediment contaminants. This is not unexpected considering the historical industrialized nature of land uses in and around this area of the Port.

Hillsborough Bay sediments in some areas contain moderately elevated levels of several heavy metals, such as arsenic, and significantly elevated levels of unionized ammonia which is released when these sediments are disturbed. The key sediment concern for Port interests is the potential release of these contaminants during dredging operations. Scientists have found that the metals are tightly bound to the clay fraction of the sediments, and are not generally released to the water column, staying bound to the sediments as it settles back to the bottom. The unionized ammonia is released to the water column, but is immediately oxidized to other nitrogen forms, and generally is quickly returned to the sediments by biological processes. The TPA conducts extensive water column quality monitoring to ascertain these localized impacts during dredging operations.

### **c) Marine Habitats**

Since 1950 Tampa Bay has lost almost 50% of its original saltwater wetlands and nearly 40% of its sea grasses. Much of this loss has been attributed to waterfront development along the shore of the Bay, including the development of present Port properties. Since 1972, however, the rate

of habitat loss has been reduced as federal, state, and local environmental regulations have been implemented. A wetlands map is presented in Exhibit I-7.

In addition to the losses associated with the dredging and filling of shallow habitats, much of the seagrass decline has been caused by reduced water clarity, as discussed previously. Since 1982 over 3,500 acres of seagrasses have reappeared, due in large measure to increased water clarity caused by reduction in nitrogen discharges by municipal wastewater plants. A major goal of the TBNEP initiatives regarding nitrogen loading to the Bay is to create conditions which will encourage the reestablishment of sea grasses in more than 14,000 additional acres of the Bay. Such a habitat expansion will significantly improve fish stocks in the Bay, as discussed later in this chapter.

During the past several decades there has also been a continuous and growing bay-wide process of creating, restoring and enhancing intertidal wetlands. This process has included both wetland mitigation projects associated with shoreline development and government-sponsored restoration projects, primarily associated with the Surface Waters Improvement and Management (SWIM) program of the Southwest Florida Water Management District.

The TPA has contributed to the wetland restoration/creation program with its award-winning Pendola Point Mitigation Project. The project includes wetland creation, wetland restoration and enhancement, preservation of important coastal backland habitats, and removal of invasive non-native plant species involving 220 acres. Also, over 400 acres of adjacent shallow sovereign submerged lands have been placed into protective conservation easements. Projects such as these contribute significantly to the critical habitat available for juvenile forms of several important commercial and recreational fish species.

#### **d) Wildlife Resources**

The Bay also supports important backland wildlife habitats. In addition to coastal hammock communities, such as those protected at TPA's Pendola Point mitigation project, the dredge spoil islands (created from the deposit of material dredged from channels and harbors) have become very important nesting sites for a variety of aquatic birds. Four islands in the vicinity of the Alafia River and Big Bend area, two of which were created by dredge material disposal, are managed as sanctuaries by the National Audubon Society. These islands annually support several thousand breeding pairs of brown pelicans, along with several species of herons, terns, and ibis. A backlands map is presented on Exhibit I-8.

The two large dredged material disposal islands in Hillsborough Bay have also become important bird nesting areas. These islands support two of Florida's largest nesting populations of laughing gulls as well as supporting smaller nesting populations of several species of concern, such as oystercatchers, black skimmers, and least terns. The US Army Corps of Engineers (USACE) and the TPA manage the disposal areas consistent with the Federal Migratory Bird Protection Plan. This plan protects the use of these areas by nesting birds by requiring the cessation of dredging operations during next seasons. Valuable islands resource management input is received from the TPA Migratory Bird Protection Committee. This Committee, formed in 1991, provides expert advice on bird nesting resource protection. Its members include representatives from the National Audubon Society, U.S. Fish & Wildlife Service, Tampa Bay

Estuary Program, Florida Game & Freshwater Fish Commission, Florida Department of Environmental Protection, Environmental Protection Commission of Hillsborough County, the TPA and USACE.

Exhibit I-7  
Tampa Bay Wetlands

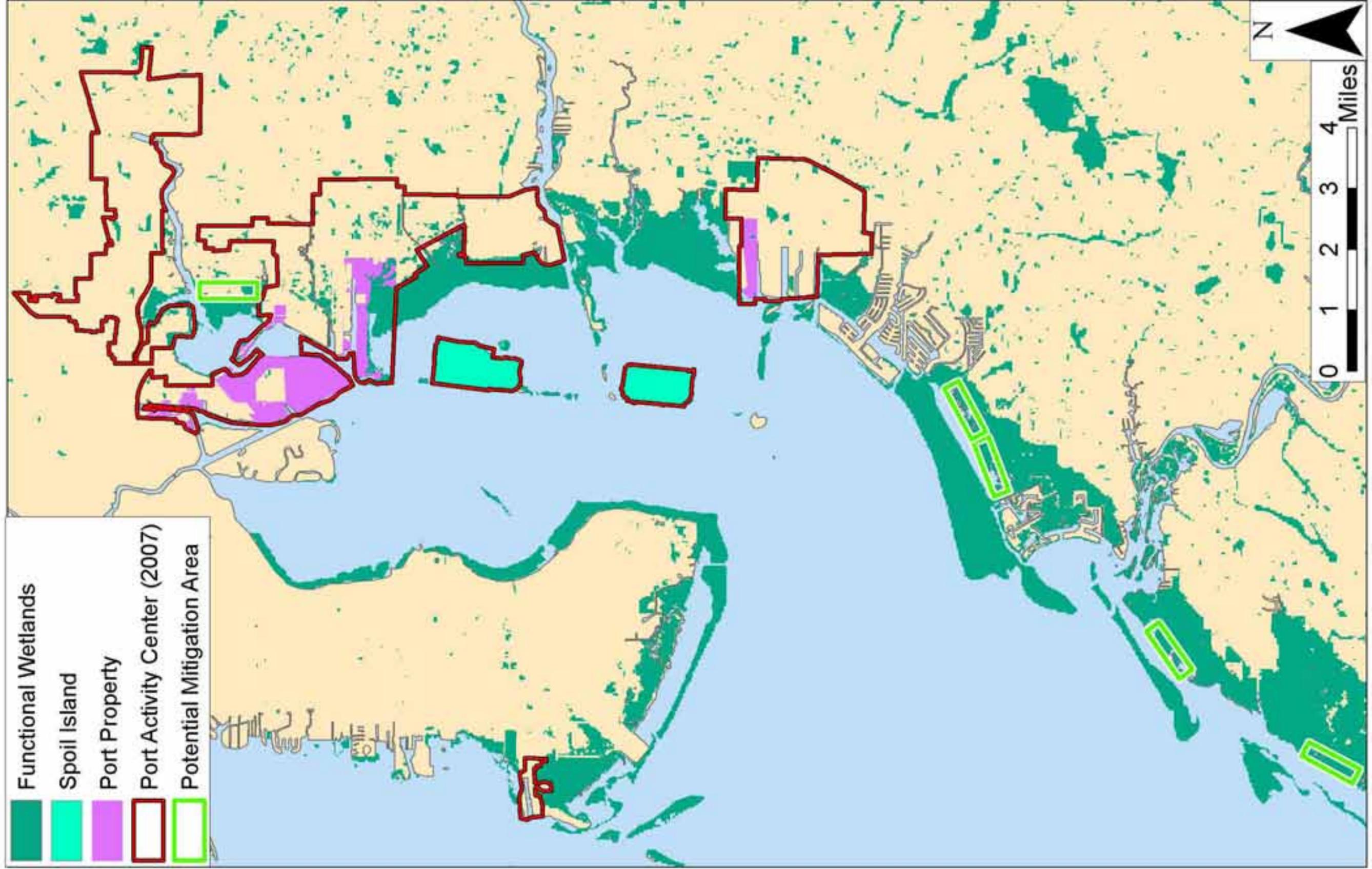
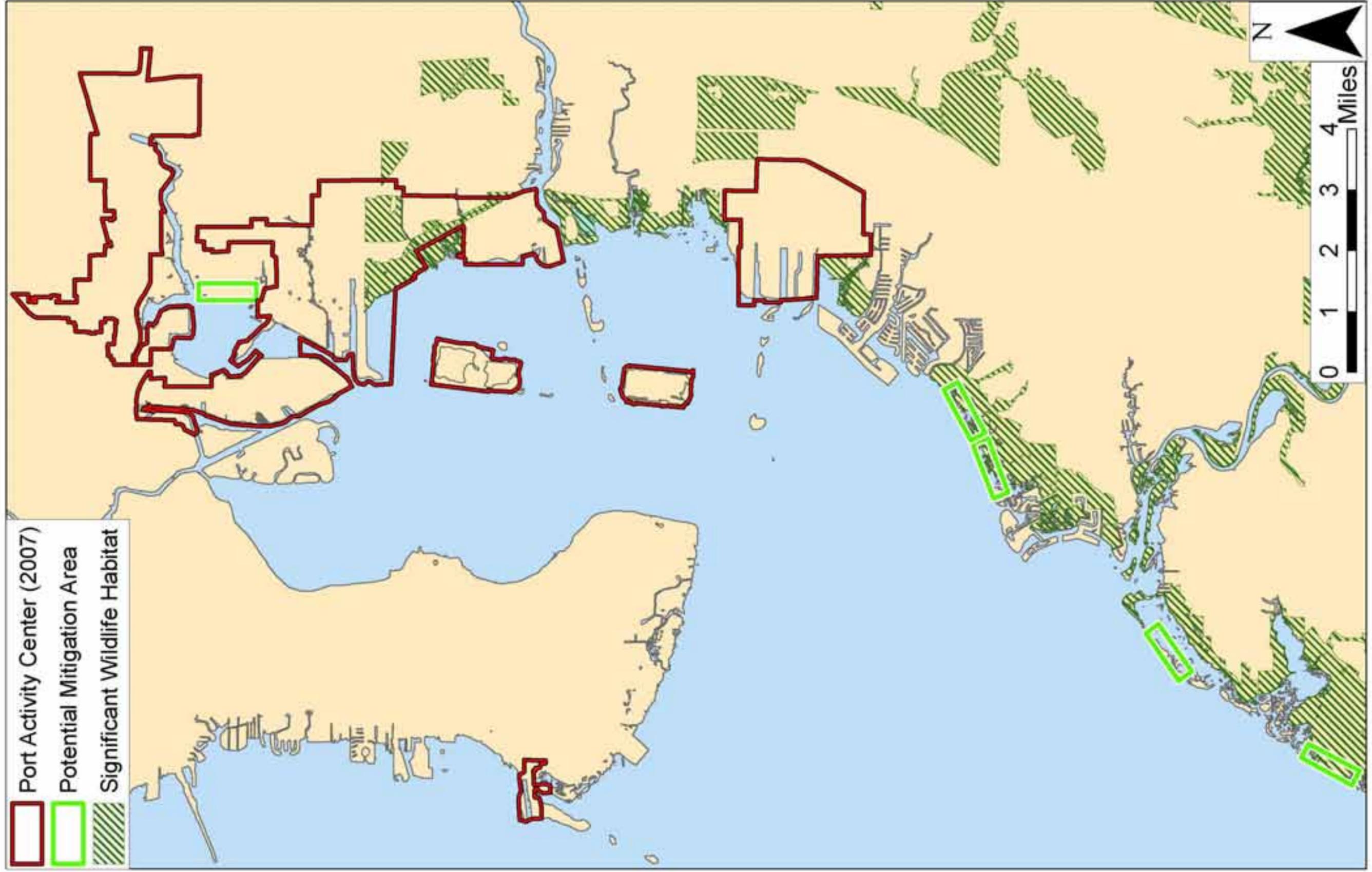


Exhibit I-8  
Tampa Bay Backland Habitat



## **D. Overview of TPA's Assets**

The TPA's financial performance is a key strength. The TPA's FY2007 budget reports a positive financial condition based on the solid growth in most of its lines business, continued attention to cost efficiencies and opportunistic use of government grant programs and ad valorem taxes.

The TPA's assets, including its component unit Tampa Bay International Terminals, Inc., totaled \$559 as of September 30, 2007. In addition to almost \$106 million in cash, receivables and other current assets, the TPA owns approximately 2,500 acres of waterside land and island properties, and has made substantial infrastructure and other improvements to the property for use by its tenants and customers. The TPA's liabilities total \$173 million, of which \$15 million are current notes and payments due within a year. In recent years, the TPA's coverage ratio—the funds available for debt servicing from operating income (excluding depreciation), ad valorem tax receipts, and grants compared to interest expense and principal repayment—has increased from the bond covenant mandated ratio of 1.2:1 to in excess of 2.0:1. The TPA's improved profitability provides a significant source of future funding (direct investment or through bonds) for requisite capital improvements.

The capital intensive nature of the port industry in general and the increasing list of requisite capital investments in non-revenue generating activities (security, road and rail improvements, environmental mitigation) will challenge the TPA's ability to fund requisite improvements over the twenty year planning horizon solely from internally generated funds and debt. The TPA, as defined in its financial strategy, will need to continue to diligently pursue all available (current and future) sources of funding including federal and state grants, public-private partnerships and user fees.

## **E. Overview of TPA's Facilities**

The TPA owns approximately 2,500 acres of land within the Port District, the majority of which is located in Hillsborough County. Dredge spoil islands used for depositing material dredged from the navigation channels and berths approximates 968 acres. The remaining 1,500+ acres includes marine terminals, roadways, parking garages, commercial and industrial development, shipyards, wet lands and mitigation areas.

TPA facilities include in excess of 640,000 square feet of dockside warehouse storage, including both cold storage and ambient space, and another 450,000 square feet of near-dock warehouse storage. Recent expansion projects have included the construction of a new container terminal with 1,750 linear feet of berth and 22 acres of paved storage, the acquisition of three container gantry cranes, the construction of a new 96,000 square foot transit shed at Berth 206, and the construction of a port security access facility. Navigational improvement projects have included the widening of Sparkman Channel, dredging to create additional berth space on the east and west sides of Hooker's Point, and channel enhancements at East Port and Big Bend to support marine terminal expansion.

## F. Overview of the Port of Tampa's Economic Impacts

Martin Associates, a transportation consulting firm and leader in the field of economic impact analysis, developed an economic impact study for the Port of Tampa (the Port). Economic impacts generated at port facilities include marine cargoes that cross the piers owned by the Tampa Port Authority (TPA) including activity at the proprietary and private docks such as Mosaic, CF Industries Inc., Kinder Morgan, Tampa Electric, National Gypsum Company, Amalie Oil Company, CITGO Petroleum Corp., TransMontaigne Product Services and Cargill Grain Division. In addition to the economic impacts generated by the cargo activity at the public and private marine terminals, Martin Associates has also estimated the economic impacts of the cruise and shipbuilding and repair industries within Tampa Bay and the impact of non-maritime real estate tenants of the Port of Tampa, located at the Channelside Bay Mall and the World Trade Center.

The study employs a methodology and definitions that have been used by Martin Associates to measure the economic impacts of seaport activity at more than 250 ports in the United States and Canada, and at leading airports in the United States. It is to be emphasized that only measurable impacts are included in this study. In order to ensure conservatism and credibility, the Martin Associates' approach to economic impact analysis is based on data developed through an extensive interview and telephone survey program of the firms participating in each of the Port's major lines of business. Specific re-spending models have been developed for the Tampa Bay Area to reflect the unique economic and consumer profiles of the regional economy. The resulting impacts reflect the uniqueness of the individual Port operations, as well as the surrounding regional economy.

It is important to note that the study used a different methodology than previous economic impact studies and therefore the comparability of the study results with previous economic impact studies may be limited.

### 1. Impact Definitions

Economic impacts are measured separately for the Port of Tampa's marine cargo, cruise and shipbuilding and repair activity. Economic impacts are measured in terms of:

- Jobs (direct, induced indirect and related shipper/consignee (related users));
- Personal income;
- Business revenue;
- State and local taxes.

**Direct, Induced and Indirect Jobs:** Direct jobs are those that would not exist if activity at Port of Tampa cargo, cruise and shipbuilding and repair facilities were to cease. Direct jobs created by marine cargo activity at the Port of Tampa's terminals are jobs associated firms directly providing cargo handling and vessel services including stevedores and terminal operators, members of the International Longshoremen's Association (ILA), trucking companies, customs house brokers, vessel agents, pilots and tug assist companies, and shippers directly dependent upon the use of the Port of Tampa, specifically the Florida phosphate and fertilizer industry.

Direct jobs with the shipbuilding and repair tenants include the employees of the ship yards as well as the employees of the subcontractors working on the repair jobs. Direct employees created by the cruise operations include the jobs with the firms providing the direct vessel services -- tugs, pilots, longshoremen, line handlers, local advertising firms, caterers, beverage wholesalers, linen companies, security firms, waste disposal firms, parking, local transportation - as well as the firms providing services to the passengers on the vessels -- hotels, taxi cabs, restaurants and tour packages. Also included are impacts generated at Tampa International Airport associated with those cruise passengers arriving via air.

**Induced jobs** are jobs created in the Tampa Area by the purchases of goods and services by those individuals directly employed by each of the Port's lines of business. These jobs are based on the local purchase patterns of Tampa area residents. The induced jobs include jobs with grocery stores, restaurants, health care providers, retail stores, local housing/construction industry, and transportation services, as well as with wholesalers providing the goods to the retailers.

**Indirect jobs** are created throughout the Tampa Area as the result of purchases for goods and services by the firms directly impacted by the Port of Tampa activity, including the ship repair facilities, and the firms providing services to cargo and cruise passenger operations. The indirect jobs are measured based on actual local purchase patterns of the directly dependent firms, and occur within such industries as utilities, office supplies, contract service providers, maintenance and repair, and construction.

**Related shipper/consignee (related user) jobs** are jobs with shippers and consignees (exporters and importers) using the marine terminals for shipment and receipt of cargo. The Tampa Port Authority's shippers and consignees are concentrated within the phosphate mining and fertilizer manufacturing industries.

**Personal income** impact consists of wages and salaries received by those directly employed by Port activity, and includes a re-spending impact which measures the personal consumption activity in the Tampa Area of those directly employed as the result of the Port of Tampa. Indirect personal income measures the wages and salaries received by those indirectly employed.

**Business revenue** consists of total business receipts by firms providing services in support of the marine cargo activity, shipbuilding and repair activity, cruise operations, and miscellaneous activity at Port of Tampa facilities, film/television activity on Port property, private construction investment on Port property, and the Tampa Port Authority administrative operations. Local purchases for goods and services made by the directly impacted firms are also measured. These local purchases by the dependent firms create the indirect impacts.

**State and local taxes** include taxes paid by individuals as well as firms dependent upon the Port of Tampa cargo, cruise, and ship repair activity.

## 2. Methodology

The impacts of the Port of Tampa were estimated based on telephone and personal interviews with 317 (which includes 32 calls to non-maritime real estate tenants) firms in the Tampa Bay

Area. This represents the universe of the marine cargo, cruise and ship repair firms, mixed use real estate tenants and service providers (with the exception of trucking and freight forwarding firms) in the Tampa Bay Area, as defined in the “2006 Tampa Port Authority Directory” as well as the “Tampa Port Authority Current Tenant Listing”. It is to be emphasized that a 100% response rate was achieved from these firms located in the Port directory and Port tenant listings. The direct impacts are measured at the firm level of detail, and aggregated to develop the impacts for each of the Port’s lines of business. Each firm surveyed provided Martin Associates with detailed employment levels (both full time and part time), annual payroll, local purchases and the residence of where the employees reside.

### 3. Results

Exhibit I-9 summarizes the results of the economic impact analysis of the Port of Tampa.

**Exhibit I-9**  
**Port of Tampa Estimated Economic Impacts**  
**2005**

	MARINE			REAL	
	TERMINALS	CRUISE	SHIPYARDS	ESTATE	TOTAL
<b>JOBS</b>					
DIRECT	14,081	710	851	728	16,370
INDUCED	19,811	553	404	316	21,085
INDIRECT	6,700	417	678	282	8,076
SHIPPER/CONSIGNEE (USER) JOBS	<u>50,919</u>	NA	NA	NA	<u>50,919</u>
TOTAL JOBS	91,512	1,681	1,933	1,326	96,451
<b>PERSONAL INCOME (\$1,000)</b>					
DIRECT	\$754,744	\$17,169	\$30,410	\$24,562	\$826,885
RE-SPENDING/CONSUMPTION	\$2,218,872	\$49,089	\$24,024	\$19,650	\$2,311,635
INDIRECT	\$263,928	\$13,486	\$23,713	\$8,130	\$309,257
SHIPPER/CONSIGNEE (USER) INCOME	<u>\$2,709,557</u>	NA	NA	NA	<u>\$2,709,557</u>
TOTAL INCOME AND CONSUMPTION	\$5,947,102	\$79,744	\$78,147	\$52,342	\$6,157,334
<b>VALUE OF ECONOMIC ACTIVITY (\$1,000)</b>					
BUSINESS SERVICES REVENUE	\$1,271,419	\$101,141	\$106,598	\$59,119	\$1,538,277
SHIPPER/CONSIGNEE (USER) OUTPUT	<u>\$6,292,026</u>	NA	NA	NA	<u>\$6,292,026</u>
TOTAL VALUE OF ECONOMIC ACTIVITY	\$7,563,445	\$101,141	\$106,598	\$59,119	\$7,830,303
<b>LOCAL PURCHASES (\$1,000)</b>					
	\$496,584	\$16,746	\$45,550	\$22,059	\$580,938
<b>STATE &amp; LOCAL TAXES (\$1,000)</b>					
DIRECT, INDUCED AND INDIRECT	\$297,854	\$7,340	\$7,189	\$4,815	\$317,199
SHIPPER/CONSIGNEE (USER) TAXES	<u>\$254,452</u>	NA	NA	NA	<u>\$254,452</u>
TOTAL STATE AND LOCAL TAXES	\$552,306	\$7,340	\$7,189	\$4,815	\$571,651

Source: Martin Associates

In 2005, the Port of Tampa created nearly 96,451 jobs in the State of Florida. Of these jobs, 16,370 jobs are directly created, while another 21,085 induced jobs are supported in the Tampa Bay Area as the result of local purchases by those directly employed by Port of Tampa activity. In addition, there are 8,076 indirect jobs supported in the Tampa Bay Area as the result of \$581 million of local purchases. In addition, the cargo moving via the Port of Tampa supports nearly 51,000 jobs throughout the State of Florida. The majority of these jobs are associated with the movement of phosphate rock and fertilizer through the Port of Tampa.

The 16,370 direct jobs received \$827 million of direct wage and salary income, for an average earnings of \$50,510 per direct employee. As the result of local purchases with this \$827 million of direct wages and salaries, an additional \$2.3 billion of income and local consumption expenditures were created in the Tampa Bay Area. It is this re-spending impact that supported the 21,085 induced jobs. The indirect jobs were paid an annual income of \$309 million. In total, \$6.2 billion of personal income was created as the result of the Port of Tampa operations.

Local businesses received \$1.5 billion of sales revenue from providing services to the marine cargo activity at the marine terminals, shipbuilding and repair activity, cruise activity and non-maritime commercial activity. This does not include the value of the cargo moving via the Port. The cargo activity at the Port created an additional \$6.3 billion of total economic output in the state, the majority of which is created in the state's fertilizer industry and the in-state industries supporting this industry. It is to be emphasized that only the economic activity associated with the raw materials and finished products that move via the Port is included.

As a result of the activity at the Port of Tampa, a total of \$571.7 million of state and local tax revenue was generated.

## **G. Review of 2000 Master Plan**

The Tampa Port Authority last updated its Master Plan in 2000. The major goals of the plan were:

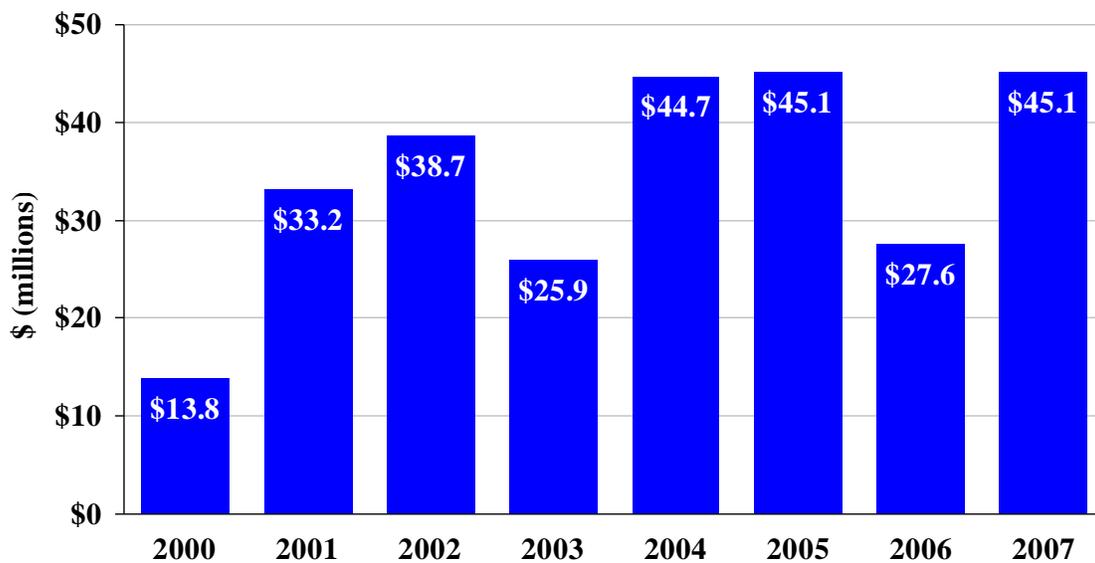
- Consolidation of land uses and operations to improve the overall port efficiency via:
  - Consolidation of container and other general cargo operations on Hooker's Point
  - Consolidation of scrap metal operations on Hooker's Point
  - Expansion of liquid bulk terminals on Hooker's Point
  - Development of new bulk facilities at Pendola Point and Hooker's Point
- Maintaining flexibility to meet market opportunities while improving the revenue generation of TPA lands. This was to be accomplished by:
  - Transitioning properties at Port Ybor to cargo/mixed uses
  - Development of Port Redwing for marine, manufacturing, warehouse, or industrial uses
  - Provisioning of lands for additional mixed use or cruise facilities in the Channelside area
  - Possible development of the east end of Port Sutton for industrial use

The 2000 Master Plan contained a variety of projects, some specific to particular TPA lines of business, and some which served all TPA lines of business. These projects were recommended based on the existing capacity and condition of TPA facilities, and on expected future TPA cargo and passenger volumes. Major project categories included land use, transportation infrastructure (road and rail), other infrastructure such as drainage and utilities, spoil island capacity, and facilities to support the TPA's major lines of business, i.e. liquid and dry bulk cargoes, container breakbulk general cargoes and cruise businesses.

Since 2000, the TPA has made considerable progress toward fulfilling its master plan, and has invested nearly \$275M in capital improvements (Exhibit I-10). These investments have covered various areas/lines of business including:

- Containerized cargo: Added Berths 212 and 213; expanded and improved backlands for container storage (ongoing); acquired container gantry cranes
- Breakbulk: Built a new general cargo warehouse at Berth 206; improved back-up land for general cargo storage
- Dry bulk: Developed new bulk facilities at Pendola Point and Hooker’s Point
- Port Ybor: Rebuilt bulkheads and developed backlands to support cargo, passenger, warehousing, and other mixed use operations/facilities
- Port Redwing: Installed various infrastructure and marine improvements
- Channelside: Developed mixed use facilities via public/private partnerships (in progress)
- Land Acquisition: Acquired land at East Port
- Other: Built a new security building; increased the capacity of dredge disposal sites.

**Exhibit I-10**  
**TPA Historical Capital Expenditures**



*Source: Norbridge, Inc. analysis of TPA data*

## **II. TPA Mission, Objectives and Master Plan Policies**

This chapter presents the Tampa Port Authority's mission, objectives and master plan policies that collectively provide the strategic direction and context for implementing the master plan.

### **A. Introduction**

Port planning encompasses a multitude of initiatives including strategic plans, business plans, land use plans and master plans. Each initiative has a specific purpose and either relies on or drives the other initiatives. The TPA's strategic plan provides the foundation for the TPA's other planning initiatives. The TPA's strategic plan defines the TPA's purpose (mission), establishes long-term objectives for successfully pursuing its mission and identifies a set of priorities that drive decision-making and resource allocation. These priorities include initiatives related to the planning, development, operation and management of marine terminals and supporting infrastructure. The TPA's MP translates the TPA's land and asset-based strategic priorities into a market driven, actionable plan for the next twenty years. The strategic plan defines the where, i.e. the TPA's long-term direction. The TPA's master plan defines the how, what investments in current and future marine terminals and related infrastructure are required to fulfill the TPA's strategic plan.

### **B. TPA Mission, Objectives and Strategic Priorities**

Mission statements define the business or businesses an organization will pursue, are based on the core competencies of an organization and state the goals by which an organization will measure its success in achieving its mission. Mission statements should drive an organization's management, investment and business processes. Mission statements are the "ultimate tie-breaker" in strategically managed organizations, i.e. all decisions taken in terms of resource allocation, capital investment, planning and management are made on the basis of how well they support attainment of the organization's mission. By definition (enduring statement), mission statements are long-lasting, i.e. they do not change in response to near term change or one-time events. Rather they should evolve as the organization's businesses mature, markets change and the organization successfully fulfills its objectives. Finally mission statements should be clear, succinct and focused. Clarity of purpose is critical if an organization is to manage strategically, remain focused and establish the right measures (objectives) for evaluating performance.

Objectives are the metrics by which an organization evaluates its performance relative to its mission. Objectives, wherever possible, should be quantifiable. They should challenge the organization to think and behave strategically. Most importantly, objectives should be clear and meaningful, i.e. they are clearly understood throughout the organization to be the foundation upon which performance is measured across all levels in the organization.

The TPA's mission is:

*The TPA will be recognized as a leader in the maritime industry. The TPA will have a customer-driven, strategic business focus in working with stakeholders to develop and manage marine terminals and supporting infrastructure for the benefit of the regional economy. The TPA will*

*employ sound financial, business and environmental management practices in fulfilling its mission.*

The TPA's objectives include:

- Enhance its business focus by:
  - Continuing to expand and diversify its lines of business
  - Pursuing public-private partnership opportunities
  - Sustaining its financial performance
- Expanding and enhancing its market focus
  - Identifying and evaluating the evolution of international markets and trade in order to proactively pursue opportunities and address challenges as they emerge
  - Continuously work with customers to understand their evolving needs and the role the TPA can play in assisting customers to meet their needs
- Seeking innovative ways to improve the efficiency and capacity of its marine terminals and related investments
  - Optimizing marine terminal design and development within the context of customers' future requirements and the practical application of state-of-the industry technologies
  - Working with customers to maximize asset utilization over the long-term in order to optimize facility investment and meet the TPA's financial return requirements
  - Emphasizing flexibility and adaptability in designing and constructing marine terminals
- Enhancing collaboration and communication with TPA's stakeholders
  - The Tampa Port Community, i.e. all organizations involved in the movement of freight and passengers through the Port
  - The citizens of the region
  - The city of Tampa and Hillsborough County
  - Neighbors
- Continue to improve sound environmental management practices
  - Identify, evaluate, select and implement sustainable practices and technologies to minimize adverse effects on the environment
  - Develop a strategic focus on mitigation

The TPA's strategic priorities include:

- Future land use and development
- Navigation (vessel access) Strategy for the Port
- Energy Gateway Strategy to meet the Central and West Florida economies future energy needs
- Regional Freight Transportation Strategy to insure the local and regional road and rail networks have the capacity to move cargoes and passengers between the Port and its markets.

## **C. Master Plan Objectives and Policies**

The following objectives and policies will be used to guide the implementation of the Master Plan.

### **1. Land Use and Development**

**Objective:** Continuously seek innovative ways to improve the efficiency and capacity of its marine terminals and related investments

**Policies:**

- Implement the Master Plan recommendations so that they are aligned with the 2027 Land Use Vision for the Port of Tampa
- Collaborate with the City of Tampa and Hillsborough County to ensure the established TPA land use vision for future port activities within the Port Activity Center is consistent with and supported by the goals, objectives and policies of the City of Tampa and Hillsborough County Comprehensive Plans and addressed during the development of land development policies and regulations
- Maintain an inventory of all vacant industrial property within the Port Activity Center in order to preserve and protect property for future port-related uses and to insure sufficient land is available for implementing the TPA's Land Use Vision
- Benchmark and periodically update best practices in the design, management and operation of international marine terminals
- Incorporate best practices in marine terminal design in implementing the recommended Master Plan
- Work with tenants to continuously enhance the efficiency and productivity of the Port's marine terminals, thereby maximizing terminal capacity
- Incorporate incentives in its marine terminal leases to incent tenants to implement best practices in marine terminal management and operations

### **2. Navigation Access**

**Objective:** Preserve and enhance navigation access to the Port insure competitive access to international markets for West Central Florida businesses and citizens.

**Policies:**

- Collaborate and cooperate with the U.S. Army Corps of Engineers to insure the Port's navigable waterways are maintained to authorized depths
- Collaborate and cooperate with the federal and state regulatory and permitting agencies to continuously enhance and improve the efficient and effective implementation of navigation and marine terminal infrastructure improvement and expansion projects
- Benchmark and periodically update best practices in planning, design and implementation of navigation and related improvement projects

- Continuously monitor developments in the design and draft (water and air) of the world's cargo and cruise fleets in order to anticipate future navigation improvement projects
- Continuously monitor proposed, planned and executed navigation improvement projects at Florida and Gulf Coast ports
- Continuously monitor the Panama Canal expansion project and the effects it has on new cargo and cruise vessel designs and draft requirements to insure the Port and the TPA will be able to accommodate those portions of the future world fleet that will likely call the Port
- Continuously work with tenants to establish and implement efficient, effective and compensatory berth deepening and berth maintenance dredging policies and processes.

### **3. Economic Development**

**Objective:** To contribute to local, regional and state economic development by promoting trade, developing port properties, partnering with the private sector and improving the efficiency of port operations.

**Policies:**

- Continue to plan and construct, in partnership with the privates sector where appropriate, marine terminal facilities and supporting infrastructure
- Facilitate federal improvements and maintenance of channels as necessary and appropriate to enhance shipping of cargo and cruise ships through both public and private terminals
- Continuously monitor rate of return for all TPA leases based on the full economic costs of the usage services provided, including return of and return on invested capital
- Continuously monitor and implement, in conjunction with tenants and stakeholders, best practices in marine terminal management and operations in order to maximize the safety, security, efficiency and capacity of marine terminals and supporting infrastructure

### **4. Environmental Management**

**Objective:** Continuously improve and enhance sound environmental management.

**Policies:**

- Benchmark and continuously update environmental management best practices
- Work with local and state regulatory agencies and environmental groups to insure the future needs of the Port are met while preserving and protecting environmentally sensitive areas of Tampa Bay
- Continuously seek innovative ways to minimize deleterious effects of marine terminal construction and operations on the Tampa Bay environment
- Continuously work with local, state and federal regulatory agencies to enhance the efficiency and sustainable effectiveness of port planning, design and construction permitting processes
- Benchmark mitigation best practices and wherever practical incorporate these practices in implementing mitigation programs

- Continuously monitor developments in port-related green technologies and work with the Port Community to implement where practical these technologies
- Collaborate with the City, County, State and Port Community to identify, apply for and obtain funding for the implementation of commercially, economically and technically feasible green port technologies

## **5. Land Side Transportation**

**Objective:** Work with the City, County and State to preserve, expand and enhance road and rail freight transportation access between the Port and West Central Florida.

### **Policies:**

- Collaborate with the City, County, State and Metropolitan Planning Organization to consider the master plan in the development of local, regional and state long range transportation plans and capital investment plans
- Collaborate with the City, County, Port Community, CSX Corporation and State to identify, designate, preserve and protect road and freight corridors for connecting the Port and the West Central Florida region
- Work with the City, County, State and Metropolitan Planning Organization to secure state and federal funding for all qualified freight-related road and rail access modernization, improvement and expansion projects
- Work with the Port Community to identify and implement practical expansions of marine terminal operating hours (days per week, hours per day) in order to balance the effect of port-related freight operations on the Region's highways and railroads.

## **6. Safety and Security**

**Objective:** The TPA will work with the Port Community and local, state and federal law enforcement agencies to insure the safety and security of the Port.

### **Policies:**

- Benchmark and periodically update navigation and port safety best practices
- Collaborate with the U.S. Coast Guard, Tampa Bay Pilots, vessel operators and agents to identify, evaluate and implement safe and secure vessel navigation practices throughout Tampa Bay
- Collaborate with the Port Community and local, state and federal law enforcement agencies to identify, evaluate and implement safe and secure marine terminal practices at all marine port facilities
- Proactively anticipate and comply with all local, state and federal security regulatory policies and procedures
- Continuously monitor and selectively implement pragmatic safety and security technologies to enhance the Port's safety and security.

### **III. Existing Conditions Assessment**

#### **A. Introduction**

An assessment of the physical condition and capabilities of the TPA's existing marine terminal assets is the requisite first step to pursuing the TPA's MP strategic priorities. This first step establishes the capabilities and capacities of the TPA's marine terminal assets and their physical condition. The assessment provides the foundation upon which the TPA's MP for pursuing its strategic priorities can then be prepared.

This chapter contains an inventory of TPA's current facilities (Exhibit III-1) and assesses their condition in order to recommend ongoing terminal and infrastructure maintenance requirements. The first step was to identify each port area's facilities and their uses, and identify the terminals, berths, leased lands, private lands and buildings and other waterfront structures. Next, interviews and visual inspections of the Port properties and structures were conducted. The inspections were used to determine the condition assessment rating and useful life for existing structures. This provided a foundation for recommendations to optimize current and future port operations. Where rehabilitation, replacement or repairs are required, cost estimates have been developed..

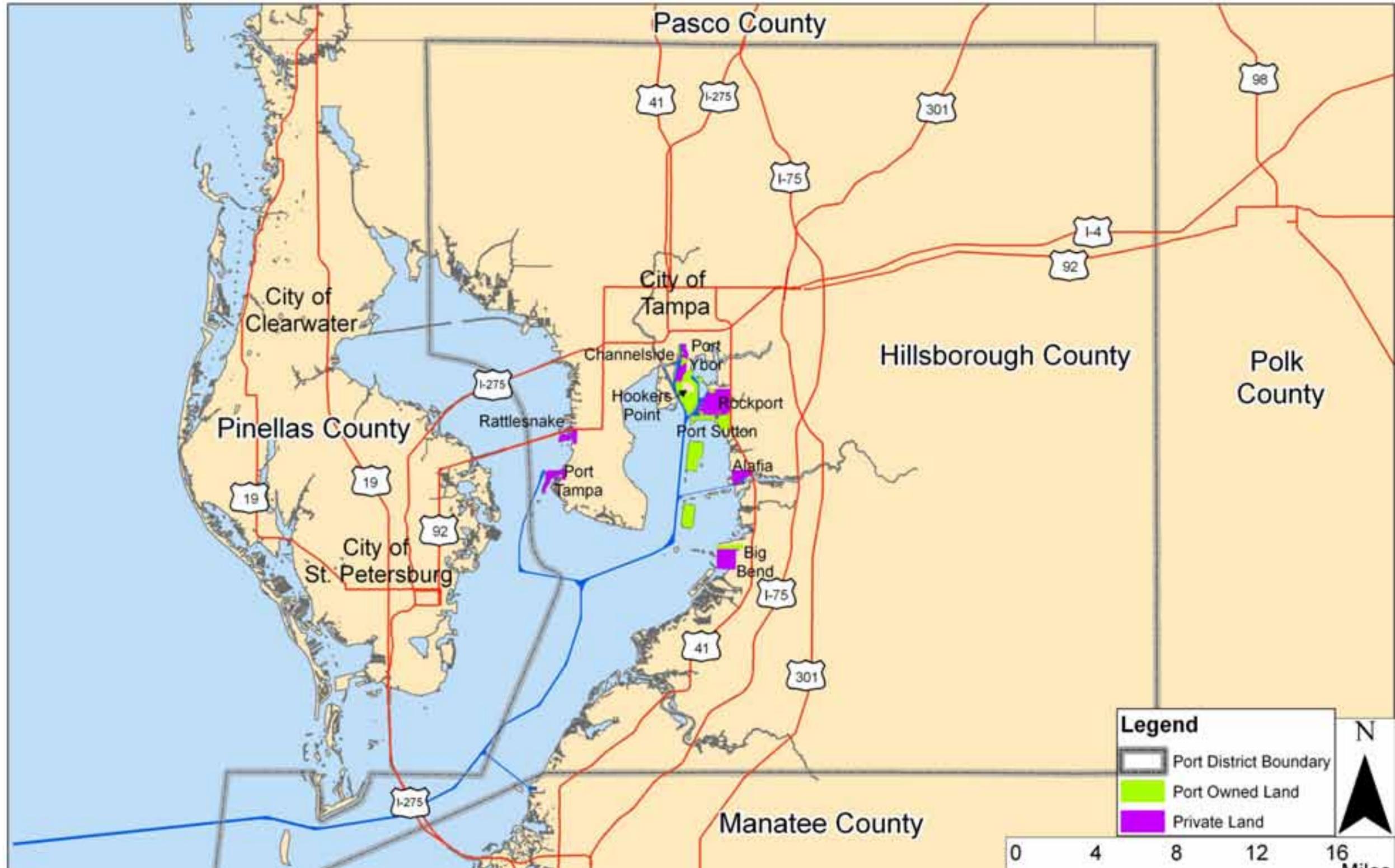
#### **B. Overview of Port Areas and Existing Port Facilities**

##### **1. Port Areas, Facilities and Terminals/Buildings**

The Tampa Port Authority owns approximately to 2,500 acres of land (Exhibits III-2 and III-3) that supports facilities at:

- Hooker's Point
- Channelside
- Port Sutton/Pendola Point
- Big Bend/Port Redwing
- East Port, and
- Port Ybor.

In addition to properties at these locations, TPA-owned land includes two dredge disposal islands (2D and 3D), which were constructed to receive dredged materials and comprise about 38 percent of TPA-owned land.



**Exhibit III-1**  
**Port of Tampa Maritime Facility Locations**

*Source: Moffatt & Nichol*

Exhibit III-2  
Port-Owned Land within the Port of Tampa District



**Exhibit III-3  
TPA Property Inventory by Port Area  
2007**

Port Area	Acres
Spoil Islands	968
Hooker's Point	764
Port Sutton/Pendola Point	435
Big Bend/Port Redwing	146
Channelside	72
Eastport	41
Port Ybor	38
Shrimp Docks	26
East Bay/McKay Bay	19
<b>Total</b>	<b>2,509</b>

*Source: TPA*

TPA's current marine terminal asset base includes:

- 58 marine terminals
- 67 deep water berths
- Three cruise terminals

Approximately 1,500 acres of TPA owned land with access to the main 43-foot deep approach channel are zoned for industrial use. The TPA owns in excess of 640,000 square feet of dockside warehouse storage, which includes 140,000 square feet of cold storage, and another 450,000 square feet of near-dock warehouse storage. In 2007, the TPA signed a lease for a 28-acre aggregates and cement terminal.

**a) Hooker's Point**

Hooker's Point (Exhibit III-4) is bordered on the eastern side by the East Bay Channel and Turning Basin and on the west by the Ybor, Sparkman and Cut D Channels. The TPA owns approximately 764 acres of land at Hooker's Point. The area is located at the tip of a peninsular that lies between the Davis Island peninsular and Port Sutton. TPA's Hooker's Point infrastructure includes 28 berths with project depths alongside ranging from 34 feet to 43 feet. The deepest draft berths are located on the southern half of Hooker's Point and in general berth drafts progressively decrease to 34 feet toward the upper half of Hooker's Point in line with the decreasing depth of the main navigation channels.

The R.E.K. pier on the west side of Hooker's Point handles petroleum products, the largest commodity handled at the Port. The TPA's container and general cargo facilities are located on the eastern side of the peninsula. In addition to containers, aggregate and cement cargoes,

automobiles, steel products, scrap metal, fertilizer, juice, and anhydrous ammonia are also handled in this port area.

***(1) Hooker's Point – West side***

There are 15 TPA berths on the west side of Hooker's Point. Heading north on the west side of Hooker's Point are Berth 219, with breakbulk (scrap metal) and dry bulk (aggregate) operations and Berth 220, a liquid bulk (sulphuric acid) and dry bulk (aggregate) facility. Berths 223, 224, 226, and 227 (226 and 227 are known as the REK pier) support liquid bulk petroleum operations.

Berth 230 is non-operational due to its close proximity to Berth 227, and Berth 232 and is used for berthing tugboats. Berths 235 through 241 support the ship repair operations of Tampa Bay Shipbuilding & Repair Company.

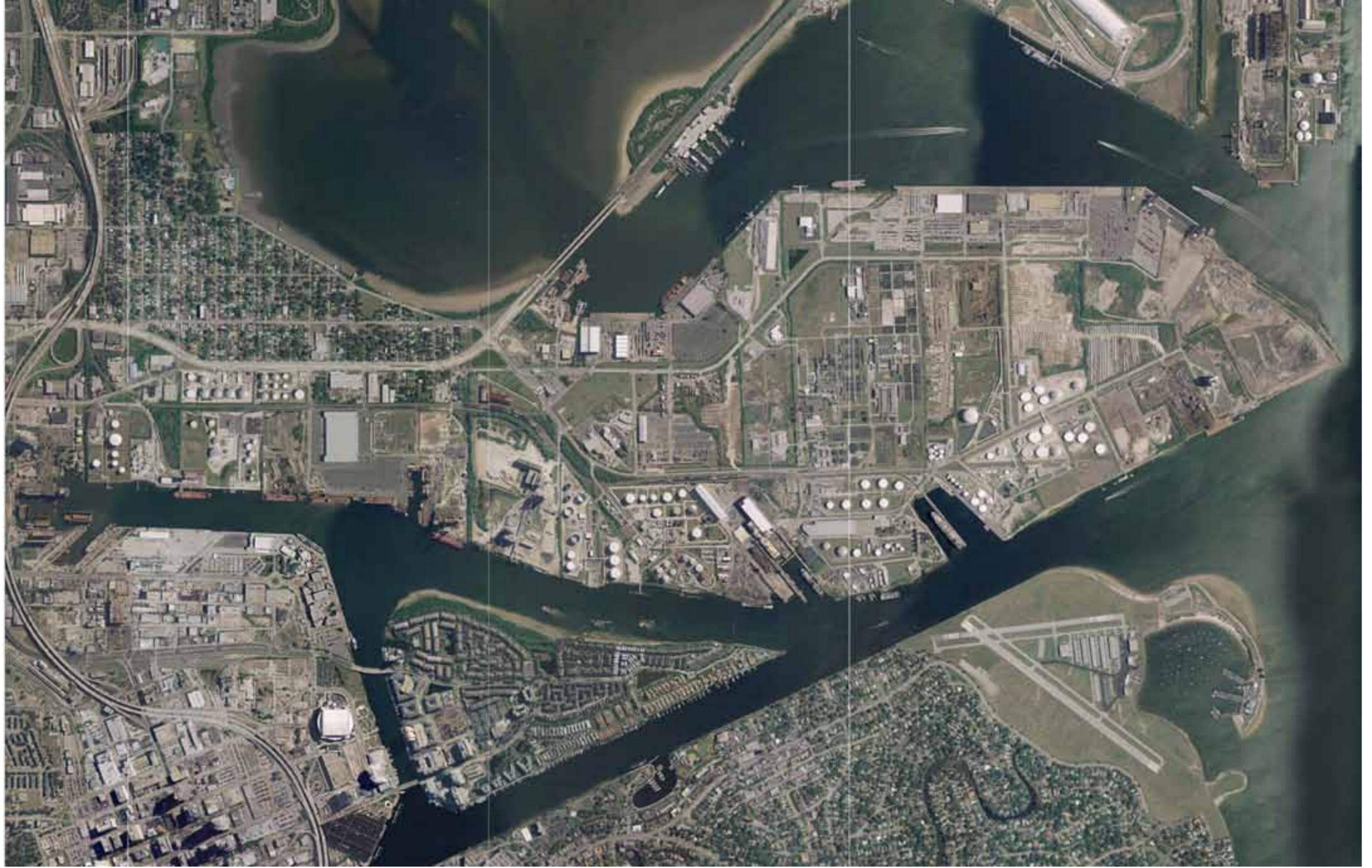
***(2) Hooker's Point – East side***

There are 13 TPA berths located on the east side of Hooker's Point. Berth 200, located at the northeastern end of Hooker's Point supports International Ship Repair's vessel and tug boat repair operations. Heading south, Berths 201 and 202 are operated as breakbulk berths by Ports America under a concession agreement with the TPA. Berths 204 and 205 are used for dry bulk and liquid bulk cargoes, respectively. Ports America's breakbulk operations include Berths 208 through 211 and its container operations are located at Berths 212 and 213. A new aggregates import facility is currently under construction at Berth 214 as part of a long-term lease between the TPA and an aggregates producer. Berth 206 is a temporary berth.

***(3) Hooker's Point Transportation Access***

Transportation access (road and rail) is provided from the north (road and rail) and east (road). Interstate I-4, the Lee Roy Selmon Expressway (Crosstown Expressway) and State Route (SR) 60 are the major roads serving Hooker's Point from the north. Causeway Boulevard (SR 45) is the main roadway serving Hooker's Point from the east, and connects Hooker's Point to U.S. 41, SR 301 and I-75. CSX Railroad provides rail connections to Hooker's Point via its main line out of the Uceta Rail Station in southeast Tampa. This main line has multiple spurs that serves the entire Hooker's Point area. An existing City ordinance limits Hooker's Point train lengths to a maximum 20 rail cars which limits the efficiency and capacity of rail service and operations to/from Hooker's Point.

**Exhibit III-4**  
**Aerial View of Hooker's Point**



*Source: TPA*

The main roadways supporting cargo operations on Hooker's Point include:

- Maritime Boulevard, an asphalt paved roadway running north-south along the west side of Hooker's Point
- Guy N. Verger Boulevard, an asphalt-paved roadway running north-south along the east side of Hooker's Point. Guy N. Verger Boulevard extends from Maritime Boulevard to its terminus south of GATX Drive. Between Maritime Boulevard and GATX Drive, Guy N. Verger Boulevard is a four lane, 46-foot wide roadway.
- GATX Drive is an east-west asphalt paved roadway running east-west, connecting Maritime Boulevard and Guy N. Verger Boulevard.

Rail access is available on both the west and east sides of Hooker's Point. Most of the Hooker's Point marine terminals have access to rail. The primary rail users are the private petroleum facilities located on the northwest portion of Hooker's Point. A rail car storage yard is located north of Shoreline Drive and to the west of Maritime Drive on the northwest side of Hooker's Point.

#### **b) Channelside District**

The Channelside District is located to the west of Ybor Channel and North of Garrison Channel (Exhibit III-2). There are a total of 11 berths at Channelside. Six berths support three TPA cruise terminals. Channelside Berth 269 supports Cruise Terminal 3, Berths 272 and 273 support Cruise Terminal 2, and Berths 266, 267, and 268 support Cruise Terminal 6. Berths 263, 263Y, 264, and 265 support International Ship Repair's vessel repair activities. The TPA's main office building, a 2,100 space parking garage, a 250,000 square foot retail and entertainment complex and the Florida Aquarium (Berth 271) are also located at Channelside. Access to Channelside is provided by the Lee Roy Selmon Expressway, I-275 and I-4 exit No. 1 (Exhibit III-5).

The Channelside District was redeveloped from a port industrial district to mixed maritime (cruise) and commercial uses during the 1990s. Since the construction of the Florida Aquarium and Cruise Terminal 2, the area has been incorporated as a district in the City of Tampa. Ongoing redevelopment of the area includes construction of high rise condominiums and mixed-use office buildings serving the Tampa central business district.

**Exhibit III-5**  
**Aerial View of Channelside District**



*Source: TPA*

### **c) Port Sutton/Pendola Point**

Port Sutton includes both Port Sutton and Pendola Point and is located north of the Alafia River and south of Rockport (Exhibit III-6). This area is accessed via the Port Sutton Entrance and Terminal Channels, which collectively extend approximately 1.5 miles eastward from The East Bay Channel at depths ranging between 43 feet (Port Sutton Entrance Channel) and 34 feet (Port Sutton Terminal Channel). Landside access is via Pendola Point Road. The TPA owns approximately 435 acres of property at Port Sutton/Pendola Point.

Port Sutton is located on the northern side of the Port Sutton Terminal Channel. The TPA owns four berths (Berths 1-4) at Port Sutton. The project depth alongside these berths is 34 feet and the primary uses of these berths are:

- Berth 1: scrap metal
- Berth 2: liquid sulphur
- Berth 3: cement
- Berth 4: return wall

Pendola Point is located on the south side of the Port Sutton Terminal Channel. The TPA owns seven berths that have project depths alongside these berths of 34 feet except for Berth 24b (14 feet) and Berth 31 (43 feet). The primary uses of these berths are:

- Berths 21 and 22: liquid fertilizer, liquid sulphur, bunker lay berth
- Berths 24, 24b, 26 and 31: petroleum/bunkers, cement, aggregates
- Berth 30: liquid propane, coal and aggregates.

The southwest corner of Pendola Point is currently undeveloped. The southeast waterfront parcel is a wetland site and was used to mitigate development activities at Hooker's Point.

Port Sutton/Pendola Point is near the intersections of U.S. 41 and Port Sutton Road, and U.S. 41 and Pendola Point Road. The facilities include rail and waterfront access. U.S. 41 provides highway access to Port Sutton and provides a link to I-4, SR 60 and the Lee Roy Selmon Expressway. Access between Port Sutton and Hooker's Point is provided via Causeway Boulevard. Rail access to Port Sutton is via CSX rail line (east of U.S. 41) which runs south from the Uceta Rail Station in southeast Tampa and a spur which connects Port Sutton to the rail facilities at CSX's Rockport terminal. There is also a lead rail that runs the east-west length of Pendola Point. This rail spur connects directly to the CSX line to the east of U.S. 41. Utilities at the site include water and electricity. There is currently no sewer utility in place.

**Exhibit III-6  
Aerial View of Port Sutton/Pendola Point**



*Source: TPA*

Access roads include:

- Port Sutton Road is located along the north side of the Port Sutton channel and provides access to Berths 1 through 4
- Pendola Point Road is located along the southern side of the Port Sutton Channel and provides access to Berths 3 through 31
- Pendola Point Road connects to U.S. 41, US 301 and I-75.

#### **d) Big Bend (Port Redwing)**

The Big Bend port area (Exhibit III-7) is located at the southeastern end of Hillsborough Bay. The Big Bend port areas include three major parcels: Port Redwing which is owned by the TPA, the Mosaic property site and the Tampa Electric Company (TECO) site. The TPA owns approximately 146 acres of land at Port Redwing. Water access is provided by the Big Bend Channel which extends easterly from Gadsden Point Cut. The Big Bend Channel is currently 200 feet in width and 34 feet in depth.

The TPA has recently leased the first 28 acres of this property to an aggregates producer which is constructing Berth 300 and backlands to handle imported aggregate. The remaining acres are available for leasing.

Road access to Port Redwing is via Pembroke Road. Pembroke road connects to U.S. 41 immediately east of the site which in turn provides access to US 301 and I-75 via Big Bend Road. The CSX Railroad accesses the Mosaic portion of the Big Bend port area. There currently is no rail access to the TPA's Port Redwing property.

In 2005 plans were initiated to develop Port Redwing to provide addition support for the future expansion of the bulk cargo operations. There are three berths planned at Port Redwing. Utilities present include water. There is currently no sewer or electric utility in place.

**Exhibit III-7  
Aerial View of Big Bend**



*Source: TPA*

### **e) East Port**

The East Port area (Exhibit III-8) is located on the northeast side of East Bay. It is bordered on the north by Causeway Boulevard and on the east and south by Eastern Associated Terminals and the CSX-owned Rockport phosphate terminal. The East Port property is accessed via the East Bay Channel which has a depth of 43 feet. The property includes 11 berths (Berths 160 through 170) which comprise 10 shrimp docks and one ship repair and towing facility.

The East Port site is in the process of being developed as part of a long-term lease with CEMEX, a cement and aggregates company. The development includes the construction of Berth 150 which will have a depth of 41 feet when completed in 2009 and 36 acres of terminal and storage area.

Road access to the East Port facility will be provided via Causeway Boulevard as part of the terminal development. There currently is no rail access to the facility. However, rail access could be extended to the property via CSX's Rockport facility which is contiguous to the TPA's East Port property.

Exhibit III-8  
Aerial View of East Port



Source: TPA

#### **f) Port Ybor**

The Port Ybor area (Exhibits III-9 and III-10) is located in the Channelside District on the east side of the Ybor Turning Basin across from the Florida Aquarium. The site is accessed via Sparkman Channel which has a depth of 34 feet.

The Port Ybor area was originally developed in the 1940's. The TPA owns approximately 52 acres of land including Berths 249 through 253 and Berth 256. Berths 249-252 are primarily built for Ro/Ro and breakbulk cargo operations. Berths 250 to 252 are currently used for ship repair operations on a month to month basis. Berth 253 is also used for ship repair and Berth 256 is used for dry bulk operations. The berths have project depths of up to 34 feet.

TPA reconstructed Berths 249-252 bulkheads and backlands in 2000 to accommodate Ro/Ro vessels and other maritime activity. A portion of the backlands at the Port Ybor site has been leased to an industrial developer who has constructed warehousing on the site.

Highway access to the Port Ybor area is provided via Grant Street and Flagler Street. These east-west roadways connect the site with 20<sup>th</sup> Street. 20<sup>th</sup> Street connects to the Lee Roy Selmon Expressway, SR 60 and I-4 to the North and Causeway Boulevard to the south and east. CSX serves the site via its branch line that connects Hooker's Point to its east-west main line. The branch line traverses the Port Ybor site. The facilities have electric, and water utilities.

#### **g) Cargo Terminals/Buildings**

TPA facilities include in excess of 640,000 square feet of dockside warehouse storage, including both cold storage and ambient space, and another 450,000 square feet of near-dock warehouse storage. The warehouses provide covered storage and transit space for a wide range of cargoes including steel products, forest products, fruits and vegetables. Most of the buildings on TPA property are owned and/or maintained by TPA's tenants. Exhibit III-11 provides an inventory of TPA-owned buildings and structures. Recent expansion projects have included the construction of a new container terminal with 1,750 linear feet of berth and 22 acres of paved storage, the acquisition of three container gantry cranes, the construction of a new 96,000 square foot transit shed at Berth 206, and the construction of a port security access facility.

**Exhibit III-9  
Port Ybor Area**



*Source: TPA*

**Exhibit III-10**  
**Aerial View of Port Ybor Area**



*Source: TPA*

**Exhibit III-11  
TPA Owned Facilities, Buildings and Structures**

<b>Port Area/ Lease Hold or Owner</b>	<b>Occupancy</b>	<b>Physical Property Location &amp; cross street</b>	<b>Year Built</b>	<b>Width (approx.)</b>	<b>Length (approx.)</b>	<b>Square Foot Area</b>
<b>Hooker's Point - west</b>						
Tampa Port Authority	Security Operations Center	Maritime/Verger	6/24/2004	52.00	109.00	5,668
US CUSTOMS & BORDER PATROL	Office and warehouse	Eastport/ Maritime Blvd.	2004	110.00	350.00	38,500
Tampa Port Authority	New port security imp. Guard shack at Maritime Blvd. & Eastport (Temp. portable bldg, TPA Checkpoint Building)	Removed to Fac. Mgmt or Reused	2002	8.00	10.00	80
Tampa Port Authority	New port security imp. Guard shack at R.E.K. Pier (Temp. portable bldg, TPA Checkpoint Building (was at McCloskey)	Removed to Fac. Mgmt or Reused	2002	8.00	10.00	80
Tampa Port Authority	New Port Security Improvements Guard Shack at TPA Maint. Yard not in use (was at Easport)	Removed to Fac. Mgmt or Reused	2002	8.00	10.00	80
Tampa Port Authority	Dockside facilities	Berth 223/224	1968	8.00	12.00	96
Tampa Port Authority	Cattle Facility (Holding Pen)	Lehman/ Shoreline	1967	180.00	200.00	36,000
Tampa Port Authority	Cattle Dock	Berth 232/ Lehman	1967	85.00	138.00	11,730
Tampa Port Authority	Guard Shack AT R.E.K. Pier	REK Dock		10.00	10.00	100

**Exhibit III-11 (continued)**  
**TPA Owned Facilities, Buildings and Structures**

Port Area/ Lease Hold or Owner	Occupancy	Physical Property Location & cross street	Year Built	Width (approx.)	Length (approx.)	Square Foot Area
<b>Hooker's Point - east</b>						
Tampa Port Authority	Restroom Facility (Berth 205)	Verger/ Barker		17.00	21.00	357
PORTS AMERICA / Tampa Port Authority	Warehouse / Berth 206 Transit Shed	Verger/ Barker	May 2007	160.00	600.00	96,000
Tampa Port Authority - Scale	New TPA Truck Scale Building & Scales	Verger/ Eastport	3/24/2005	10.00	15.00	150
Tampa Port Authority - Scale Toilet	TPA Truck Scale Toilet Building	Verger/ Eastport	3/24/2005	9.00	10.00	90
Tampa Port Authority	US Customs & Border Patrol Office (CBP) - Radiation Portal Monitor (RPM) Facility	Verger/ Barge	2005	8.00	14.00	112
Tampa Port Authority	US Customs & Border Patrol Office (CBP) - Radiation Portal Monitor (RPM) Facility - 1ST MONITOR	Verger/ Barge	2005	10.00	22.00	220
Tampa Port Authority	US Customs & Border Patrol Office (CBP) - Radiation Portal Monitor (RPM) Facility - 2ND MONITOR	Verger/ Barge	2005	10.00	22.00	220
Tampa Port Authority	Shed behind main bldg at Tampa Port Authority Maintenance Bldg (Portable Building)	Verger/ Barge	2003	8.00	40.00	320
Intermodal Shipping Co formerly A. R. Savage, Inc./ TPA	New Hooker's Point Sec Access Trailer (Portable Bldg) Office Trailer	Verger/ Barge	2002	24.00	54.00	1,296
Tampa Port Authority	TPA Facility Management Main Building	Verger/ Barge	2002	118.00	118.00	13,924
Tampa Port Authority	New port security imp. Guard shack at Verger & Eastport (Temp. portable bldg, TPA Checkpoint Building)	Removed to Fac. Mgmt or Reused	2002	8.00	10.00	80
Tampa Port Authority	New port security imp. Guard shack at Verger & Eastport (Temp. portable bldg, TPA Checkpoint Building)	Removed to Fac. Mgmt or Reused	2002	8.00	10.00	80
Ports America/ TPA formerly Terminal no 7 Cruise	Warehouse Building	Verger / Eastport	1984	292.00	363.00	105,996
Ports America	Restroom Facility	Guy N Verger Blvd / Berth 211	1982	10.70	17.40	186
Tampa Port Authority	Berth 201 Transit Shed	Berth 201				86,000
Tampa Port Authority	Temporary warehouse	Berth 201				25,000
Tampa Port Authority	Transit Shed-dry	Berth 202				100,000
Tampa Port Authority	Transit Shed-dry	Berth 208				77,000
Tampa Port Authority	Transit Shed-dry	Berth 209 (CD&E Bldg)				84,000
Tampa Port Authority	Transit Shed-dry	Berth 209 (off-dock behind cold-storage)				37,500
Tampa Port Authority	Transit Shed-reefer	Berth 210 (A&B building at cold-storage)				47,460
Tampa Port Authority	Transit Shed-reefer	Berth 211 (main building at cold-storage)				91,000

**Exhibit III-11 (continued)**  
**TPA Owned Facilities, Buildings and Structures**

<b>Port Area/ Lease Hold or Owner</b>	<b>Occupancy</b>	<b>Physical Property Location &amp; cross street</b>	<b>Year Built</b>	<b>Width (approx.)</b>	<b>Length (approx.)</b>	<b>Square Foot Area</b>
<b>Hooker's Point</b>						
Tampa Port Authority - SOC	HP SOC - Emergency Generator Bldg	Maritime/ Verger	6/24/2004	15.00	22.00	330
Tampa Port Authority - SOC	HP SOC - Canopy Entrance (Maritime Blvd)	Maritime/ Verger	6/24/2004	29.00	123.00	3,567
Tampa Port Authority - SOC	HP SOC - Canopy Exit (Verger Blvd)	Maritime/ Verger	6/24/2004	28.00	48.00	1,344
Tampa Port Authority - SOC	HP SOC - Dumpster	Maritime/ Verger	6/24/2004	12.00	13.00	156
<b>Port Sutton/ Pendola Point</b>						
Tampa Port Authority	Pendola Point Security Access Control Building	Pendola Point / US HWY 41	2002	24.00	55.00	1,320
Tampa Port Authority	Pendola Point Security Access Control - Canopy Building	Pendola Point / US HWY 41	2002	45.00	100.00	4,500
Tampa Port Authority	Roadway Building	Port Sutton Road/ Berth 3		21.00	35.00	735
Tampa Port Authority or Tenant	Pipeline Building at Berth 21	Pendola Point Rd/ Berth 21		8.00	8.00	64

**Exhibit III-11 (continued)**  
**TPA Owned Facilities, Buildings and Structures**

Port Area/ Lease Hold or Owner	Occupancy	Physical Property Location & cross street	Year Built	Width (approx.)	Length (approx.)	Square Foot Area
<b>Channelside</b>						
Tampa Port Authority - Terminal 3 Guard House	TPA Terminal 3 Guard House (Temporary Portable Building)	Terminal 3 East Side of the South east corner of the building		10.00	10.00	100
Tampa Port Authority - Terminal 2 Guard House	TPA Terminal 2 - Guard House (Temporary Portable Building)	Terminal 2 Edge of Back of Dock		10.00	10.00	100
Guard House at McKay St / T6	Guard House Temporary Portable Building	McKay St/ Terminal 6		10.00	10.00	100
Tampa Port Authority	Cruise Terminal No. 2	Channelside / Seaport				108,091
Tampa Port Authority	TPA Cruise Terminal 3	Channelside/ Cumberland	2003	106.00	504.00	53,424
Starship Yacht at Berth 273 Entrance Building	Port Security - Guard Shack TPA (Checkpoint Bldgs) Temp. Portable Building	Berth 273/ Garrison St	2002	8.00	10.00	80
Tampa Port Authority	TPA Main Office	Channelside/ York St	1999			102,000
Tampa Port Authority	Main Office Emergency Generator	Channelside/ York St	1999	16.00	16.00	256
Tampa Port Authority	Fire Pump Room	Channelside/ York St	1999	12.00	12.00	144
Tampa Port Authority	AC Chiller Vault	Channelside/ York St	1999	33.00	52.00	1,716
Tampa Port Authority	Parking Canopy	Channelside/ York St	1999	20.00	227.00	4,540
Tampa Port Authority	Parking Canopy	Channelside/ York St	1999	20.00	247.00	4,940
Tampa Port Authority	Dumpster Storage	Channelside/ York St	1999			
Tampa Port Authority	Seaport Parking Garage	Channelside/ Cumberland	1999	250.00	690.00	862,500
Tampa Port Authority	Cruise Terminal No. 6	McKay St/ Terminal 6	1995	80.00	400.00	32,000
Tampa Port Authority	Building B-264 TPA Office	Channelside/ Harbor St	1984	16.00	20.00	320
Tampa Port Authority	Office Building B-264	Channelside/ Harbor St	1966	9.40	17.40	164
Guard House at Berth 268	Guard House Temporary Portable Building	York St / Berth 268		10.00	10.00	100

*Source: Moffatt & Nichol analysis of TPA data*

## 2. Channels

### a) Tampa Bay Main Navigation Channel

Ships calling at the Port of Tampa navigate from the sea buoy at the Egmont Channel entrance and transit under the Sunshine Skyway Bridge to reach the berths at the Port's marine terminals. The main channel, as discussed in the following paragraphs, is comprised of many cuts, between the sea buoy and the main Port area Buoys 25 and 26 (beginning at the southern end of Hooker's Point and is 41 miles in length.

The main channel has a project depth of at least 43 feet and can accommodate vessels with an operating draft up to 41 feet at mean low water, and 43 to 44 feet at high tide. The USACE's standard practice is to dredge channels two to four feet deeper than the project depth, depending on the channel area, to provide a tolerance for wave action and vessel trim while underway. The channel cuts which comprise the main channel and their physical specifications are summarized in Exhibits III-12 and III-13.

**Exhibit III-12  
Tampa Bay Navigation Channel: Segment Specifications**

Channel Name	Length		Project Depth (Feet)	Width (Feet)
	(Feet)	(Nautical Miles)		
Egmont Channel Cut 1	66,990	11.0	45	700
Egmont Channel Cut 2	13,265	2.2	45	700
Mullet Key Channel	22,000	3.6	45	600
Cut A	16,661	2.7	43	500
Cut B	20,936	3.4	43	500
Cut C	10,493	1.7	43	500
Cut D	13,154	2.2	43	500
Cut E	12,505	2.1	43	500
Cut F	9,528	1.6	43	500
Gadsden Point Cut	20,256	3.3	43	400
Hillsborough Cut A	6,045	1.0	43	400
Hillsborough Cut C	34,177	5.6	43	400
<b>Total</b>	<b>246,010</b>	<b>40.5</b>		

*Source: Moffatt & Nichol analysis of TPA data*

**Exhibit III-13  
Navigation Channel by Segment (Cut)**



Source: TPA

Channel depths are a key determinant of a port’s competitive positioning since they determine the maximum size vessel that can access a port both currently and in the future. Historically, the average size vessel in the world’s cargo has steadily increased resulting in a steady demand for deeper water. This is particularly true for the world’s container, dry bulk and liquid bulk fleet segments. Conversely, while the average size vessel in the World’s cruise ship fleet has steadily increased, the draft requirements have not significantly increased. Channel lengths and air drafts are significantly more important factors affecting cruise vessel access to ports. The current vessels on order will continue this trend in the short-term. The trend toward increasing vessel size in general and the container and cruise ship fleets in particular is expected to continue for the next decade or more.

Vessels operating at 41 feet of draft or less, have unlimited access to the Port assuming the main navigation channels are maintained at 43 feet and weather conditions are not abnormal. At this depth, a majority of the world’s cargo fleet can access the Port (Exhibit III-14).

**Exhibit III-14  
Percentage of the World Merchant Fleet with a Draft of 41 Feet or Less**

Vessel Type	Total Number of Vessels World Fleet		Percent of Vessels with Draft of 41’ or Less	
	Current	On Order	Current	On Order
Liquid Bulk	11,561	1,620	95%	78%
Dry Bulk	6,518	839	77%	54%
Container	4,339	1,183	75%	60%
Cruise	226	25	100%	100%

Note: Liquid and dry bulk vessels includes only those of 80,000 DWT or less. Cruise vessels includes only those with capacity of 500 passengers or more

*Source: Norbridge, Inc. analysis of Lloyd’s Fairplay data*

**b) Port Area Access Channels**

As described above under each of the port area descriptions, five channels provide access between the main port areas and the main navigation channel (Exhibit III-15).

These port area access channels moving from south to north include:

- Big Bend Channel which provides access to the Big Bend Port Area
- Alafia River Channel which provides access to the private port facilities on the Alafia River
- Port Sutton Entrance Channel which provides access to the Port Sutton and Pendola Point port areas
- East Bay Channel which provides access to CSX’s Rockport facilities, East Port and the eastern side of Hooker’s Point

- “Cut D” which provides access to the western side of Hooker’s Point and via the Sparkman Channel to the Port Ybor area, the Channelside District and the marine facilities located on Ybor Channel.

**Exhibit III-15  
Tampa Bay Port Area Access Channels**

Channel Name	Length		Project Depth (Feet)	Width (Feet)
	(Feet)	(Nautical Miles)		
Big Bend Channel	11,431	1.88	34	200
Alafia River Channel	16,500	2.71	36	250
Port Sutton Entrance Channel	4,230	0.70	43	400
East Bay Channel	6,381	1.05	43	600
Hillsborough Cut D	7,043	1.16	41	400

*Source: TPA, Tampa Bay 2007 Ports Guide, and Moffatt & Nichol*

The average depth in these channels varies significantly. Consequently, the average size vessel that can access each port area varies significantly. In the long-term, the port areas most likely to be constrained in terms of vessel access include Hooker’s Point, Port Ybor, and Port Redwing. These areas are most likely to be constrained due to the fact that the cargoes handled in these areas are likely to be carried in increasingly larger vessels. This is particularly true for container cargoes.

**c) Channel Widths**

The width of a navigation channel is important since it determines the degree to which two way traffic can be accommodated. Generally speaking, the wider the channel the greater the potential to accommodate two way traffic. A channel width of 600 feet or more is generally considered to be unrestricted for the maximum size (i.e. 41 foot draft) vessels capable of transiting Tampa Bay.

The maximum width of the Tampa Bay main navigation channel narrows proceeding eastward and then northward from the sea buoy to the upper bay. The maximum channel width is 700 feet wide from the sea buoy to the eastern end of Egmont Channel. The channel narrows to 600 feet in width in Mullet Key Cut (Exhibit III-16). The Tampa Bay Pilots and the U.S. Coast Guard permit unrestricted two way traffic between the sea buoy and eastern end of Mullet Key Channel.

Exhibit III-16  
Tampa Bay Channel Width Overview



Source: TPA

At the Sunshine Skyway Bridge, the main channel narrows to 500 feet and maintains that width through Hillsborough Bay Cut C. For safety reasons, vessel traffic in this area may be restricted to one way traffic during certain vessel movements. When large cruise vessels, loaded anhydrous ammonia or loaded LPG vessels are operating in these areas, vessel movements are restricted to one direction. This restriction reduces the effective capacity of the main shipping channel.

As a result of these navigational restrictions, vessels occasionally experience delays, both planned and unplanned. The Tampa Port Authority, in conjunction with vessel operators, the Tampa Bay Pilots and the U.S. Coast Guard, proactively plans vessel movements to minimize one way operations and the associated delays to vessels. However, delays still occur, even if the plan is adhered to. For example, while creating a vessel movement plan, the TPA may ask a vessel to delay its arrival or departure time by several hours to accommodate channel congestion or expected one way traffic restrictions. Vessel types most sensitive (commercially, economically) to delays are those operating on a regular schedule, such as cruise and container vessels.

### **3. TPA Existing Berths**

TPA currently owns a total of 67 berths throughout the Port. These berths serve a wide variety of vessel types and cargo activities including two container berths, eleven breakbulk cargo berths (two of which are also can accommodate Ro/Ro vessels and one of which is a temporary berth), seven dry bulk cargo berths (primarily cement and aggregates), nine liquid cargo berths (primarily petroleum products), six cruise ship berths and one berth used for the Aquarium. Two berths serve both dry and liquid bulk, one berth serves both breakbulk and dry bulk operations, one berth serves Ro/Ro vessels, ten are shrimp docks, 15 serve the tug and shipbuilding and repair industries, one is inoperable and one is a return wall (Exhibit III-17).

Hooker's Point, TPA's largest land area, currently has a total of 28 berths, 13 on the East side serving primarily container, breakbulk and dry bulk industries, and 15 on the West side primarily serving liquid and dry bulk industries. East Port has 11 berths. Port Sutton/Pendola Point's 11 berths primarily serve the dry bulk and non-petroleum liquid bulk industries. Channelside is home to six berths that comprise three cruise terminals, four ship repair berths, and the berth used by the Aquarium. Port Ybor's 6 berths serve breakbulk, dry bulk and ship repair operations.

**Exhibit III-17**  
**TPA Existing Berth Inventory by Port Area and Cargo Type/Use**

PORT AREA, BERTH AND USE			
Location	Berth Nos.	Type	Use
<b>Hooker's Point - East side - 13 berths</b>			
	TPA 200	Ship repair/tug	ship repair/tugboat
	TPA 201	Breakbulk	multi-purpose cargo with heavy lift capacity
	TPA 202	Breakbulk	multi-purpose cargo with heavy lift capacity
	TPA 204	Dry bulk	phosphate, fertilizer products
	TPA 205	Liquid bulk	frozen juice concentrate, tallow
	TPA 206	Breakbulk	temporary berth
	TPA 208	Breakbulk	forest products, vehicles, steel, steel products
	TPA 209	Breakbulk	forest products, vehicles, steel, steel products
	TPA 210	Breakbulk	forest products, vehicles, steel, steel products
	TPA 211	Breakbulk	melons, seafood, other chilled/frozen
	TPA 212	Containers	containers
	TPA 213	Containers	containers
	TPA 214	Dry bulk	aggregates
<b>Hooker's Point - West - Dry docks: 7 berths</b>			
	TPA 235-241	Ship repair, dry docks	ship repair, dry docks
<b>Hooker's Point - West: 8 berths</b>			
	TPA 219	Breakbulk / Dry bulk	scrap metal, aggregate
	TPA 220	Dry bulk / Liquid bulk	cement, aggregate, sulphuric acid
	TPA 223	Liquid bulk	petroleum products, anhydrous ammonia, caustic soda
	TPA 224	Liquid bulk	petroleum products, anhydrous ammonia, caustic soda
	TPA 226	Liquid bulk	petroleum products, anhydrous ammonia, caustic soda
	TPA 227	Liquid bulk	petroleum products, anhydrous ammonia, caustic soda
	TPA 230	Non operational	non operational
	TPA 232	Tug	tugboat towing
<b>East Port: 11 berths</b>			
	TPA 160	Shrimp docks	shrimp docks
	TPA 161 -162	Shrimp docks	shrimp docks
	TPA 163 -164	Shrimp docks	shrimp docks
	TPA 165 -166	Shrimp docks	shrimp docks
	TPA 167	Shrimp docks	shrimp docks
	TPA 168	Shrimp docks	shrimp docks
	TPA 169 - 170	Shrimp docks, ship repair	shrimp docks, ship repair
<b>Port Sutton: 11 berths</b>			
	TPA 1	Breakbulk	scrap metal
	TPA 2	Liquid bulk	molten sulphur
	TPA 3	Dry bulk	cement
	TPA 4	Return wall	
	TPA 21	Liquid bulk	
	TPA 22	Liquid bulk	sulphur
	TPA 24	Dry bulk	cement, petroleum, sulphur
	TPA 24b	Liquid bulk	bunker (lay berth)
	TPA 26	Dry bulk	cement
	TPA 30	Dry bulk / Liquid bulk	propane, coal, aggregates
	TPA 31	Dry bulk	cement, limestone, coal

**Exhibit III-17 (continued)**  
**TPA Existing Berth Inventory by Port Area and Cargo Type/Use**

PORT AREA, BERTH AND USE			
Location	Berth Nos.	Type	Use
<b>Channelside: 11 berths</b>			
	TPA 263	Ship repair	ship repair
	TPA 263Y	Ship repair	ship repair
	TPA 264	Ship repair	ship repair
	TPA 265	Ship repair	ship repair
	TPA 266	Cruise	cruise terminal 6
	TPA 267	Cruise	cruise terminal 6
	TPA 268	Cruise	cruise terminal 6
	TPA 269	Cruise	cruise terminal 3
	TPA 271	Aquarium	museum ship
	TPA 272	Cruise	cruise terminal 2
	TPA 273	Cruise	cruise terminal 2, starship
<b>Port Ybor: 6 berths</b>			
	TPA 249	Ro-ro	not in service
	TPA 250	Breakbulk/ ro-ro	multi-function
	TPA 251	Breakbulk/ ro-ro	multi-function
	TPA 252	Breakbulk cargo	multi-function
	TPA 253	Ship repair	ship repair
	TPA 256	Dry bulk	citrus pellets

*Source: Moffatt & Nichol, TPA.*

## 4. Roadways and Railways

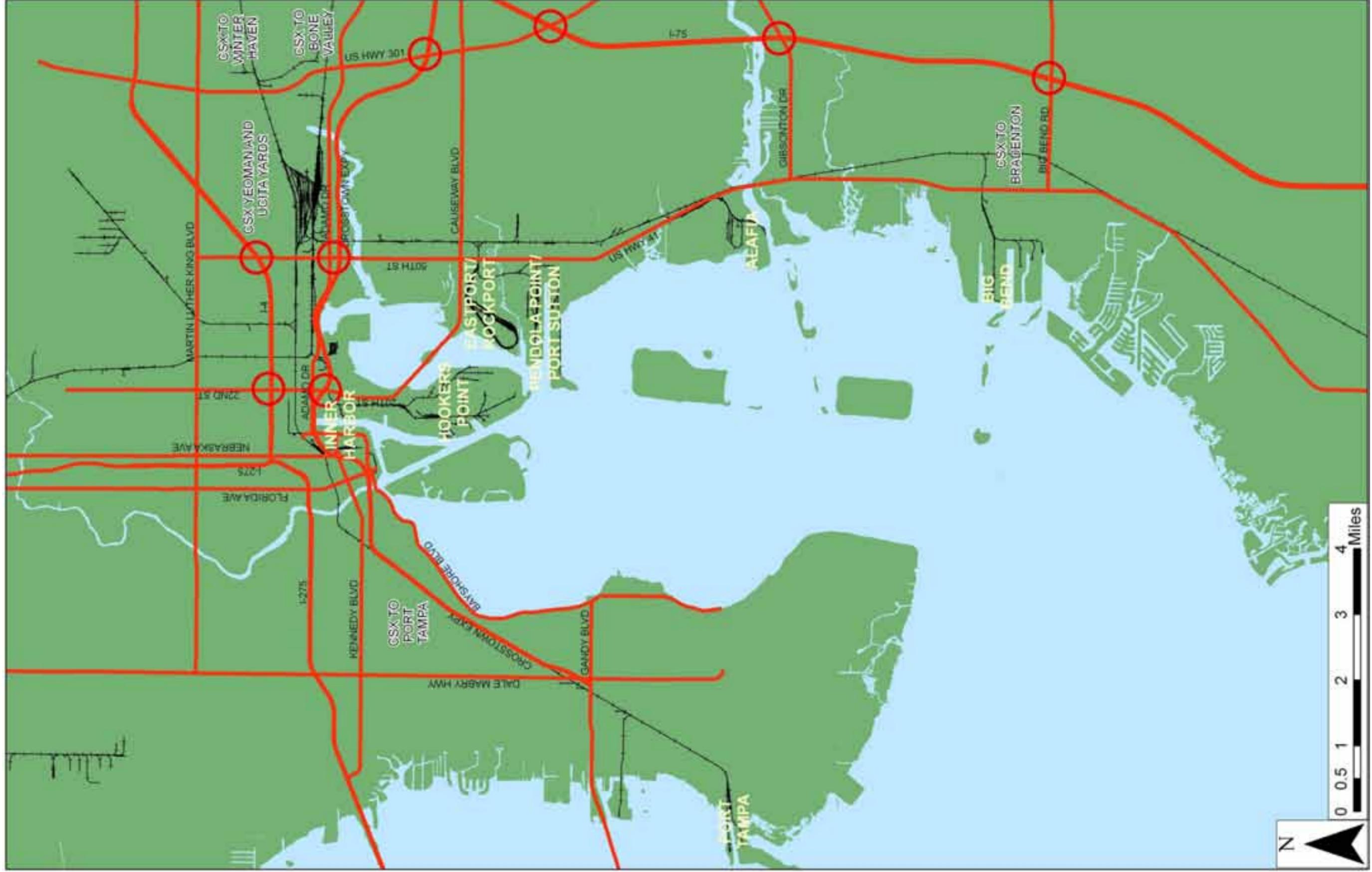
### a) Off-Port Roadways

Several major roadways serve the Port of Tampa. The primary roads connecting with specific Port locations include (Exhibit III-18):

- Hooker's Point: I-4, 22<sup>nd</sup> Street, Selmon Crosstown Expressway, and SR-60 via 20<sup>th</sup> and 21<sup>st</sup> Street and U.S. 41 via Causeway Boulevard (SR45)
  - Hooker's Point internal north-south roads include Maritime Boulevard serving the western side of Hooker's Point and Guy N. Verger Boulevard serving the eastern side of Hooker's Point
  - The main internal east-west roads connecting the eastern and western portions of Hooker's Point include: East Port Drive, and GATX drive
  - In addition to these roadways, there are a number of smaller east-west and north-south roadways that connect specific terminals or terminal areas to major Hooker's Point internal roadways
- Port Ybor port area: Grant Street and Flagler Street provide access to 20 Street which in turns provides connections to the Crosstown Expressway, I-4 and U.S. 60 to the north and Causeway Boulevard to the south and east
- East Port: Causeway Boulevard is the main roadway linking East Port to I-4, the Crosstown Expressway and U.S. 60 to the north and U.S. 41 to the east

- Port Sutton: U.S. 41 is the main north south roadway connecting Port Sutton to the regional highway network. U.S. 41 provides access to Causeway Boulevard, I-4 and the Crosstown Expressway as well as US301 and I-75 via connecting roadways
  - Port Sutton Road is the main internal roadway linking the individual berths/terminals to U.S. 41
- Pendola Point: U.S. 41 is the main north south roadway connecting Port Sutton to the regional highway network. U.S. 41 provides access to Causeway Boulevard, I-4 and the Crosstown Expressway as well as US301 and I-75 via connecting roadways
  - Pendola Point Road is the main internal roadway linking the individual terminals/berths to U.S. 41
- Big Bend/ Port Redwing : Pembroke road connects the Big Bend port area to U.S. 41 which then provides access to Causeway Boulevard, I-4 and the Crosstown Expressway as well as U.S. 301 and I-75 via connecting roadways

Exhibit III-18  
Port of Tampa Major Highway & Rail Access



## **b) Off-Port Railways**

CSX Transportation (CSXT) provides regional bulk, container, and auto intermodal facilities that serve the Tampa Bay region. CSXT's mainline connection from Orlando terminates at its Yeoman and Uceta yards, shown in Exhibit III-18 above just north and east of the U.S.-41/SR-60 intersection. Most of CSXT rail traffic originating or terminating in the Tampa Bay region pass through these facilities. Rail access to the Port is via branch lines from these facilities. The branch line serving Port Ybor and Hooker' Point extends westward from the Uceta yard parallel to and just north of Route 60. The branch line serving the private and public marine terminals on the east side of East Bay and Hillsborough Bay extends southward and just to the east of U.S. 41. CSXT's largest facility is its phosphate rock/fertilizer facility at Rockport. Rockport provides rail delivery of phosphate rock for export and for processing into fertilizer which is subsequently exported.

CSXT has rail access to most of the Port's marine terminal facilities. The rapid growth in the Tampa Bay region's population and traffic is increasingly challenging the ability of CSXT to provide commercially viable rail service to the Port's marine terminals. A synopsis of CSXT rail access and challenges by port area is as follows:

- Port Ybor/Hooker's Point: CSXT operates over its branch line that connects to its east-west main line at 35<sup>th</sup> Street and East Broadway. This line has vertical clearance restrictions, crosses several major roadways at grade and train lengths are limited to 20 rail cars. The rail line traverses the eastern third of the Port Ybor port area. Rail access is available on or directly behind most of the marine terminals on Hooker's Point except south of Berth 210 on the east and Berth 219 on the west.
- East Port: there is currently no rail access to the East Port area but CSXT has a major rail facility directly south of the property at Rockport. CSXT track serving Rockport crosses U.S. 41 at grade at the northeast corner of the Rockport facility.
- Pendola Point/Port Sutton: CSXT has rail access to Pendola Point via its branch line running south from its main line just to the east of U.S. 41. The CSXT line crosses U.S. 41 at grade and Port Sutton Road at grade before entering the Pendola Point/Port Sutton port area. CSXT also accesses Port Sutton via its Rockport facility.
- Big Bend/Port Redwing: currently, only the Mosaic and TECO portions of the Big Bend port area have rail access. Rail access is provided via the same branch line that serves Rockport, Port Sutton and Pendola Point. The CSTX line crosses U.S. 41 at grade just north of the Pembroke Road/U.S. 41 intersection.

## **C. Facilities Assessment**

This section provides an assessment of the physical condition and capabilities of the existing TPA's major marine terminals and supporting infrastructure described above. It provides the basis for addressing the TPA's first two strategic priorities: maximizing the operational efficiency and capability of existing facilities and rehabilitating/modernizing existing facilities to increase capacity. Recommendations for capital investment as a result of this assessment are included in Chapter VII: Recommended Capital Investment Plan.

## **1. Berths**

The TPA currently owns a total of 67 berths. In general the TPA berths are in fair to satisfactory condition, as shown in Exhibit III-19. The breakbulk, container and dry bulk berths on the East side of Hooker's Point are in satisfactory to good physical condition. The shrimp docks are in poor condition and the Berth 200 ship repair berth would need reconstruction. On the West side of Hooker's Point the REK Piers (Berths 226 and 227) are in poor to serious physical condition and in need of reconstruction. The liquid bulk berths, Berth 220 and Berth 223, are good to excellent (new). The shrimp docks (Berths 160-170 along the south side of Causeway Boulevard) are in poor condition.

The TPA's Port Sutton/Pendola Point's berths are generally in good condition. Similarly the cruise berths at Channelside are in generally good condition with the exception of Berths 266 and 267. The ship repair docks at the north end of the Channelside District Port area, Berths 263-265, are in serious physical condition. Berths 249 through 252 at Port Ybor have been rebuilt but the one ship repair berth is in poor condition.

Periodic maintenance and repair on the TPA's berths is included as part of the TPA's annual maintenance contracts in its capital investment plan. In addition, Berths 267 and 268 at Cruise Terminal 6, Berth 4 and Berth 224 require more extensive repair (\$0.5 million to \$1 million) at an estimated total cost of \$3.5 million. Recommendations for additional capital investment are included in Chapter VII: Recommended Capital Investment Plan.

## **2. Buildings**

Currently TPA owns approximately 50 facilities, buildings, and structures. Many of the structures are either new or in good condition, as shown in Exhibit III-20.

**Exhibit III-19  
Assessment of TPA Existing Berth Inventory by Port Area and Cargo/Use**

PORT AREA, BERTH AND USE			CONDITION ASSESSMENT					Est. Repair Cost (\$)
Port Area / Berth #	Type	Approx. Year Built	Useful Life if Maintained Regularly	Approx. Year Repaired	Current Condition	Repairs/Upgrades/Replacements		
<b>Hooker's Point - East side - 13 berths</b>								
TPA 200	Ship repair/tug	1983	50		serious	Complete reconstruction	\$ 10,000,000	
TPA 201	Breakbulk	1989	25		satisfactory	Replace timber curb, resurface deck, repair bollards	\$ 50,000	
TPA 202	Breakbulk	1975	25	1988	satisfactory	Replace timber curb, repair / replace arch fenders	\$ 10,000	
TPA 204	Dry bulk	1972	25		good	Repair bollards	\$ 50,000	
TPA 205	Liquid bulk	1985	20		fair	Repair bollards, resurface deck, repair expansion joints, repair bearing seat	\$ 100,000	
TPA 206 (temporary berth)	Breakbulk				poor			
TPA 208	Breakbulk	1994	40		satisfactory	Resurface deck, replace timber curb & repair bollards	\$ 10,000	
TPA 209	Breakbulk	1976	20		satisfactory	Resurface deck, replace timber curb, repair fenders, & repair bollards	\$ 16,667	
TPA 210	Breakbulk	1975	20		satisfactory	Resurface deck, replace timber curb, repair fenders, & repair bollards	\$ 16,667	
TPA 211	Breakbulk	1975	20	1986	satisfactory	Resurface deck, replace timber curb, repair fenders, & repair bollards	\$ 16,667	
TPA 212	Containers	1999	40		good	Repair damaged fenders	\$ 10,000	
TPA 213	Containers		50		like new			
TPA 214	Dry bulk	2007	40		new	Bi-annual structural inspections	\$ 10,280,000	
<b>Subtotal</b>								
<b>Hooker's Point - West - Dry docks: 7 berths</b>								
TPA 235-241	Ship repair, dry docks				N/A	Design repair inspection needed	\$ 18,125,000	
<b>Hooker's Point - West: 8 berths</b>								
TPA 219	Breakbulk / Dry bulk	1983	15 - 20	1991	fair	Repair failed timber fender section, repair mooring hardware	\$ 50,000	
TPA 220	Dry bulk / Liquid bulk	1977	20		good	Repair steel fender frame and bollards	\$ 25,000	
TPA 223	Liquid bulk	2005	40		like new	Bi-annual structural inspections		
TPA 224	Liquid bulk	1993	40		good	Grit blast and repaint cleats & upgrade fender system	\$ 500,000	
TPA 226	Liquid bulk	1967			serious	Complete berth reconstruction	\$ 13,330,000	
TPA 227	Liquid bulk	1967			serious	Complete berth reconstruction	\$ 13,330,000	
TPA 230	non operational tugboat towing				critical	Complete berth reconstruction	\$ 10,000,000	
TPA 232					fair / poor	Complete berth reconstruction	\$ 1,000,000	
<b>Subtotal</b>								
<b>East Port: 11 berths</b>								
TPA 160	Shrimp docks				poor	Seawall repairs, concrete pile repair, concrete cap repair, repair extruded rubber, repair warehouse roof and edge beams	\$ 250,000	
TPA 161 - 162	Shrimp docks	1979	10		poor	Seawall repairs, concrete pile repair, concrete cap repair, repair extruded rubber, repair warehouse roof and edge beams	\$ 250,000	
TPA 163 - 164	Shrimp docks	1979	10		poor	Seawall repairs, concrete pile repair, concrete cap repair, repair extruded rubber, repair warehouse roof and edge beams	\$ 250,000	
TPA 165 - 166	Shrimp docks	1979	10		poor	Seawall repairs, concrete pile repair, concrete cap repair, repair extruded rubber, repair warehouse roof and edge beams	\$ 250,000	
TPA 167	Shrimp docks	1979	10		poor	Seawall repairs, concrete pile repair, concrete cap repair, repair extruded rubber, repair warehouse roof and edge beams	\$ 250,000	
TPA 168	Shrimp docks	1979			poor	Seawall repairs, replacing timber piles, concretepile repair, replacing cleats	\$ 166,667	
TPA 169 - 170	Shrimp docks, ship repair	1979			poor	Seawall repairs, replacing timber piles, concretepile repair, replacing cleats	\$ 333,333	
<b>Subtotal</b>								
<b>Port Sutton: 11 berths</b>								
TPA 1	Breakbulk	2001	25 - 30	2000	new	Repair bollards and patch impact damage	\$ 50,000	
TPA 2	Liquid bulk	2001	25 - 30	1995	like new	Repair bollards and patch impact damage	\$ 50,000	
TPA 3	Dry bulk	2007	50	1996	like new	Replace damaged and add new access trestle	\$ 25,000	
TPA 4	Return wall			1996	poor	Berth reconstruction	\$ 1,000,000	
TPA 21	Liquid bulk	1984	20		satisfactory	Inspect piles, add fender and bollard, repair spalling, repair bollards, & repair concrete cap	\$ 100,000	
TPA 22	Liquid bulk	1984	25	1991	good	Replace damaged fenders & pipe bollard	\$ 10,000	
TPA 24	Dry bulk	1984	20		fair	Replace timber catwalks, repair impact damage at breasting dolphins, replace pipe bollards	\$ 100,000	
TPA 24b	Liquid bulk	1991	20		fair	Replace fender system, install deck drains, & repair bollards	\$ 50,000	
TPA 26	Dry bulk	2006		2000	new	Repair bollards	\$ 10,000	
TPA 30	Dry bulk / Liquid bulk	2000	40	2000	good	Repair bollards, replace timber catwalks, repair impact damage, replace missing sheet pile wall section, & shore up abutment bearing	\$ 200,000	
TPA 31	Dry bulk	1985	20	1993	fair			
<b>Subtotal</b>								
<b>Channelside: 11 berths</b>								
TPA 263	Ship repair	1920		N/A	serious	Replace piles, deck, and fender system & repairing mooring hardware	\$ 5,000,000	
TPA 263Y	Ship repair	1920		N/A	serious			
TPA 264	Ship repair	1920		N/A	serious	Complete berth reconstruction	\$ 7,000,000	
TPA 265	Ship repair	1920		N/A	serious	Replace piles, deck, and fender system & repairing mooring hardware	\$ 15,000,000	
TPA 266	Cruise	1920			failed	Replace piles, deck, and fender system, bulkhead & adding new soil	\$ 5,000,000	
TPA 267	Cruise	1920			satisfactory	Replace concrete curb and fender system & resurface concrete deck	\$ 1,000,000	
TPA 268	Cruise	1920			satisfactory	Replace concrete curb and fender system & resurface concrete deck	\$ 1,000,000	
TPA 269	Cruise	1920			like new	Bi-annual structural inspections		
TPA 271	Aquarium	1993			satisfactory	Replace timber curb and concrete pedestals and repair bollards	\$ 25,000	
TPA 272	Cruise	1993			satisfactory	Replace timber curb and concrete pedestals and repair bollards	\$ 25,000	
TPA 273	Cruise	1992			satisfactory	Replace timber curb and concrete pedestals and repair bollards	\$ 25,000	
<b>Subtotal</b>								
<b>Port Ybor: 6 berths</b>								
TPA 249	Ro-ro	2003		N/A	new			
TPA 250	Breakbulk/ ro-ro	1968		N/A	like new	Bi-annual structural inspections		
TPA 251	Breakbulk/ ro-ro	1968		N/A	like new	Bi-annual structural inspections		
TPA 252	Breakbulk cargo	1968		N/A	like new	Bi-annual structural inspections		
TPA 253	Ship repair	1968		N/A	critical	Replace bulkhead, deck, and fender system		
TPA 256	Dry bulk	1968		N/A	fair	Replace timber on dolphins, install curb, grit blast and recoat damaged steel, stabilize soil in south corner & reinstall buried bollard	\$ 50,000	
<b>Subtotal</b>								
<b>Total Estimated Repair Cost</b>							<b>\$ 104,110,000</b>	

**Exhibit III-20  
TPA Existing Building Inventory by Port Area and Cargo/Use**

<b>Port Area/ Lease Hold or Owner</b>	<b>Occupancy</b>	<b>Physical Property Location &amp; cross street</b>	<b>Current Condition</b>
<b>Hooker's Point - west</b>			
Tampa Port Authority	Security Operations Center	Maritime/ Verger	New
US CUSTOMS & BORDER PATROL	Office and warehouse	Eastport/ Maritime Blvd.	Good
Tampa Port Authority	New port security imp. Guard shack at Maritime Blvd. & Eastport (Temp. portable bldg, TPA Checkpoint Building	Removed to Fac. Mgmt or Reused	Fair
Tampa Port Authority	New port security imp. Guard shack at R.E.K. Pier (Temp. portable bldg, TPA Checkpoint Building (was at McCloskey)	Removed to Fac. Mgmt or Reused	New
Tampa Port Authority	New Port Security Improvements Guard Shack at TPA Maint. Yard not in use (was at Eastport)	Removed to Fac. Mgmt or Reused	New
Tampa Port Authority	Dockside facilities	Berth 223/224	Fair
Tampa Port Authority	Cattle Facility (Holding Pen)	Lehman/ Shoreline	Poor
Tampa Port Authority	Cattle Dock	Berth 232/ Lehman	Poor
Tampa Port Authority	Guard Shack AT R.E.K. Pier	REK Dock	Good
<b>Hooker's Point - east</b>			
Tampa Port Authority	Restroom Facility (Berth 205)	Verger/ Barker	Fair
PORTS AMERICA /	Warehouse / Berth 206 Transit Shed	Verger/ Barker	New
Tampa Port Authority -	New TPA Truck Scale Building & Scales	Verger/ Eastport	New
Tampa Port Authority -	TPA Truck Scale Toilet Building	Verger/ Eastport	New
Tampa Port Authority	US Customs & Border Patrol Office (CBP) - Radiation Portal Monitor (RPM) Facility	Verger/ Barge	New
Tampa Port Authority	US Customs & Border Patrol Office (CBP) - Radiation Portal Monitor (RPM) Facility - 1ST MONITOR	Verger/ Barge	New
Tampa Port Authority	US Customs & Border Patrol Office (CBP) - Radiation Portal Monitor (RPM) Facility - 2ND MONITOR	Verger/ Barge	New
Tampa Port Authority	Shed behind main bldg at Tampa Port Authority Maintenance	Verger/ Barge	New
Intermodal Shipping Co formerly A. R. Savage, Inc./ TPA	New Hooker's Point Sec Access Trailer (Portable Bldg) Office Trailer	Verger/Barge	Fair
Tampa Port Authority	TPA Facility Management Main Building	Verger/Barge	New
Tampa Port Authority	New port security imp. Guard shack at Verger & Eastport	Removed to Fac. Mgmt or	New
Tampa Port Authority	New port security imp. Guard shack at Verger & Eastport	Removed to Fac. Mgmt or	New
Ports America/ TPA	Warehouse Building	Verger / Eastport	Good
Ports America	Restroom Facility	Guy N Verger Blvd /	Fair
Tampa Port Authority	Berth 201 Transit Shed	Berth 201	Fair
Tampa Port Authority	Temporary warehouse	Berth 201	Fair
Tampa Port Authority	Transit Shed-dry	Berth 202	Fair
Tampa Port Authority	Transit Shed-dry	Berth 208	Fair
Tampa Port Authority	Transit Shed-dry	Berth 209 (CD&E Bldg)	Fair
Tampa Port Authority	Transit Shed-dry	Berth 209 (off-dock)	Fair
Tampa Port Authority	Transit Shed-reefer	Berth 210 (A&B building)	Fair
Tampa Port Authority	Transit Shed-reefer	Berth 211 (main building)	Fair
<b>Hooker's Point</b>			
Tampa Port Authority -	HP SOC - Emergency Generator Bldg	Maritime/ Verger	New
Tampa Port Authority -	HP SOC - Canopy Entrance (Maritime Blvd)	Maritime/ Verger	New
Tampa Port Authority -	HP SOC - Canopy Exit (Verger Blvd)	Maritime/ Verger	New
Tampa Port Authority -	HP SOC - Dumpster	Maritime/ Verger	New
<b>Port Sutton/ Pendola Point</b>			
Tampa Port Authority	Pendola Point Security Access Control Building	Pendola Point / US HWY	New
Tampa Port Authority	Pendola Point Security Access Control - Canopy Building	Pendola Point / US HWY	New
Tampa Port Authority	Roadway Building	Port Sutton Road/ Berth 3	
Tampa Port Authority or	Pipeline Building at Berth 21	Pendola Point Rd/ Berth	New
<b>Channelside</b>			
Tampa Port Authority - Terminal 3 Guard House	TPA Terminal 3 Guard House (Temporary Portable Building)	Terminal 3 East Side of the South east corner of the building	Good
Tampa Port Authority - Guard House at McKay St	TPA Terminal 2 - Guard House (Temporary Portable Building)	Terminal 2 Edge of Back McKay St/ Terminal 6	Good
Tampa Port Authority	Cruise Terminal No. 2	Channelside / Seaport	Like new
Tampa Port Authority	TPA Cruise Terminal 3	Channelside/ Cumberland	Like new

### **3. Roadways and Railways**

#### **a) Roadways**

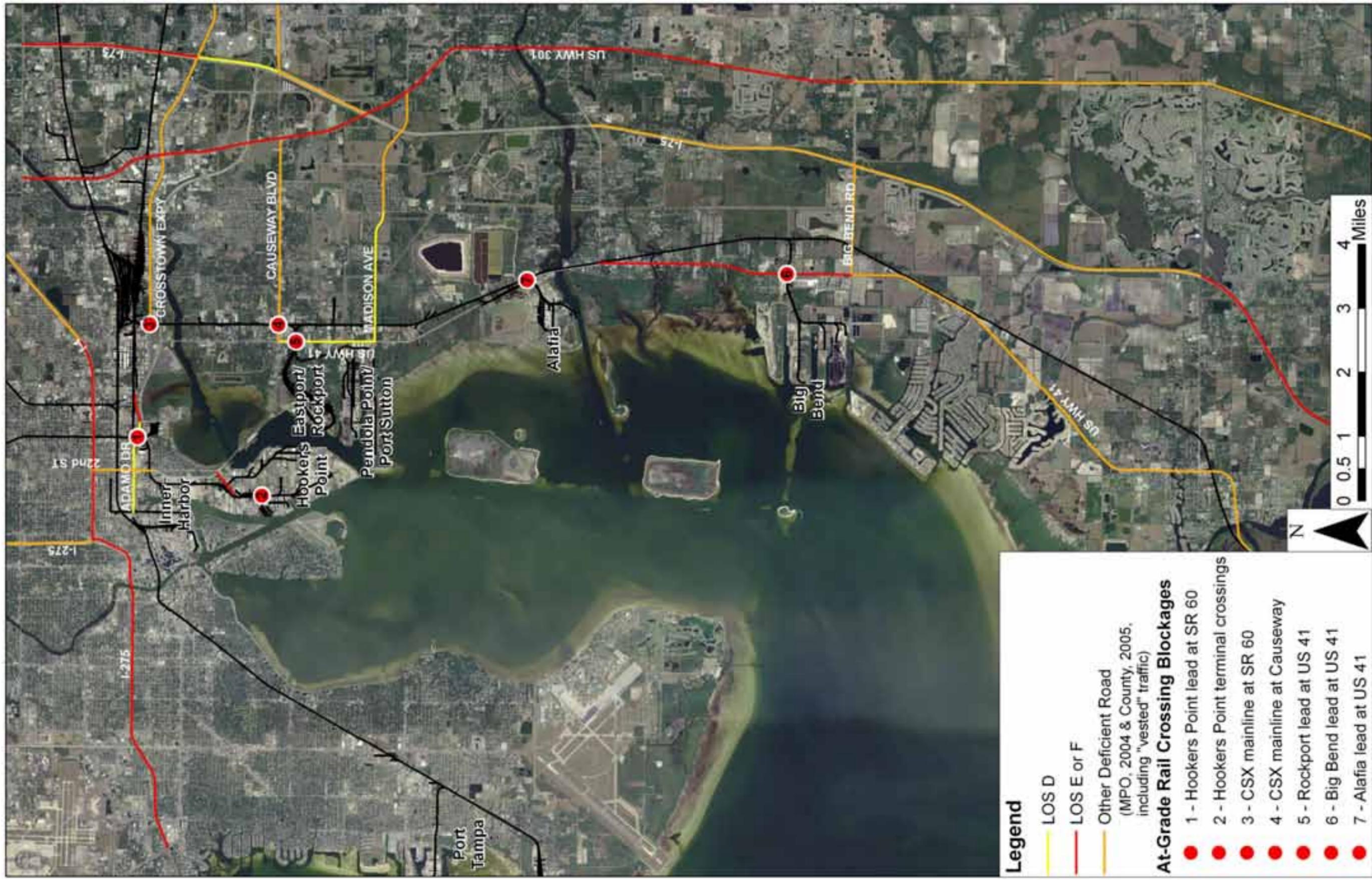
##### *(1) Off-Port Roadways*

Overall, the level of connectivity between the Port and inland points is considered to be very good to excellent. However, while some roads are performing at acceptable conditions, others are considered to be at a “failing” level or experience other problems. These include:

- Major segments of I-275, I-75, I-4, U.S. 301, and U.S. 41 currently operate at level of service “E” or “F” (failing) during peak periods; segments of Adamo Drive and Madison Avenue currently operate at level of service “D” (approaching failing).
- Segments of the Crosstown Expressway, Causeway Boulevard, Madison Avenue/Progress Boulevard, and Big Bend Road have been identified as deficient roads in Hillsborough County and Metropolitan Planning Organization documents.
- At multiple locations, Port access roads are crossed at-grade by active freight rail lines, resulting in temporary disruptions of traffic flow (affecting both trucks and automobiles) throughout the day.
- Port trucks utilize certain roads where they are perceived as incompatible with area land uses and activities, such as 21<sup>st</sup> and 22<sup>nd</sup> streets through Ybor City, which are the main connectors between Hooker’s Point and I-4. The completion of the I-4 connector will alleviate most of this issue.

“Problem segments” are mapped on Exhibit III-21.

Exhibit III-21  
Roadway Segment Issues Impacting the Port of Tampa



Source: Cambridge Systematics

(2) TPA Roadways

Exhibit III-22 provides a summary of the roadway conditions assessed. Of the two roadways assessed at Hooker’s Point, Maritime Boulevard is generally in good condition; Guy N. Verger Boulevard is in poor condition. Both Port Sutton Road and Pendola Point Road on Port Sutton are generally in good condition. Pembroke Road on Big Bend/ Port Redwing is new, as is Grant Street on the Port Ybor port area.

**Exhibit III-22  
TPA Roadways Condition Assessment**

Port Area / Roadway	Current General Condition	Issues
<b>Hooker’s Point</b>		
Maritime Boulevard:		
Segment #1 South of GATX Drive	good	Studebaker Drive - poor condition
Segment #2 South of Shoreline Boulevard to GATX Drive	fair	Railroad crossing Shoreline Ave - poor condition
Segment #3 Security Gate to Shoreline Avenue	good	Railroad crossing Eastport Drive - very poor condition
Guy N. Verger Boulevard:		
Segment #1 South of North Road	poor	Requires stabilization
Segment #2 North of North Road	poor	Severe cracking and base failure
<b>Port Sutton/Pendola Point</b>		
Port Sutton Road	good	Entrance to Berths 1-4 fair to poor condition
Pendola Point Road	good	
<b>Port Redwing</b>		
Pembroke Road	new	
<b>Upper Ybor</b>		
Grant Street	new	

Source: Norbridge, Inc. analysis of Moffatt & Nichol data

**b) Railways**

CSX Transportation (CSXT) provides regional bulk, container, and auto intermodal facilities that serve the Tampa region. The rail system’s performance is generally reported as being adequate, at least in terms of rail service and operability. The primary access problem posed by rail operations has to do with at-grade impacts to roadways at the following locations:

- Hooker’s Point: seven crossings of port service roads as well as SR-60
- East side of Tampa Bay: three crossings of U.S. 41, one of Causeway Boulevard and one of SR-60.

Additionally, there is an emerging issue with respect to the potential need for increased rail service to Hooker’s Point to serve new aggregate and container businesses. These customers have expressed a desire to have the option to have on-site rail service, which would require improvements to the facility. Improved rail service could potentially reduce the overall impact of truck traffic generated by these businesses on the surrounding community, which is clearly a benefit in terms of addressing long range goals such as reducing traffic in and around the Port. On the other hand, more frequent rail service and/or longer trains introduce the potential for at-

grade rail blockages on Hooker's Point and at SR-60. Reconfiguration of the road and rail alignments to reduce impacts at the Hooker's Point crossing would be required to support any significant increase in rail usage and this usage would need to be carefully coordinated with the crossing at SR-60 due to the alignment of the new I-4/Crosstown Connector. The most critical road and rail access issues on corridors that serve the Port of Tampa are highlighted on Exhibit III-21 above.

#### **c) Future Plans for Land Access, Roadways, and Intermodal Services**

As suggested, there are a number of rail/highway grade crossings and highway corridors that are currently of concern. However, several important projects planned for construction over the next few years should provide increased capacity and therefore reduction in peak period road congestion. These improvements include:

- I-4/Crosstown Connector
- Widening of Causeway Boulevard (22nd Street)

The I-4/Crosstown Connector will provide a vital link between these two major divided highways, with a connecting ramp into Hooker's Point. This will eliminate the need for port trucks to use 21st/22nd streets to access I-4, reducing congestion on these streets as they cross SR-60 and run through the heart of the Ybor City entertainment district. At the same time, the widening of Causeway Boulevard (22nd Street) to four lanes between US-41 and US-301 will substantially improve capacity and performance on this important east-west connector which should also improve access to/from I-75.

#### **4. Summary**

A summary of TPA's berths, buildings and structures, roadway, and rail access condition assessment is shown in Exhibit III-23.

**Exhibit III-23  
General Assessment Summary**

Legend				
Critical	Poor	Fair/Satisfactory	Good	Like New
○	◐	◑	◒	◓

Category	Overall Assessment
<b>Berths</b>	
<i>Hooker's Point</i>	
<i>East side</i>	
Breakbulk, container and dry bulk	◑ - ◒
Shrimp docks	◐
Ship repair	◐
<i>West side</i>	
REK Piers	○ - ◐
Liquid bulk	◒ - ◓
Ship repair	◑
<i>Port Sutton/Pendola Point</i>	
<i>Channelside</i>	◒
Cruise	◐
Ship repair	
<i>Port Ybor</i>	◓
Breakbulk	○
<b>Buildings/Structures</b>	◒ - ◓
<b>Roadway</b>	
<i>Hooker's Point</i>	
Maritime Blvd	◑
Guy N. Verger	◑
<i>Port Sutton/Pendola Point</i>	◒
<i>Big Bend/Redwing</i>	◓
<i>Port Ybor</i>	◓
<b>Rail</b>	
<i>Hooker's Point</i>	◑
<i>Port Sutton/Pendola Point</i>	◐

*Source: Norbridge, Inc. analysis of Moffatt & Nichol data*

## **IV. Market Assessment**

### **A. Introduction**

This chapter presents an assessment of the Port of Tampa and the TPA's four cargo (liquid bulk, dry bulk, container and breakbulk general cargo) lines of business. The objective of this chapter is to quantify the upside market potential and downside market risks associated with each of the TPA's major lines of business. This information, together with the Chapter IV Competitive Analysis provides the foundation upon which the TPA's mission, objectives and strategic issues are developed.

The chapter is organized by line of business and major commodity where appropriate. Each section begins with an historical overview, then discusses key trends and market drivers and concludes with a projection of future volume.

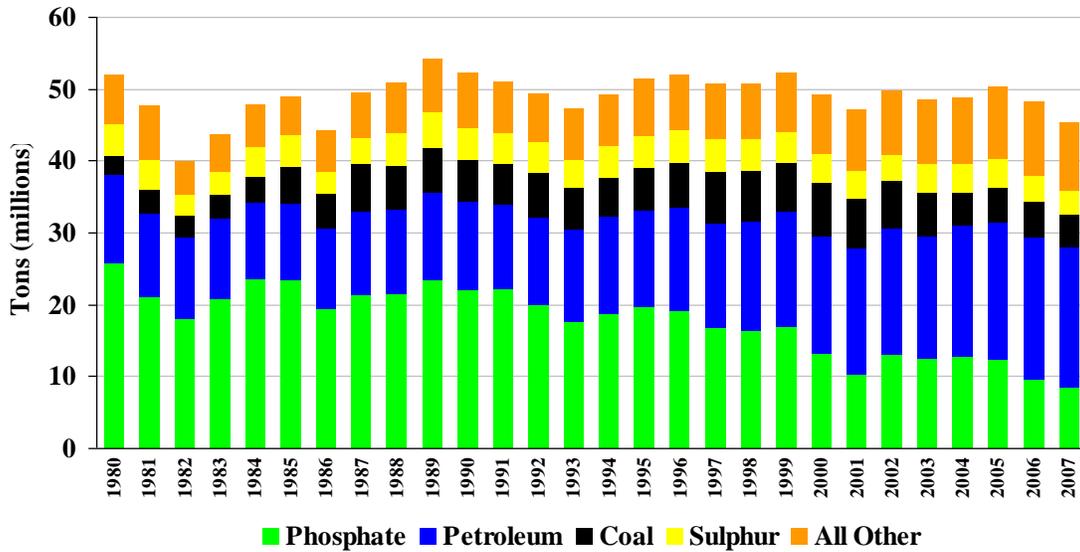
### **B. Overview of Port of Tampa and TPA Throughput**

The Port handled 45.3 million tons of waterborne cargo tonnage in 2007 (Exhibit IV-1). Outbound phosphate-based export cargoes and inbound petroleum based cargoes are the dominant source of the Port's total throughput. The Port's cargo volumes have followed a cyclical pattern of increases and decreases during the past 27 years. These cycles have generally corresponded to the cycles of the U.S. economy. This correlation reflects dependence of many of the Port's commodities on the strength of the U.S. and overseas economies. The decline in the Port's cargo volumes in 2007 is in part the result of the decline in the U.S. economy which began with the secondary mortgage liquidity problems. Given the current outlook for the U.S. economy in 2008, the Port could potentially experience a further reduction in cargo tonnage during 2008.

Growing international competition in the international fertilizer industry has also affected the Port's cargo tonnages. The Port's phosphate-based traffic has been declining since early 1980s. The decline is due to a steady increase in competition from low cost international suppliers in major international fertilizer markets. To date, these declines have been mostly offset by increases in the Port's other major cargoes. The fact that the Port has continued to handle 45 to 50 million tons of cargo per year, despite the loss of some 16 million tons of fertilizer products since 1980, reflects the Port's sustained ability to diversify through the identification and pursuit of new market opportunities.

The Port's phosphate-based and related cargoes are expected to continue the pattern of long-term decline due to continued competition from lower cost international producers.

**Exhibit IV-1  
Port of Tampa Cargo Throughput  
1980-2007**



*Source: Tampa Port Authority 2006 CAFR*

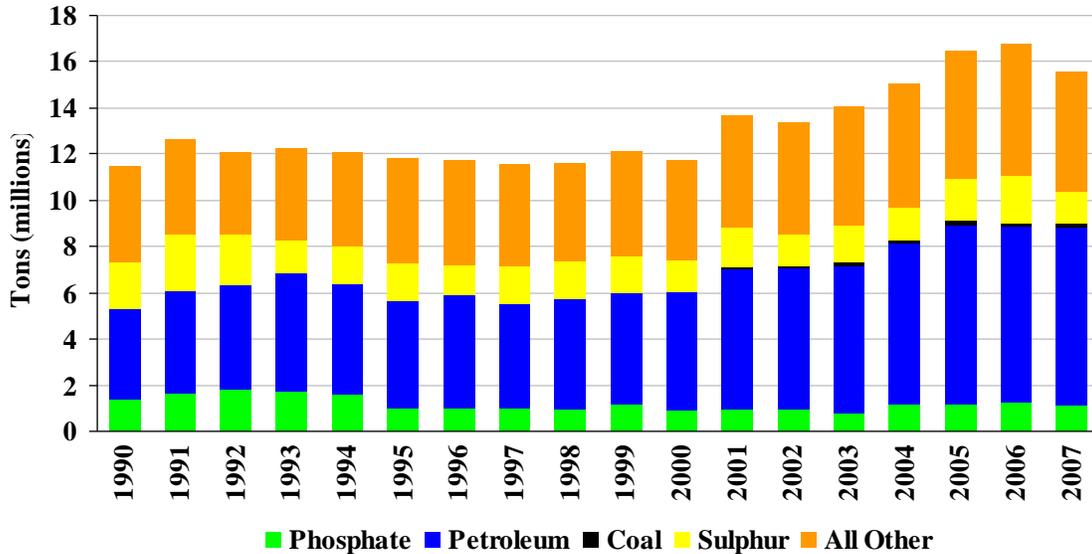
The TPA has experienced consistent growth in its cargo business during the past seventeen years. Since 1990, TPA cargo tonnage has increased by 4.1 million tons or 35 percent (Exhibit IV-2). This reflects an average annual compound rate of growth of 4.1 percent per year.

The TPA has experienced growth in petroleum related cargoes and all other cargoes while experiencing declines in its phosphate and sulphur (related to phosphate production cargoes :

- Petroleum-related cargoes: increased by 3.8 million tons or 99 percent
- All other cargoes: 1.3 million tons or 26 percent
- Phosphate and sulfur cargoes: 1.1 million tons decline or -30 percent.

The consistent growth in TPA's overall cargo tonnage reflects the diversity of cargoes handled and the fact that the TPA handles a relatively small portion of phosphate (handled predominately by private terminals) and comparatively little coal (handled mostly by private utilities), i.e. the major cargoes that have driven the overall decline in the Port's tonnage.

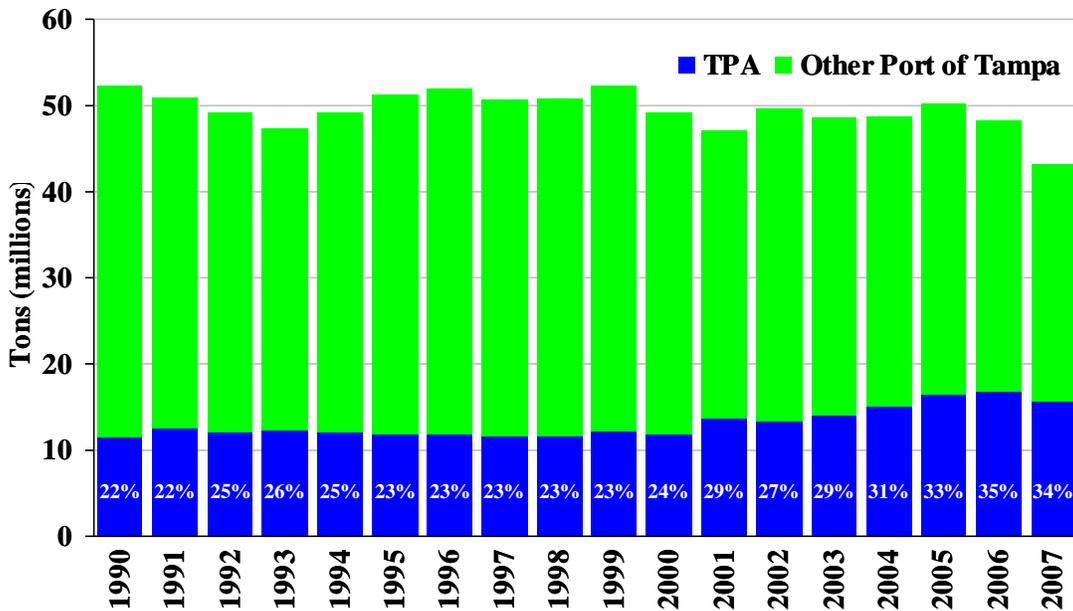
**Exhibit IV-2  
Tampa Port Authority Cargo Throughput  
1997-2007**



*Source: Tampa Port Authority. 2006 CAFR and Port Reported 2007 Volumes*

As a result of its sustained growth, TPA’s cargo tonnage has grown from 22% of the Ports’ total throughput in 1990 to 34% in 2007 (Exhibit IV-3). This share is expected to continue to increase due to the anticipated continued growth in the TPA’s cargo business, the emerging expansion of the TPA’s container cargo business and the uncertain outlook for phosphate and phosphatic fertilizer exports and the inbound coal trade.

**Exhibit IV-3  
Tampa Port Authority Share of Port of Tampa Cargo Throughput  
1990-2007**



*Source: Norbridge, Inc. analysis of the TPA's 2006 CAFR*

### C. Overview of the TPA's Major Lines of Business

Two lines of business generate a majority of the TPA's activity and revenues: cargo and cruise.

- Cargo:
  - Eight of the TPA's top ten customers in 2006 were cargo customers that generated 28 percent of total operating revenue
  - Cargo tenants generated an estimated 71 percent (\$7.4 million) of the TPA's 2006 minimum lease and property rental revenues
- Cruise: generated \$10 million or 25 percent of TPA's total operating revenue.

The TPA's cargo line of business is subdivided into four segments: liquid bulk, dry bulk, container and breakbulk general cargo (breakbulk). Historically, the liquid and dry bulk businesses have generated a majority of TPA's cargo tonnage (as was shown in Exhibit IV-2) and ship-related revenues.

The TPA's other major line of business, real estate, supports both the cargo and cruise lines of business as well as covering the property leases and rentals for non-cargo related activities.

Given the importance of the TPA's cargo and cruise lines of business, the market assessment focuses primarily on these businesses. The market assessment also focuses on selective opportunities (container, steel, refrigerated cargoes) in the TPA's breakbulk line of business.

## **D. Overview of the Florida and Tampa Economies**

This section provides a brief overview of the Florida and Regional economies within the context of the U.S. economy. Macroeconomic growth in the market area served by a port is a major driver of that port's future cargo throughput. Consequently, understanding the future growth potential of a port's market is a key step in developing demand forecasts. This section addresses several key drivers of future macroeconomic growth including an overview of the Florida economy, gross state product, population and personal income. This section has been prepared with input from Global Insight, a leading macroeconomic forecasting consulting firm.

### **1. The Florida Economy**

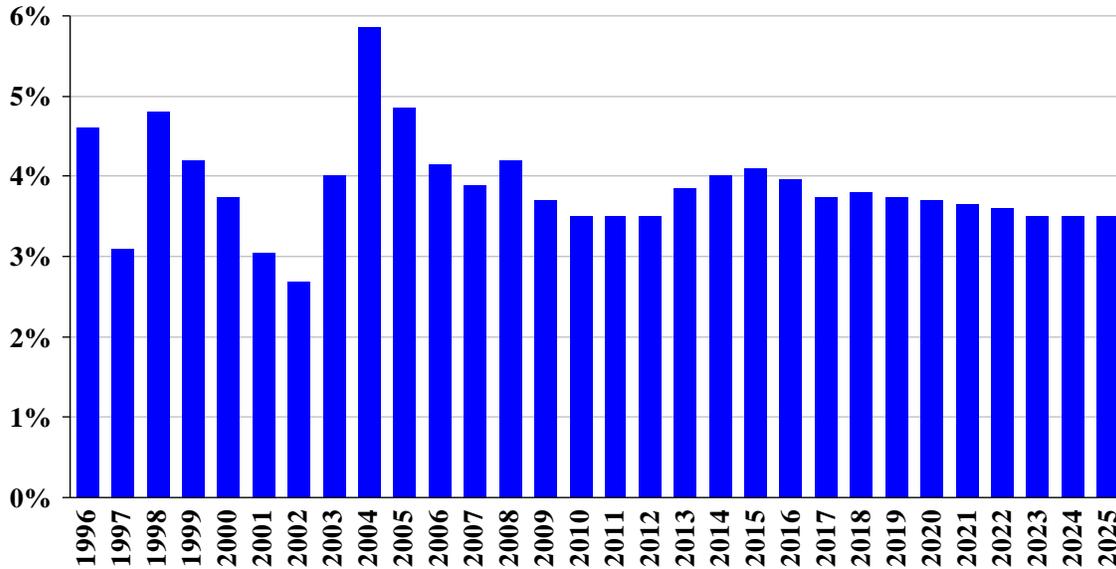
#### **a) Overview**

Recently, the Florida economy has shown steady, but slowing, job growth. According to the Bureau of Labor Statistics, the state's employment increased 3.6% in 2005, 1.9% in 2006, and 1.1% in 2007. From 2004 to 2007, the state added more than 500,000 jobs, which accounts for about 8% of all new jobs nationally.

The Florida economy is expected to remain a leader in employment growth in the years ahead given its strong fundamentals. Relatively low costs and a favorable climate continue to attract migrants, tourists, and companies, leading to strong population growth, which is a key driver of economic growth. Population gains have driven strong demand for service industries and construction. From 2006 on, annual employment growth is expected to decelerate slightly, in line with the national average, but job growth in Florida is expected to average 2.0% in the next five years, trailing only Nevada, Arizona, and Idaho.

The outlook for Florida's long-term growth in Gross State Product (total output of goods and services, plus exports, minus imports) is healthy (Exhibit IV-4). The GSP is projected by Global Insight to average 4% per year through 2015 with a peak at 4.3% growth in 2008 before falling to 3.5% in 2010.

**Exhibit IV-4  
Projected Florida Gross State Product (GDP)**



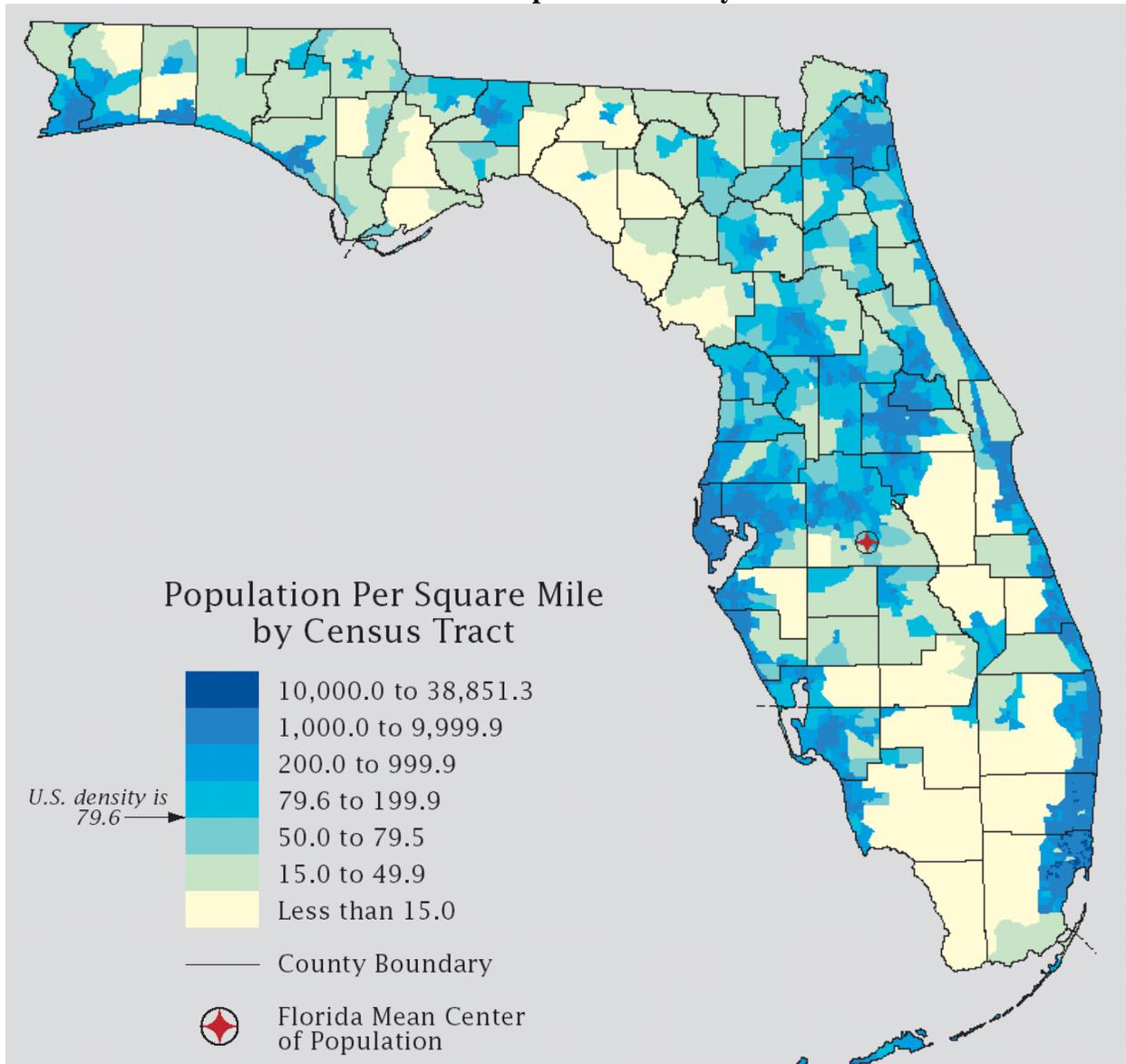
*Source: Global Insight*

**b) Population**

Most major Florida population centers are location on Florida’s coastline (Exhibit IV-5), with the west central Florida coast containing one of the state’s larger population centers. Florida population is projected to increase at a compound annual rate (CAGR) of growth of 1.7 percent through 2025, and is expected to soon surpass New York as the third most populous state. Per the U.S. Census Bureau, eight million people live within 100 miles of the Tampa Bay area, and the states mean population center is located almost directly east of Tampa. The state also attracts over 80 millions tourists per year.

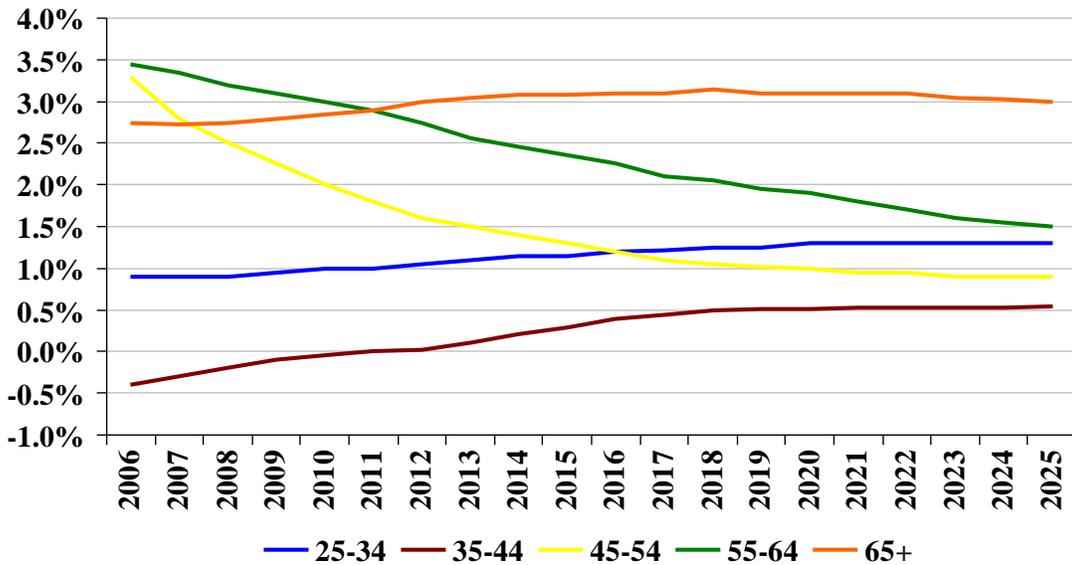
At the county level, Collier, Flagler, and Osceola counties are expected to experience the fastest growth with CAGRs of 2.9 percent, 2.8 percent, and 2.6 percent respectively through 2025. Hillsborough and Broward counties are projected to increase at 1.6 percent per year through 2025. Projected Florida population growth by age group is shown in Exhibit IV-5A.

**Exhibit IV-5  
Florida Population Density**



*Source: U.S. Census Bureau*

**Exhibit IV-5A  
Projected Florida Population Growth Rates by Age Group**



*Source: Global Insight*

**c) Employment**

Recently, the Florida economy has shown steady, but slowing, job growth. According to the Bureau of Labor Statistics, the state's employment increased 3.6% in 2005, 1.9% in 2006, and 1.1% in 2007. From 2004 to 2007, the state added more than 500,000 jobs, which accounts for about 8% of all new jobs nationally.

Florida's total employment is projected to increase at a compound annual growth rate of 1.9 percent between 2005 and 2025. On a county level, Collier, Manatee, and Orange counties are projected to experience the strongest growth with average CAGRs of 2.9 percent, 2.7 percent and 2.5 percent respectively between 2005 and 2025, respectively. Hillsborough County is also projected to experience solid growth of 2.1 percent per annum.

**d) Real Personal Income**

Florida's real personal income is projected to increase at faster rates than its employment growth. Specifically, statewide real personal income is expected to grow at a compound annual growth rate of 3.9% between 2005 and 2025. Strong income growth counties include Collier, Flagler, Clay, Lee and Manatee with projected CAGRs averaging from 4.6 percent to 5.1 percent. Hillsborough County real personal income growth is forecast at 3.9%.

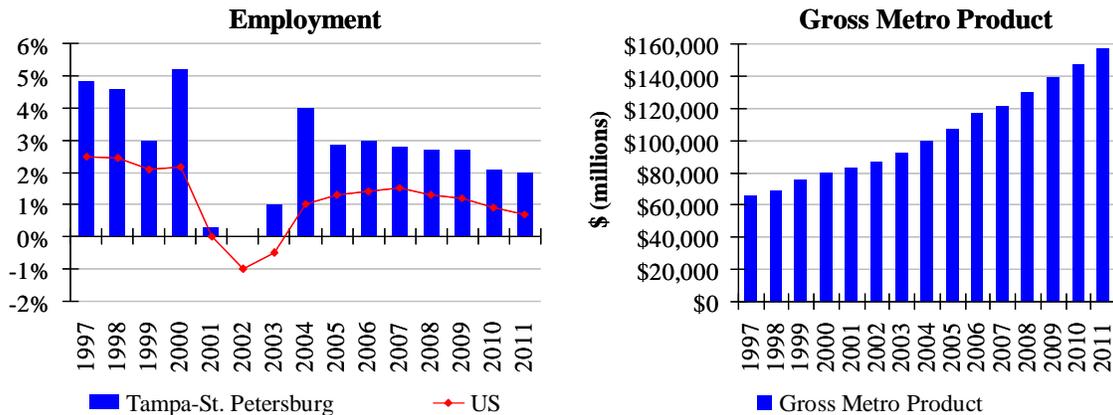
**2. The Tampa Economy**

The Tampa economy has experienced and is projected to experience continued growth through 2011 (Exhibit IV-6). Gross Metro Product is projected to increase 6.7 percent per year. This projection was developed prior to the secondary mortgage crisis which began in the latter half of 2007. Consequently, actual growth in 2008 and 2009 will likely lag this average projection while

2010 and 2011 could potentially exceed this projection depending on the strength of the economic recovery.

Employment is also projected to increase between 2007 and 2011 at an average annual compound rate of 2.4 percent. Consistent with current economic conditions, 2008 and 2009 employment will likely lag this projection while 2010 and 2011 could potentially exceed this projection based on the strength of the economic recovery.

**Exhibit IV-6  
Historical and Projected Tampa Employment and GMP  
1997-2011**



*Source: Global Insight*

### **E. TPA Market Assessment**

Historically, liquid and dry bulk cargoes have accounted for the largest portion of the Port’s and the TPA’s annual cargo volumes. While the cargo sectors driving throughput are the same, there are significant differences at the commodity level:

- Liquid bulk
  - Port: sulfur and anhydrous ammonia associated with the phosphate fertilizer export trade as well as petroleum products
  - TPA: petroleum products and sulfur
- Dry bulk
  - Port: phosphate and coal
  - TPA: aggregates and cement

This section presents market assessments of those lines of business and major commodities that will drive the Port’s and TPA’s future cargo growth. These assessments are organized into four sections as follows:

- Liquid bulk: petroleum products
- Dry bulk: aggregates
- Container

- Breakbulk: imported steel, refrigerated, vehicle cargoes as well as an overview of the Roll On/Roll Off market sector.

## **1. Liquid Bulk Cargoes**

TPA facilities handled 9.7 million tons of liquid bulk cargoes in 2007. Two commodities accounted for 94 percent of this total:

- Petroleum products: 7.7 million tons or 80 percent
- Sulfur: 1.3 million tons or 14 percent.

The remaining 0.7 million tons comprised ammonia and sulfuric acid used in fertilizer production and miscellaneous liquid bulk products. The liquid bulk market assessment focuses on petroleum products and sulfur.

### **a) Petroleum Products**

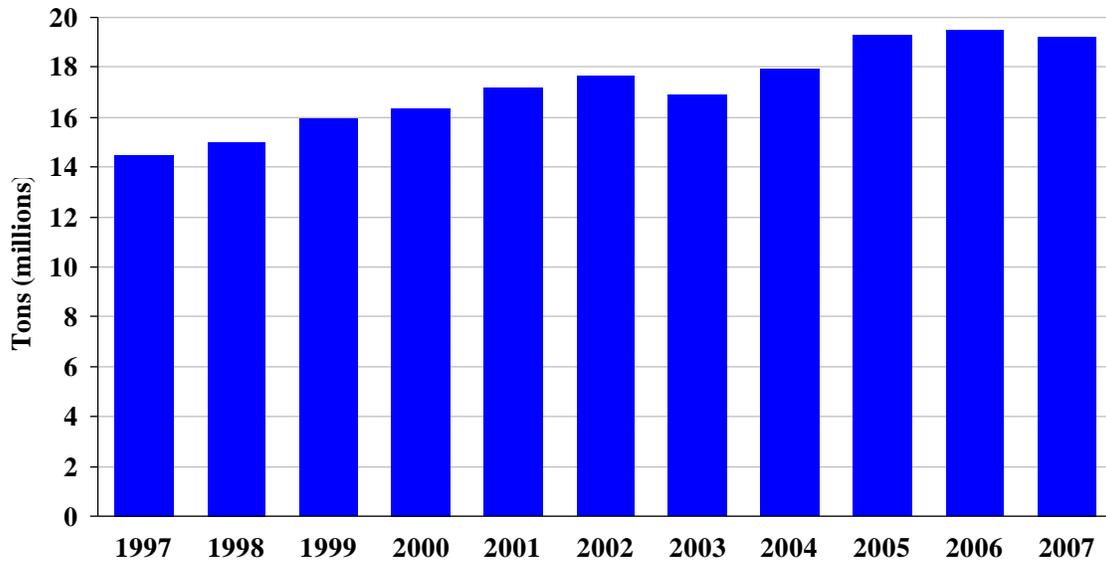
#### *(1) Overview*

The State of Florida is the third leading user of petroleum products within the United States. Rapid population growth combined with the tourism and agriculture industries have driven the increasing demand for petroleum products. Florida's steady growth in inbound waterborne fuel receipts (domestic and international origins) has closely matched the population and economic growth of the region and state over the past ten years.

Florida receives the majority of its petroleum products via its ports since it lacks a petroleum refining industry and is not directly connected to the Colonial Pipeline. The Colonial Pipeline transports petroleum products from the West Gulf petroleum refining industry to major consumption markets along the eastern seaboard. Florida's waterborne petroleum receipts originate from both domestic (West Gulf oil refineries) and from international locations. The Port of Tampa petroleum products trade has increased approximately 3 percent per year since 1997 (Exhibit IV-7).

The Port handles an estimated 45 percent of the total petroleum products consumed in Florida. Other significant entry points for Florida's waterborne petroleum product receipts (domestic and international origins) include Port Everglades, Jacksonville, Port Canaveral and from the Colonial Pipeline via its Bainbridge, Georgia terminal. A variety of barge terminals on the Florida Panhandle Coast handle waterborne petroleum receipts for Northwest Florida. The Port's petroleum product trade has increased at an average annual rate of 1.7 percent per year and is now the Port's largest source of cargo throughput (as was shown in Exhibit IV-1).

**Exhibit IV-7**  
**Port of Tampa Petroleum Products Trade**  
**1997-2007**



Note: Port of Tampa 2007 volume is estimated based on TPA 2007 reported volume

*Source: Norbridge, Inc.*

**(2) Future Demand**

Gasoline and diesel oil are the primary petroleum products consumed in Florida and handed at the Port. Norbridge research indicates that gasoline and diesel oil will remain the major drivers of Florida petroleum demand:

- Most energy forecasts (e.g., DOE, EIA) project continued growth in these products and only minor growth in alternative fuel sources (bio-diesel, ethanol, natural gas, electricity)
- Florida's population in general and its driving age population in particular are expected to continue to grow
- Continued long-term growth in tourism will also contribute to increased demand
- Per capita vehicle miles traveled in Florida are expected to continue to increase
- The Florida economy remains essentially a truck served market so as the economy grows truck trips and miles will continue to grow
- While conservation, i.e. improved fuel efficiency in vehicle fuel consumption, car-pooling, etc., may slightly reduce the overall demand growth rate, it will not lead to no growth or reductions in petroleum product consumption. The ongoing debate over setting fuel efficiency standards is the most salient indication of this trend. Consequently, it is unlikely that improved fuel economy, in combination with source substitution associated with hybrid vehicles and bio fuels will offset growth in population and miles traveled per capita
- The one unknown is the price of fuel. If fuel prices continue to escalate at significant real rates in the future, then the population will likely experience potentially significant erosions

in purchasing power. This trend has the potential to result in a flattening or potentially a decline in gasoline and diesel oil consumption as a result of consumers taking significant actions to limit or eliminate a long-term erosion in purchasing power.

Based on the foregoing trends and analyses of energy consumption projections for the total U.S., the South Atlantic and the State of Florida, a long-term demand trend that parallels or slightly lags overall growth in population growth appears to present a practical basis for projecting future demand. A forecast that aligns with population growth implies that increasing demand, as reflected in increased growth in vehicle miles traveled, would be offset by the net effects of multiple conservation measures and result in population as the key driver.

Conversely, a combination of increased conservation through source (electric, bio fuels, etc.) substitution and reduced vehicle miles, brought about by rapidly escalating fuel prices that in turn erode purchasing power could result in a growth in petroleum products that is less than population growth.

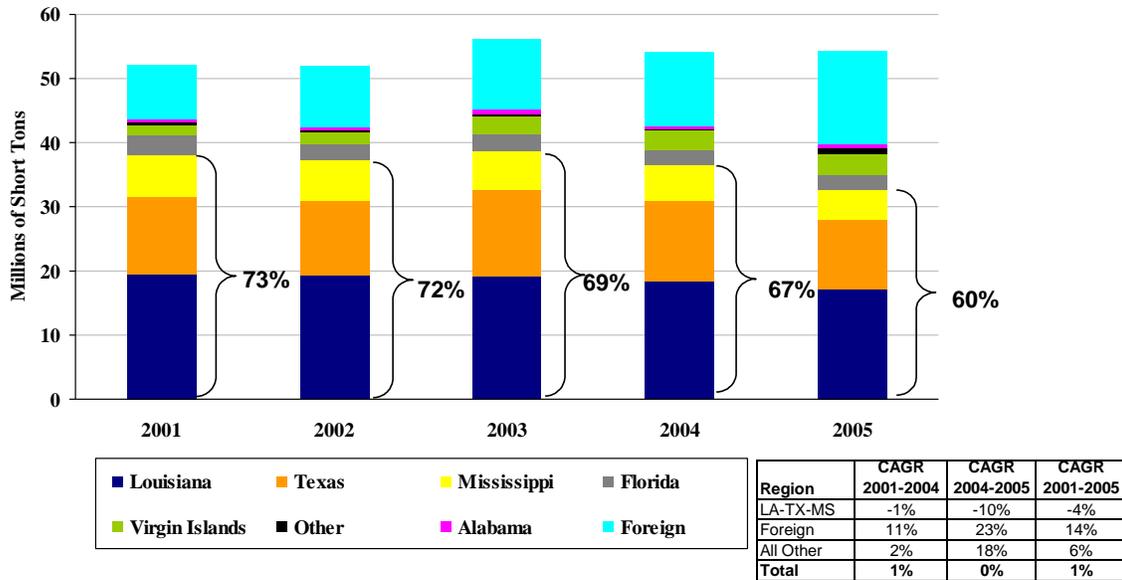
Based on the foregoing scenarios, Norbridge has projected long-term regional demand in petroleum products to increase at an average annual compound rate ranging from 1.4 percent (high prices, significant conservation, significant source substitution, reduced average travel per capita offsetting the growth in population based demand and resulting in a lower rate of growth) to 2.0 percent (increases in average vehicle miles per capita and per truck move offset the combined effects of higher prices, conservation initiatives, source substitution) and result in demand growing at or slightly above the rate of population increase.

### ***(3) Sourcing Considerations***

The Florida economy relies totally on inbound receipts (from both domestic and international locations) of petroleum products for its energy needs since Florida lacks a refining industry. The majority of Florida's petroleum receipts are:

- Received by water
- Sourced primarily from U.S. Gulf Coast refining centers in Texas, Louisiana and Mississippi (Exhibit IV-8).

### Exhibit IV-8 Florida Petroleum Product Receipts



*Source: 2001-2005 Waterborne Commerce Statistics Center, Commodity Movements-Region to Region by Commodity*

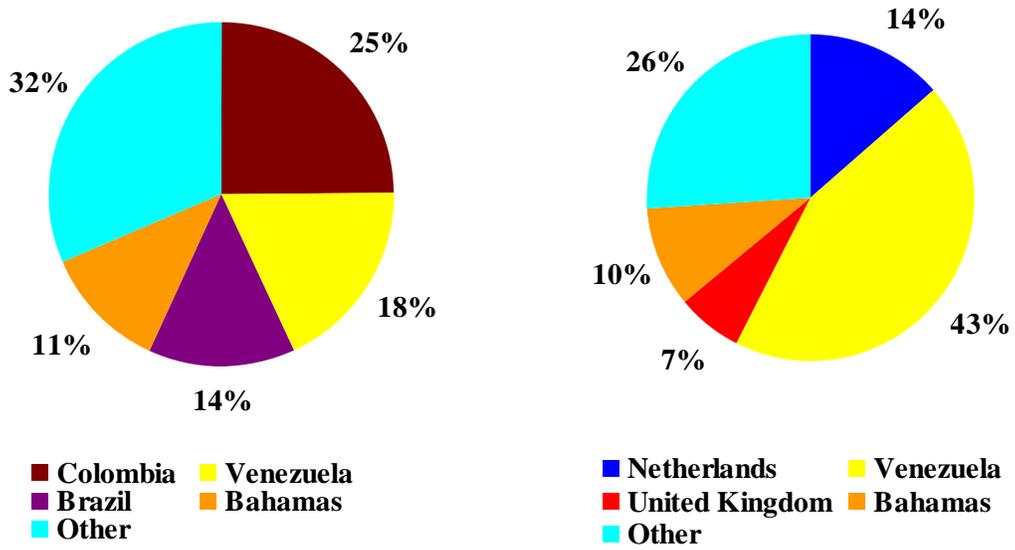
International imports and receipts from the Colonial Pipeline at Bainbridge, Georgia comprise the remaining sources of Florida’s inbound petroleum shipments. Venezuela is the largest international source of refined petroleum products for Florida. Venezuela’s proximity to Florida, oil reserves and refining capacity are major factors for its role in supplying Florida. Other international origins vary significantly by year as evidenced in Exhibit IV-9 and reflect the “flexibility” of global oil companies to adjust supply to any region based on world supply/demand balances, the comparative delivered costs of alternative sources in any given market, and the availability of supply.

Tampa, Port Everglades and Jacksonville are the major gateways for Florida’s inbound waterborne petroleum product receipts (Exhibit IV-10). Tampa and Port Everglades dominated the market between 2001 and 2005.

Their dominance is the result of a number of competitive advantages including:

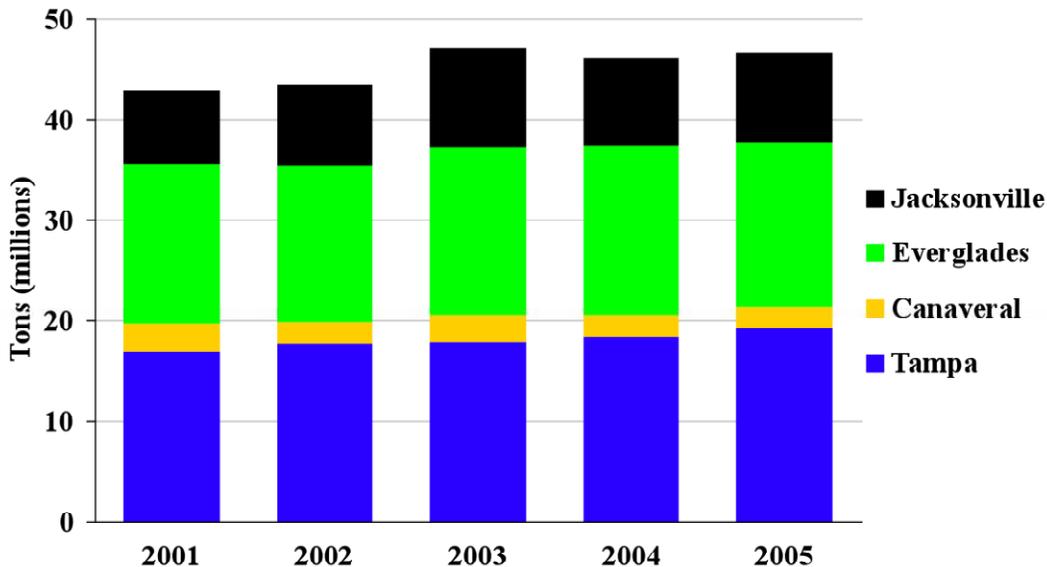
- Proximity to major consumption markets, i.e. central/west and southeast Florida respectively
- Pipeline service to major markets, i.e. Orlando/Taft and Miami International/Fort Lauderdale International/West Palm Beach airports respectively
- Significant petroleum product tank storage capacity
- Many of major petroleum product companies that distribute and sell product in the U.S. operate from these two ports
- Inland transportation cost advantages to regional markets.

**Exhibit IV-9  
International Sources of Florida Petroleum Products  
2001 and 2005**



*Source: U.S. Census Bureau*

**Exhibit IV-10  
Florida Waterborne Petroleum Product Receipts by Port  
2001-2005**



*Source: Waterborne Commerce Statistics Center*

The future mix of petroleum product sourcing will be driven by a number of key events including:

- Gulf Coast refining capacity in general and the amount of that capacity allocated to Florida in particular which will determine:
  - The future mix of domestic and international receipts
  - Future vessel size since the U.S. Gulf Coast trades are dominated by barge, integrated tug/barge and small U.S.-flag tankers whereas the international trades are dominated by Handy-Max and Panamax tankers
- The availability and delivered cost of alternative international sources of refined petroleum products to the alternative Florida gateway ports
- The inland cost of delivering petroleum products from Florida’s petroleum gateway ports to major consumption markets.

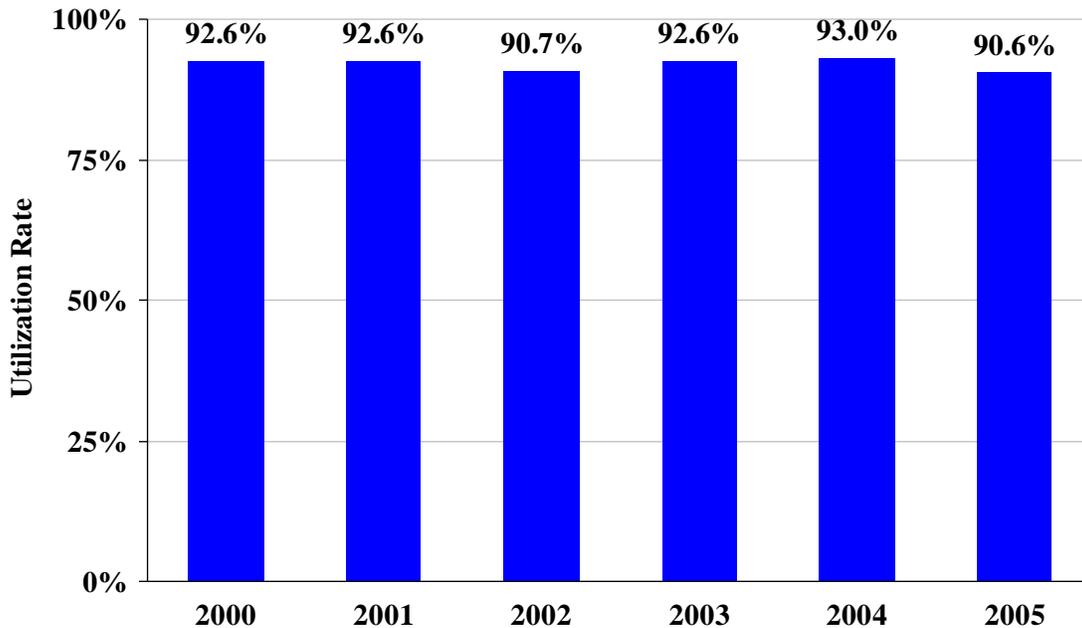
These last two points will determine Tampa’s share of Florida’s petroleum product imports versus other Florida gateways.

**(4) U.S. Refinery Capacity**

Historically, the U.S. petroleum refining industry has not kept pace with demand and has been operating at high levels of utilization for the past five years (Exhibit IV-11). U.S. consumption of refined petroleum products has been growing at an annual rate of 1.9% since 2000, but refinery capacity has only increased at a rate of 0.8% during the same period. The effect of scarce capacity is compounded by seasonal fluctuation in demand; U.S. gasoline sales typically rise in

the spring, peak during the summer travel season, and drop 10% to 15% to a low in January each year.

**Exhibit IV-11**  
**U.S. Refinery Utilization**  
**2000-2005**



*Source: National Petrochemical & Refiners Association*

As a result of these trends, imports of refined petroleum products from international sources have been increasing. There are a number of challenges the refining industry faces in adding refinery capacity including:

- Escalating costs
- Environmental rules and regulations
- Increasing complexity of product demand: air quality regulations require different blends of gasoline be produced for different regions of the U.S. which limit the refining industry's ability to achieve production scale economies
- Increases in the federal biofuels mandate and calls to reduce gasoline consumption 20 percent in 10 years could limit the need and desire for additional domestic refining capacity. Rapidly rising biofuel requirements and demands for reduced consumption in the future add more risk to investments in refinery capacity expansions
- Price competition from international suppliers
- The U.S Gulf Coast refining industry remains vulnerable to hurricanes.

There has been a notable reversal in U.S. refinery industry investment during 2007. During 2007 Valero announced a \$5 billion program to expand refining capacity in its Western Hemisphere

refineries which include facilities in Texas and Louisiana. Marathon Oil also reported that it is expanding its Garyville, Louisiana refinery. The expansion will increase refining capacity by an estimated 70 percent per day. A summary of reported refinery capacity expansion (planned and underway) in the Petroleum Allocation Defense District (PADD) III which includes the Gulf Coast is summarized in Exhibit IV-11A.

**Exhibit IV-11A**  
**Reported PADD III Oil Refinery Capacity Enhancement Projects**

Refinery	Total Capacity Expansion (bpd)
Marathon Oil Corp.	406,000
Motiva Enterprises	370,000
Valero	337,000
Chevron Corp.	230,285
Holly Corp.	75,000
WRB Refining	74,000
Placid Refining Company	25,000
<b>Total</b>	<b>1,517,285</b>

Note: Current PAD III Refining Capacity: 8,318,000 bpd

*Source: Marathon Update on Refinery Expansion Projects:  
<http://uk.reuters.com/article/oilRpt/idUKN2530030820080115>*

The future pace of investment in maintaining and enhancing Gulf Coast refinery capacity will have a significant effect on the future size and draft requirements of the tanker and tank barge fleets serving the Port’s petroleum trades.

**(5) Alternative Fuel Sources**

The most likely, and currently most advanced alternative fuel source for gasoline is ethanol. The ethanol manufacturing industry is currently experiencing unprecedented growth as a result of government subsidy programs to promote its use. A majority of ethanol plants are located in the Midwest states in close proximity to the “corn belt”.

The U.S government has announced ambitious plans to substitute renewable energy sources such as ethanol and biodiesel for petroleum in the next 10-20 years. However, even if these targets are met (e.g. 7.5 billion gallons of renewable energy sources substituted for petroleum products by 2012) renewable energy sources will remain a small portion of total energy demand. For example, Exxon/Mobil estimates that U.S. corn-produced ethanol will represent only 2 percent of projected 2030 gasoline consumption.

EarthFirst Technologies currently imports ethanol from Ecuador through the Port. EarthFirst anticipates its volumes could increase from an estimated 30 million gallons in 2006 to 100 million gallons in 2007. Despite this increase, ethanol will remain a very small portion of the Port’s and the TPA’s total liquid bulk throughput.

While ethanol and biodiesel offer several upsides for the Port (increased imports, potential slowing of the decline in phosphate fertilizers as domestic fertilizer demand increases), neither ethanol nor biodiesel are likely to significantly affect the Port's and the TPA's petroleum products trade in the future.

### ***(6) Alternative Sources of Petroleum Product Imports***

As illustrated in Exhibit IV-9 above, the Port's petroleum product imports are sourced from a number of different region including South America, the Caribbean and Europe with Venezuela being the largest source. The stability of Venezuela imports is affected by the current confrontational relationship between the Chavez government and the Bush administration. The potential exists in the short to medium term for Venezuelan imports to be curtailed or eliminated through a politically mandated embargo. If such a curtailment were imposed, then alternative sources such as the Caribbean, Europe and the Middle East would likely supplant Venezuela as a major source of petroleum products. A shift to Europe in particular could potentially affect the economic competitiveness of Tampa as a gateway to West Central Florida relative to the major Florida East Coast petroleum gateways. However, analyses suggest this threat is comparatively low for three reasons:

- Waterborne transportation costs per barrel or gallon of oil are relatively low. Consequently, the additional distance of traveling to Tampa vs. Florida east coast ports is relatively small, particularly when compared to trucking costs to final consumption markets
- Historically, the supply of tankers has in most years significantly exceeded the demand for tankers resulting in comparatively low charter rates for tankers that further reduce waterborne transportation costs
- Tampa has a significant inland trucking cost advantage relative to Port Everglades and Jacksonville in particular for serving the West Central Florida market. Trucking costs are significantly higher than ocean transport costs. Consequently, modest increases in the vessel-based transportation costs are typically not sufficient to offset Tampa's advantage in trucking costs. The proposed petroleum expansion at Port Canaveral is the possible exception since Canaveral has a geographic advantage in serving the Orlando market. However, even if the proposed expansion occurs, Canaveral faces potential berth and terminal storage capacity constraints and the Central Florida Pipeline offers a competitive alternative to trucking via Port Canaveral
  - Vitol, Port Canaveral's proposed new petroleum terminal operator, is currently evaluating the feasibility of constructing a pipeline to the Orlando area. If successful, this pipeline would reduce the Port's share of the future growth in the Orlando market

In summary, a shift in international sourcing from Venezuela or other Caribbean sources is not expected to have a major effect on the Port's overall petroleum traffic.

### ***(7) Inland Transportation Costs***

An inland transportation cost analysis was conducted that identified estimated petroleum product trucking costs from each major supply point (principally the four major Florida ports, the Colonial Pipeline at Bainbridge, Georgia and the Central Florida Pipeline at Taft) to each county

in Florida. The analysis showed that the Port is cost advantaged in 12 counties and in an additional eight counties is cost competitive. Collectively, the Port has a potential truck delivered cost advantage in 20 west central Florida counties. Since trucking costs are one of the highest components of the overall delivered cost of petroleum products, and the lack of backhaul opportunities limits any individual gateway from developing an inland cost advantage through backhaul pricing, the Port's trucking cost advantage should remain relatively stable over time.

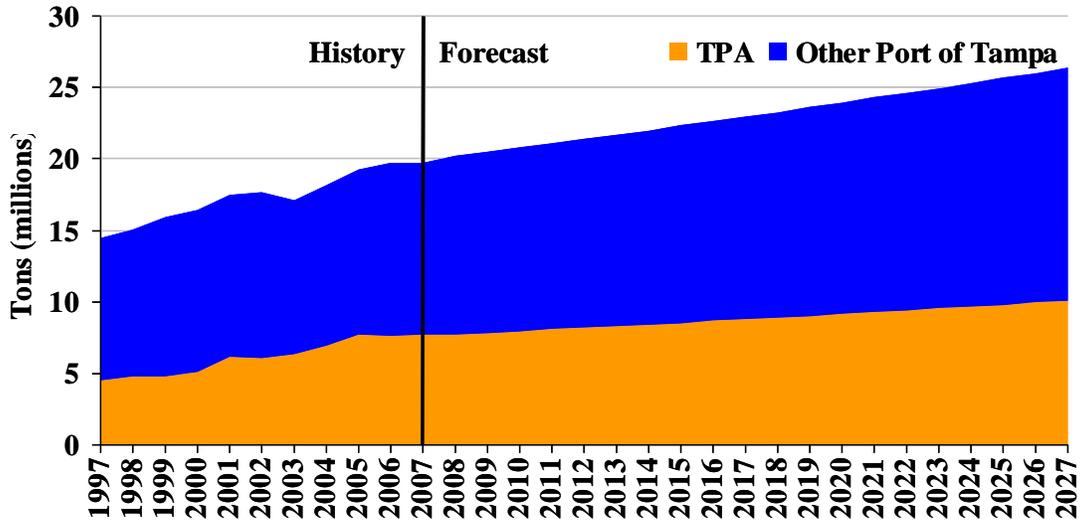
The Port's advantage in terms of serving Taft (terminus of the Central Florida pipeline) has also been enhanced through Kinder Morgan's investments in capacity expansions to the Central Florida Pipeline. Kinder Morgan reports that it has expanded its receiving capability at its Tampa terminal and increased truck delivery capability at its Orlando terminal. In addition, it has plans to boost pumping capacity on the existing pipeline as demand warrants.

### *(8) Summary*

Gasoline, diesel oil, aviation fuels and residual fuel oil will remain the major drivers of the Florida economy. Florida will continue to source its energy requirements from out-of-state sources with waterborne deliveries from U.S. Gulf Coast refining centers and international imports representing the major sources. The U.S. Gulf refining industry capacity investments are expected to continue to modestly lag the growth in demand and create additional demand for imports. Imports are expected to continue to be sourced from a wide range of overseas locations including South America, the Caribbean, Europe and potentially the Middle East. The distribution of imports across these origins is likely to fluctuate from year to year and is not expected to have a significant, long-term detrimental effect on the Port. The proposed TransGulf Pipeline project (linking west Gulf refineries to Florida) is not expected to be built during the planning horizon.

The Port's competitive advantages (location relative to the Central/West Florida Market, number of deep draft liquid bulk berths, comparatively deepwater, and the Central Florida Pipeline) position the Port to continue to fulfill its role as the petroleum product gateway for West Central Florida. Based on the foregoing, Norbridge projects the Port's future petroleum product imports to increase at average annual rates of growth of 1.4 percent to 2.0 percent per year (Exhibits IV-12 and IV-13). The TPA's volumes could increase at a faster rate through reinvestment in existing facilities (REK Pier) and new facilities (e.g. Berth 222). The additional capacity, in combination with existing water depths and potentially deeper channels in the future could lead to the TPA capturing greater shares of the West Central Florida petroleum market and result in TPA's petroleum product imports growing at a higher rate than the Port as a whole. Should the federal government permit offshore oil exploration and production in the Eastern Gulf Coast closer to Florida, this will likely impact the demand not just for petroleum products, but potentially some general cargo opportunities as well (staging, offshore supply, etc.).

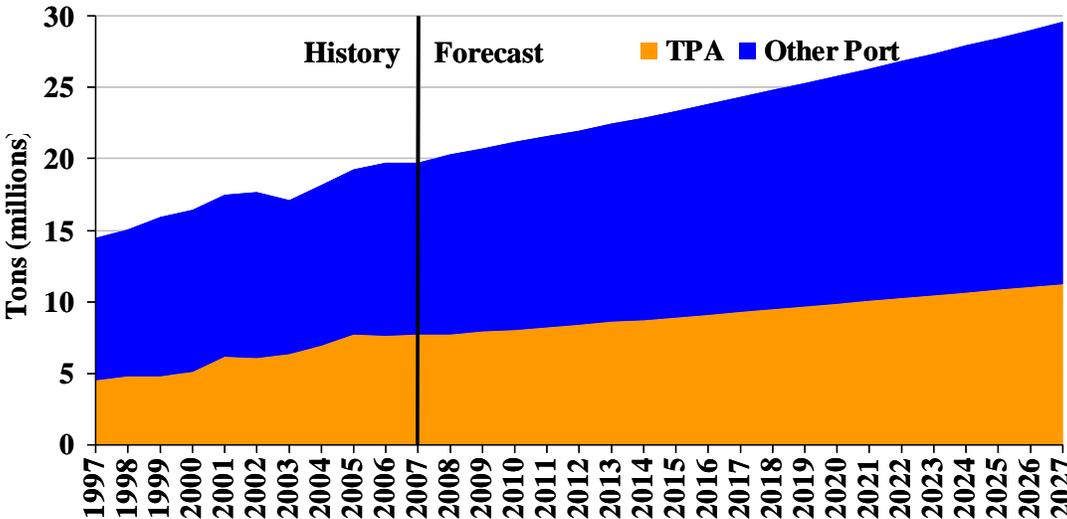
**Exhibit IV-12  
 Port of Tampa and Tampa Port Authority Petroleum Products Forecast: Low Market  
 Growth Scenario  
 FY1997-FY2027**



Note: 2007 Port of Tampa volume estimated based on estimated TPA share and volume. Port of Tampa volume grows at fixed percentage beyond 2007

Source: Norbridge, Inc. analysis

**Exhibit IV-13**  
**Port of Tampa and Tampa Port Authority Petroleum Products Forecast: High Market Growth Scenario**  
**FY1997-FY2027**



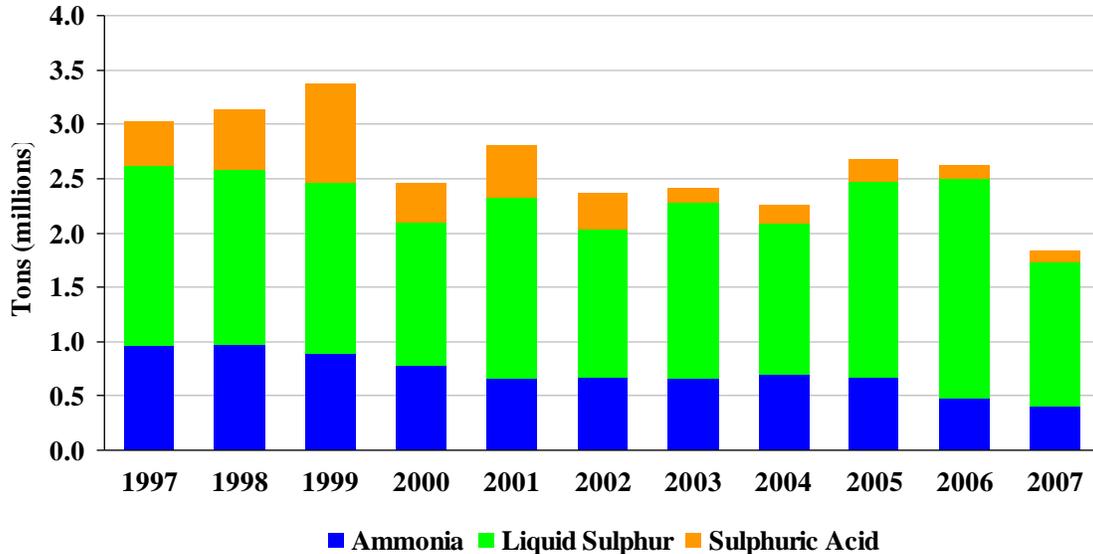
Note: 2007 Port of Tampa volume estimated based on estimated TPA share and volume. Port of Tampa volume grows at fixed percentage beyond 2007

*Source: Norbridge, Inc. Analysis*

**b) Liquid Sulfur, Sulfuric Acid, and Anhydrous Ammonia Cargoes**

The TPA’s other liquid bulk trade is comprised of liquid sulfur, sulfuric acid, anhydrous ammonia and other liquid bulks (Exhibit IV-14). The former three commodities are primarily used in the production of phosphate fertilizers and account for 82 percent of other liquid bulk throughput at TPA’s facilities. Since 1997, the TPA’s traffic volumes in these three commodities have declined at a compound annual rate of five percent.

**Exhibit IV-14**  
**TPA Ammonia & Sulphur-Related Cargoes**  
**FY1997-FY2007**



*Source: Norbridge, Inc. analysis of TPA data*

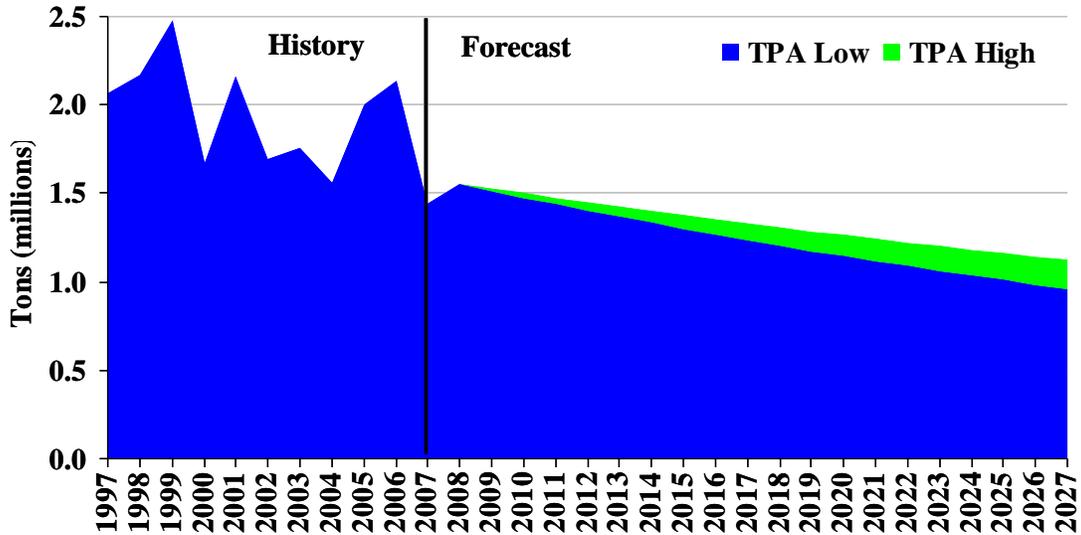
The long-term outlook for phosphate fertilizer exports is for a continued decline that has been experienced during the past ten years at the Port of Tampa and the TPA. Despite the renewed emphasis on corn production associated with the production of ethanol, the long-term outlook is for a decline in U.S. phosphate fertilizer exports due to:

- Rising production costs
- The emergence of low cost producers: China and India
- The erosion of domestic production’s market shares in coastal states where imports can be easily sourced via deep draft ports such as Tampa.

While the current weakness in the U.S. dollar against selected currencies may enhance the short-term competitiveness of U.S. phosphate fertilizers, this short-term situation is not expected to reverse the long-term decline due to the significant cost-competitiveness of international suppliers. These trends are discussed in more detail below under the dry bulk market assessment.

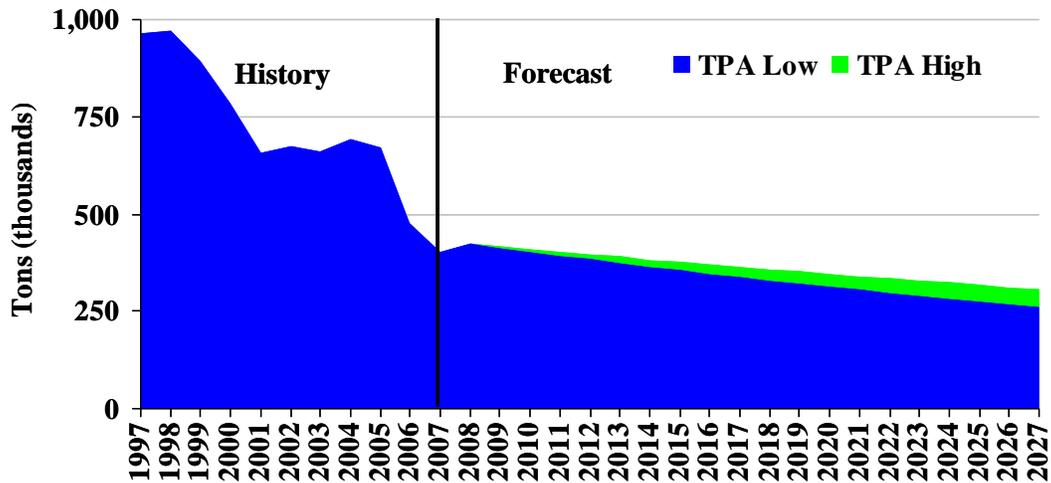
The net effect of the long-term decline in phosphate fertilizer exports is neutral to negative for the Port and the TPA. If exported fertilizers are replaced with inbound phosphate rock shipments, then the TPA’s sulphur and ammonia trades would likely remain at or near current levels since these materials would be required to process the inbound phosphate rock into phosphate fertilizers. Conversely, if exported phosphate rock exports are not replaced with similar volumes of imports, then the TPA’s sulphur, sulphuric acid and ammonia trades will likely decline, consistent with the projected declines (see below) projected for phosphate fertilizer exports, i.e. long-term declines of 3 percent to 4 percent annually between 2007 and 2025 (Exhibits V-15 and V-16).

**Exhibit IV-15**  
**TPA Historical and Projected Liquid Sulphur and Sulphuric Acid Volumes**  
**FY1997-FY2027**



*Source: Norbridge, Inc.*

**Exhibit IV-16**  
**TPA Historical and Projected Ammonia Volumes**  
**FY1997-FY2027**

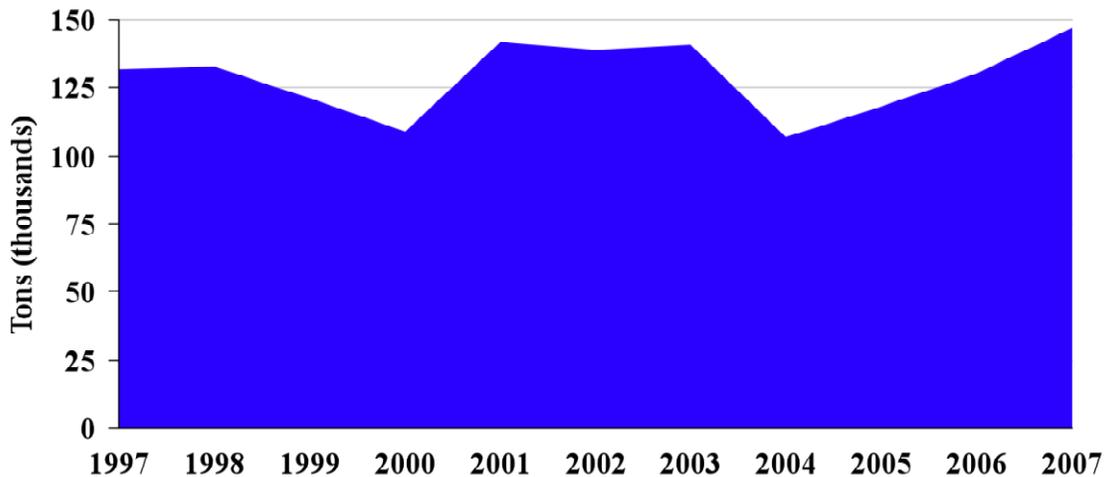


*Source: Norbridge, Inc.*

### c) Miscellaneous Liquid Bulk Cargoes

The TPA's remaining liquid bulk cargoes comprise bulk citrus concentrate and miscellaneous liquid bulks. Collectively, these cargoes have remained flat in terms of total volume between 1997 and 2007 although there have been significant fluctuations on a year to year basis (Exhibit IV-17). They also represent a very small percentage of the TPA's total liquid bulk cargo throughput.

**Exhibit IV-17**  
**TPA Other Liquid Bulk Cargoes**  
**FY1997-FY2007**



*Source: Norbridge, Inc. analysis of TPA data*

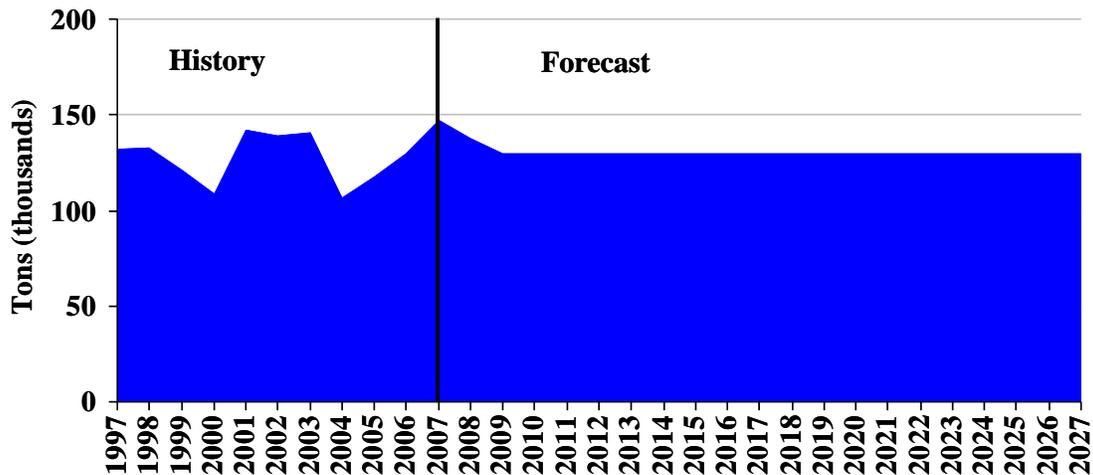
Historically, the TPA has handled up to seven different types of bulk citrus concentrate. The largest category, citrus concentrate in bulk, has accounted for 96 percent of total concentrate throughput during the last ten years and 100 percent of total citrus concentrate since 1999. International imports have accounted for an average 86 percent of total citrus concentrate handled through the Port during the past ten years. The TPA reports that most of the inbound concentrate has originated in Brazil and Costa Rica and has been used for blending with domestically produced product.

The future outlook for bulk citrus concentrate is uncertain due to a number countervailing factors. These factors include declines in Florida citrus production due to damage caused by recent hurricanes, diseases (canker, citrus greening), potential declines in citrus production as groves are sold to developers for housing and or commercial development and competition from international suppliers. The combined effect of these factors would be to potentially increase the demand for citrus concentrate imports to compensate for corresponding reductions in domestically produced concentrate. Conversely, if the Florida citrus industry were to successfully address the factors driving a decline in production, then it is possible that citrus concentrate imports would remain at or near current levels. There are also growth prospects associated with increased importation of juice concentrate from central and South America. Finally, there is significant potential for citrus bulk concentrate to shift to tank containers, given

the origins of the imports, i.e. Brazil, Costa Rica. Given both the complexity of factors affecting citrus concentrate trade through the Port and the comparatively small volumes involved, Norbridge has assumed a no growth scenario over the planning horizon. Norbridge anticipates the combined effects of a potential decrease in domestic production, an increase in imports and a gradual containerization of imports will lead to an overall flat trend in bulk imports of citrus concentrate.

The future outlook for other liquid bulk products is less clear due to the small volumes of numerous commodities, each of which has its own set of demand drivers. For planning purposes, the forecast assumes that other liquid bulks in total remain flat at a volume equivalent to the past ten years, essentially a no growth scenario (Exhibit IV-18).

**Exhibit IV-18**  
**TPA Historical and Projected Other Liquid Bulk Traffic**  
**FY1997-FY2027**

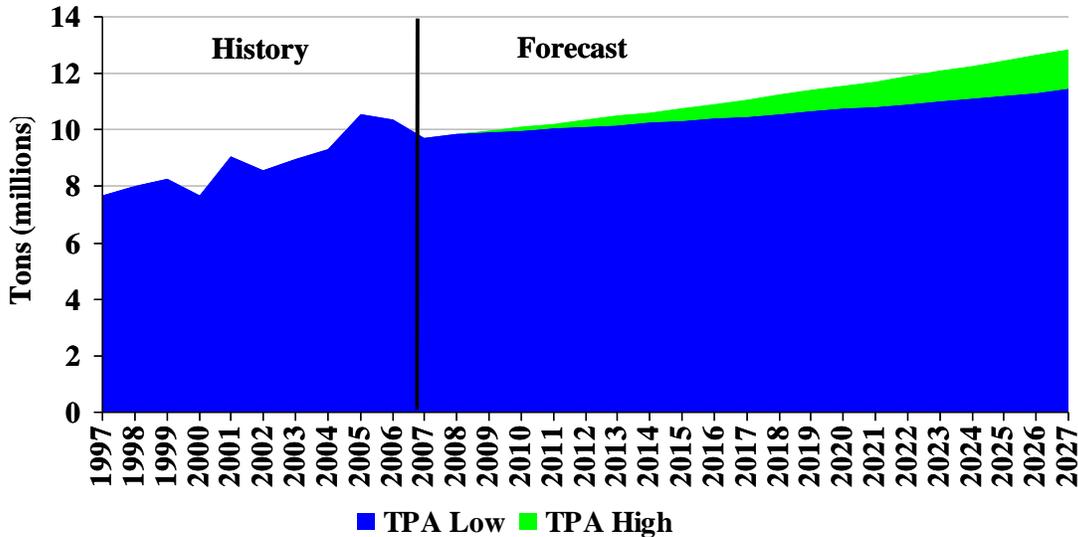


*Source: Norbridge, Inc. analysis*

**d) Liquid Bulk Cargoes Summary**

TPA’s total liquid bulk cargo traffic is projected to increase from a FY2007 volume of 9.7 million tons to a FY2027 volume of 11.4 million tons under the low forecast and 12.8 million tons under the high forecast (Exhibit IV-19). These forecasts represent compound annual rates of growth of 0.8 percent and 1.4 percent respectively which are significantly lower than the ten year historical rate of 2.3 percent. The projected declines in fertilizer related (ammonia, sulphuric acid, liquid sulphur) liquid bulk cargoes partially offset the projected growth in petroleum products and result in the projection of lower growth in the future.

**Exhibit IV-19  
TPA Historical and Projected Liquid Bulk Traffic  
FY1997-FY2027**



*Source: Norbridge, Inc. and Moffatt & Nichol*

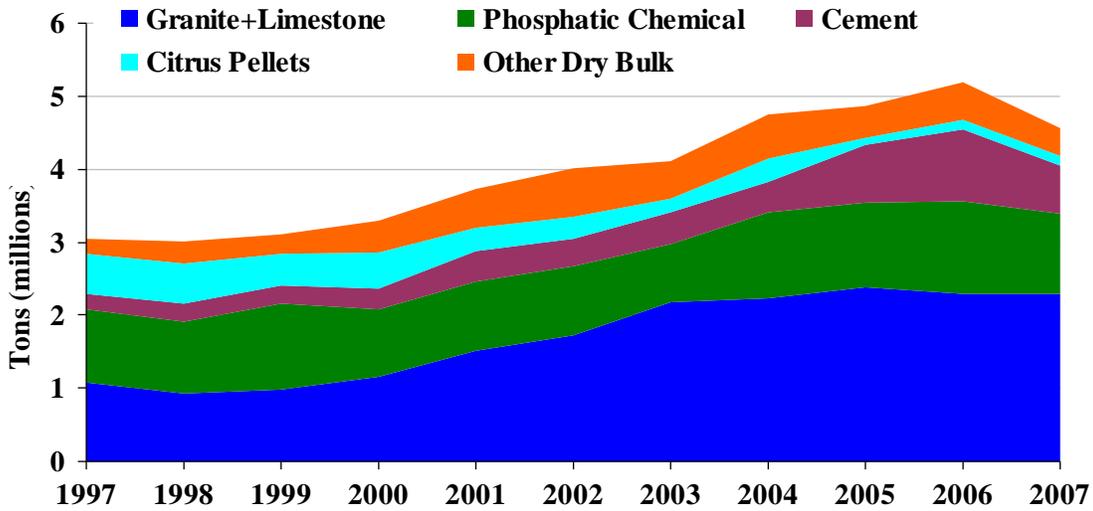
**2. Dry Bulk Cargoes**

The TPA’s dry bulk cargo business has experienced steady growth during the past ten years (Exhibit IV-20). Between FY97 and FY07, the TPA’s dry cargo businesses increased by 1.5 million tons or by an average annual compound rate of growth of 4.1 percent. The TPA’s dry bulk trade is dominated by four products: limestone, phosphate chemical fertilizers, and cement and granite rock. Collectively these four commodities represented 89 percent of TPA’s 2007 dry bulk throughput. Limestone, cement and granite rock are used in the commercial and residential construction industries whereas phosphate chemical bulks are used as fertilizers in domestic and international markets. This section assesses the future market for these two industries and the associated commodities.

**a) Construction Materials**

The Florida commercial construction industry is a major driver of the Florida economy. Strong population and economic growth underlie the continued demand for highway, public construction and commercial construction projects. The construction industry is projected to continue to experience strong growth in the future as evidenced by the significantly higher growth in construction industry employment versus total Florida statewide employment shown in Exhibit IV-21.

**Exhibit IV-20  
TPA Historical Dry Bulk Cargo  
FY1997-FY2007**



*Source: Norbridge, Inc. analysis of TPA data*

**Exhibit IV-21  
Projected Florida Statewide Construction Industry and Total Employment  
2006-2025**



*Source: Global Insight*

In contrast to the outlook for the construction industry, Florida housing starts are expected to decline 2.0% annually between 2006 and 2015, and 1.2% between 2015 and 2025. This decline is partially due to rapid price appreciation, and population growth that will be weaker than what

has been seen in recent years. However, considering Florida's recent highs in construction growth rates, negative growth of 2% and below will still result in a high level of construction in Florida.

### *(1) Aggregates*

Aggregates, principally crushed limestone, are a major raw material used in commercial (buildings, highways) and residential construction. The primary sources of aggregates in the State of Florida are domestic mines. In 2004, the estimated 139 million tons of crushed stone consumed in Florida were sourced as follows:

- Lake Belt mining district of Dade County: 36 percent
- Other Florida mines: 47 percent
- International waterborne imports: 4 percent
- Domestic receipts from other states: 6 percent
- Recycled materials: 7 percent.

The construction industry accounted for an estimated 130 million tons or 94 percent of the 139 million tons of crushed stone consumption.

The dominant role of the Lake Belt region is due to the quality of the rock produced, the scale economies in production that are achieved and the scale economies in transport cost achieved through the use of high volume, high speed unit trains. In 2004, the Florida State Department of Transportation (FDOT) commissioned a study (Strategic Aggregates Study) to assess the current and future supply of aggregates to the State of Florida. The study documented current supply and demand, projected future demand (to 2009) and assessed the market and economic effects a shut down in state production in the Lake Belt region would have on the state economy. The demand forecast projected demand by market sector and FDOT district. The study projected:

- Total consumption would increase from 139 million tons to 146 million tons (one percent per year)
- Construction related demand would increase from 130 million tons to 136 million tons
- FDOT District 7 (Citrus, Hernando, Hillsborough, Pasco and Pinellas counties) demand would increase from 16.9 million tons to 17.2 million tons or 2 percent in total
  - Hillsborough and Pinellas counties accounted for a majority of the demand but were projected to remain constant over the forecast horizon.

The study also analyzed alternative reserves of crushed limestone that could potentially be mined to replace declining reserves (e.g. major deposits in Lee and Collier counties will begin to be depleted circa 2015). The study noted that the largest reserves of quality limestone exist in Taylor County in northern Florida.

Transportation cost is often more than half of the delivered cost for aggregates. Consequently, the “product” being consumed can often be considered to be the transportation itself. Transportation costs together with production costs drive the supply and marketing of

aggregates. In order to assess the competitiveness of future waterborne deliveries of aggregates via the Port to FDOT District 7 and other markets, a linear program transportation cost model was developed. The model was used to assess the optimum distribution of crushed stone sourcing on a county basis. Key inputs included:

- Truck transportation costs:
  - \$10 per load fixed cost for paperwork and administration; plus
  - \$2.00 per mile operating cost for fuel and maintenance; plus
  - \$200 per 8-hr day labor and capital costs for the driver and truck;
  - The truck is unloaded at the receiving station and returns empty; a 20-mile one-way trip that takes 30 minutes driving plus an average 40 minutes loading/unloading time incurs a total cost of \$120 or about \$6.00 per ton as the truck and driver must spend 100 minutes and travel 40 miles.

In addition to truck haul costs, the costs of hauling a railcar full of aggregates as part of a unit train was estimated by a model that assumes:

- \$400 fixed cost for administration, handling, etc.; plus
- \$1.00 per mile operating cost.

For a typical 100-ton railcar, the modeled cost is \$4.00 per ton fixed cost plus \$0.01 per ton-mile.

Lastly, imported aggregates incur ocean shipping costs before they arrive at ports. Although the cost per ton-mile by ship is very low (\$0.005 per ton-mile in a large ship), the distances can be large. A primary source of crushed stone currently being imported at the Port is the Yucatan Peninsula of Mexico. Located approximately 500 miles away, the ocean cost of transporting crushed stone from the Yucatan Peninsula to the Port is about \$2.50 per ton. The same cost has been applied to the other ports (Jacksonville and Canaveral) on the assumption that they could receive shipments from similar sources.

The model results indicate the Port is currently competitively positioned to serve much of the FDOT District 7 market. This market is projected to total 17 million tons in 2009. Long-term growth is assumed to approximate the projections contained in the Strategic Aggregate Study of one percent per year. In 2006, the TPA handled approximately 2.3 million tons of limestone and granite rock or an estimated 14 percent of the total District 7 market. The rate at which waterborne shipments penetrate the FDOT District 7 market will be determined by a number of factors including:

- Construction demand in FDOT District 7
- Major suppliers product sourcing and distribution strategies
- Available capacity at the Port
- Future development of domestic sources in Taylor, Sumter, Citrus and Hernando counties in general and large scale production mines in Taylor County in particular
- Transportation costs between Taylor, Sumter, Citrus and Hernando counties and FDOT District 7 consumption centers

- Conservation strategies aimed at significantly increasing the amount of recycled materials in construction.

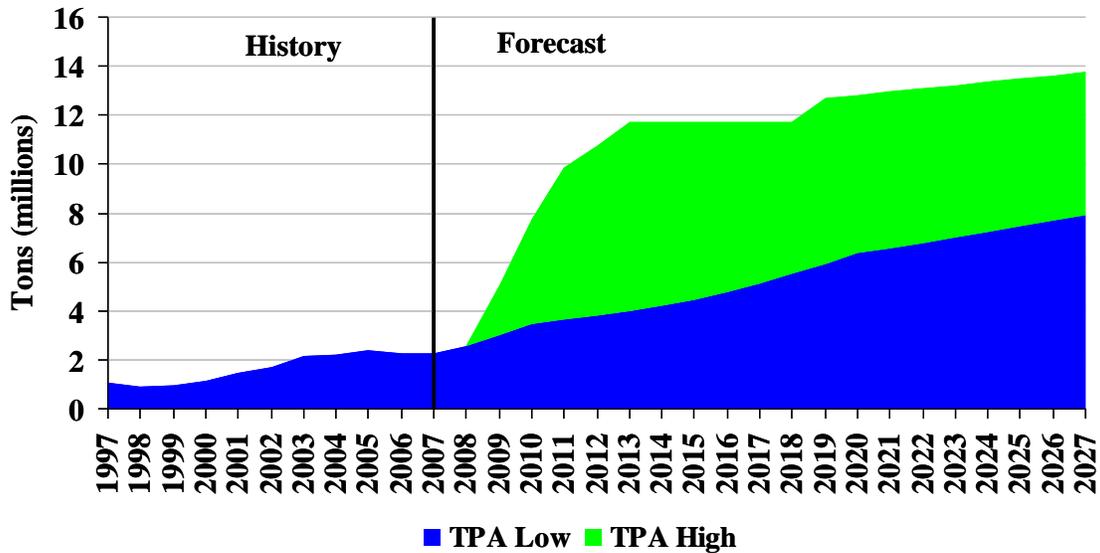
Given the Port's competitive advantages, lead time to bring on new domestic supplies, and its relatively low share of current FDOT District 7 consumption, there appears to be substantial upside potential for the Port and the TPA to handle additional imports of aggregates. For example, a doubling of the Port's share of the estimated 2009 FDOT District 7 market would result in an estimated 4.8 million tons of aggregate or double what the TPA handles today. A 50 percent market share penetration would result in a 2009 volume of 8.6 million tons or a quadrupling of the TPA's current throughput. In the longer run, the TPA's share of the FDOT District 7 market could become dominant (75% or more) based on a major new aggregate tenant starting operations in the next 24 months and if new sources of production are not developed in a 2010-2015 timeframe. Under these conditions, the TPA's volumes could approach 13 million tons of the combined FDOT District 7 market in a 2015-2020 timeframe.

Two forecast scenarios were developed for the TPA's future aggregates/bulk granite traffic as follows:

- Low-Significant new domestic production/low TPA share of FDOT District 7 consumption: This scenario assumes the Florida aggregate mining industry is successful in developing new sources of high grade, high production aggregates (Taylor, Dixie, and Sumter counties) to replace the declining deposits in Lee and Collier counties and potential cessations in a portion of Lake Belt production. Under this scenario regionally produced aggregates continue to supply a majority of the aggregates to FDOT District 7 and consequently the TPA's share only gradually increases to 40 percent of the FDOT District 7 market over the next 20 years
- High-New Tenants and Minimum Annual Guarantees: For the high aggregate forecast, it is assumed that new TPA tenants come on line, and that all TPA tenants then meet their minimum annual guarantees.

The two scenarios result in average annual compound rates of growth of 6.4 percent and 9.4 percent respectively as compared to the historical (1997-2007) growth rate of 7.7 percent. Exhibit IV-22 provides a summary of the two forecast scenarios.

**Exhibit IV-22  
TPA Historical and Projected Aggregate Cargo  
FY1997-FY2027**



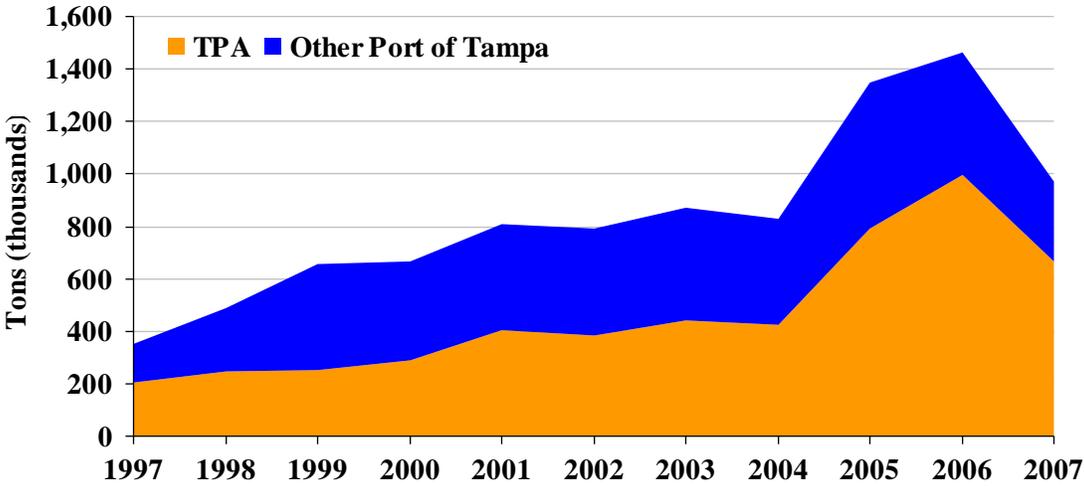
*Source: Norbridge, Inc. & Moffatt & Nichol*

**(2) Cement**

Cement and cement clinker are a large source of dry bulk tonnage at the Port of Tampa, representing 6% of the dry bulk traffic at the Port. In 2006, cement throughput totaled 1,453,000 tons, which represents a peak volume for the Port (Exhibit IV-23). For the period 1997-2006, cement throughput grew at an average annual compound rate of growth of 17.2%.

TPA cement throughput totaled 666,000 tons in 2007. For the period 1997-2007, The TPA's cement traffic increased at an average annual compound rate of growth of 12.4 percent. Between 1997 and 2007, the TPA share of the Port's total cement throughput ranged from 38% to 70%, with the 70% peak coming in 2006. Cement trade is predominantly an inbound trade and foreign imports represent an estimated 78% of all cement throughput at the Port.

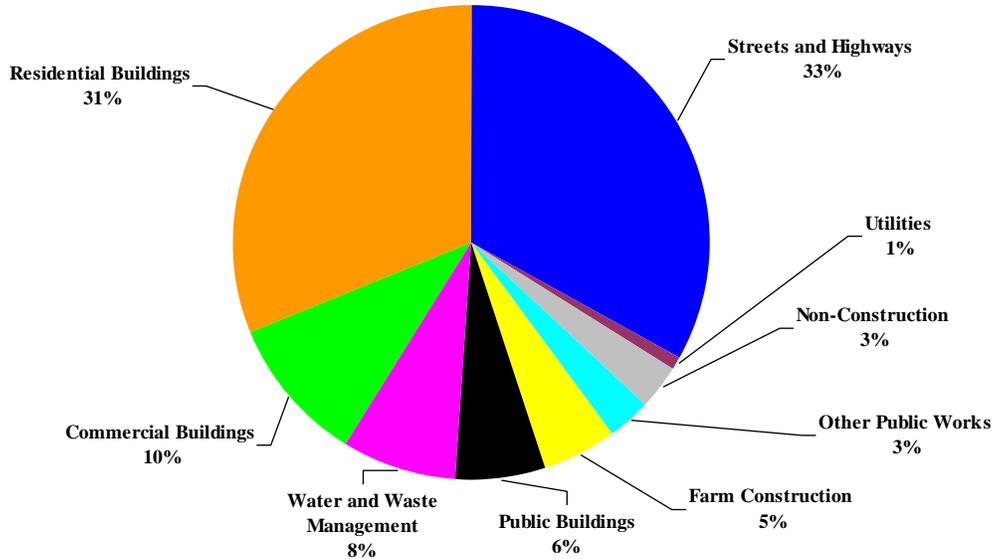
**Exhibit IV-23  
Port of Tampa Cement Trade  
FY1997-FY2007**



*Source: Port of Tampa Tonnage Reports 1997-2007*

The Portland Cement Association reports that highway and residential construction sectors are the key drivers of demand for cement, with commercial construction also contributing substantially to demand. These three sectors account for 74% of cement demand throughout the United States (Exhibit IV-24).

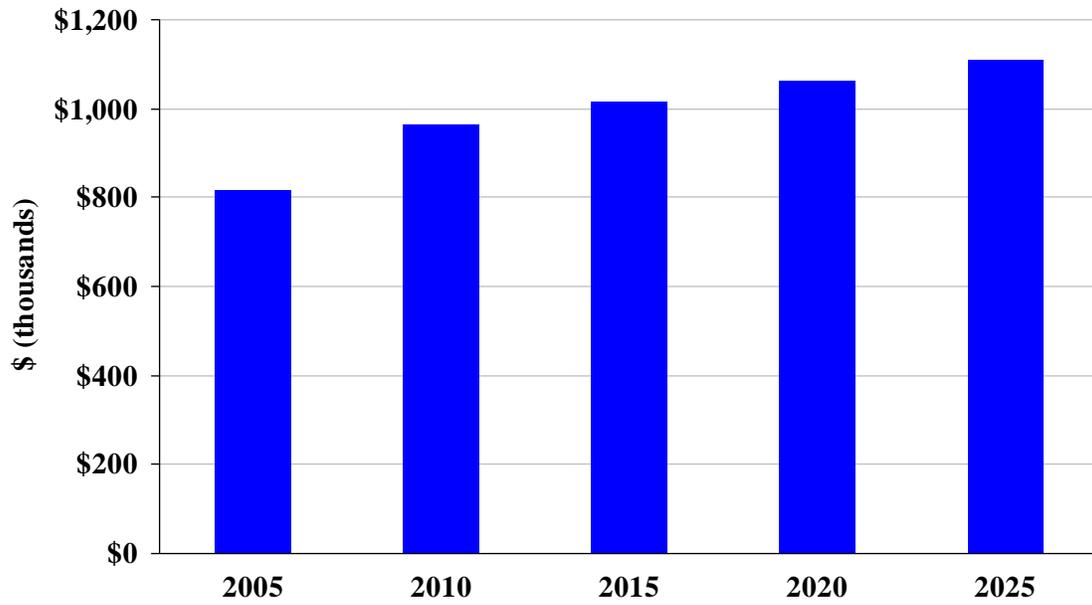
**Exhibit IV-24  
Cement Use by Market Sector**



*Source: Portland Cement Association*

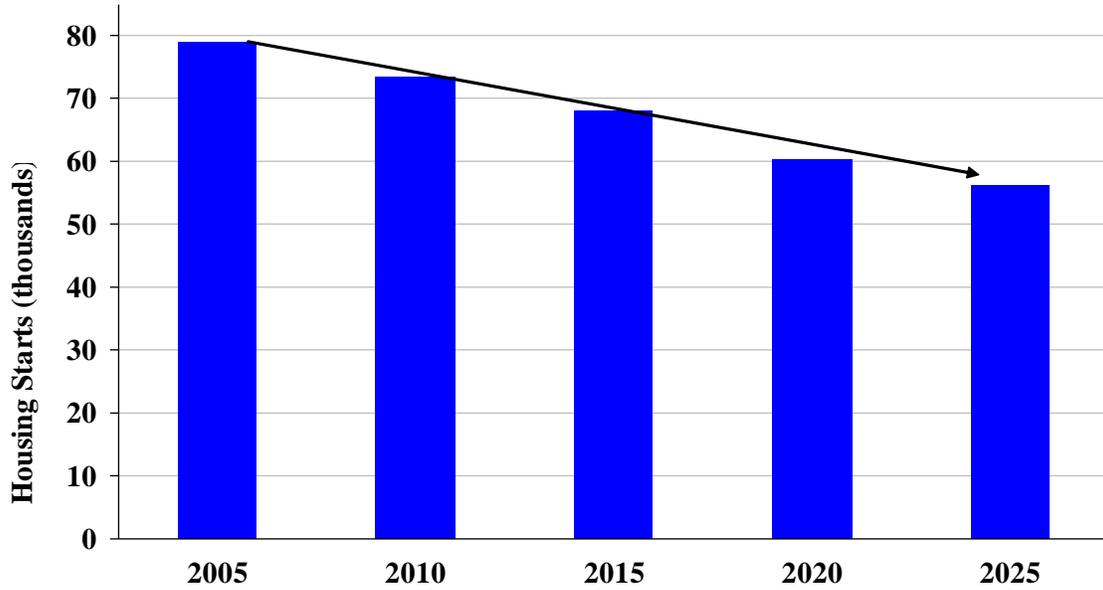
In the future, both the highway and commercial construction sectors are predicted to grow moderately (Exhibit IV-25), while residential construction in West central Florida is predicted to decline between now and 2025 (Exhibit IV-26). The Florida Department of Transportation planned highway construction projects in West and Central Florida are forecast to increase at annual growth rate of 1.5% in highway construction expenditures. Conversely, the growth in residential housing starts is projected to slow over the planning horizon. The slowing growth likely reflects the slowing of population growth, a transition of a portion of the population from variable to fixed incomes as the population ages and retires, and a transition from single family to multi-family (townhouses, condominiums, apartments, etc.). In the short-term, the current weak U.S. economy in general and the significant downturn in the residential housing market are also likely to slow the pace of residential construction and housing starts over the next one to three years. The Florida Economic Estimating Conference held in July of 2007 predicts commercial construction expenditures in Florida to grow the fastest with a compound annual growth rate of 4.3% (Exhibit IV-27) while it predicts overall construction (used as a proxy for the other forms of construction) to grow at 3.8% (Exhibit IV-28).

**Exhibit IV-25**  
**Projected West Central Florida Highway Construction Expenditures**



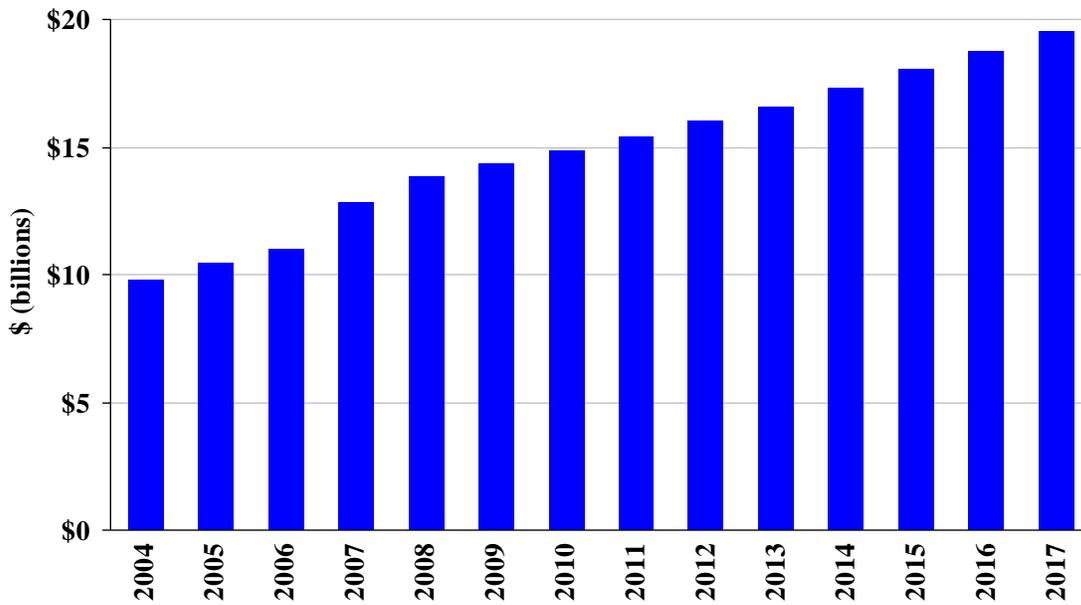
*Source: Florida Dept. of Transportation with extrapolation*

**Exhibit IV-26**  
**Projected Housing Starts in West Central Florida**



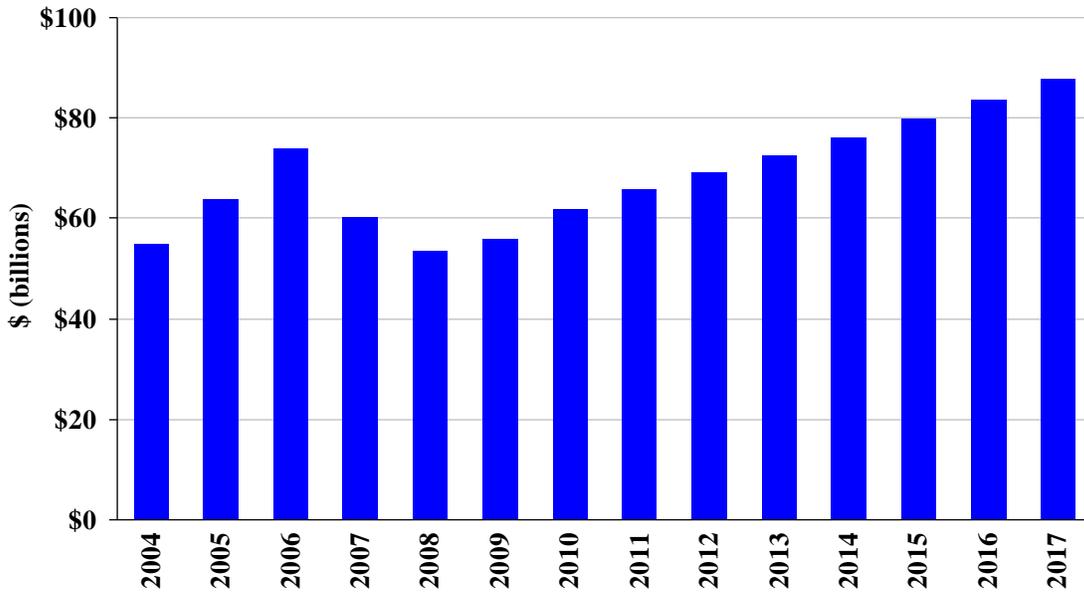
*Source: Moffatt & Nichol estimates*

**Exhibit IV-27**  
**Projected Florida Commercial Construction Expenditures**



*Source: Florida Economic Estimating Conference: Long Run Tables. 07/2007*

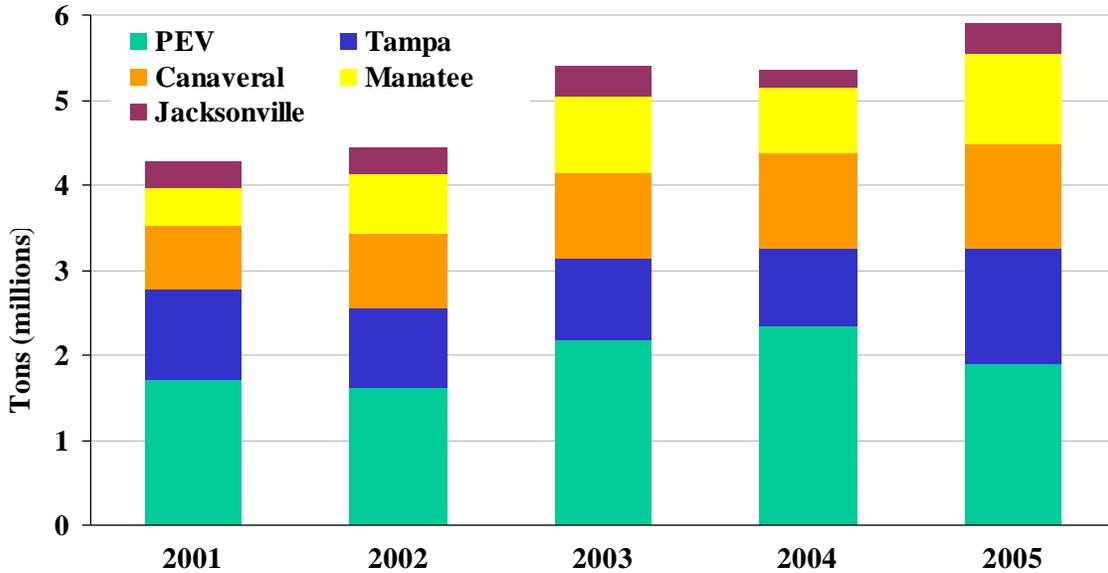
**Exhibit IV-28**  
**Projected Florida Overall Construction Expenditures**



*Source: Florida Economic Estimating Conference: Long Run Tables. 07/2007*

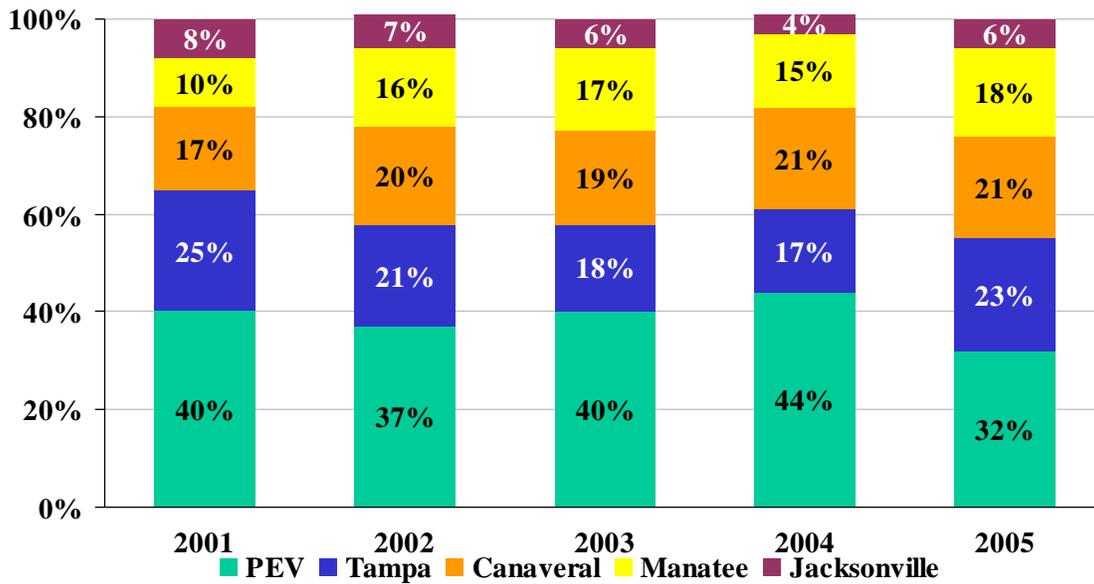
The majority of cement throughput into Florida arrives through five major ports: Everglades, Tampa, Canaveral, Manatee, and Jacksonville (Exhibit IV-29). Everglades has the largest throughput, accounting for anywhere between 32% and 44% of cement traffic in the period between 2001 and 2005. Tampa accounts for anywhere between 17% and 25% in the five year period (Exhibit IV-30).

**Exhibit IV-29  
Cement Throughput by Florida Port**



Source: Army Corps of Engineers. Waterborne Commerce Statistics Center 2001-2005

**Exhibit IV-30  
Cement Throughput by Florida Port**



Source: Army Corps of Engineers. Waterborne Commerce Statistics Center 2001-2005

The forecast for cement comes from an average of the growth rates given in the demand section for the various construction sectors, weighted by the relative percentage of cement that is used in each market area. For example, the effect of the highway construction growth would be 1.5% (the projected growth of highway expenditures in West Central Florida) multiplied by 33% (the percentage of overall cement generally used in highway construction). This yields:

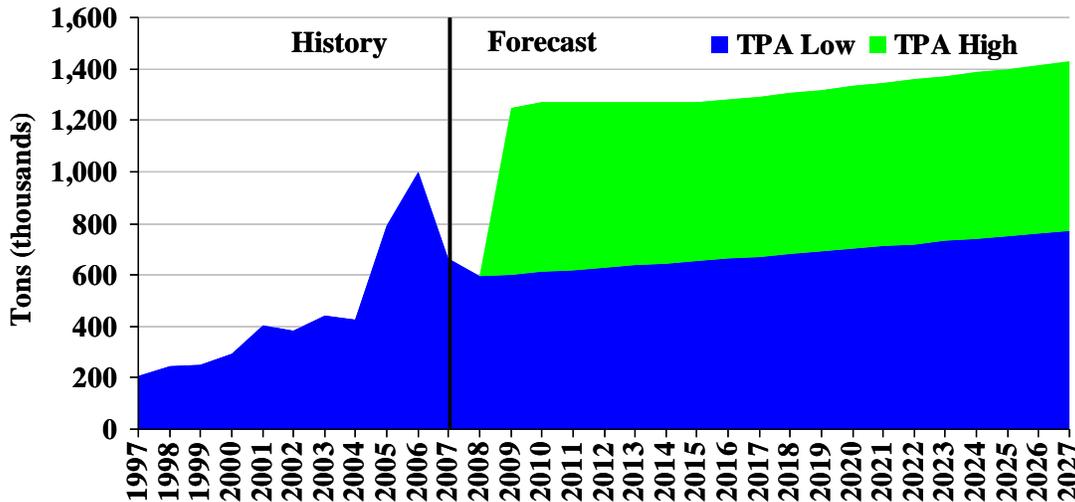
Weighted average= Highway Growth Rate(.33)+Housing Start Growth Rate(.31)+Commercial Construction Growth rate(.10)+Total Construction Growth Rate(.26)

$$\text{Weighted average} = 1.5(.33) + 1.7(.31) + 4.3(.10) + 3.8(.26) = \underline{1.4\%}$$

For the low forecast, a 1.4% growth rate was applied to the base year of 2007 to predict that the overall Port of Tampa cement throughput will reach 1.1 million tons by 2027. The TPA share of this volume is estimated to be 70 percent of the total Port throughput, or 772,000 tons (Exhibit IV-31).

For the high cement forecast, it is assumed that two TPA tenants will increase their volumes in 2009 to meet their tonnage guarantees, and then all TPA cement traffic grows 1% annually beginning in 2016.

**Exhibit IV-31**  
**TPA Historical and Forecast Cement Traffic**  
**FY1997-FY2027**



Source: Norbridge, Inc. and Moffatt & Nichol

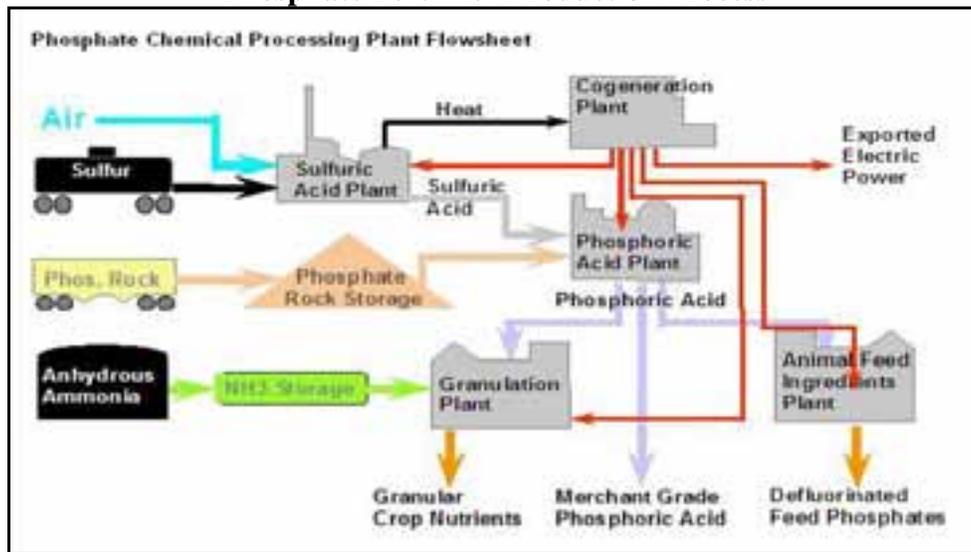
**b) Fertilizers**

For more than 70 years, Florida has been a major source of phosphate rock which is used in the production of phosphate fertilizers. The Port’s proximity to the major phosphate mines (Bone Valley) has driven the Port’s role as the gateway for Florida phosphate rock and phosphate

fertilizer exports as well as its significant inbound receipts of ammonia and sulphur which are used to produce phosphate fertilizers.

The local availability of the phosphate “matrix” (a mixture of sand, phosphate and clay), rail connections and the existing export facilities has led to the local preparation of ammoniated (more concentrated) phosphate products. The local fertilizer industry uses anhydrous ammonia and sulphuric acid to create DAP (diammonium phosphate) and MAP (monoammonium phosphate) fertilizers (Exhibit IV-32).

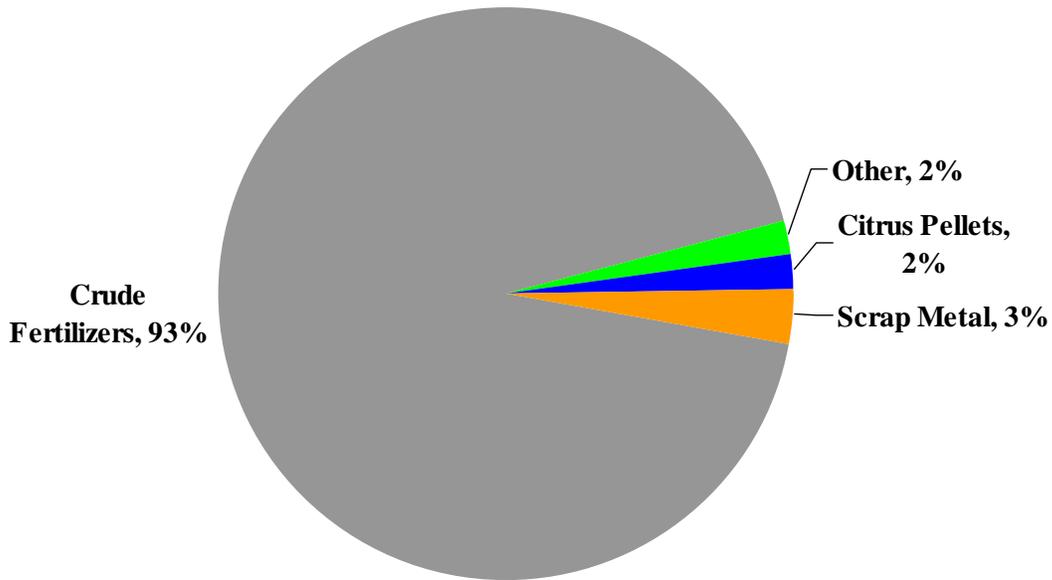
**Exhibit IV-32  
Phosphate Fertilizer Production Process**



*Source: Moffatt & Nichol*

Crude fertilizers (including phosphates, calcium nitrates, ammonia in various forms, and potash) are the largest export commodity for the Port (Exhibit IV-33). The majority of phosphate export cargoes are handled through private terminals.

**Exhibit IV-33  
Port of Tampa Outbound Commodity Share 2005**



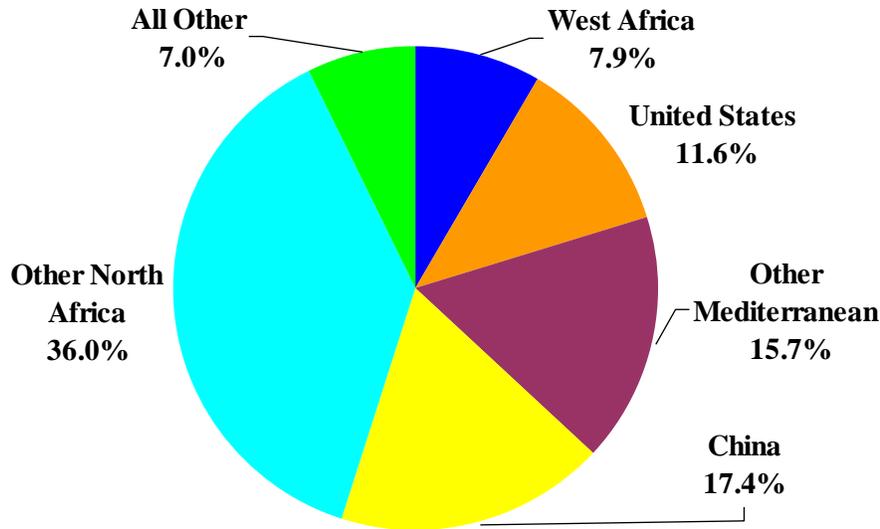
*Source: Moffatt & Nichol*

In 2004, United States sources supplied approximately 12% of the world's crude fertilizer, down from almost 30% ten years earlier. The world's largest exporters are the six countries shown in Exhibit IV-34, below (2004). In 2004, a total of 28.3 tons were exported worldwide. Northern Africa, Morocco and the Western Sahara are the principal suppliers. Their reserve base of phosphates is estimated to be five times that of the U.S.<sup>1</sup> and also can be extracted at much lower cost. It is important to note that China's 17.4% share of world crude fertilizer exports was as low as 5.6% in 1995. China, therefore, has become a major competitor in a short period.

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<sup>1</sup> U.S. Geological Survey, Mineral Commodity Summaries.

**Exhibit IV-34  
Top Six Exporting Countries for Crude Fertilizers: 2004**

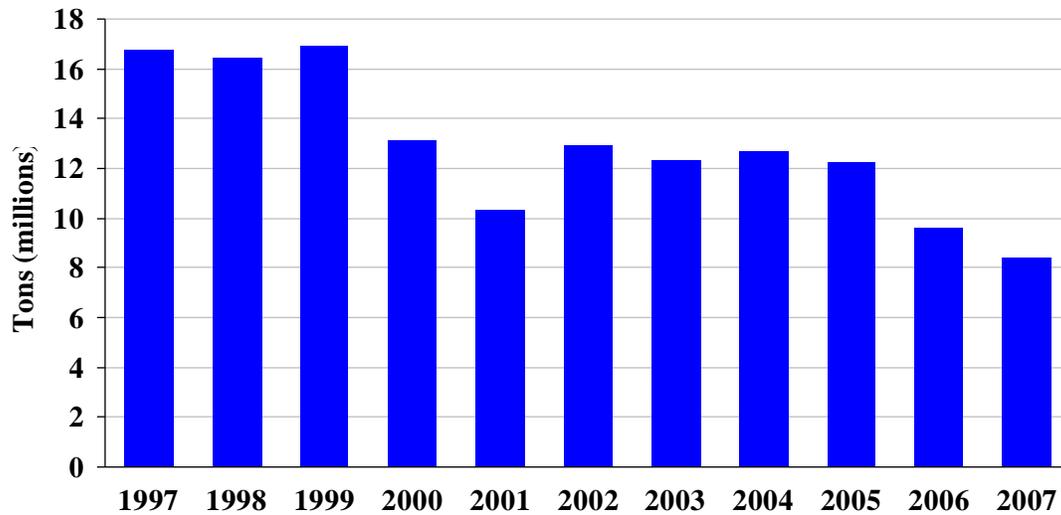


*Source: Global Insight*

In recent years, exports and domestic consumption of crude fertilizers have been volatile, due mainly to changes in export markets and weather conditions affecting agricultural production, averaging a -1.7% change per year over the period from 2000-2004 but with a significant change of -49.3% from 2004-2005. U.S. Domestic shipments, mainly to Louisiana, have declined on average, with outbound volumes in 2005 recorded at 11.4 million tons and year end figures for 2006 expected to approximate 8.2 million tons.

Consistent with the national trend, the Port of Tampa phosphate bulk export traffic has steadily declined since 1999 (Exhibit IV-35). The decline reflects increased competition from international sources. The 1999-2007 decline is a continuation of the ongoing long term decline in the Port's phosphate bulk export traffic.

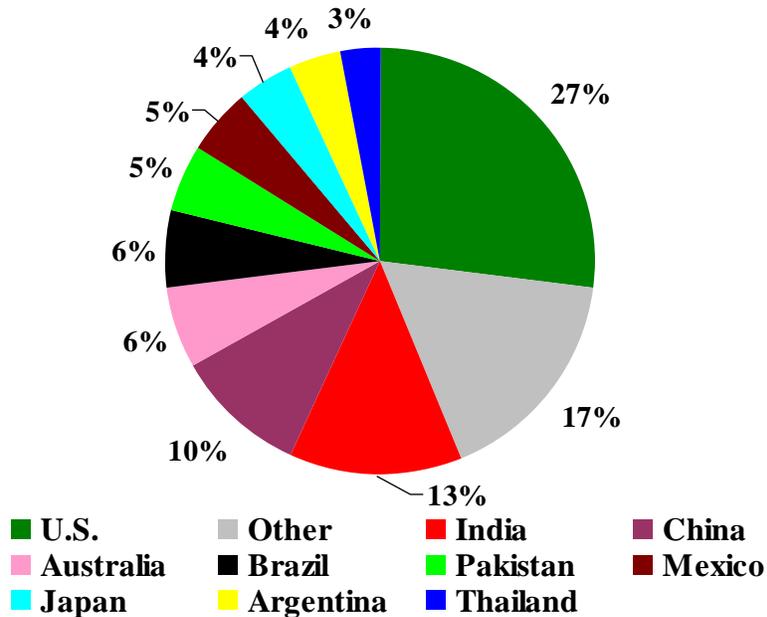
**Exhibit IV-35**  
**Port of Tampa Phosphate Chemical Bulk Traffic**  
**FY1997-FY2007**



*Source: Norbridge, Inc. and Moffatt & Nichol*

The end market of the Tampa outbound crude fertilizers, including Louisiana, is shown in the pie chart below (Exhibit IV-36). Looking at the international markets, where there is greater volatility, the Port exported 8.3 million tons in 2005.

**Exhibit IV-36  
Destination Shares of Fertilizers from the Port of Tampa - 2005**



*Source: Moffatt & Nichol*

As noted earlier, the primary reason for the decline in overall crude fertilizers shipments from the Tampa area has been increased competition from low-cost, high capacity competitors.

Shipments to China have declined by an average 28.5% per year over the 2000-2005 period as it has become a world supplier on its own, while shipments to India have expanded 16.6% per year, and by 109% in 2005.

Most of Tampa's other main export markets have also shown shifts in import sourcing in recent years. Brazil is a growing market for crude fertilizer imports, averaging 5.0% per year over 2000-04. However, Morocco and Israel are the top two suppliers, with the U.S. in third place. These three nations supply 97% of Brazil's imports (2004). Australia's market expanded at 10.7% per year between 2000 and 2004. The increased demand has been met by a variety of suppliers with the U.S. and Western Africa (Nigeria) tied for first place, followed by China and Morocco. The U.S. share of the Australian market has been declining in the face of increased shipments from Western Africa and China.

Argentina is one of Latin America's faster growing markets, and both imports and exports are booming, and the country is in strong financial condition. Imports of crude fertilizers in 2004 alone were up 35.3%, and the U.S. has nearly 100% of this market. However, there is strong competition from Morocco for this market.

Shipments of crude fertilizers to Mexico were almost 1.5 million MT in 2004, and imports have been growing at an average of 13.2% per year from all foreign sources, of which Morocco is the principal supplier, with 75% of the sales. However, the U.S. share is increasing, and shipments

from the U.S. to Mexico (by sea) have increased an average of 34% per year over from 2000 to 2004.

Competition from foreign suppliers for world markets is expected to increase in the future. Florida fertilizer companies are also faced with higher extraction costs for the raw rock from the “Bone Valley” area. While there are no expectations that the available volumes of rock will disappear within the next 30 to 50 years, the quality of the remaining stocks is declining. At the same time, permitting for the opening of new mining areas is become more complicated and time consuming, and the need to provide extensive stockpiles for byproducts is also increasing base construction costs.

Florida’s competitive positioning in domestic phosphate markets is expected to remain relatively stable for the foreseeable future. However, the domestic market overall is expected to decline by approximately 4% per year as improved technologies reduce coverage needs. Some of this material will move through the facilities in the Tampa area, but it is expected that more than 75% will be move directly by rail to inland destinations. In the mid-to-long term, there are clear indications are that the lower cost of rock extraction and conversion to crude fertilizers by foreign sources will offset higher transport costs in key world markets and erode the traditional advantage that the Florida producers have had in the Latin American and its U.S. markets.

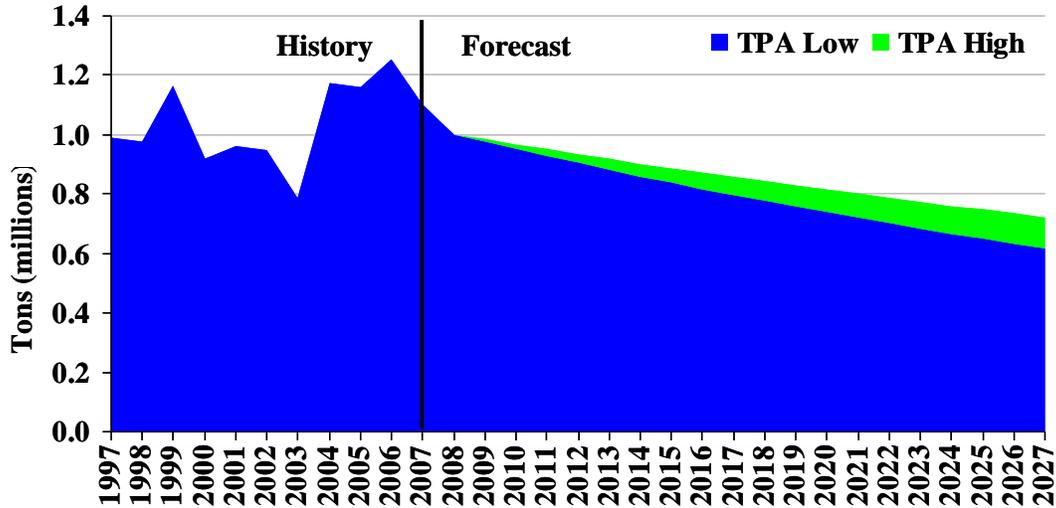
In the longer term, it is possible that U.S. producers will move offshore to access more competitive supplies in order to remain competitive. This has already begun as evidenced by Mosaic’s investments in offshore production.

In the short term, if the extraction costs of the raw resource in Florida increase to a non competitive level, there is a possibility that Tampa could become an import location for raw rock to be processed in local processing plants, until these plants reach the end of their economic lives. However, in the longer term, it would be most economic for the production process to be carried out closest to the foreign extraction areas.

Given the production and competitive challenges faced by the Florida phosphate fertilizer industry, it is likely that the Port’s phosphate related trades will continue to decline in line with historical trends. An upside is the potential for fertilizer companies to import and process phosphate rock at existing processing facilities.

Based on the challenges and opportunities the Florida fertilizer industry faces, two fertilizer forecasts have been developed. These scenarios are intended to bracket the range of likely future Port and TPA fertilizer traffic. Under the low scenario, the Florida fertilizer industry is assumed to maintain its share of the declining U.S. domestic market and lose share in the international markets resulting in an annual decline approximating 1.75 percent per year. The high scenario assumes a partial switch from exports of finished fertilizers to imports of phosphate rock through the existing terminals and a modest increase in overall U.S. demand. The two forecast scenarios are summarized in Exhibit IV-37.

**Exhibit IV-37  
TPA Historical and Projected Phosphate Chemical Dry Bulk Traffic  
FY1997-FY2007**

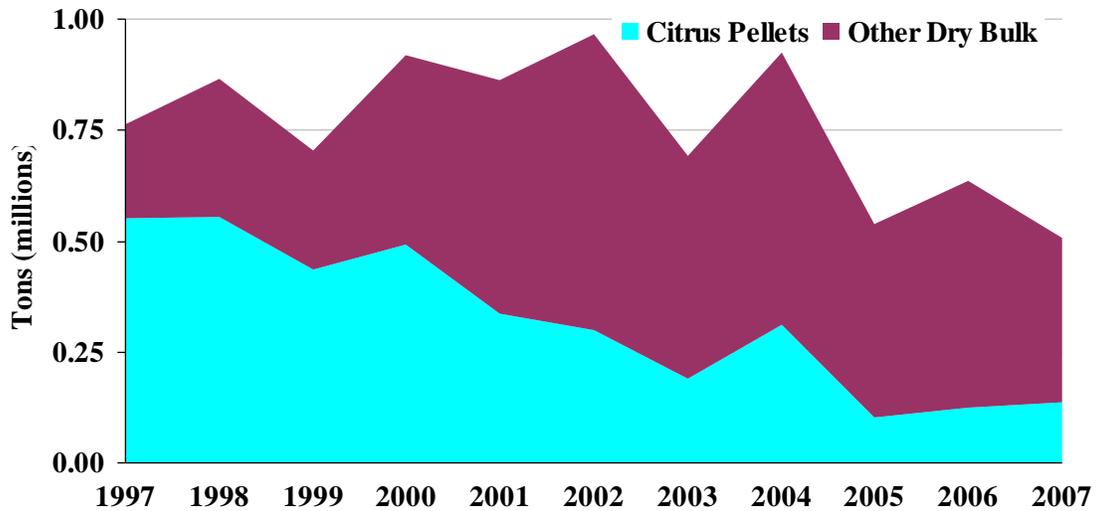


*Source: Norbridge, Inc. and Moffatt & Nichol*

**c) Other Dry Bulk Cargoes**

The TPA’s other dry bulk cargoes are comprised of coal and other miscellaneous dry bulks (Exhibit IV-38). Historically, this segment of the TPA’s dry cargo business has steadily declined since 2002-2003. The reasons for the declines are numerous, vary by specific commodity and include declines in citrus pellet shipments due to disease and hurricane-related damage to the Florida citrus groves and the closure or conversion of power plants from coal to cleaner fuels. The TPA’s other dry bulk business represents a small 8 percent in 2007 and declining share of the TPA’s dry bulk trade.

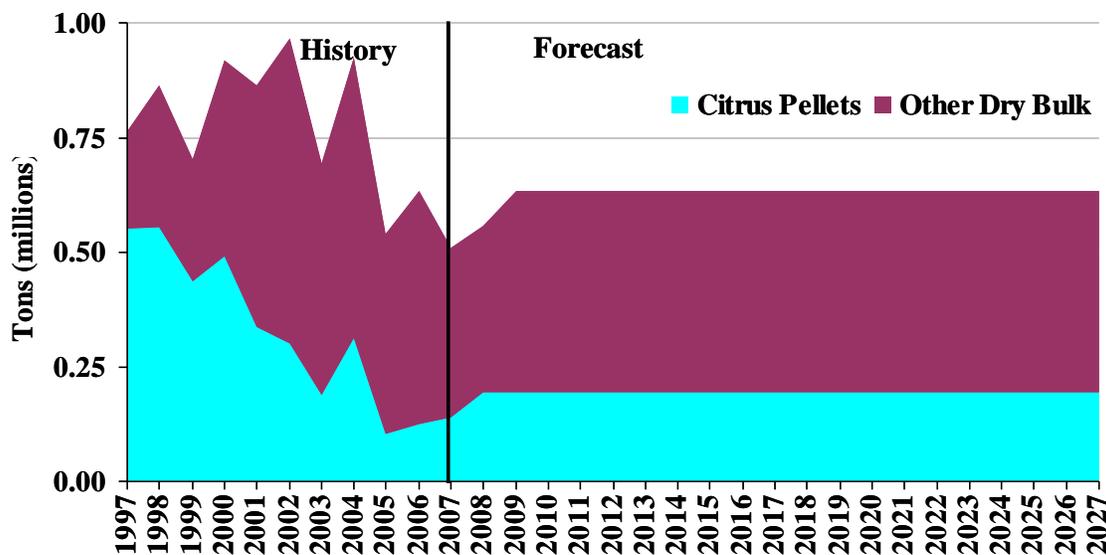
**Exhibit IV-38  
TPA Other Dry Bulk Cargo Volume  
FY1997-FY2007**



*Source: Norbridge, Inc. analysis of TPA cargo data*

The outlook for citrus pellet exports and inbound coal shipments is uncertain. The ultimate effect of the citrus canker and green diseases on the Florida citrus industry remains unclear. The trend toward cleaner fuels will likely result in a continued transition from coal. Given this uncertain outlook and the relatively small volume of other bulk cargoes handled at TPA berths, the forecast for the Other Bulk segment is for no growth. The forecast assumes other dry bulks in total will remain flat at a level that equates to the average of the last six years, i.e. 630,000 tons (Exhibit IV-39).

**Exhibit IV-39  
TPA Historical and Projected Other Dry Bulk Traffic  
FY1997-FY2027**

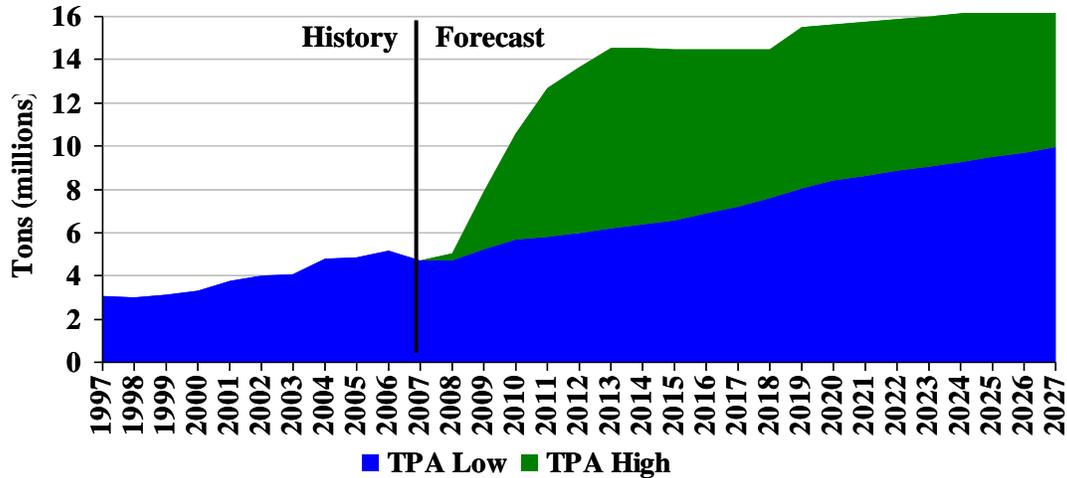


*Source: Norbridge*

**d) Dry Bulk Cargoes Forecast Summary**

TPA dry bulk cargo traffic is projected to increase from a FY2007 base of 4.6 million tons to 10.0 million tons under the low forecast and 15.2 million tons under the high forecast (Exhibit IV-40). These projections represent compound annual rates of growth of 3.8 percent and 6.0 percent respectively. These growth rates bracket the historical rate of growth of 4.1 percent experienced between FY1997 and FY2007. Significant increases in aggregates drive the TPA's future dry bulk cargoes.

**Exhibit IV-40  
TPA Historical and Projected Dry Bulk Traffic  
FY1997-FY2027**

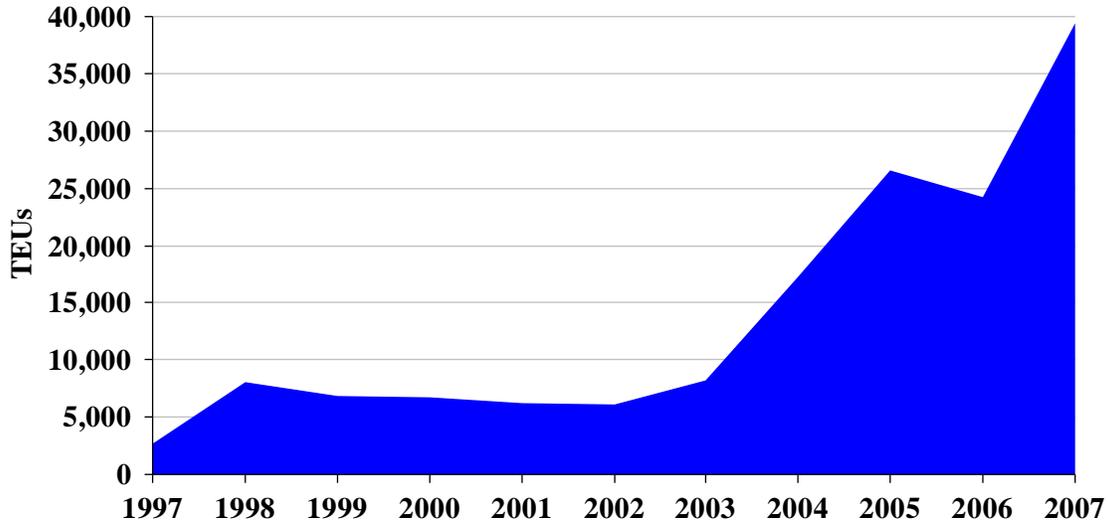


*Source: Norbridge, Inc.*

### 3. Container Cargoes

The TPA’s container line of business is poised for significant growth. Historically, the TPA’s container business has primarily comprised small niche carriers that primarily have served Caribbean and Central American markets. For example, Tropical Shipping’s Thompson Line has been serving the Cayman Islands via Tampa for over 25 years. Until recently, the TPA has not had a dedicated container facility to serve this trade. Consequently, the TPA has handled comparatively small amounts of container traffic (Exhibit IV-41).

**Exhibit IV-41  
TPA Historical Container Traffic  
FY1997-FY2007**



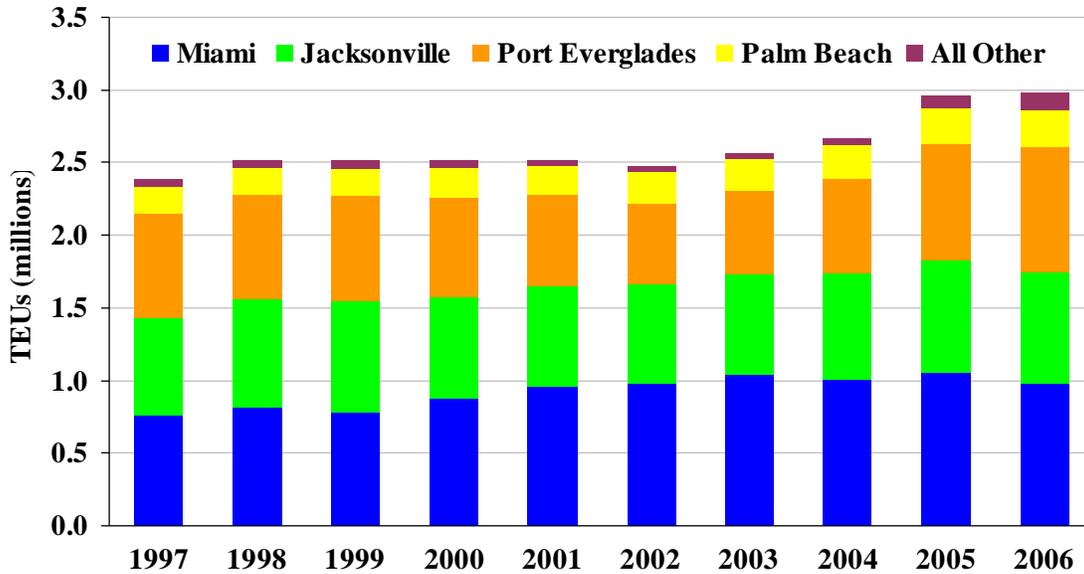
*Source: TPA*

TPA's container traffic has grown at an average annual rate of 3.1 percent since 1997. Most of the growth has occurred in the past four years when the business has nearly quadrupled. Investment in a dedicated container facility, signing a concession agreement with Ports America, the acquisition of container gantry cranes, the formation of the Executive Shippers Council and the attraction of new container services including direct service from Asia by Zim Integrated Shipping Services have driven this growth.

**a) Florida Container Market**

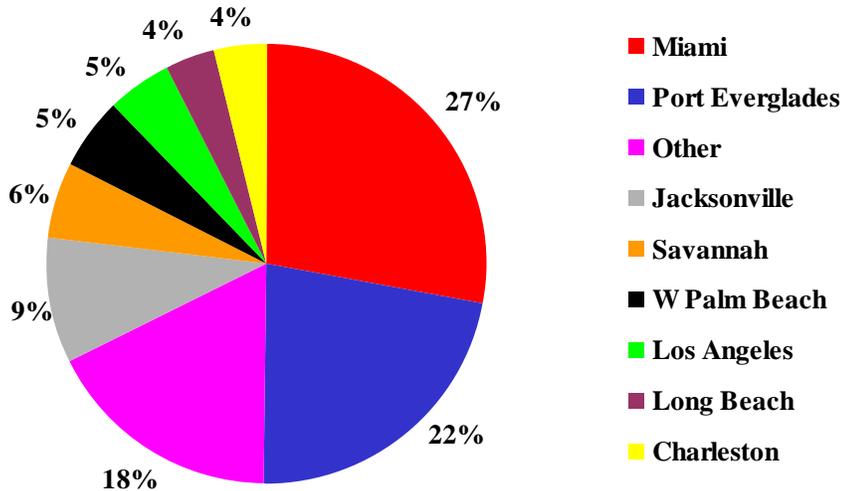
Historically, the vast majority of waterborne container traffic moving through Florida ports has moved through four ports: Miami, Port Everglades, Jacksonville and Palm Beach (Exhibit IV-42). Miami and in recent years Port Everglades have dominated Florida's container trade. They handle a majority of the total traffic moving to and from Florida in general and South Florida in particular (Exhibit IV-43). In addition, these ports have traditionally served as regional gateways for trade between the Caribbean and the eastern half of the U.S. During the past nine years, container traffic through Florida's major gateways has increased at a compound annual rate of growth of 2.5 percent.

**Exhibit IV-42  
Florida Container Traffic by Port  
1997-2006**



*Source: Norbridge, Inc. analysis of AAPA data*

**Exhibit IV-43  
Estimated Florida Container Market by Port of Import or Export  
2006**



Note: Total TEUs = 2.2M; Loaded TEUs only (Empties are excluded); 2006 data not available

*Source: Norbridge, Inc. analysis of Journal of Commerce PIERs data*

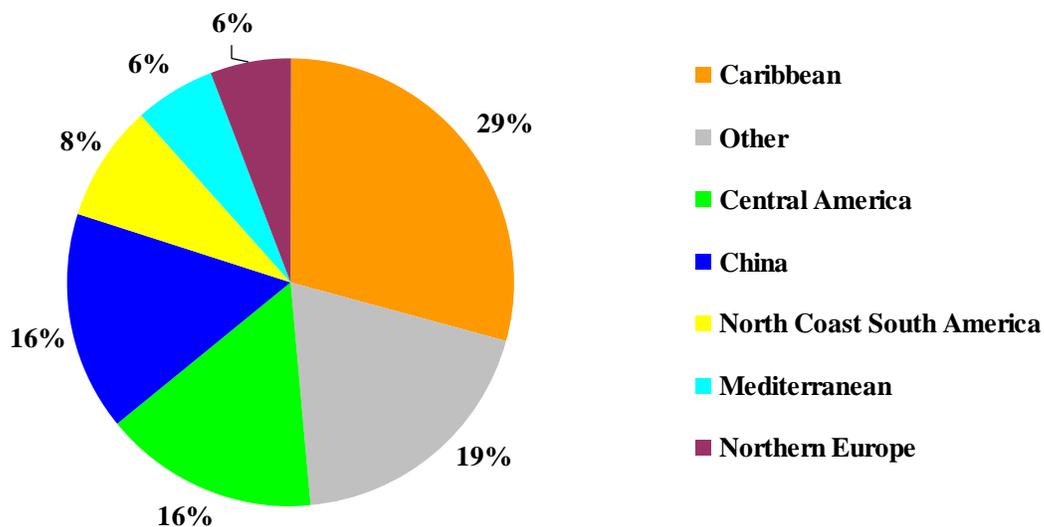
Historically, Jacksonville's primary role has been as a regional port (eastern U.S.) gateway for the Puerto Rico trade and as a local port for the west coast South American trades. The

Jacksonville Port Authority (JPA) recently concluded a long-term agreement with TRAPAC, the terminal operating subsidiary of the global shipping line Mitsui OSK, to develop a major container terminal on Dames Point. This development will significantly expand and diversify the JPA’s current container traffic base and drive future growth as Mitsui OSK primarily serves the faster growing Asian trades. The JPA will experience further growth if Mitsui OSK’s New World Alliance partners American President Lines (APL) and Hyundai Merchant Marine also choose to use the facility.

Palm Beach’s primary role is a regional gateway for Tropical Shipping’s Caribbean and Latin American operations. Tropical Shipping accounts for most of Palm Beach’s container throughput. Tropical Shipping is a niche carrier that serves the Caribbean, Central American and South American trades.

The Caribbean, Central America and China accounted for nearly two thirds of Florida’s 2006 container traffic (Exhibit IV-44). The proximity of Florida in general and Miami and Port Everglades to the Caribbean and Central America reflect these regions’ significant role. China’s emergence as the world’s manufacturing center is reflected in its significant and growing share of Florida’s container trade.

**Exhibit IV-44**  
**Florida Container Trade by Region**  
**2006**



Note: Total TEUs = 2.2M; Loaded TEUs only (Empties are excluded)

Source: Norbridge, Inc. analysis of Journal of Commerce PIERS data

**b) Tampa’s Container Market Opportunity**

The TPA, in recent years, has made significant investments in its container line of business. These investments include purchasing three container gantry cranes, making improvements to its container terminal (Berth 212-213 complex) and signing a long-term concession agreement with Ports America, one of the largest independent terminal operating companies in North America.

The investments have been made in advance of a number of favorable developments in the U.S. and U.S. Gulf container trades. These developments include:

- Growing support, developed through a sustained marketing effort by the TPA, from regional importers for direct call service to the Port which has resulted in Zim Line introducing direct call service to the Port in 2003, and the recent upgrade to direct service from Asia by Zim Line
- The opening of Bayport, the Port of Houston's major new container terminal, in February of 2007
- The anticipated opening of the Choctaw Container Terminal in the Port of Mobile. This facility is expected to open during mid-2008
- A significant expansion in the world container fleet which is expected to result in a number of new container services being introduced to the U.S. Gulf to serve the new container facilities in Houston and Mobile
- The continued, rapid growth in the U.S.-China container trade in general and the U.S. East Coast-China trade in particular
- The potential for the introduction of a number of Suez services (services operating between Asia and the U.S. East and Gulf Coasts via the Suez Canal vs. the Panama Canal)
- The initiation of work on expanding the Panama Canal to increase capacity and double or triple the size container ship that can transit the Panama Canal.

Collectively, these trends provide significant growth opportunities for the TPA's container business. Specifically, they provide the opportunity for the TPA to develop as a regional container gateway for the West central Florida market.

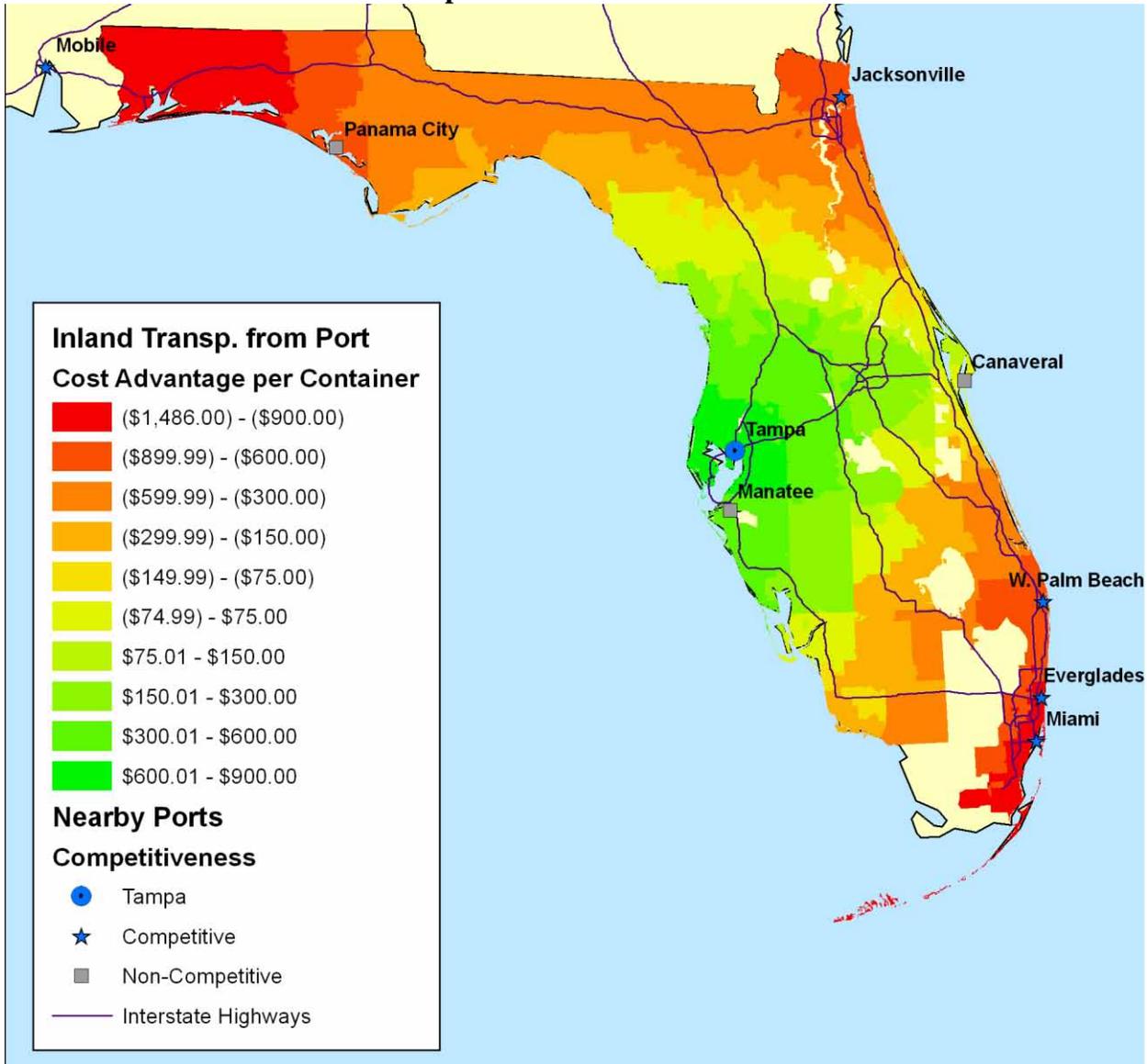
The consulting team completed a competitive assessment of the Port's container market hinterland. Specifically, the Port's competitive market was defined as that area within which the Port had lower container trucking costs than competitor ports. Trucking costs were used as a competitive benchmark since they represent a significant portion of the total cost of moving containers to and from inland markets and they are likely to continue to increase in importance over time due to rising fuel prices, potential driver shortages, and increased travel times associated with highway congestion. The analysis did not consider potential differences in ocean services nor port-terminal handling efficiency or cost, although it is anticipated the Port will likely have a terminal cost advantage in the short-to-midterm due to the use of low density stacking operations and associated efficiencies.

Trucking cost estimates between the major Florida container ports, Savannah and Mobile and 67 counties that represent the largest population centers (consumption centers) were modeled using the following assumptions:

- \$100 per load fixed cost for paperwork and administration; plus
- \$1.75~1.85/ mile operating cost for fuel and maintenance; plus
- \$180~200/ day (approximately \$.30/minute) labor and capital costs for the driver and truck;

- Small (20%) opportunity for a productive (i.e. non-empty container) backhaul
- The Port's competitive container market hinterland was defined as those counties where container drayage (trucking) costs via the Port were lower than any of the competitor ports analyzed. The analysis considered nearly a thousand Florida ZIP code specific locations and each port. The Port's competitive hinterland, based on the competitive analysis, is highlighted in Exhibit IV-45.

**Exhibit IV-45  
Port of Tampa Container Market Hinterland**



*Source: Moffatt & Nichol*

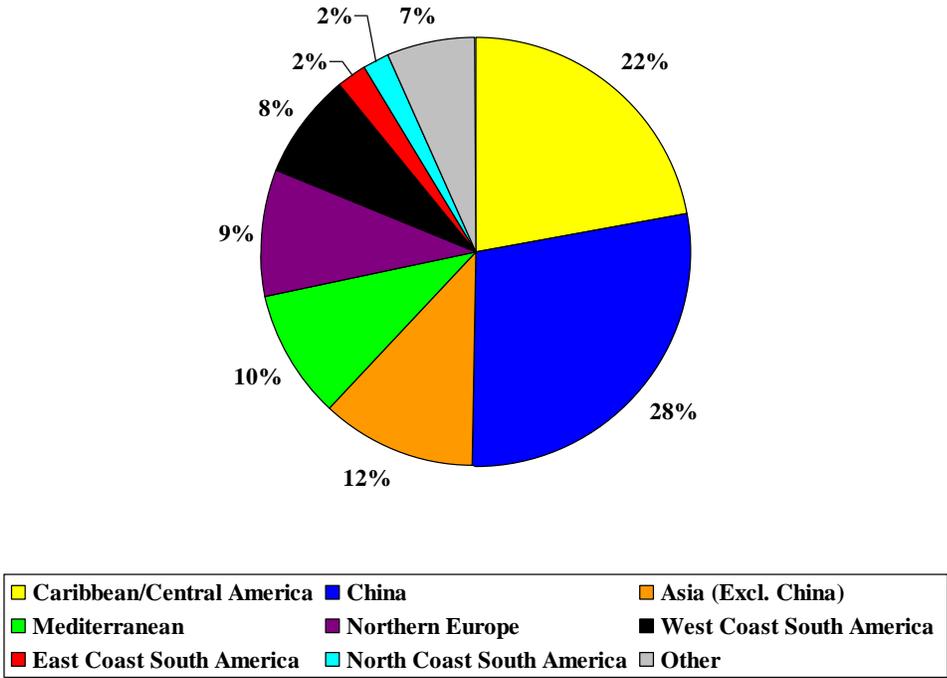
The Port's competitive hinterland comprises 24 counties in west central Florida. Norbridge's analysis of this market indicates that an estimated 336,000 loaded and empty TEUs moved between international markets and the Port's target market in 2005, not including transload shipments. A majority (estimated 62 percent) of these containers moved between Caribbean/Central America, China and Asia (Exhibit IV-46).

The TPA and its partners (Executive Shippers Council, Ports America) face several challenges in competing for this market. These challenges include:

- Fragmented market: the market comprises multiple trade lane, multiple ocean carriers and multiple port gateways

- Shippers’ supply chain management strategies in serving the target market
- Established routing patterns
- Competition for multiple port gateways.

**Exhibit IV-46**  
**Port of Tampa Total Target Market by Trade Region: Loaded Containers**  
**2007**



*Note: Total estimated market (loaded and empty) approximates 336,000 TEUs*  
*Source: Norbridge, Inc. analysis of PIERs data*

The TPA’s success to date has been in pursuing the importers and exporters that ultimately route the cargo to and from the target market, i.e. the Executive Shippers Council. The success of this strategy is evidenced by the introduction of direct Asian service by Zim Line. The Asian container trades in general and the China container trade in particular are the fastest growing container trades. The long-term growth prospects for the China trade are for growth in the 6-8+ percent range in the near term to 5-6 percent in the longer-term. Conversely, the Caribbean, Central American, Latin American and European trades are all expected to grow in the 5-6 percent in the near term and 3-5 percent in the longer term.

The TPA will need to continue to pursue its dual strategy of working with importers and exporters and carriers in order to continue to grow its container business. The TPA should focus on four core segments of the container business:

- China: fastest growing trade, projected to become the largest source of container trade in the target market, served by all the world’s major carriers, and a major growth opportunity for

U.S. Gulf ports, both via traditional Panama Canal services and in the next several years potentially via the Suez Canal depending on the ultimate capacity of the Panama Canal prior to its expansion in 2014-2015

- Central America and the Caribbean: largest segment of the target market, a trade historically served by Tampa, growth prospects are solid with the passage of the Central American Free Trade Agreement (CAFTA), and a competitive strength of the Port
- European and Mediterranean Trades: collectively represents 18 percent of the target market, likely to generate additional services into the U.S. Gulf with the opening of Bayport and Mobile, reasonable growth prospects, it is a core strength of Zim Line and the trade is also served by most of the world's container shipping lines
- Mexico also has potential, especially given the congestion and relatively high costs of overland routes, plus the volume and growth of the Mexico-Florida/Southeast U.S. trade
- Transload and distribution center business: discussed below.

### **c) Transload and Distribution Center Business**

Transload involves the transfer of the contents of two or more international ocean shipping containers (typically 40' long ocean containers) to one domestic high cube (53' long and 9'-6" high) container for onward delivery to a distribution facility or a retail store. Transloading offers shippers in general and importers of retail goods in particular several advantages including:

- Enhanced supply chain flexibility: shippers have the ability to delay the decision on the ultimate destination for their goods until the ocean containers arrive at the gateway port. This enables shippers to better respond near real time to changes in customer demand
- Improved access to rail and truck capacity: by consolidating multiple international container loads into one domestic container load, the shipper reduces the number of rail car slots or motor carriers required to transport the goods inland. This enhances the potential for the shipper to obtain capacity in markets where capacity is tight, i.e. they move more goods in fewer containers.
- Reduced transport costs: the scale economies associated with high cube domestic containers, together with lower overall transport costs (shipping fewer containers) often offsets the additional costs associated with transloading and results in lower overall transport costs to the shipper.

Transload is reportedly (by shippers) becoming an increasingly attractive option for shippers for the reasons cited above. The size of the transload market varies by port gateway, trade lane and shipper. It is a market that is difficult to size due to the lack of available information. The Los Angeles Basin, served by the Western Hemisphere's largest container ports (Los Angeles and Long Beach) is believed to be the largest transload market. Research conducted by the two ports in conjunction with other Southern California agencies indicates the transload market can approximate 10-15 percent of total import traffic, i.e. 15% of all imports via the two ports are transloaded at regional distribution facilities before being shipped onward to U.S. Midwest and other locations.

In the past ten years, the port of Savannah and the Virginia ports of Hampton Roads (Norfolk, Portsmouth, and Newport News) have emerged as major gateways for import traffic and transloading. The port of Savannah in particular is a major gateway into the South Atlantic market for Asian imports. The Georgia Ports Authority, in conjunction with the State of Georgia, has been highly successful in attracting distribution centers. Today the Port of Savannah is used by many of the largest importers (Target, Lowe's, Home Depot, Dollar Tree Stores) for distributing imports throughout the Southeast including the target market. The GPA reports over fifteen million square feet of warehousing and distribution centers are located in close proximity to its container facilities. These facilities, which function in part as transload centers, undoubtedly serve the target since Florida accounts for a significant share of Savannah's container throughput. Given the Port's economic advantage in serving the target market, it should, over time, be able to capture some portion of this transload market.

Two developments in particular may enhance the TPA's ability to serve this market. The first of these is the growing private sector investment in warehousing facilities near the Port. The TPA reports that major warehousing investments are being made along the U.S. 41 corridor near Big Bend and in nearby Polk County. As the target market continues to expand, these facilities may become increasingly important as transload and warehousing centers for the target market which should attract additional container line services. This trend could also result in a rerouting of transloaded container traffic to Tampa from South Atlantic ports. This would also provide additional incentive for new container services to begin calling Tampa.

The second development is the potential development of a major Intermodal and logistics hub in Winter Haven, Florida. The CSX railroad is currently pursuing the development of a major new Intermodal facility on property owned by the CSX. The purpose of this facility will be to serve as the Intermodal hub for the target market. CSX is also reportedly interested in attracting private developers to invest in warehousing and distribution centers and industrial parks on property adjacent to the site. This latter initiative could create additional opportunity for major importers to utilize the Port as a major gateway for containerized imports.

#### **d) Forecast**

While the prospects for container growth are significant, the growth itself is likely to be volatile and episodic over the next several years. This is particularly the case given the small base upon which the business is likely to grow. In the short-term, the TPA's container business is likely to increase in step functions associated with the attraction of new container lines. For example, 500 containers (750 TEUs) per week is generally considered a threshold volume to attract new container services to a port. A new weekly container service carrying this benchmark breakeven volume would generate approximately 40,000 TEUs to 45,000 TEUs per annum or more (depending on vessel size and the amount of the total vessel capacity allocated to Tampa) than 100 percent of the TPA's container throughput—hence the step function growth.

In the medium to longer-term as the TPA's customer portfolio matures, the TPA's container business will reflect long-term macroeconomic trends in the container trades. Given these trends, Norbridge developed two alternative (low and high) forecast scenarios for the TPA's container business as follows;

- Low Forecast:

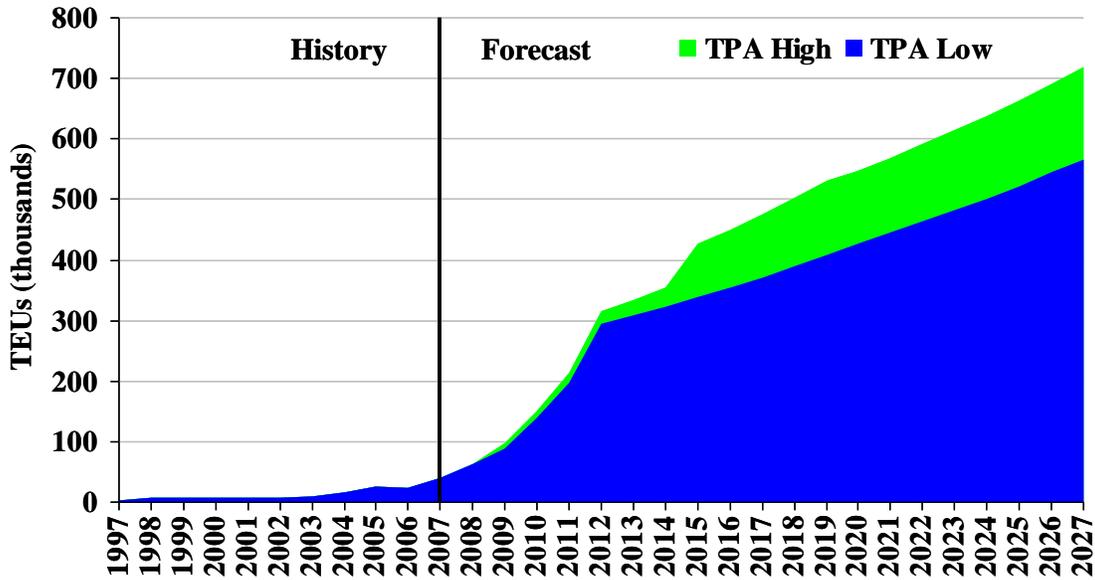
- Short-to-to-midterm: the TPA attracts four (one China, one Latin American, one, European and one Mediterranean) container services
- Mid-to-long-term: TPA’s container trade grows at the macroeconomic growth rates projected for the various trades
- High Forecast:
  - Short-term: the TPA attracts five (one China, one China/Asia, one Latin American, one European and one Mediterranean) new container services
  - Mid-term: the TPA is successful in attracting transload business moving via other South Atlantic container ports
  - Long-term: the TPA captures 75 percent of the target Central/West Florida market.

The purpose of the low and high forecasts is to define the most likely range of future growth in TPA container traffic rather than specific point estimates. Defining the likely range is particularly important for developing a long-term master development plan for the TPA’s container line of business that can “flex” to accommodate the likely significant changes in the TPA’s container traffic that is likely to occur in the next 1-3 years.

The actual development of the TPA’s future container volumes will be dependent upon the number of new container lines and or services offered via the Port and the timeframe within which they are introduced. Container shipping lines consider a wide range of factors when contemplating new services and ports of call. A partial listing of these factors include the overall growth of trade, the balance between imports and exports, freight rate levels, availability of owned vessels, the cost and availability of charter vessels, the vessel deployment strategies of alliance partners, the ability to add or drop ports from a particular service and the availability, cost and efficiency of container terminals in each potential port of call. Collectively, these and other factors, most of which are beyond the control or influence of the TPA or any potential port of call, will determine the timing of new container services at the Port. Consequently, the TPA container forecasts should be considered as indicative of the TPA’s future growth potential rather than carrier/service/time specific estimates of container volume growth.

A summary of the likely range of projected TPA container growth is shown in Exhibit IV-47 (TEU basis).

**Exhibit IV-47  
TPA Historical and Projected Container Forecast Traffic  
FY1997-FY2027**



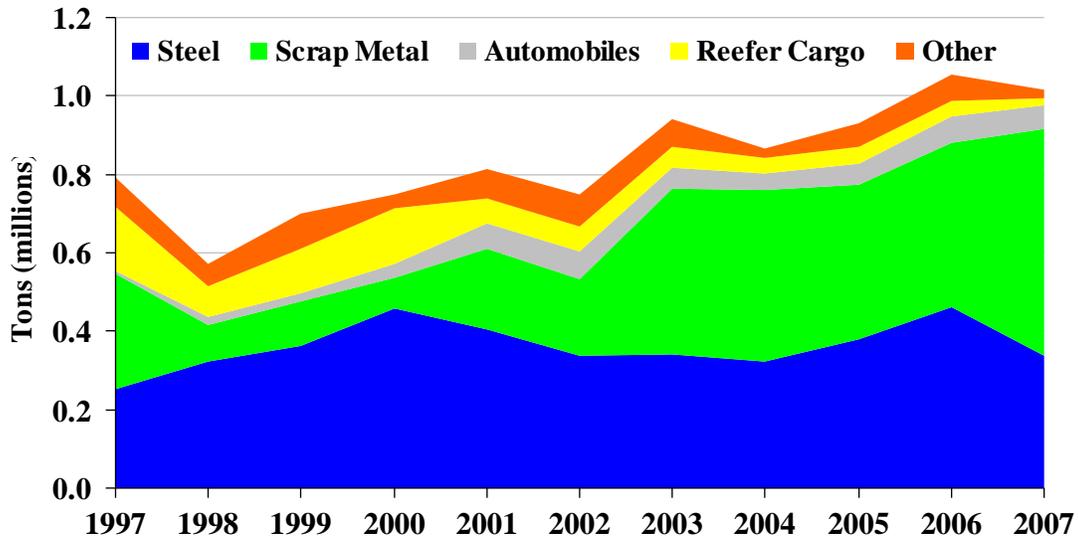
*Norbridge, Inc. Analysis*

The TPA’s container traffic is projected to increase from 39,435 TEUs in FY2007 to between 566,000 TEUs (low case) and 718,000 TEUS (high case) in 2027. These projections reflect compound annual rates of growth of 14.3 percent and 15.6 percent respectively. These significant rates of growth reflect the combined effects of a very low base, attracting multiple carriers in the next four to five years, and strong growth in the China trade.

**4. Select General Cargoes**

General cargoes comprise raw materials, agricultural products, semi-manufactured and manufactured products that are handled as individual pieces (e.g. steel slabs, vehicles, ingots, machinery,) or in units (palletized boxes of fruits or vegetables, bales of pulp, bundles of lumber, etc.). The TPA’s general cargo volume increased by 34 percent between 1997 and 2006 before declining in 2007 (Exhibit IV-48). This represents a compound annual rate of growth of 2.4 percent.

**Exhibit IV-48  
TPA Historical General Cargo Tonnage  
FY1997-FY2007**



*Source: TPA*

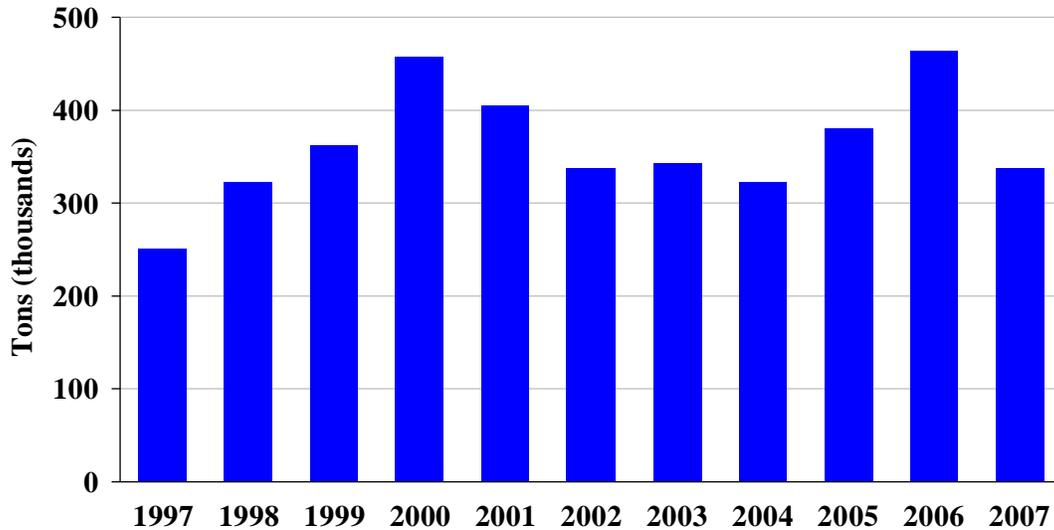
Steel imports and scrap metal exports dominate the TPA’s general cargo business. Historically, these two commodities have accounted for 79 percent of the TPA’s total general cargo throughput. The other TPA’s other major general cargoes include vehicles and refrigerated cargoes. Forecasts have been prepared for these four major general cargoes as part of the strategic planning process.

**a) Steel Products**

In 2007, TPA’s steel products trade totaled 338,000 tons (Exhibit IV-49). For the ten year period 1997-2007, iron and steel products grew at an average annual compound rate of growth of 3.0%.

Steel products are predominantly an inbound trade with foreign imports representing the dominant source steel products. They have accounted for 80% of total steel trade during the past ten years. Steel products are primarily handled at Berths 200-205.

**Exhibit IV-49  
TPA Steel Products Traffic  
FY1997-FY2007**

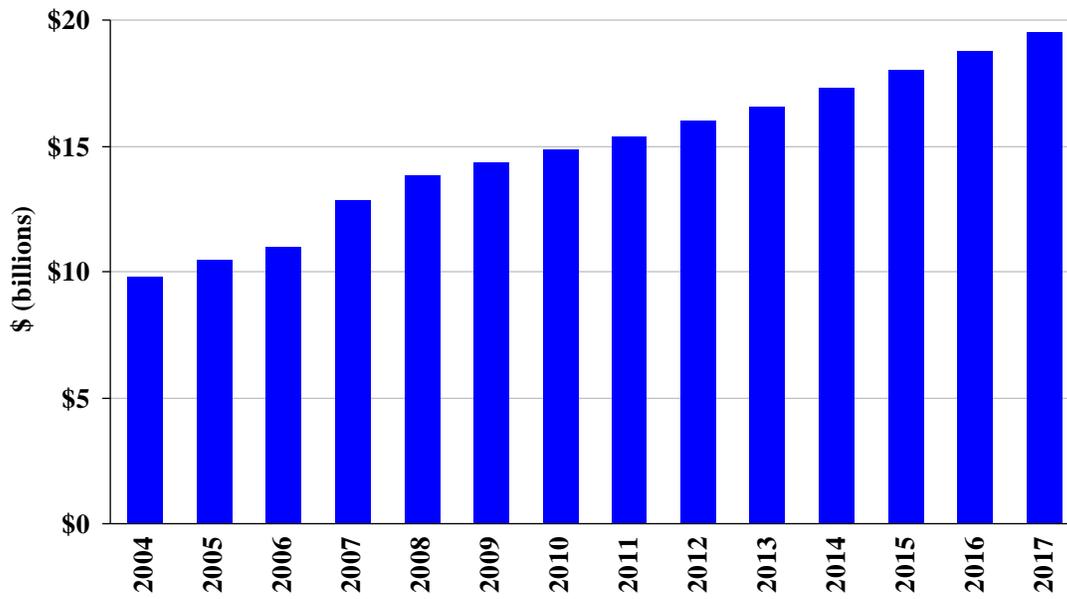


*Source: Port of Tampa Tonnage Reports FY1997-FY2007*

The steel products trade has a cyclical trend that is associated with both economic and construction cycles. Moreover, it is a commodity business that is affected by trade regulation. The trough in 2002-2003, for example, was driven by import quotas imposed by the Federal Trade Commission in retaliation for alleged “dumping” of steel products by international steel producers. The slowing of steel products in 2007 is reflective of slowdown in commercial construction and home building resulting in part from financial problems in the secondary mortgage market and from interport competition among Florida ports.

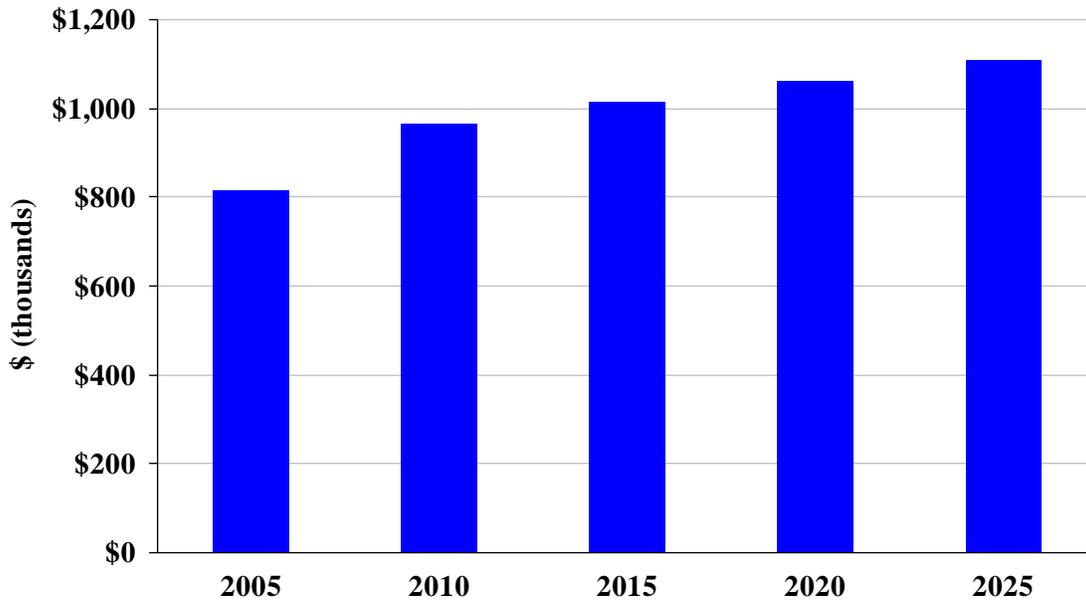
The commercial building and highway construction sectors are the key drivers of demand for iron and steel products. In the future, both the commercial building and highway construction sectors are predicted to grow, although at rates below historical levels (Exhibits IV-50 and IV-51). The Florida Economic Estimating Conference held in July of 2007 predicted commercial construction expenditures in Florida to grow at a compound annual growth rate of 4.3%, while the Florida Department of Transportation planned highway construction projects in west central Florida are projected to increase at a future compound annual growth rate of 1.5%.

**Exhibit IV-50  
Projected Florida Commercial Construction Expenditures**



*Source: Florida Economic Estimating Conference: Long Run Tables. 07/2007*

**Exhibit IV-51  
Projected West Central Florida Highway Construction Expenditures**



*Source: Florida Dept. of Transportation with Extrapolation*

Domestic production is the primary source of central Florida’s steel products as shown in Exhibit IV-52. Domestic steel shipments to Florida represented 89 percent of Florida’s 2004 estimated inbound steel receipts. Imports, primarily via the Port, accounted for the other 11 percent. Historically, imports have functioned as the swing supply in the Florida market. Domestic steel receipts are projected to remain the primary source of Florida’s steel supply in the future.

**Exhibit IV-52**  
**Estimated Central Florida Sourcing Patterns: 2004 and Projected**

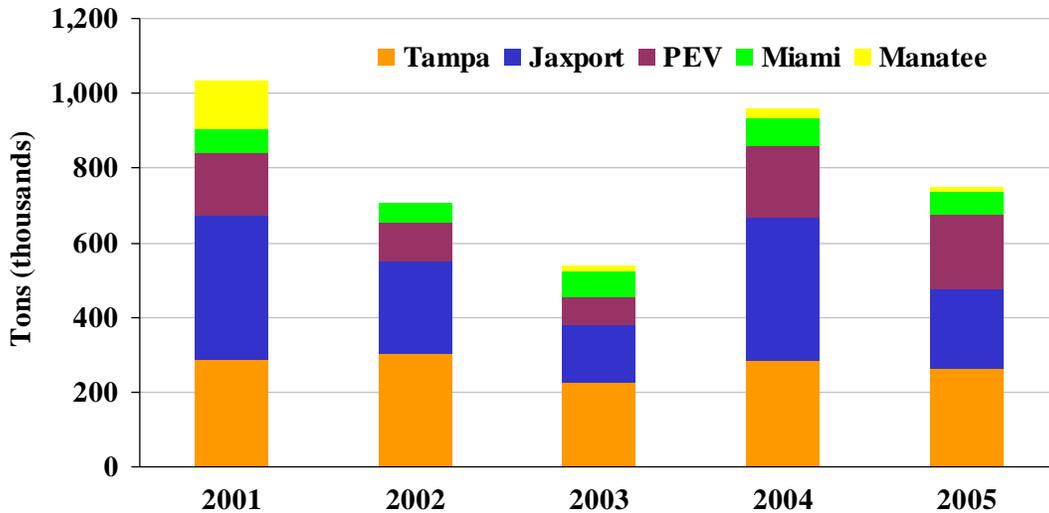
<b>Steel - Central</b>			
<b>Florida</b> (Tons)	<b>Base</b> <b>2004</b>	<b>CAGR</b> <b>2004-2015</b>	<b>CAGR</b> <b>2004-2025</b>
Overland	2,458,947	1.5%	0.9%
Water	288,591	0.1%	-0.2%
<b>Total Central</b>			
<b>Florida</b>	2,747,612	1.3%	0.8%
<b>Hillsborough</b>			
<b>County</b>	905,146	1.3%	0.7%

Note: Data may not be 100% inclusive

*Source: GI TRANSEARCH Model*

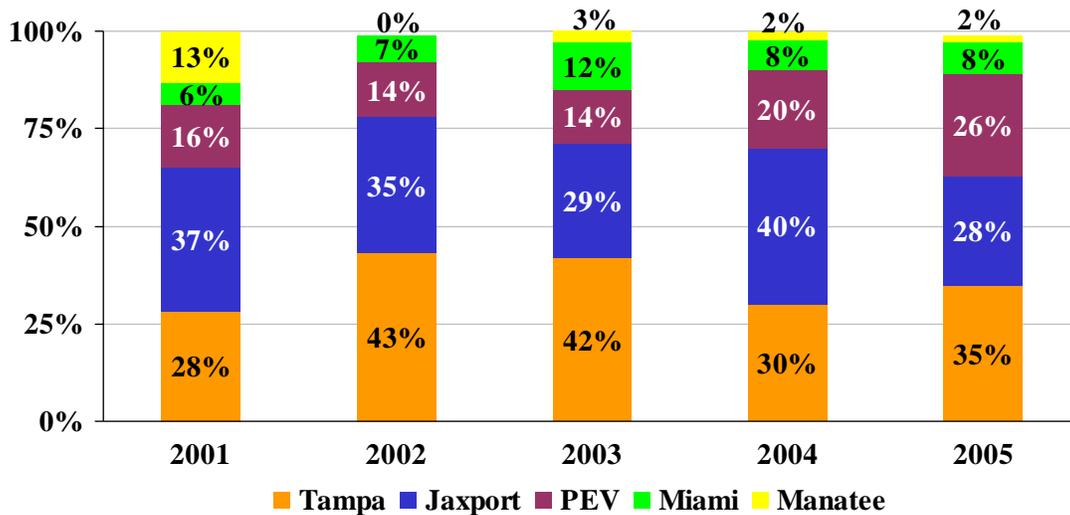
The majority of Florida’s steel product imports are handled through five major ports: Tampa, Jacksonville, Port Everglades, Manatee and Miami (Exhibit IV-53). Tampa and Jacksonville are the two largest gateways accounting for average markets shares of 43 percent and 28 percent respectively between 2001 and 2005 (latest date for which comparable data is available) (Exhibit IV-54). Port Everglades, Manatee and Miami account for the other 20% to 40% in any given year with Port Everglades representing the largest share. These percentages have remained relatively constant with minor fluctuations during the time period from 2001 to 2005.

**Exhibit IV-53  
Primary Steel Product Imports by Florida Port  
2001-2005**



*Source: Army Corps of Engineers. Waterborne Commerce Statistics Center 2001-2005*

**Exhibit IV-54  
Percentage of Primary Iron and Steel Product Imports by Florida Port**

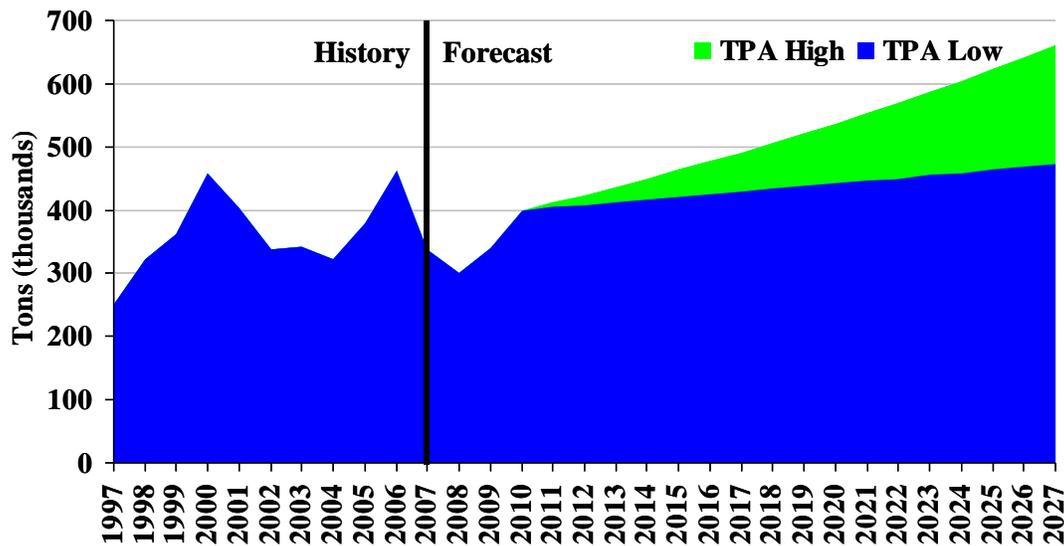


*Source: Army Corps of Engineers. Waterborne Commerce Statistics Center 2001-2005*

Given the cyclical nature of steel products, the role of imports as the swing supply and the moderate growth in the key end markets (highway and commercial construction), and interport competition, two conservative forecasts were developed for the TPA's steel product trades (Exhibit IV-55). The low forecast assumes a compound annual rate of growth of one percent per year for the period 2009-2027. The high forecast assumes the steel products trade increases at a

rate of three percent per year between 2009 and 2027. The 2008 forecast is based on the TPA’s budgeted volume of 300,000 tons. The forecasts assume that due to the current economic cycle, that the TPA’s steel products trade experiences a period of recovery in 2009 and 2010. Specifically, projected volumes recover to 2007 levels in 2009 and to the ten year average (400,000 tons) in 2010. The one and three percent growth rates then apply for the period 2011 through 2027.

**Exhibit IV-55  
TPA Historical and Projected Steel Products Traffic  
FY1997-FY2027**



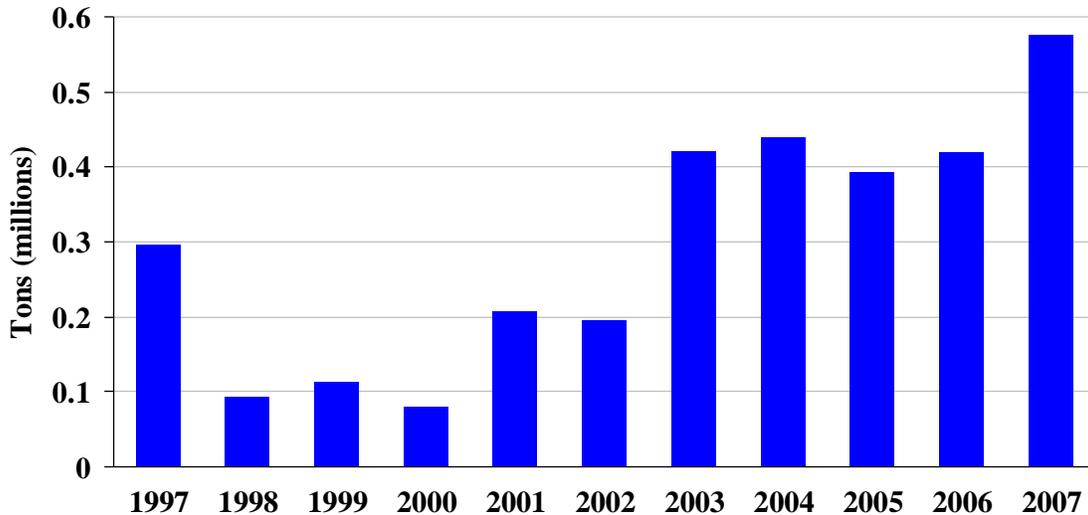
*Source: Norbridge, Inc. analysis*

Under the low forecast scenario, steel products trade totals 474,000 tons in 2027. This volume is 4 percent higher than the FY2000 historical peak (457,000 tons). Under the high forecast, the 2027 projected volume is 661,000 tons or 45 percent higher than the FY2000 peak year. Given the historical volatility in the TPA’s steel trade, which is a function of economic cycles, trade regulation, interport competition and exchange rates, the TPA’s future steel trade will likely remain volatile on a year to year basis. Consequently, the projections should be considered as the most likely range within which TPA’s actual steel volumes will fall throughout the forecast horizon.

**b) Scrap Metal**

Scrap metal is the largest general cargo handled at TPA general cargo facilities. Historically, it has accounted for 35 percent of the TPA’s total general cargo throughput. Scrap metal volumes doubled between 2001 and 2003 and have remained stable since then (Exhibit IV-56).

**Exhibit IV-56  
TPA Scrap Metal Volumes  
FY1997-FY2007**



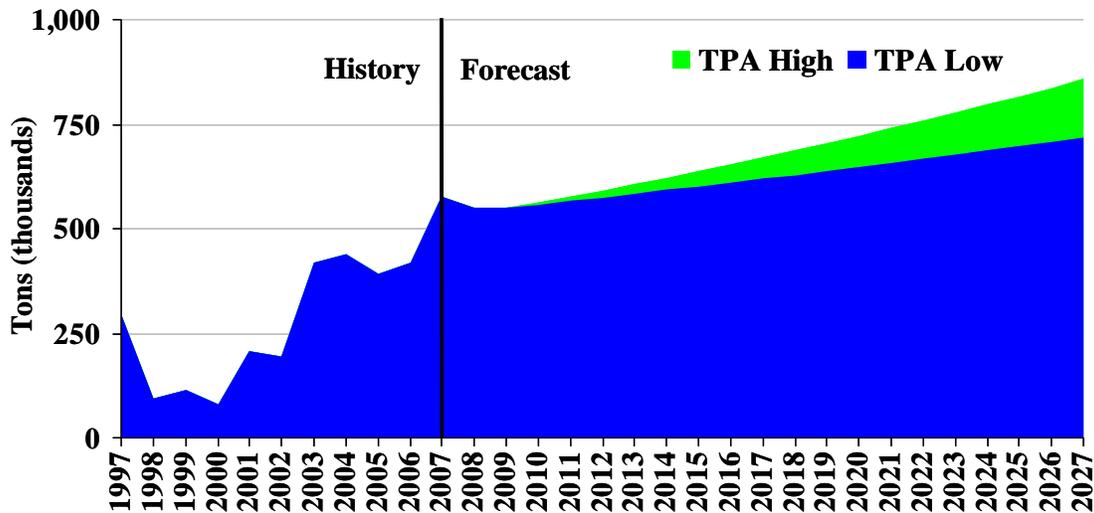
*Source: TPA*

The three top export destinations are China, Taiwan and Turkey followed by Mexico, a natural partner for the Port of Tampa. Mexico's steel industry is predominately electric-furnace production, requiring metal scrap as an input.

The global overview for the U.S. ferrous scrap trade indicates a slowdown in the rapid growth of exports witnessed over the last few years. The slowdown is reflective of a general expectation of slowing economic growth in world markets in the short-term due to a combination of factors including higher energy prices, inflation, the negative effect these trends have on consumer spending and the resulting slowdown in consumer-driven economic growth. The key exception to this general trend is China where economic growth is expected to remain strong.

Based on these trends, two forecast scenarios have been developed for scrap metal. The low forecast assumes no growth over the budgeted FY2008 volume for FY2009 and moderate growth of 1.5 percent going forward. The high forecast assumes the same trend for FY2008 and FY2009 followed by a long-term growth rate of 2.5 percent. The higher growth rate reflects a stronger outlook for the world economy, continued moderate demand for steel products and the requisite need for scrap metal, and a long-term trend toward increased recycling of metal products. Under the low and high forecasts, TPA projected scrap metal volumes reach 719,000 tons and 858,000 tons respectively in 2027 (Exhibit IV-57).

**Exhibit IV-57  
TPA Historical and Projected Metal Scrap Volumes  
FY1997-FY2027**



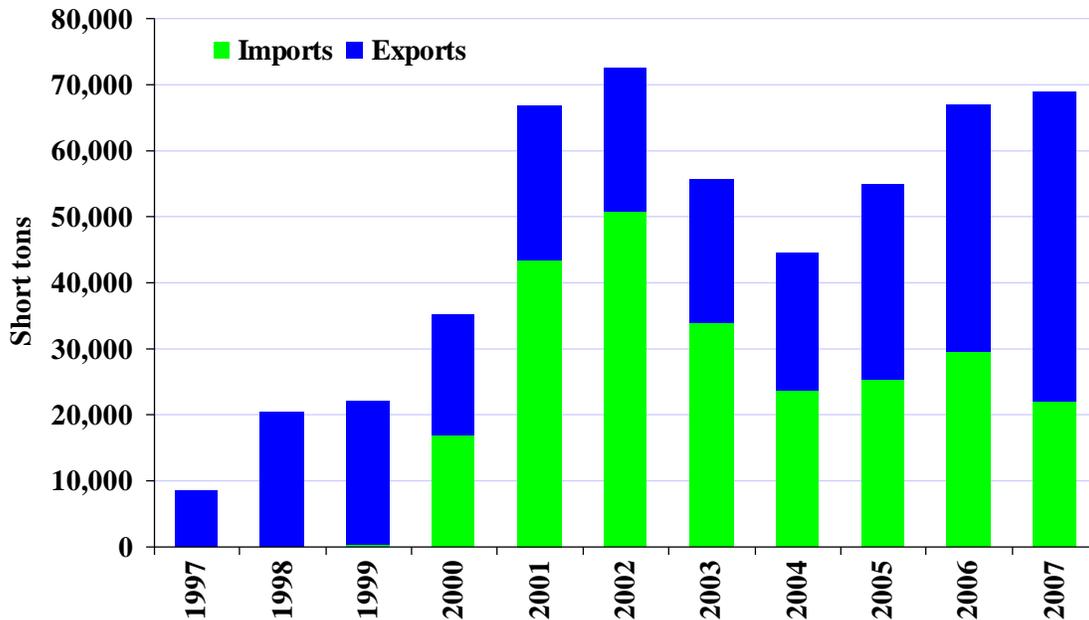
*Source: Norbridge, Inc. and TPA tonnage reports*

**c) Vehicles**

Historically, the TPA’s vehicle trade has been dominated by exports of used vehicles to Latin America. Given the nature of this trade (comparatively low value vs. new vehicles, significant fluctuations in economic growth and exchange rates in the Latin American economies, an auction-based business in the U.S.), the TPA’s vehicle trades have exhibited significant volatility on an annual basis. This has particularly been the case during the past six years (Exhibit IV-58).

In 2007 Tampa exported 46,865 short tons of automobiles (or about 31,000 vehicles), mainly used, to Central America, some of the Caribbean islands and Venezuela. On the import side, Tampa imported 22,144 short tons of vehicles (or about 15,000 vehicles), most of which came from the Port of Veracruz in Mexico.

**Exhibit IV-58  
TPA Historical Vehicle Traffic  
FY1997-FY2007**

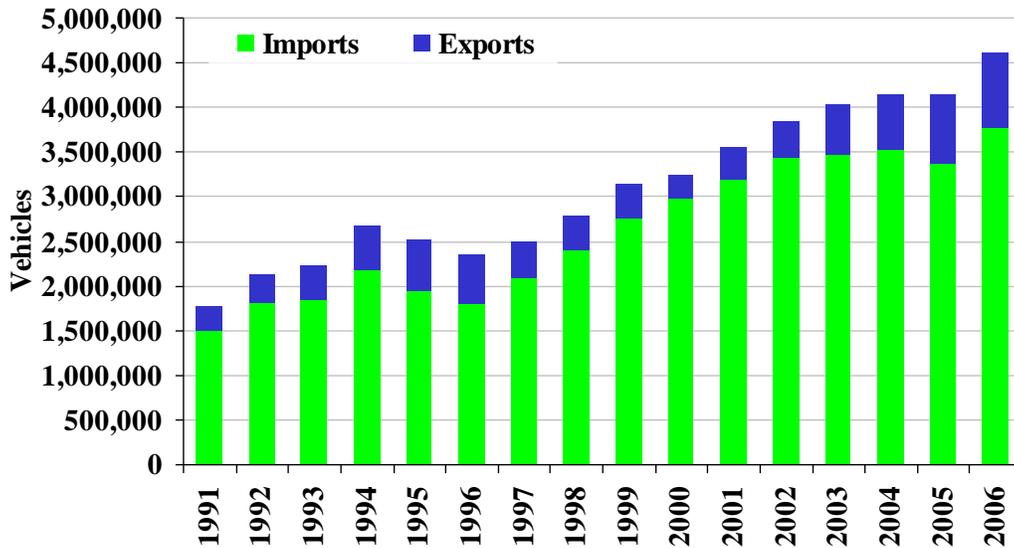


*Source: TPA*

The U.S. vehicle trades are comparatively mature trades, dominated by imports of new vehicles (Exhibit IV-58A). The U.S. inbound new vehicle trade is a mature trade in terms of the producers, ocean carriers, gateway ports and port vehicle processors. During the past 10 years there has been a significant consolidation in the U.S. import trades in terms of ocean carriers and ports. The U.S. inbound new vehicle trades today are dominated by five ocean carriers: Wallenius Wilhelmsen, NYK Line, K-Line, Mitsui OSK and NOSAC. Each of these lines has developed long-term relationships with the major international vehicle producers. These carriers, in conjunction with their vehicle producing customers, have also consolidated import gateway ports. Today, East and West Coast ports of New York, Baltimore, Brunswick, Jacksonville, San Diego, and Portland dominate the U.S. vehicle trades (Exhibit IV-58B). Each of these gateway ports have evolved as regional and or national gateways for vehicles. While a number of other ports handle some new vehicle traffic, the majority of new import vehicles are routed via the aforementioned ports. Historically, Houston has been the major Gulf Coast vehicle traffic. As the industry has consolidated, Houston's traffic base has shrunk. Today, its primary vehicle customer is Volkswagen.

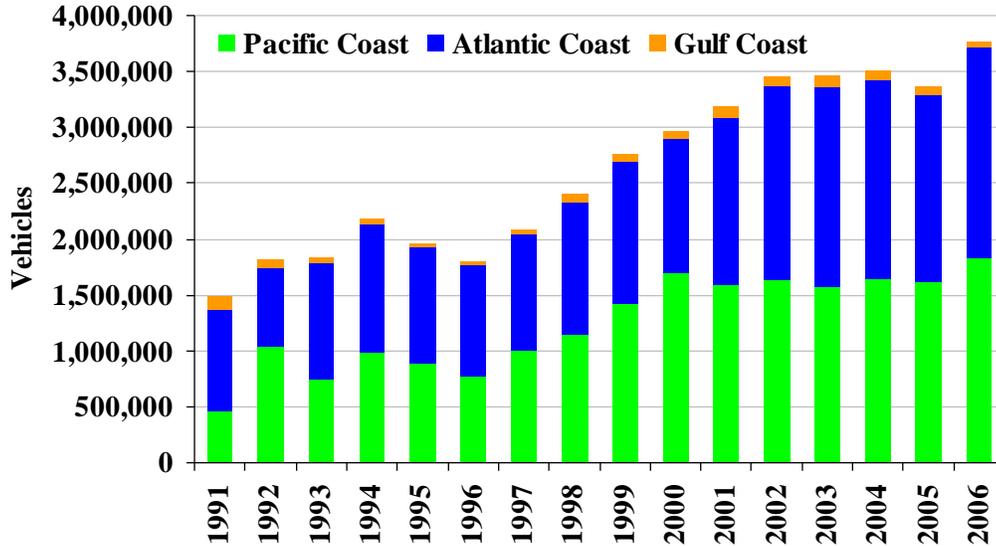
The origins of new vehicle imports have also become concentrated in a relatively few regions and countries. Asia, North Europe and Mexico have dominated production of vehicles imported to the U.S. Within these regions, Japan, Korea, Germany, and Sweden have been the major sources of vehicle production. In recent years, China has begun investing in vehicle production and in the future may become a major source of vehicle imports to the U.S.

**Exhibit IV-58A**  
**U.S. Vehicle Imports and Exports**  
**1991-2006**  
**(Units of New and Used Vehicles)**



*Source: Norbridge analysis of AAPA data*

**Exhibit IV-58B**  
**U.S. Vehicle Imports and Exports by Coast**  
**1991-2006**  
**(Units of New and Used Vehicles)**



*Source: Norbridge analysis of AAPA data*

The U.S. new vehicle export trades are relatively small compared to the import trade. They also show similar signs of concentration in terms of the ocean carriers, manufacturers, ports and port processors. Baltimore, Brunswick and Jacksonville are three of the larger gateway ports for new vehicle exports. The proximity of these ports to vehicle manufacturing plants, direct rail connections, and large scale import operations which attract most of the major vehicle carriers and port processors are key reasons for these ports' significant roles in the new vehicle export trades. The export of used cars is much more diversified due to the comparatively small volumes involved and the fragmented structure of the trade (large numbers of exporters and consignees).

Given both the mature nature of the new vehicle trades, TPA's geographic positioning and the long-term trends in the U.S. new vehicle trades, the future potential market for Tampa will most likely be driven by continued export of used vehicles to the Latin America market and production of vehicles in Mexico for export by sea to the United States. For the export market, final demand will continue to depend on economic growth and per capita income in Latin American countries, gasoline prices, and import tariff policies in the receiving countries.

The largest potential market for imported new vehicles through Tampa is from Mexico, where automakers have recently invested US\$3.1 billion in production facilities and continue to invest (Exhibit IV-58C).

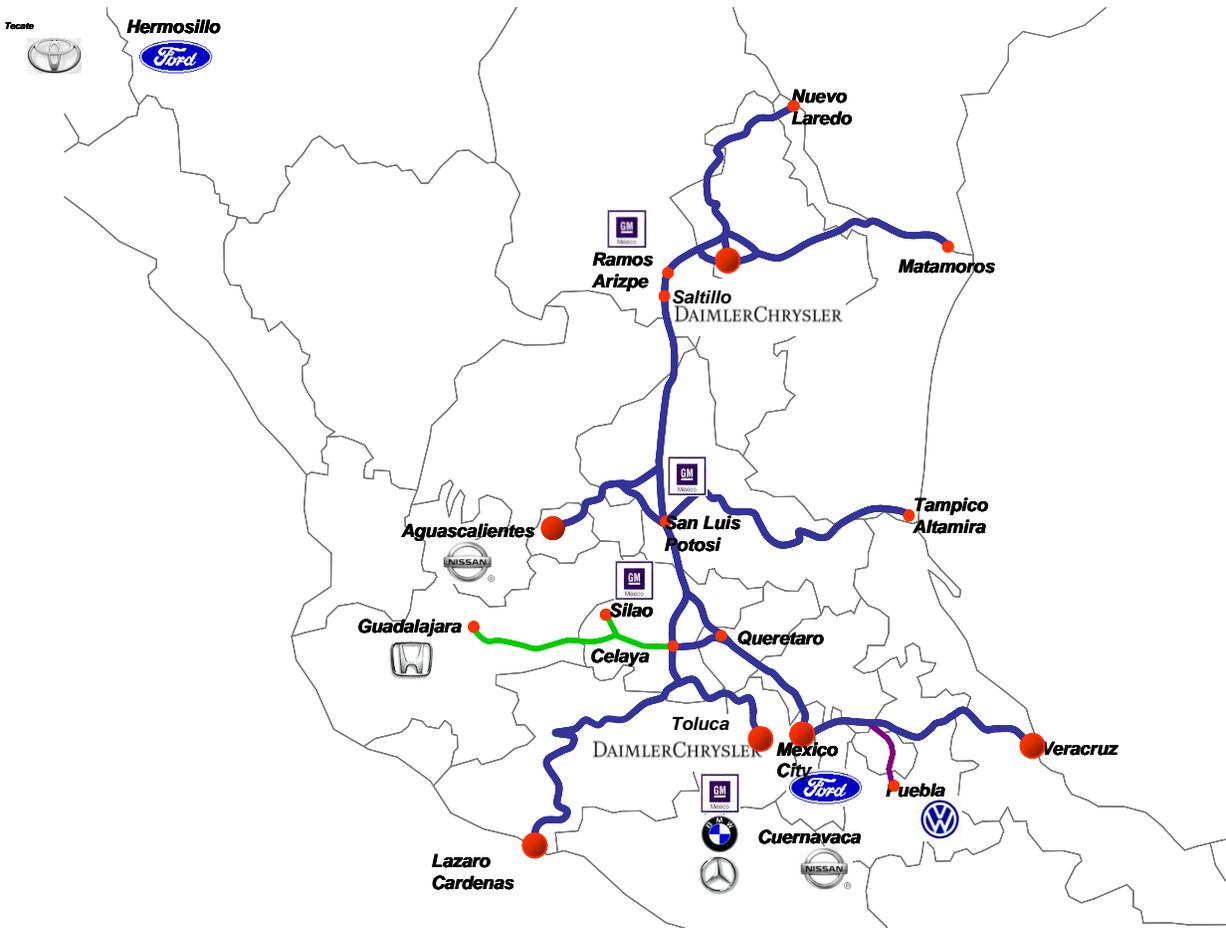
**Exhibit IV-58C**  
**Reported Vehicle Manufacturing in Mexico**  
**2006-2008**

1. General Motors is building a \$600 million plant in San Luis Potosi in 2008
2. Nissan recently opened a \$800 million expansion of an old plant in Auguscalientes to supply North America
  - To supply N. America with the Versa and the new version of the Sentra
3. Ford, while closing factories in N. America is upgrading its factories in Cuautitlan, Hermosillo, and Chihuahua with a plan called the “Way Forward”. The plan also calls for a new plant to be built in N. America, probably in Mexico somewhere.
  - Would double Mexican production capacity for Ford to 850,000 units/yr.
4. Chinese vehicle maker Zhongxing Automobile has struck a deal for the construction of an assembly facility in Tijuana, Mexico
  - Car models will be similar to U.S. counterparts (compact and sedan)
5. Chamco Auto has struck a deal to build an assembly plant in Tijuana, Mexico by 2009
  - Now will be joint venture with Zhongxing (300 million)
  - SUVs, Pickups, and 3-wheel passenger cars for Mexican population
  - Will have installed capacity of 150,000 units/yr.
  - A plant in Tijuana will most likely take advantage of rail opportunities rather than ocean shipping
6. DaimlerChrysler is preparing to invest up to one billion dollars in its Toluca, Mexico facility

*Sources: Business Week. Factories go South. So Does Pay...April, 2007. Automotive News. Mexico set to become top supplier...May, 2007. Mexico and NAFTA Report. Car Industry: Ford chooses Mexico. July, 2006. China Knowledge Newswire. Zhongxing Auto... June, 2007. Automotive News. Chinese Plant in Mexico... June, 2007. Agence France Presse. Ford Considering 9.2 billion dollar...June, 2006*

Most of the Mexican vehicle manufacturing plants are located in the central and northern sections of Mexico (Exhibit IV-58D). The concentration of vehicle plants in the central region of the country reflects several factors including the majority of Mexico’s population and economy has historically been located in the interior, Mexico’s rail system which is a key provider of inbound parts from Canada and the U.S. and outbound vehicle shipments to the U.S. and Canada is located in the interior of the country and oriented on a north-south axis and historically a majority of Mexico’s vehicle exports have been built by Ford and GM and targeted for the U.S. and Canadian markets, much of which are most efficiently served via the existing rail network.

**Exhibit IV-58D  
Selected Mexican Vehicle Assembly Plants: 2007**



*Source: Norbridge analysis*

Given these factors and the continued investment in inland manufacturing plants, it is likely that a majority of Mexico's vehicle exports to the U.S. and Canada will continue to move via rail. Automotive business is a large and profitable business for the railroads. The three major railroads serving the Mexican market (BNSF, KCS through its acquisition of TFM, and UP) have all made significant improvements in their networks serving the NAFTA corridor (Mexico City, Chicago, Toronto) and in their border crossings and working with U.S. and Mexican Customs to improve efficiency and security. TTX, the North American rail industry equipment supplier, continues to invest in bi-level and tri-level cars for carrying vehicles. While rail will likely continue as the dominant mode of transport, the ports of Vera Cruz and Altamira/Tampico are positioned to potentially serve exports destined for U.S. Gulf and East Coast locations.

Veracruz is the main automobile export and import port with some 266,074 units (392,905 metric tons) in 2005, which includes exports to Europe. Veracruz reportedly handled 68% of the vehicle production from manufacturing plants that could use the port and Tampa captured an estimated 9.2% of these shipments. Exhibit IV-59 shows projected light vehicle production from Mexican vehicle plants through 2010.

Florida market fundamentals indicate there may be future opportunities for TPA to expand its participation in the import vehicle trades. These fundamentals include:

- The Port's competitive advantage in serving the West Central Florida market relative to other gateway ports
- Projected population growth in the Florida market
- Projected growth in the Florida driving population which combined with a continued increase in vehicle miles driven will expand the demand for vehicles
- Projected growth in tourism which will drive continued growth in vehicle rentals
- Vehicle exports from Mexico are increasing as a percentage of total vehicle production
- Continued investment in Mexican vehicle production capacity including new manufacturers that are not necessarily tied to traditional modes and markets.

**Exhibit IV-59**  
**Projected Auto Production from Mexican Plants - 2005 to 2010**

Brand	Plant	Target	2005	2006	2007	2008	2009	2010
DAIMLERCHRY	SALTILLO Total	EXPORT	188,210	182,497	165,642	150,693	184,552	178,384
	TOLUCA	DOMESTIC	2,761	2,415	2,348	2,095	3,417	3,186
		EXPORT	157,067	137,581	122,794	188,600	284,680	275,981
	TOLUCA Total		159,828	139,996	125,142	190,695	288,097	279,167
<b>DAIMLERCHRYSLER Total</b>			<b>348,038</b>	<b>322,493</b>	<b>290,784</b>	<b>341,388</b>	<b>472,649</b>	<b>457,551</b>
FORD	CUAUTITLAN	DOMESTIC	36,196	19,947	10,002	44,546	27,370	29,569
		EXPORT	0	20,336	98,825	121,237	117,756	120,783
	CUAUTITLAN Total		36,196	40,283	108,827	165,783	145,126	150,352
	HERMOSILLO	DOMESTIC	0	0	0	0	0	0
		EXPORT	80,159	204,273	178,207	167,169	157,448	151,411
	HERMOSILLO Total		80,159	204,273	178,207	167,169	157,448	151,411
<b>FORD Total</b>			<b>116,355</b>	<b>244,556</b>	<b>287,034</b>	<b>332,952</b>	<b>302,574</b>	<b>301,763</b>
GM	RAMOS ARIZPE	DOMESTIC	67,077	63,915	61,686	62,538	62,718	58,758
		EXPORT	150,713	145,366	92,213	82,677	98,394	158,381
	RAMOS ARIZPE Total		217,790	209,281	153,899	145,215	161,112	217,139
	SILAO	DOMESTIC	40,835	46,249	34,728	17,441	16,395	15,980
		EXPORT	152,545	177,485	135,789	129,201	119,852	118,470
	SILAO Total		193,380	223,734	170,517	146,642	136,247	134,450
TOLUCA	DOMESTIC	16,144	11,174	0	0	0	0	
TOLUCA Total		16,144	11,174	0	0	0	0	
<b>GM Total</b>			<b>427,314</b>	<b>444,189</b>	<b>324,416</b>	<b>291,857</b>	<b>297,359</b>	<b>351,589</b>
HONDA	GUADALAJARA	DOMESTIC	9,601	8,461	7,281	11,297	11,651	10,827
		EXPORT	14,128	12,957	11,320	13,764	13,151	13,170
	GUADALAJARA Total		23,729	21,418	18,601	25,061	24,802	23,997
<b>HONDA Total</b>			<b>23,729</b>	<b>21,418</b>	<b>18,601</b>	<b>25,061</b>	<b>24,802</b>	<b>23,997</b>
NISSAN	AGUASCALIENTES	DOMESTIC	54,226	37,388	31,943	36,632	59,703	59,763
		EXPORT	139,931	217,294	324,588	321,487	309,966	311,487
	AGUASCALIENTES Total		194,157	254,682	356,531	358,119	369,669	371,250
	CUERNAVACA	DOMESTIC	151,857	118,996	114,412	116,467	84,983	86,177
	CUERNAVACA Total		151,857	118,996	114,412	116,467	84,983	86,177
<b>NISSAN Total</b>			<b>346,014</b>	<b>373,678</b>	<b>470,943</b>	<b>474,586</b>	<b>454,652</b>	<b>457,427</b>
RENAULT	AGUASCALIENTES	DOMESTIC	14,368	11,383	10,215	8,185	17,647	19,526
	AGUASCALIENTES Total		14,368	11,383	10,215	8,185	17,647	19,526
<b>RENAULT Total</b>			<b>14,368</b>	<b>11,383</b>	<b>10,215</b>	<b>8,185</b>	<b>17,647</b>	<b>19,526</b>
TOYOTA	TIJUANA	DOMESTIC	2,372	2,479	2,261	2,170	1,857	1,718
		EXPORT	21,675	31,651	32,140	32,047	32,382	32,030
	TIJUANA Total		24,047	34,130	34,401	34,217	34,239	33,748
<b>TOYOTA Total</b>			<b>24,047</b>	<b>34,130</b>	<b>34,401</b>	<b>34,217</b>	<b>34,239</b>	<b>33,748</b>
VW GROUP	PUEBLA	DOMESTIC	58,486	59,445	55,340	48,143	46,242	43,930
	Beetles and Jetta	EXPORT	236,791	279,468	249,731	238,492	238,186	218,962
	PUEBLA Total		295,277	338,913	305,071	286,635	284,428	262,892
<b>VW GROUP Total</b>			<b>295,277</b>	<b>338,913</b>	<b>305,071</b>	<b>286,635</b>	<b>284,428</b>	<b>262,892</b>
<b>TOTALS</b>		Domestic	<b>453,923</b>	<b>381,852</b>	<b>330,216</b>	<b>349,514</b>	<b>331,983</b>	<b>329,434</b>
		Export	<b>1,141,219</b>	<b>1,408,908</b>	<b>1,411,249</b>	<b>1,445,367</b>	<b>1,556,367</b>	<b>1,579,059</b>
<b>Total Light Vehicle Production</b>			<b>1,595,142</b>	<b>1,790,760</b>	<b>1,741,465</b>	<b>1,794,881</b>	<b>1,888,350</b>	<b>1,908,493</b>

*Source: Global Insight Automotive Group*

The TPA also faces several challenges in expanding the Port's vehicle traffic. Most of these challenges relate to the aforementioned consolidated nature of the international vehicle trades. In order to significantly increase import vehicle traffic, the TPA will need to work with some combination of manufacturers, vehicle carriers and Ports America to attract new business. Manufacturers are critical since they control the entire supply chain from vehicle production to distribution and sales. Each of these manufacturers has its own strategy in terms of vehicle production and distribution. Each manufacturer endeavors to match models and markets to maximize its sales and revenue potential. While the Port and TPA's geographic position to Mexico and the large Florida market are competitive strengths, they can only be realized if the

manufacturers target the Florida market for a portion of their vehicle production. Therefore it becomes important to understand each manufacturer's production facility/model/market strategy.

Given the dominance of the world vehicle trades by a relatively few carriers, participation of one or more carriers is key to both insuring efficient inbound service and capacity and providing opportunities to expand the TPA's export vehicle traffic. As noted above, each of these carriers has medium to long-term relationships with vehicle manufacturers around the world.

Consequently, it is important for the TPA to understand which carriers are aligned with the various manufacturers in Mexico. Having identified these relationships, the TPA will then need to market the Port's advantages and the potential of the Florida market.

Finally, Ports America is key since they have the concession for the TPA's general cargo facilities and are one of the nation's largest vehicle stevedoring and processing companies. TPA will need to work with Ports America to leverage its relationships with the vehicle carriers and manufacturers.

Future growth in the TPA's vehicle business will be dependent on its ability to attract specific manufacturers and carriers to use the Port. Consequently, the TPA's import vehicle business, if successful, will likely increase in step functions rather than smooth trend lines. The timing and size of the steps will be determined by TPA's success in attracting one or more manufacturers to import vehicles through the Port and the overall growth in vehicle demand. Given the consolidation in the new import vehicle business, the typical volume threshold to support a new port of entry approximates 50,000-60,000 vehicles. The challenge will be to attract one or more of the Mexican manufacturers to serve the west Florida market via a Tampa port of entry. The challenge will be to work with one of these manufacturers to attract sufficient volume in the west central Florida market to attract a port of entry operation.

For exports, sales of new cars to Germany, Saudi Arabia, and the UAE are the major components of the export market from the South Atlantic coastal range, primarily from Alabama and South Carolina plants with little expectations for Tampa. Exports to the Caribbean Basin and Central America, which are mainly used cars, are expected to grow 1.5% per year through 2015 from the South Atlantic region.

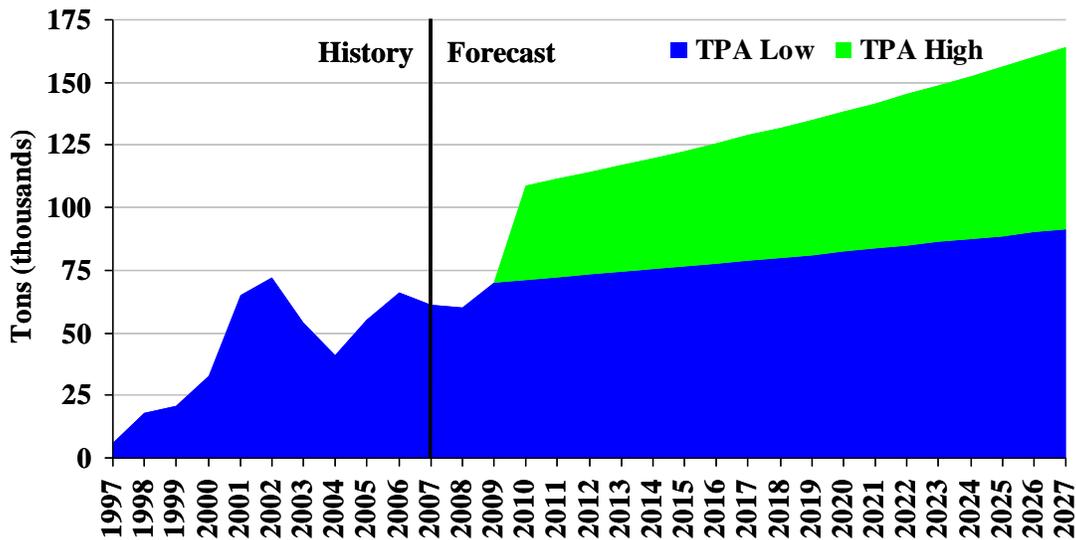
For planning purposes, Norbridge developed low and high forecast scenarios for the TPA's vehicle business. The scenarios are intended to establish the likely range within which the TPA's vehicle traffic will likely develop over the planning horizon. The key assumptions for these forecasts are:

- Low forecast
  - Imports: the TPA's business remains unchanged in terms of customers and imports grow at 1.5 percent per annum or slightly higher than the projected growth in Florida's driving age population
  - Exports: the TPA's business remains focused on used vehicles and exports grow at the projected rate for the Caribbean/Central American market or 1.5 percent per year
- High forecast

- Imports: the TPA attracts a new port of entry operation in 2010 and thereafter the business grows at a rate of 2.0 percent per year which is higher than the projected growth in Florida’s driving age population which reflects an assumption of increased share of inbound vehicles moving to the west central Florida market via the Port. The projected volume is estimated at 62,500 tons (50,000 units) and it is assumed to occur in 2010. The start up in 2010 reflects both the time required to develop the business and the likelihood that the economy in 2008 and 2009 will not be conducive to developing a new port of entry business.
- Exports: vehicle exports increase at a compound annual rate of growth of 3.0 percent over the forecast horizon. The significantly higher rate of growth reflects an assumed share increase by the Port in the Central American and Caribbean vehicle trades as a result of its geographic positioning and ability to accommodate the growth versus selected other Florida gateway ports.

Under the low forecast, total TPA vehicle volumes are projected to increase at an average annual compound rate of growth of 2.0 percent and total 91,500 tons (about 61,000 vehicles) in 2027 (Exhibit IV-60). Under the high forecast total TPA vehicle volumes are projected to increase at an average annual compound rate of growth of 5.1 percent and approximate 164,000 tons (about 110,000 vehicles) in 2027. The attraction of a new import port of entry account and the requisite ocean carrier service (frequent vessel service with sufficient capacity to meet manufacturers’ requirements) are key prerequisites to realizing the high forecast scenario.

**Exhibit IV-60  
TPA Historical and Projected Vehicle Traffic  
FY1997-FY2027**



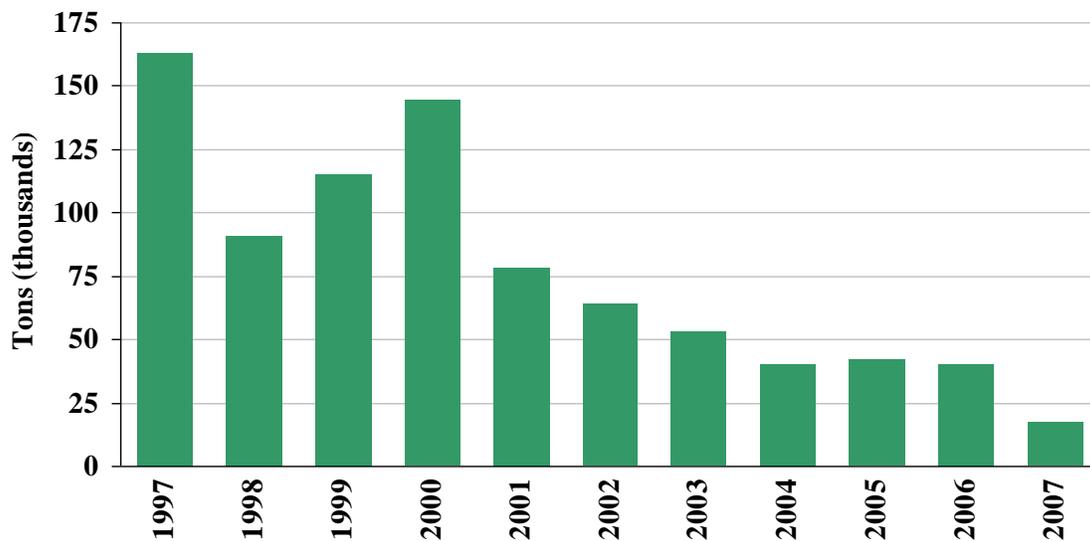
*Source: Norbridge, Inc. and TPA Tonnage Reports*

**d) Refrigerated Cargoes**

Historically, refrigerated cargoes have generated a small amount (average 9 percent between FY1997 and FY2007) of TPA’s general cargo. The TPA’s refrigerated cargo volumes have

fluctuated significantly over time and have declined since 2000 (Exhibit IV-61). Historically, the TPA’s refrigerated breakbulk traffic volumes have comprised a large number of fresh and frozen commodities. The largest commodity groups have included melon imports, imports of fresh fruits (specific fruits are not specified) and exports of poultry. The melon import traffic has been the most consistent commodity handled by the TPA although it has declined significantly in the past three years. Melon imports have accounted for most of the TPA’s refrigerated traffic since 2002. The decline in the Port’s melon traffic in 2006-2007 coincided with the termination of the TPA’s agreement with a terminal operator and the termination of the terminal operator’s contract with a Central American fruit producer. This traffic has begun to move again under an agreement between producers and a specialized refrigerated ocean carrier. Poultry exports have ceased to move through the Port. The cessation in part reflects currency, economic and political/trade related-issues in Eastern European importing countries.

**Exhibit IV-61  
TPA Historical Refrigerated General Cargo Traffic  
FY1997-FY2007**



Note: Excludes bulk juice concentrate which is discussed under Liquid Bulk

*Source: TPA*

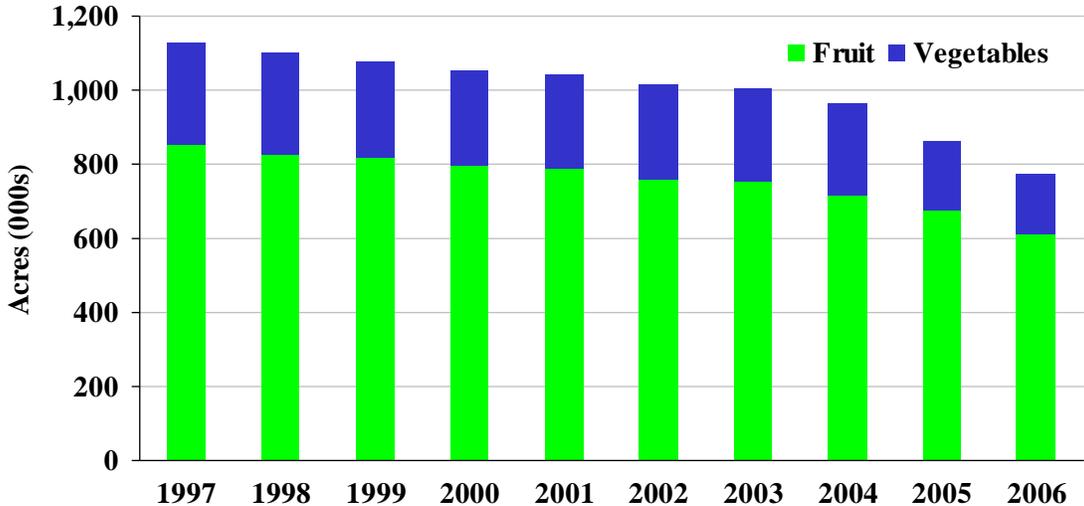
The TPA’s refrigerated cargo business faces both opportunities and challenges in the future. The opportunities are primarily related to the importation of fresh fruits and vegetables as result of anticipated declines in Florida’s agriculture industry, anticipated increases in the consumption of fresh fruit and vegetables due to population growth, increasing per capital income and the health benefits of consuming fresh fruit and vegetables, and anticipated changes in the structure and strategies of fresh fruit and vegetable retailers. Florida’s agricultural industry faces a series of challenges including:

- Significant appreciation in land values as the demand for commercial and residential construction continues to expand

- Significant damage from hurricanes in 2004
- Significant damage to the citrus industry from disease (citrus canker and citrus greening)
- Increasing competition from lower cost fresh fruit and vegetable producers in Central America.

Each of these factors is believed to have contributed to a recent decline in the amount of Florida land used in fruit and vegetable production (Exhibit IV-61A). Bearing acres of fruit in Florida have fallen by a CAGR of -3.6% since 1997, while bearing acres of vegetables in Florida have fallen by a CAGR of -5.5%.

**Exhibit IV-61A**  
**Bearing Acreage of Florida Fruit and Vegetables: 1997-2006**



Note: Fruits include oranges, grapefruit, tangerines, berries, watermelons, temples, tangelos, limes, and lemons. Vegetables include all vegetables and potatoes.

*Florida Agricultural Statistical Directory. 2007*

The long-term ability of Florida’s agricultural industry to successfully address these challenges in uncertain. If the industry continues to decline (number of acres planted, yields per acre), then the increased demand associated with population growth and changing diets will most likely be met entirely through increased imports. Even if the industry successfully addresses its challenges, seasonal imports will likely increase due to changes in diet.

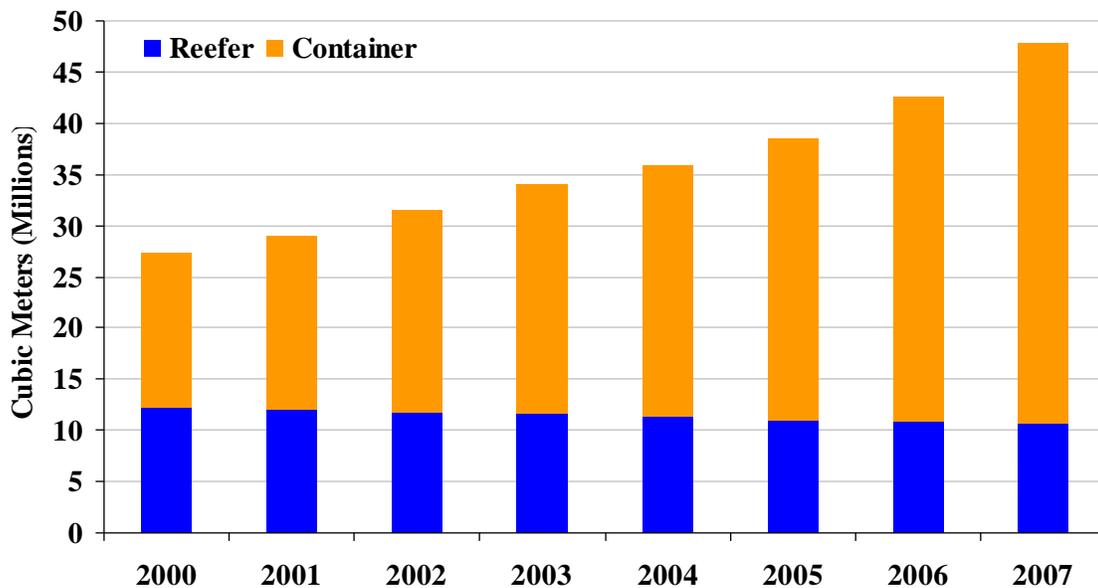
The second favorable factor supporting growth is the entry of major retailers into the retail sale of fresh fruits and vegetables. Companies such as Wal-Mart, COSTCO and Sam’s Club have targeted food in general and fresh fruits and vegetables in particular as key growth markets. These large companies are beginning to establish direct relationships with producers (both in the U.S. and internationally) for food products. As a consequence, food supply chains are being restructured to align with the distribution centers of these new market entrants. This could result in new ports of entry and demand for on port or near port based refrigerated distribution centers. Given the Port’s proximity to both the established and emerging Central American production

centers and the west central Florida market, the Port is well positioned to take advantage of these trends as they develop.

Major challenges the TPA faces include establishing relationships with carriers and distributors to take advantage of restructured supply chains, the potential need for capital investment in port refrigerated capacity, and the future modal split (breakbulk vs. container) of the fresh fruit and vegetables. The TPA is working with its general cargo concessionaire and an ocean carrier that specializes in refrigerated cargoes to develop refrigerated traffic at the Port. Collectively, the parties are evaluating the business case for investing in replacement and expanded refrigerated capacity to develop a position in the Central American refrigerated cargo trades. The long-term viability of this investment will be in part a function of the future share of these trades carried by specialized refrigerated cargo vessels versus container vessels.

The world's refrigerated cargo trades are in the process of transitioning from specialized refrigerated cargo vessels to more use of container vessels. Various industry studies and analysts estimate the relative shares of the two modes is or is approaching 50 percent. Container capacity has accounted for virtually all the growth in refrigerated vessel carrying capacity since 2000 (Exhibit IV-61B).

**Exhibit IV-61B**  
**Refrigerated Carrying Capacity of Refrigerated and Container Vessels\***  
**2000-2007**



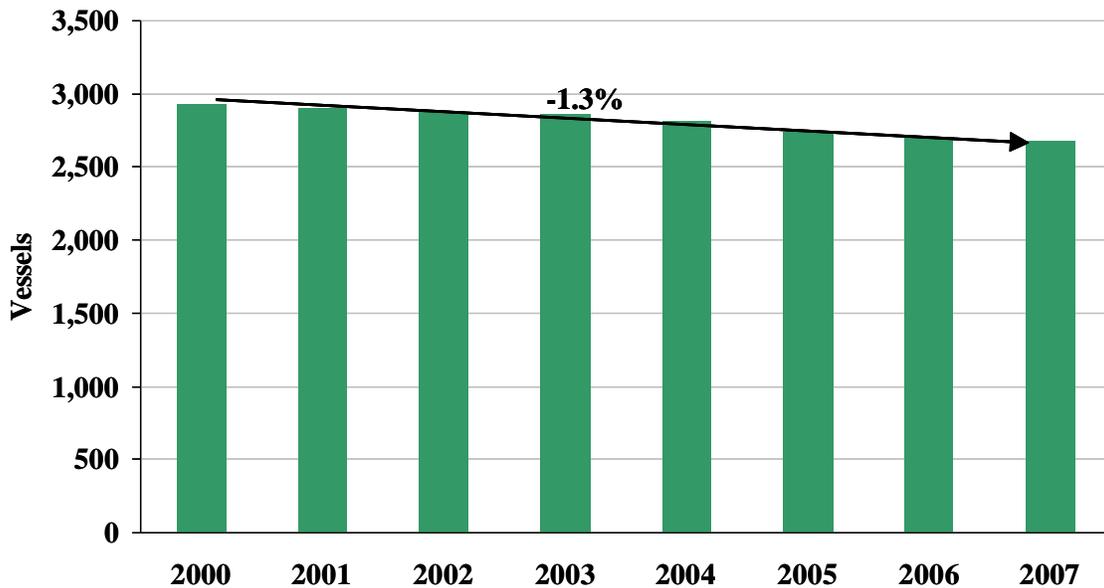
\*Note: Only 91% of Reefer Vessels list Reefer Capacity and 90% of containers list TEU capacity. Note: Indicates Vessels in use on the January 1st of each respective year

*Source: Lloyd's Fairplay 2000-2007*

The significant increase in container-based refrigerated capacity reflects a number of trends including the significant ongoing investment in container vessel capacity by both investors and shipping lines as well as the significantly higher yields available on refrigerated commodities. Refrigerated cargoes also provide value-added (logistics services) opportunities for container

shipping lines. It also reflects the fact that container-based rates on refrigerated cargoes have not risen as rapidly as rates for purpose built ships. This is primarily due to a general oversupply of container capacity in most years versus demand whereas rates for purpose built ships have reportedly escalated more rapidly in part due to a more balanced supply demand situation. As shown in Exhibits V-61C and V-61D, the purpose built refrigerated cargo fleet has declined since 2000.

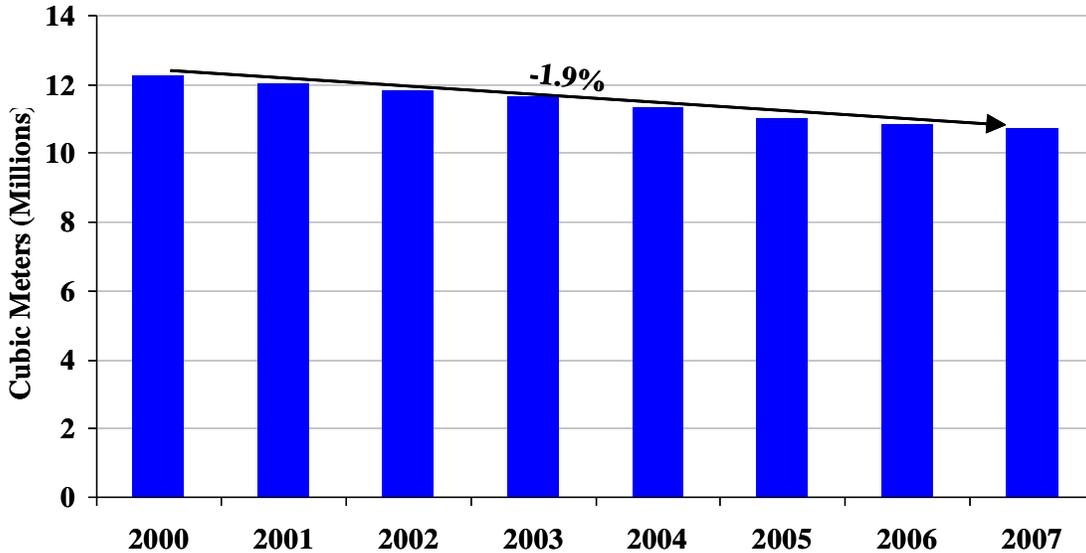
**Exhibit IV-61C**  
**Refrigerated Cargo Capacity of Purpose Built Refrigerated Vessels: Number of Vessels**  
**2000-2007**



Note: Indicates vessels in use on January 1 of each respective year

Source: *Lloyd's Fairplay 2000-2007*

**Exhibit IV-61D**  
**Refrigerated Cargo Capacity of Purpose Built Refrigerated Vessels\*: Cubic Refrigerated Capacity**  
**2000-2007**



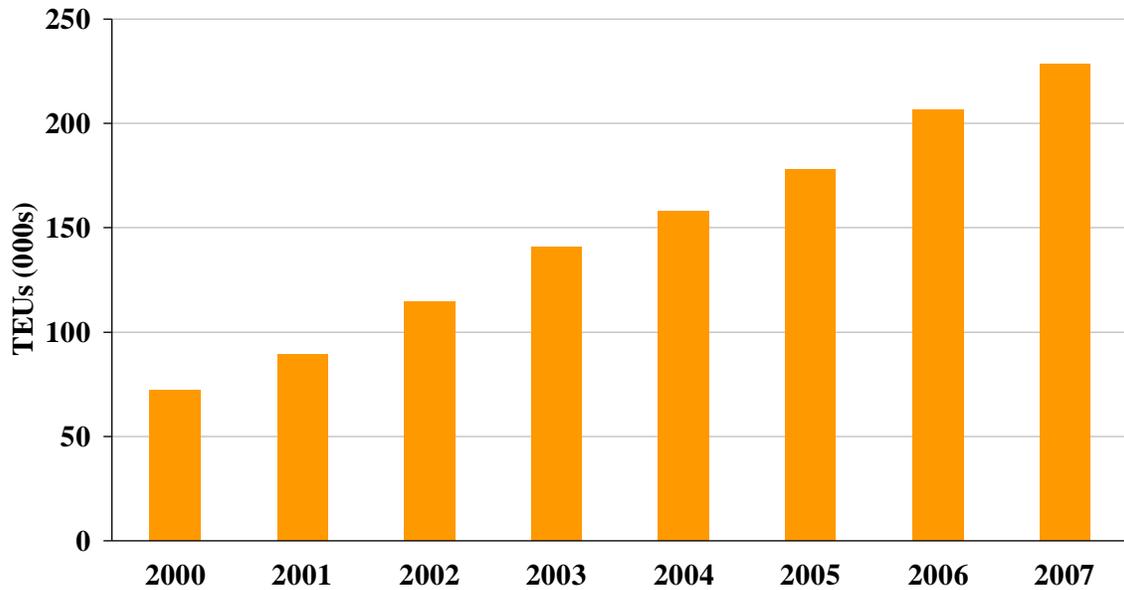
\*Note: Indicates Vessels in use on the January 1st of each respective year

*Source: Lloyd's Fairplay 2000-2007*

A potential long-term challenge to the TPA and its partners in pursuing refrigerated general cargoes is containerization. The short haul nature of the Central American/Florida trade favors the use of Roll-on/Roll-off vessels or smaller geared container ships. There are a number of successful regional vessel operators (Crowley, Seaboard Marine, Tropical) that serve these trades today. These lines have invested and continue to invest in refrigerated container capacity (Exhibit IV-61E).

Conversely, the seasonal nature of many of the fruit trades is a challenge since container lines will typically not invest in the peak capacity required to serve the trade. The TPA and its partners will need to carefully evaluate the potential effect of containerization of these trades when considering long-term investment in additional temperature controlled general cargo facilities.

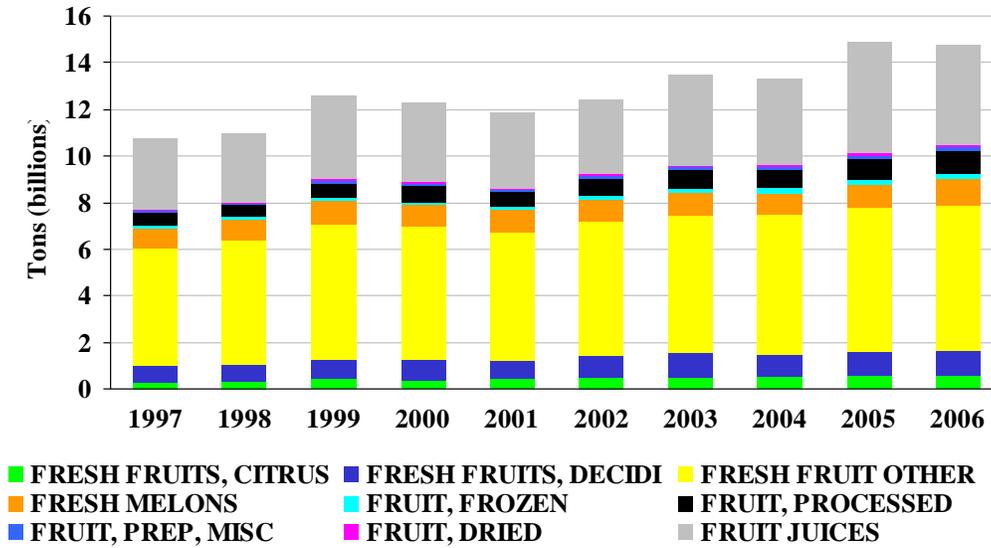
**Exhibit IV-61E**  
**Growth in Refrigerated Container Capacity for Selected Container Shipping Lines**  
**2000-2007**



*Source: Lloyd's Fairplay 2000-2007*

U.S. fruit imports have increased steadily during the past nine years (Exhibit IV-62). Between 1997 and 2006, U.S. fruit imports increased at a compound annual rate of growth of 3.6 percent.

**Exhibit IV-62  
U.S. Fruit Imports  
1997-2006**



*Source: Norbridge, Inc. analysis of USDA FAS data*

Other fresh fruit imports and fruit juices are the largest and fastest growing commodity groups (Exhibit IV-63). The Port and the TPA have begun to participate in this growth which includes apple and grape juice imports from China and Argentina respectively.

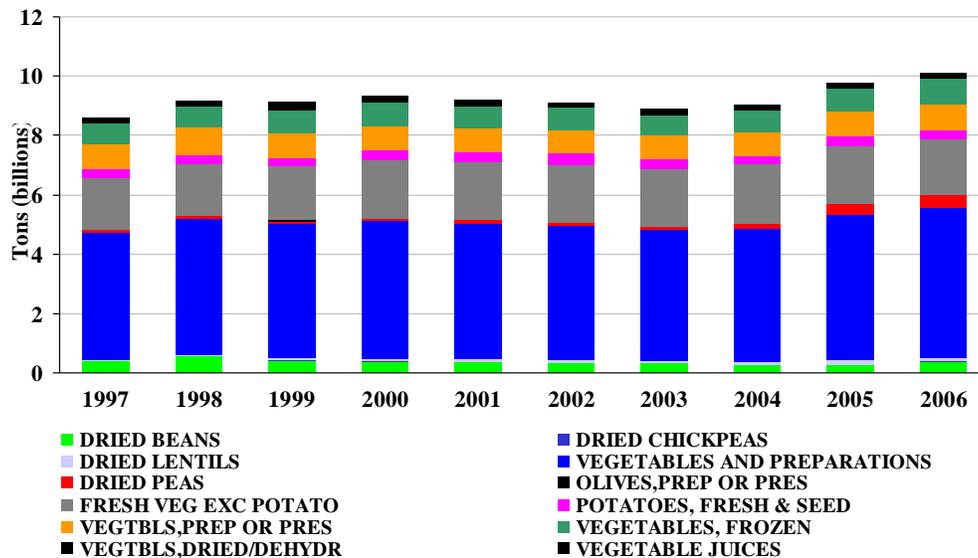
**Exhibit IV-63  
Growth in U.S. Fruit Imports  
1997-2006**

Commodity	% of 2006 Total	CAGR 1997-2006	CAGR 2001-2006
Fresh Fruit, Other	42.1%	2.4%	2.6%
Fruit Juices	29.1%	3.8%	5.7%
Fresh Melons	7.5%	2.4%	3.0%
Fresh Fruit, Decid.	7.1%	4.1%	5.1%
Fruit, Processed	6.7%	5.8%	7.9%
Fresh Fruits, Citrus	4.1%	8.7%	7.1%
Fruit, Frozen	1.7%	12.9%	16.5%
Fruit, Prep, Misc	1.0%	8.1%	12.4%
Fruit, Dried	0.6%	7.9%	9.7%
<b>Total</b>	<b>100.0%</b>	<b>3.6%</b>	<b>4.4%</b>

*Source: Norbridge, Inc. analysis*

U.S. vegetable imports have also been increasing (Exhibits IV-64 and IV-65). Between 1997 and 2006, U.S. vegetable imports increased by 1.3 million metric tons, an average annual compound rate of growth of 1.8 percent.

**Exhibit IV-64  
U.S. Vegetable Imports  
1997-2006**



*Source: Norbridge, Inc. analysis of USDA FAS data*

**Exhibit IV-65**  
**U.S. Vegetable Imports Growth Trends**

Commodity	% of 2006 Total	CAGR 1997-2006	CAGR 2001-2006
Fresh Vegetable (No Potato)	36.7%	0.9%	-0.8%
Vegetables, Frozen	17.3%	3.0%	2.9%
Vegetables, Prepared	16.5%	-0.2%	0.4%
Dried Peas	8.9%	20.0%	35.2%
Dried Beans	7.4%	-0.4%	1.3%
Potatoes, Fresh and Seed	6.2%	-0.7%	-0.2%
Vegetables, Dried/Dehydrated	2.8%	-1.5%	1.5%
Dried Lentils	2.5%	10.4%	5.3%
Vegetable Juices	1.2%	-0.5%	-1.6%
Dried Chickpeas	0.4%	20.2%	-4.2%
Olives, Prepared	0.1%	0.0%	3.3%
<b>Total</b>	<b>100.0%</b>	<b>1.8%</b>	<b>1.9%</b>

*Source: USDA FAS*

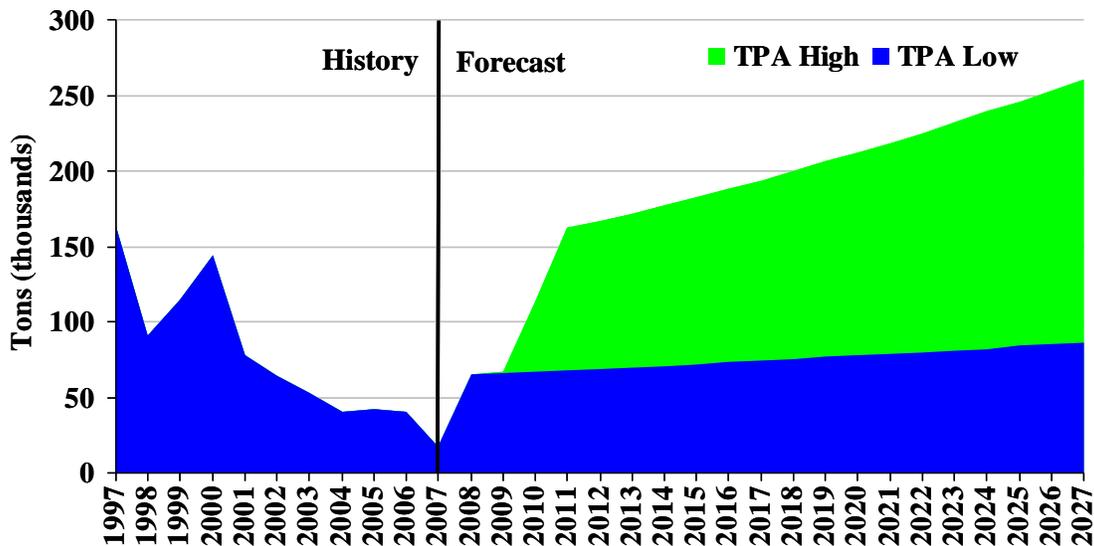
Central America is an increasing source of fresh fruit and vegetable imports for the U.S. Major agricultural producers such as Dole and Del Monte have invested in banana, melon, pineapple and vegetable production in Central America. The Port is favorably positioned as a potential gateway for fruit and vegetable imports from Central America to Florida in general and to central/west Florida in particular given the Port's competitive advantages in serving this market. The TPA is also favorably positioned in terms of having underutilized temperature controlled facilities that are available to accommodate these products. Finally, TPA's partnership approach to pursuing these opportunities minimizes risk and enhances the probability of success.

Recognizing both the opportunities and challenges in pursuing refrigerated cargo opportunities, Norbridge prepared two forecasts for TPA's refrigerated general cargo. The low forecast assumes either the import trades do not develop as quickly as anticipated due to domestic competition and potential trade regulation or a significant portion of the trade is containerized in the next 3-5 years. Under this scenario, the TPA's refrigerated general cargo trade is projected to grow at 1.5 percent per year from the TPA projected FY2008 base of 65,000 tons.

The high forecast scenario assumes the Central American-Florida refrigerated trade grows significantly and that the TPA and its partners capture a portion of this trade. The high forecast assumes the TPA and its partners successfully enter the inbound Central American refrigerated business in 2009 and the trade grows at 3 percent per year thereafter. This rate of growth assumes domestic production is not competitive (a combination of reduced acreage, higher production costs, import quotas are not implemented, etc.) and or demand exceeds domestic production capacity and results in significantly higher growth. The forecast also assumes that containerization occurs at a modest rate and does not erode specialized refrigerated vessels' share of future growth.

Under the low case scenario, TPA’s refrigerated general cargo traffic is projected to approximate 86,000 tons in 2025. Under the high case scenario, refrigerated general cargo traffic is projected to approximate 261,000 tons (Exhibit IV-66).

**Exhibit IV-66  
TPA Historical and Projected Refrigerated General Cargo Traffic  
FY1997-FY2025**



Note: Excludes liquid bulk juice concentrate which is covered under Liquid Bulk

Source: Norbridge, Inc.

**e) Other General Cargoes**

Historically, the TPA has handled small amounts of other general cargo including lumber, forest products, and miscellaneous general cargoes. Collectively, these volumes have averaged 60,000 tons or less per annum and 7 percent or less of total general cargo. They have also remained relatively flat in terms of total volume over the FY1997-FY2007 period. Historically, the TPA has faced significant competition from Port Manatee in the forest products trade, primarily a function of Port Manatee’s relationship with Gearbulk, a dominant carrier in the trade from South America. Port Manatee has invested significantly in covered storage facilities for forest products, signed long-term agreements with major forest product carriers and priced aggressively.

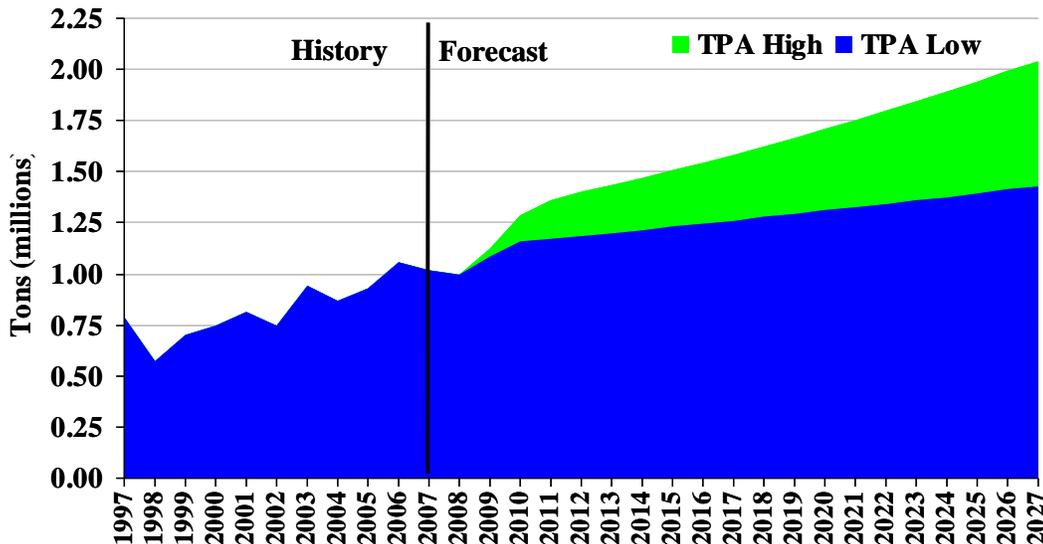
The TPA has significant covered storage facilities that it can offer to forest product customers and carriers. It also has the ability to offer rail service which is a potential advantage for avoiding highway weight limitations which can be an issue for certain paper and paperboard commodities. The TPA also has a diversified mix of general cargo facilities capable of handling most of the general cargoes that move in international trade today. These factors, in combination with available capacity position the TPA to opportunistically pursue general cargo opportunities as they arise.

For planning purposes, a conservative forecast range has been developed for other general cargoes. The projected range is from a constant 60,000 tons (historical average) on the low end to 100,000 tons (12 percent above the historical peak) on the high end.

#### f) General Cargoes Forecast Summary

Steel and scrap metal products are projected to remain the primary driver of the TPA’s general cargo traffic. Important growth opportunities include vehicles and refrigerated cargoes. The TPA’s general cargo traffic is projected to increase from the FY2007 volume of 1.1 million tons to 1.4 million tons under the low forecast scenario and 2.0 million tons under the high forecast scenario (Exhibit IV-67). These volumes represent increases of 41 percent and 101 percent respectively over the 2007 level.

**Exhibit IV-67  
TPA Historical and Projected General Cargo Traffic  
FY1997-FY2027**



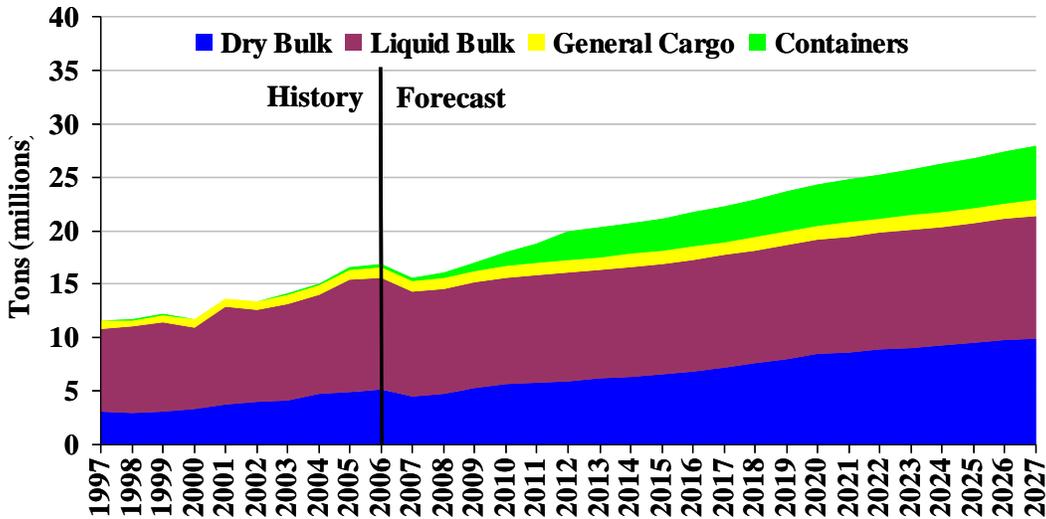
Note: Does not include container traffic

Source: Norbridge, Inc. and Moffatt & Nichol

### 5. TPA Cargo Market Assessment Summary

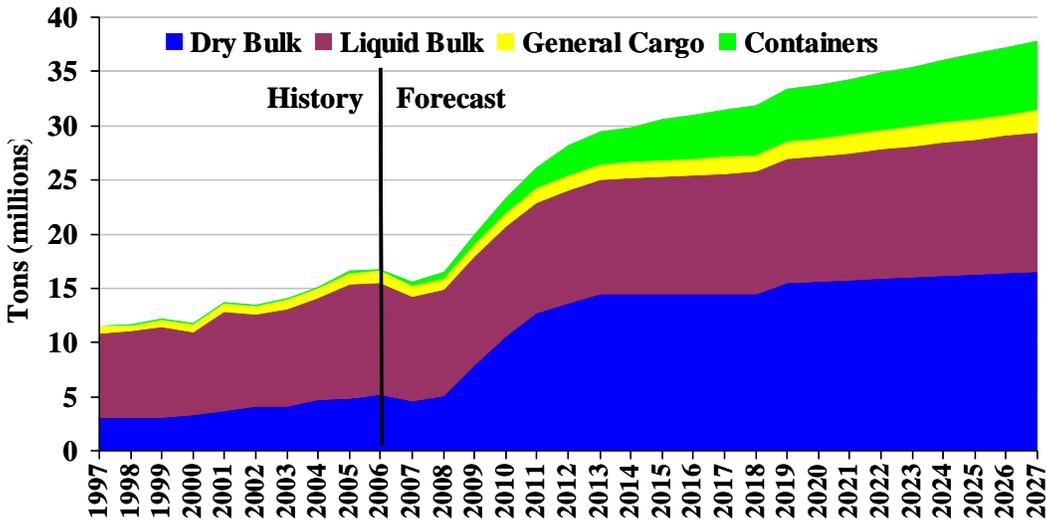
The TPA’s cargo business in total is expected to experience sustained moderate growth over the 20 year planning horizon. The TPA’s total cargo business is projected to range from 27.9 million tons under the low forecast scenario to 37.9 million tons under the high forecast in FY2027 (Exhibits IV-68 and IV-69). These projections represent increases of 79 percent and 143 percent respectively over the FY2007 volume of 15.6 million tons. The average annual compound rates of growth are 3.0 percent and 4.5 percent respectively versus the ten year historical average of 3.0 percent. Significant growth in containers, aggregates and petroleum products are the key drivers of the forecast. Growth in these commodities is projected to offset projected long-term declines in fertilizer related cargoes.

**Exhibit IV-68**  
**TPA Historical and Projected Total Cargo Traffic: Low Forecast Scenario**  
**FY1997-FY2027**



*Source: Norbridge and Moffatt & Nichol*

**Exhibit IV-69**  
**TPA Historical and Projected Total Cargo Traffic: High Forecast Scenario**  
**FY1997-FY2027**



*Source: Norbridge, Inc. and Moffatt & Nichol*

## F. Cruise

This section presents an assessment of the North American cruise industry. This section was prepared by Business and Economic Research Associates (BREA). BREA focuses on business

and economic analysis of the North American cruise industry. BREA’s clients include the Cruise Line Industry Association (CLIA) and many of the major cruise line companies.

## 1. Industry Structure

The North American cruise industry is defined as those cruise lines and the vessels they deploy in serving North American cruise passengers. While the fleet of the North American cruise industry is deployed throughout the world almost two-thirds of its capacity is deployed in North America and the Caribbean and approximately 80 percent of its passengers reside in the United States or Canada.

There are almost as many estimates of the size of this industry as there are industry organizations and reports on the industry. The Cruise Line Industry Association (CLIA) generally has the most expansive definition and measurement of the industry, including such lines as Bora Bora, Norwegian Coastal Cruises and others that are members of the organization but typically have a limited presence in the North American market. Our definition of the North American industry is similar to CLIA’s but excludes some of the smaller, niche focused lines that do not have a sustained presence in the North American market. Some of the cruise lines, especially those in the Budget Segment, no longer exist but their historical contribution to the industry is incorporated in the historical analyses.

The North American cruise industry is generally segmented by passenger/service, geography and product (itineraries) offering. The four major passenger/service segments and the cruise lines within each segment are summarized in Exhibit IV-70. The Contemporary segment is the largest segment of the market. This segment generally targets all age groups of the cruise population and offers the widest range of shipboard experiences and itineraries. The seven day cruise to the Caribbean via the south Florida ports is the most salient example of the Contemporary market cruise lines.

**Exhibit IV-70  
North American Cruise Lines by Segment**

<b>Contemporary</b>	<b>Premium</b>	<b>Luxury/Niche</b>	<b>Budget</b>
Carnival	Celebrity	Crystal	American Hawaii
Disney	Costa	Cunard/Seabourn	Cape Canaveral
Norwegian	Holland America	Oceania	Commodore
Princess	MSC Italian	Radisson	Premier Cruises
Royal Caribbean	Renaissance	Silversea	Regal
Royal Olympia		Windstar	U.S. Cruise Line
		Clipper	
		Star Clipper	
		American Canadian	

*Source: CLIA and BREA*

The largest (annual passenger volumes) geographic segments of the North American cruise market are the Eastern/Southern Caribbean, Western Caribbean, Alaskan, Bermuda and West Coast of Mexico market segments. The major product segments of the North American cruise

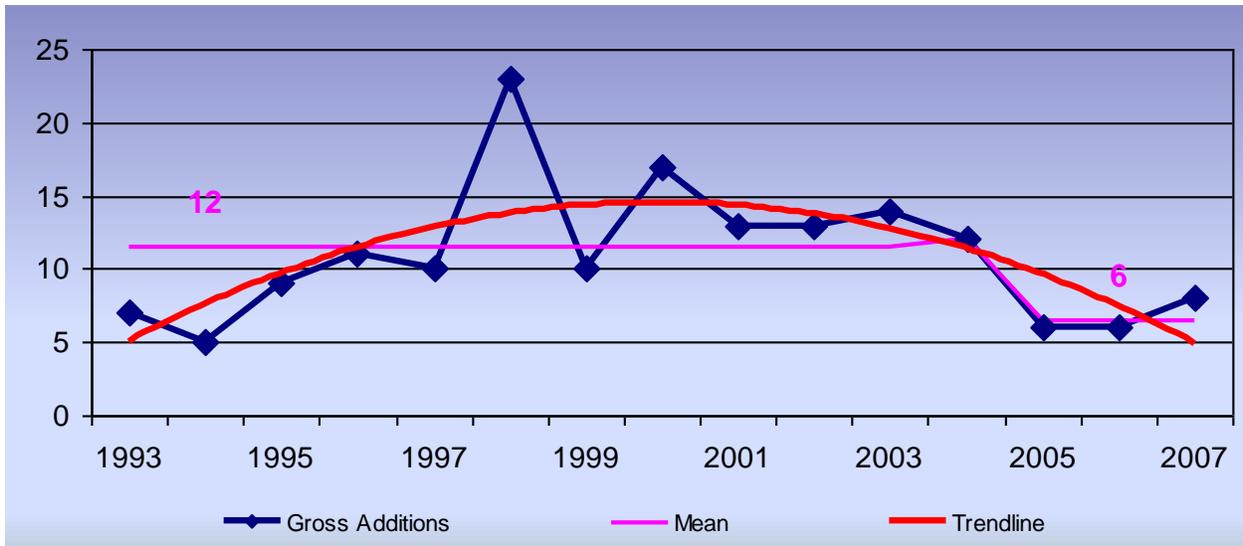
industry include seven day, five day, four day, three day and extended (10 or more day) itineraries. Historically, the seven day itinerary has been the largest segment. In recent years the three and four day cruises have become increasingly popular. These itineraries offer first time passengers a lower risk (shorter commitment) opportunity to test the cruise experience without committing an entire week of vacation. They also offer vacationers with compressed vacation schedules the opportunity to experience cruising.

## **2. Industry Trends: Historical and Projected**

The North American cruise industry has experienced strong growth, consolidation, and high occupancy rates during the past decade. Even the recession of 2000 and the terrorist attacks of 9/11, only served to slow the growth of the industry. The key attributes of this growth have been:

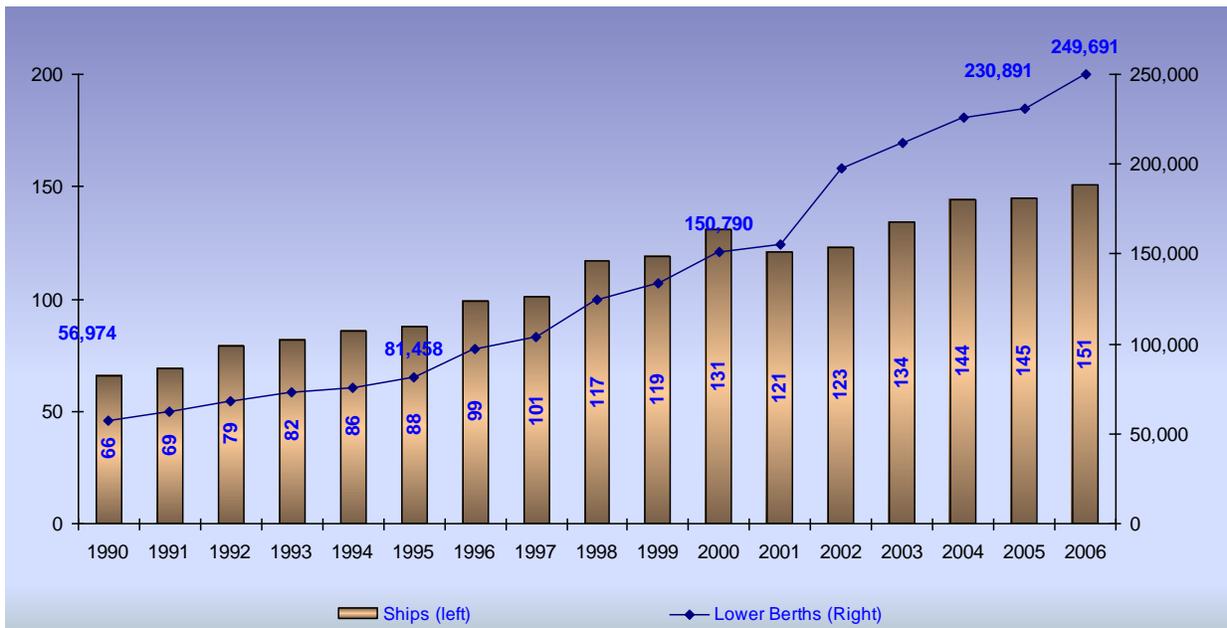
- The cruise industry on average has annually added just over 5 ships per year. As a result, the industry has added 62 vessels to its fleet since 1993 bringing the total fleet to 144 cruise ships by 2005 (Exhibit IV-71).
  - There was no net increase in cruise ships during 2005 as the addition of 6 new ships was offset by the withdrawal of an equal number of ships.
- With the steady introduction of increasingly larger ships, the growth in lower berths over the past twelve years has been double the growth in vessels, 7.7 per cent per year versus 3.8 percent. In 2005, the North American fleet consisted of an estimated 249, 641 lower berths (Exhibit IV-72).
- Industry consolidation has been driven in part by economic trends. The slowdown in passenger growth following the terrorist attacks of 9/11 resulted in falling prices and increased competition within the industry. These factors resulted in the virtual elimination of the Budget segment of the industry in North America and the bankruptcy of several Premium and Niche cruise lines.
- While passenger growth has lagged behind capacity (lower berths) growth, this has been offset by the increase in the average length of a cruise and so the industry has been able to maintain its relatively high occupancy rates.
- With supply growth outpacing demand growth since 2001, the average per diem price of a cruise has reportedly fallen by almost 30 percent through 2004.

**Exhibit IV-71  
Annual New Vessel Introductions  
1993 - 2007**



Source: CLIA and BREA

**Exhibit IV-72  
Size of the North American Cruise Fleet and Lower Berth Capacity  
1993-2006**



Source: CLIA and BREA

As shown Exhibit IV-71, the impact of falling prices on the future expansion of industry capacity has already been seen to some extent. First, as already noted, the industry experienced no change

in the size of its fleet during 2005; the first time this has occurred since 2001 when the industry experienced its first major contraction following 9/11. Second, the six new vessel introductions during 2005 were below the 11-year average and were the fewest new ships entered into service since 1994. Third, planned introductions for 2006 and 2007 will remain below the long-term average of 12 new ships per year. Thus, the deceleration in new vessel construction is firmly in place and the question is: “When and to what degree will new vessel construction accelerate?”

BREA’s analysis of available industry data and interviews with industry and association executives leads BREA to conclude the future growth in the North American Cruise industry will slow to a more sustainable level that will support a stronger pricing environment. BREA anticipates the cruise industry will see net cruise ship additions slow to an average of approximately four ships per year over the next twenty years. New vessel introductions will average about six ships per year, but will be offset by an average reduction of two ships per year as the fleet ages. By 2025, we estimate that the net increase will total 77 cruise ships bringing the fleet to 221 ships (Exhibit IV-73).

**Exhibit IV-73**  
**Cruise Industry Capacity by Segment**  
**1993-2025**

Year	Contemporary			Premium			Luxury/Niche			Total	
	Ships	Berths	Share of Industry	Ships	Berths	Share of Industry	Ships	Berths	Share of Industry	Ships	Berths
1993	38	44,566	61%	21	17,594	24%	18	6,161	8%	82	72,958
1999	51	82,490	62%	30	33,034	25%	29	10,422	8%	119	133,588
2005	71	148,327	67%	42	60,936	27%	31	12,921	6%	144	222,184
2010	84	196,235	66%	51	84,536	29%	33	14,821	5%	168	295,592
2015	94	245,687	67%	58	104,884	28%	36	18,421	5%	188	368,992
2020	104	300,821	67%	63	123,984	28%	39	22,921	5%	206	447,726
2025	112	359,758	67%	67	145,534	27%	42	28,021	5%	221	533,313
1993-2005	33	103,761	67%	21	43,342	28%	13	6,760	4%	67	153,863
2006-2015	23	97,360	66%	16	43,948	30%	5	5,500	4%	44	146,808
2016-2025	18	114,071	69%	9	40,650	25%	6	9,600	6%	33	164,321
Average Size of Ship - 1993	1,173			838			342			890	
Average Size of Ship - 2005	2,089			1,451			417			1,543	
Average Size of Ship - 2020	2,893			1,968			588			2,173	
Average Size of Ship - 2025	3,212			2,172			667			2,413	

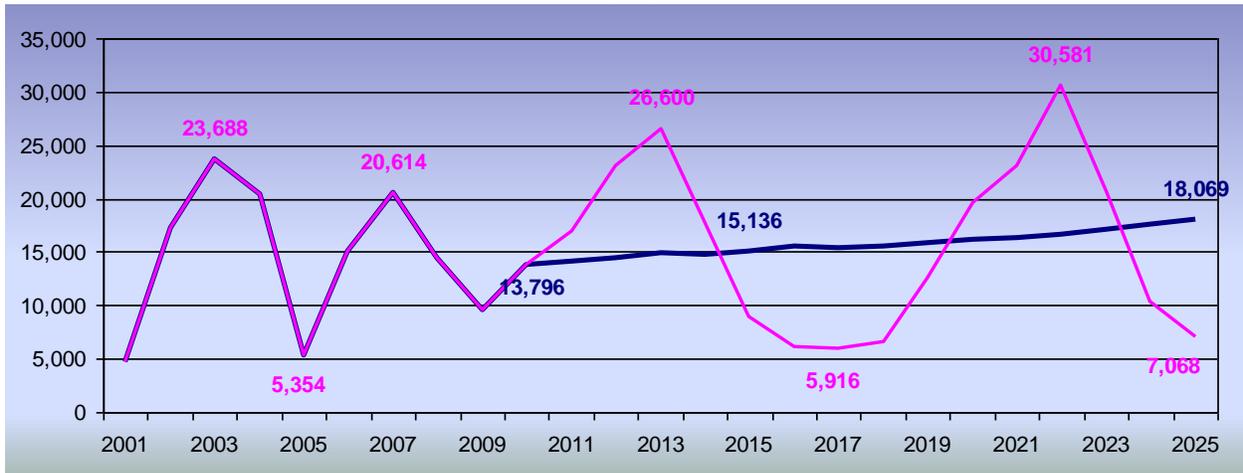
*Source: CLIA and BREA*

Looking first at new construction, after the bounce in new additions in 2007, we expect new vessel introductions to fall to an average of 5 ships per year through 2010 and then to increase to an average of 6 per year through 2025. Thus, between 2006 and 2025 we anticipate that the industry will introduce 129 new cruise ships, approximately one-half of the number of ships added annually during the previous thirteen years.

The trend to introduce increasingly larger ships will not abate with vessels as large as 5,400 passengers already being planned. As a result, the growth of lower berth capacity will continue to exceed the growth in vessels and average 4.5% per year through 2025. The North American fleet is projected to provide an estimated 533,313 lower berths by 2025 or more than double current capacity. On a trend basis, the net annual increase in lower berths is expected to increase

from about 13,800 berths per year in 2010 to 18,100 berths per year in 2025 (Exhibit IV-74). Following a more typical cyclical pattern, the North American Cruise Industry could see a net annual increase as high 30,500 berths and as low as 6,000 berths.

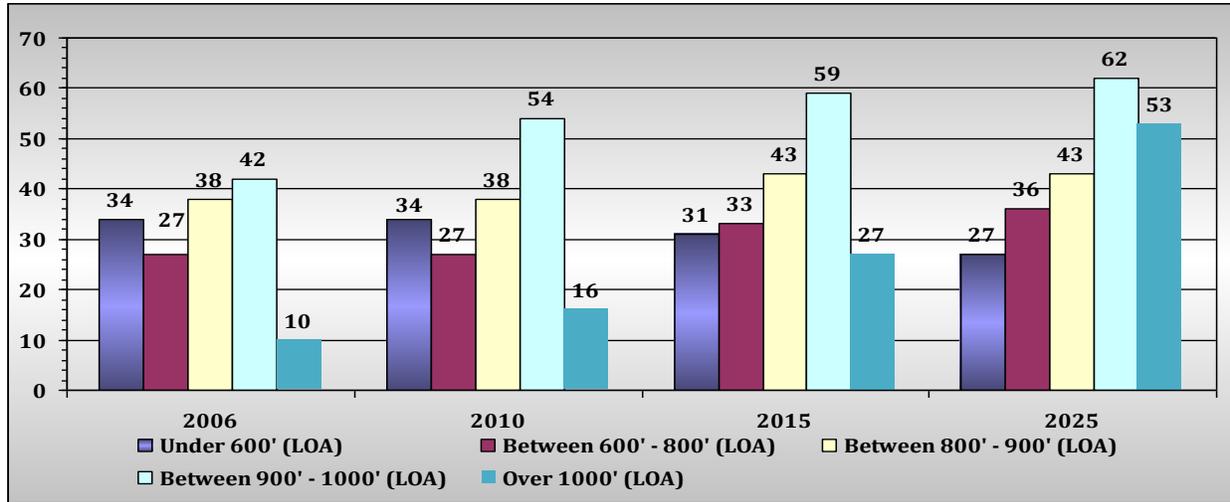
**Exhibit IV-74**  
**Net Annual Increase in Lower Berth Capacity**  
**1993-2025**



*Source: CLIA and BREA*

The current and projected size of the North American cruise fleet by size of ship (measured by overall length or LOA) is shown in Exhibit IV-75. Five size classes are shown. Most ships less than 600' in LOA are in the luxury and niche segment and carry fewer than 1,000 passengers. In addition, most of these ships homeport outside the United States and/or have global itineraries. Ships between 600' and 800' in LOA are primarily owned by the Premium Lines, such as Celebrity, Costa, and Holland America. There are also a few of the older Contemporary Ships, such as the Norwegian Dream and Norwegian Wind in this class. Ships in the 800' to 900' and 900' to 1,000' foot classes are primarily operated by the Premium and Contemporary Lines with the Contemporary Lines accounting for about 70 percent of the ships between 800' and 1,000' feet in LOA. Finally, ships over 1,000' in LOA in length are almost exclusively operated by the Contemporary Lines. Only Cunard's *Queen Mary 2*, the world's longest cruise ship, is operated by a Premium or Luxury Cruise Line.

**Exhibit IV-75**  
**Size of the North American Fleet by Vessel Size**  
**2006, 2010, 2015 and 2025**



Source: BREA

Among the ships that have cruised from the Port of Tampa in 2006 or are scheduled to sail from the port in 2007 are: *Zenith* (Celebrity), *Ryndam* (Holland America), *Veendam* (Holland America), *Carnival Legend* (Carnival), *Carnival Inspiration* (Carnival), *Legend of the Seas* (Royal Caribbean), *Grandeur of the Seas* (Royal Caribbean), and the *Carnival Legend* (Carnival). These ships range in size from 682' in LOA (*Zenith*) to 963' in LOA (*Carnival Legend*). These ships are operated by Premium Lines Holland America and Celebrity, and the Contemporary lines Carnival and Royal Caribbean. The *Carnival Legend* is the longest ship cruising from the Port of Tampa. Based on interviews with the TPA and the Tampa Bay Pilots, the maximum length cruise vessel permitted to navigate the Port's channels to the TPA's cruise terminals and turning in the turning basin at the cruise terminals approximates 950'-1,000' LOA. Based on this finding, a "Tampa-size" cruise ship is a cruise ship with an LOA ranging between 600' and 1,000' in LOA. Ships less than 600' in LOA are not considered due to their limited passenger capacity and the fact that most of these vessels sail on global itineraries. The current North American fleet has 101 cruise ships in the "Tampa-size" class. Eight of these ships have scheduled Tampa as a homeport for at least a part of 2006 and 2007.

The North American cruise industry is projected to experience a net increase of 77 cruise ships by 2025. Most of the new ships, 57 percent, will be exceed 1,000 feet in length (Exhibit IV-76 and Exhibit IV-77). A majority of the growth is projected to be in ships greater than 1,100' in LOA. Currently, only the *Queen Mary 2* is this large. All of Royal Caribbean's Freedom Class ships will be greater than 1,100' including their Project Genesis ship which is projected to exceed 1,300' in LOA.

On a net basis, nine new ships are expected to be added in the 600' to 800' LOA class, five new ships are projected to be added in the 800' to 900' LOA class, and 26 vessels are anticipated to be added in the 900' to 1,000' class by 2025. Tampa's growth in cruise vessels will likely be generated by a combination of the redeployment of existing ships displaced from current

itineraries by new larger vessels in excess of 1,000' in LOA, as well as the deployment of the 40 new cruise ships, in the 600' to 1,000' LOA classes.

The projected distribution of cruise ships by line and size in 2010 is shown in Exhibit IV-76. The projections include the current fleet plus all announced additions and withdrawals. Royal Caribbean is projected to operate the vast majority of the ships over 1,000' in LOA while almost all cruise lines will operate cruise ships in the 600' to 1,000' LOA classes.

**Exhibit IV-76**  
**Projected Size of the North American Fleet by Cruise Line and Vessel Size**  
**2010**

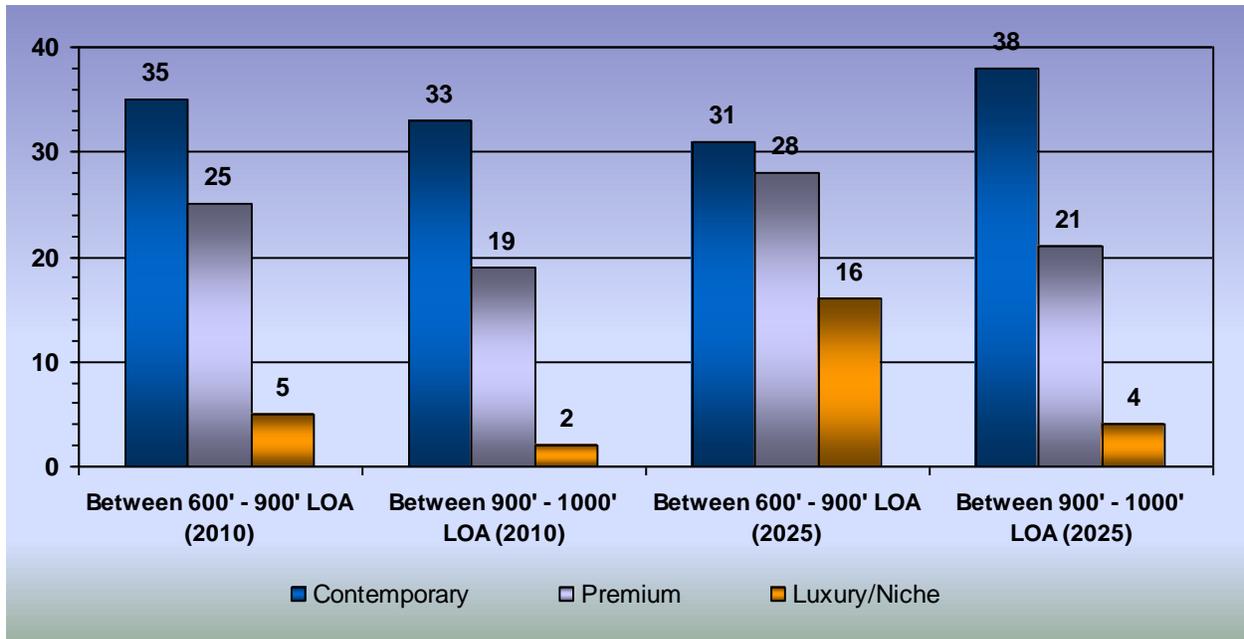
	Less than 600'	Between 600' and 800'	Between 800' and 900'	Between 900' and 1,000'	Over 1,000'	Total
Carnival	0	2	13	8	1	24
Celebrity	1	1	3	6	0	11
Costa	1	4	3	5	0	13
Crystal	0	1	1	0	0	2
Cunard	0	0	0	2	1	3
Disney	0	0	0	2	0	2
Holland America	0	9	0	5	0	14
MSC Cruises	2	1	4	3	2	12
Norwegian	1	3	5	7	0	16
Princess	2	0	4	11	0	17
Radisson	3	2	0	0	0	5
Royal Caribbean	0	3	5	5	12	25
Other	24	1	0	0	0	25
<b>Total</b>	<b>34</b>	<b>27</b>	<b>38</b>	<b>54</b>	<b>16</b>	<b>169</b>

*Source: BREA*

The projected “*Tampa-size*” fleet in 2010 and 2025 is shown in Exhibit IV-77. The 2010 estimates are based upon the existing fleet plus announced additions and removals. The estimates for 2025 are based upon BREA’s analysis of the industry and its interviews with cruise industry executives concerning the new vessel construction in the industry.

BREA projects the Contemporary segment will experience a net reduction of four cruise ships (35 to 31) in 600' to 900' LOA class and a net increase of five ships (33 to 38) in the 900' to 1,000' LOA class. Consequently, a majority of the overall growth in this largest segment of the fleet will be in the 1,000+ LOA class, i.e. ships too large to call the Port.

**Exhibit IV-77**  
**Projected “Tampamax” North American Fleet by Segment**  
**2010 and 2025**



*Source: BRE A*

The Premium segment will add ships in all size classes, including ships in the over 1,000’ LOA class. However, this segment is expected to see a net increase of six cruise ships between 600’ and 1,000’. This includes ships being planned by Celebrity, MSC Cruises and Costa.

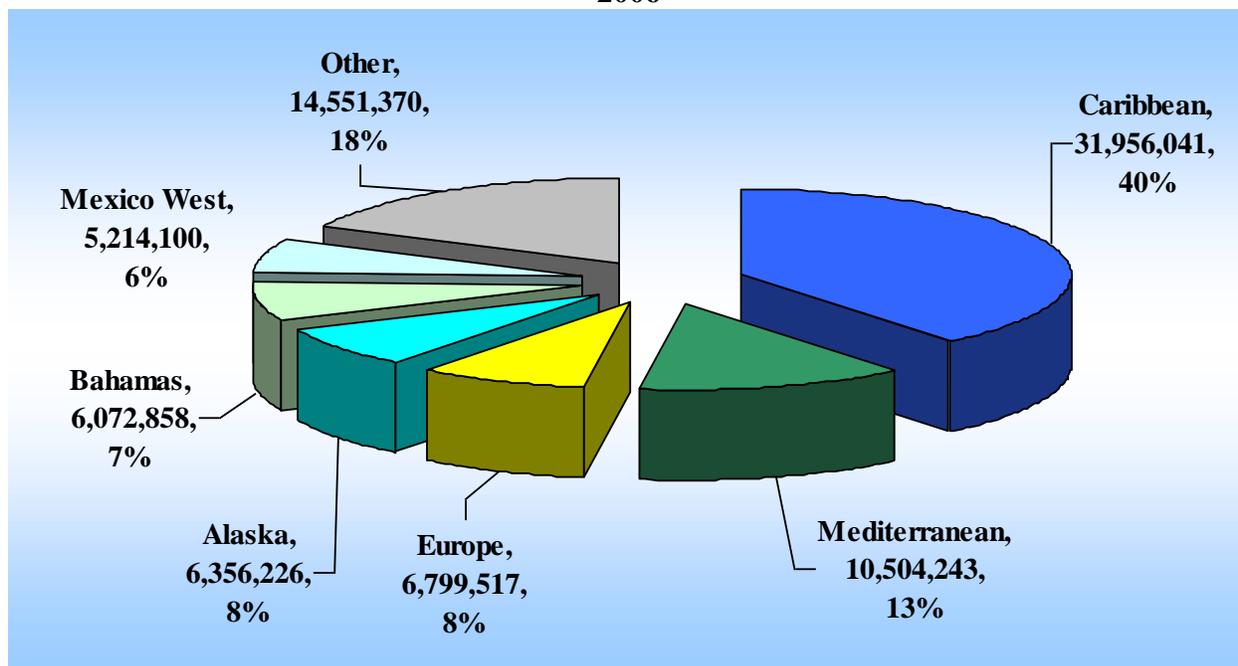
Finally, the Luxury/Niche segment which is currently dominated by ships under 600’ will experience a three-fold increase in ships between 600’ and 1,000’ in LOA. These ships will likely include new builds by Cunard, Radisson and Crystal.

The increase in the “Tampa-size” fleet will be concentrated among Premium and Luxury Cruise Lines while the Contemporary Lines focus on building mega cruise ships in excess of 1,100’ in LOA.

### 3. Destination Deployment of the North American Cruise Industry

The distribution of the North American cruise industry’s bed day capacity around the globe during 2006 is shown in Exhibit IV-78. The Caribbean remains the principal market for the North American cruise industry. The entire Caribbean and the Bahamas collectively account for 47 percent of the industry’s global bed day capacity and two-thirds of the capacity deployed in the eight North American destination markets. The Caribbean also has the advantage of being a year-round market.

**Exhibit IV-78  
Destination Deployment Bed Days  
2006**



*Source: CLIA*

The major features of this global deployment for Tampa are:

- The Western Caribbean has experienced the second highest growth of any destination market over the past decade. With an average annual growth of 16.8 percent, the Western Caribbean has seen deployed bed days increase from 3.7 million in 1995 to 17.6 million in 2005 (latest year for which consistent data is available). By 2005 the Western Caribbean, with a 23 percent market share, equaled the capacity deployed throughout the rest of the Caribbean.
- The Eastern and Southern Caribbean combined lost market share between 1995 and 2001 as the industry focused on the Western Caribbean. However, since 2001 the deployment growth in the Eastern and Southern Caribbean has exceeded that in the Western Caribbean. By 2005, this market accounted for 18 percent of the industry's global deployment with 13.7 million bed days.

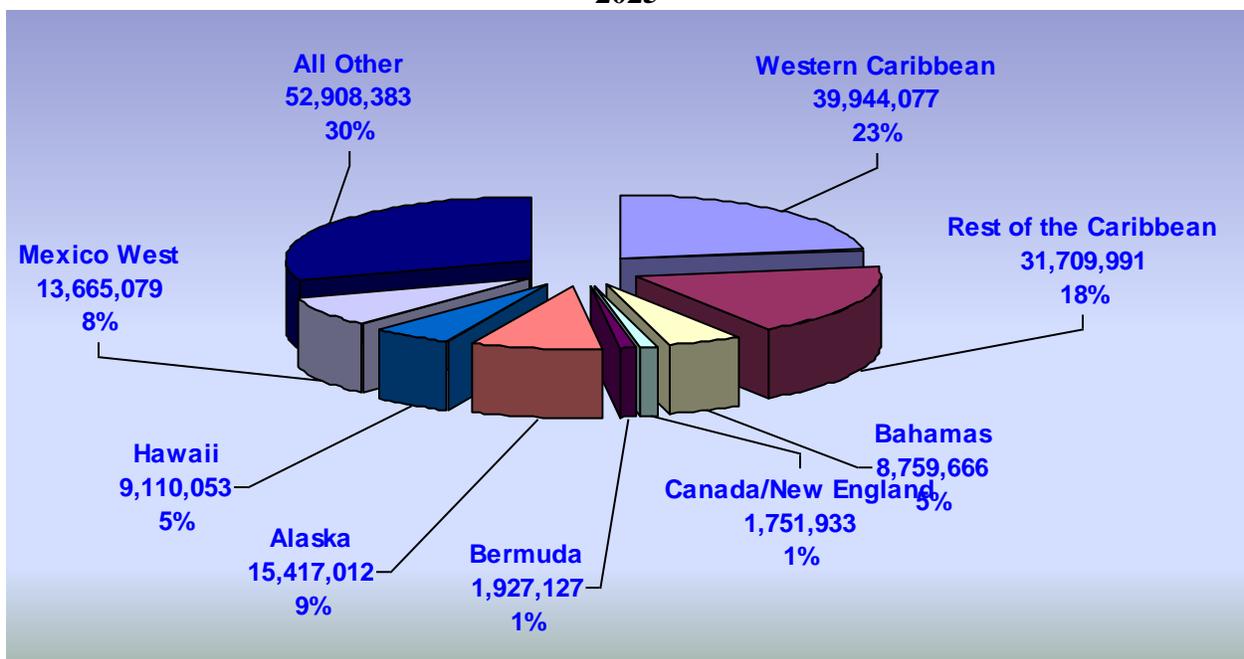
Looking to the future, all regions will experience increases in deployed capacity albeit at slower rates of increase than historically. The rate of increase in deployed capacity will likely vary by region depending on a number of market and industry factors. Over the long term, capacity will be deployed where passengers desire to cruise. Passenger demand, in turn, will be highly influenced by investment in port-of-call and tourist destinations that support passengers' desire to consume and experience local food, crafts, tours and culture in safe and clean environments. Finally, access to growing source markets, such as the population centers of the west and southwestern U.S., will also influence where and how much the cruise lines and tourist destinations will invest in homeport, port-of-call and supporting facilities and infrastructure and attractions. It is the combination of these and other factors that result in the strongest growth

projected to occur throughout the Caribbean, Hawaii, Alaska and Mexico West destination regions.

BREA’s projections related to deployed bed-day capacity are:

- The Western Caribbean is projected to remain the largest destination market within North America and the Caribbean. Deployed capacity in this region is projected to increase at an average annual rate of 5.3 percent through 2015 and then 3.1 percent thereafter. By 2025, the Western Caribbean is expected to have 39.9 million bed days deployed in the region (Exhibit IV-79). This region is projected to absorb almost one-fifth of the industry’s new capacity.

**Exhibit IV-79  
Projected Destination Deployment – Bed Days  
2025**



*Source: BREA*

- Capacity in the Eastern and Southern Caribbean is expected to increase at an average annual rate of 5.0 percent through 2015 and then slow to 3.5 percent through 2025. This region’s market share will remain fairly stable, increasing from 18 percent in 2005 to 18.3 percent in 2015 and then falling to 18.1 percent by 2025. Nonetheless, it will remain the second largest destination region.
- Finally, capacity growth in all of the North American and Caribbean markets, except Hawaii, is projected to be slower than overall growth in industry capacity beginning about 2015. Consequently, the share of global capacity in these markets will begin to fall. The projected decline will occur as the cruise industry deploys additional capacity in Europe and the Mediterranean and begins to build a greater presence in South America and Asia.

#### 4. The Western Caribbean and the Gulf Coast Ports

The Western Caribbean market approximated 3 million passengers on nearly 1,300 cruises annually between 2003 and 2006 (Exhibit IV-80). The number of cruises consistently declined during this period while the number of passengers increased slightly each year.

**Exhibit IV-80**  
**Western Caribbean Cruises and Passengers by Port of Embarkation**  
**2003-2006**

Port	2003				2004			
	Ship Calls	Passengers	Share of Gulf	Share of Total	Ship Calls	Passengers	Share of Gulf	Share of Total
Tampa	202	403,379	35%	14%	180	376,047	29%	12%
Galveston	201	374,331	33%	13%	204	425,696	33%	14%
New Orleans	138	291,452	26%	10%	158	366,769	28%	12%
Houston	8	12,944	1%	0%	55	90,515	7%	3%
Gulfport	17	57,930	5%	2%	1	3,314	0%	0%
Mobile			0%	0%	18	28,821	2%	1%
<b>Total Gulf</b>	<b>566</b>	<b>1,140,036</b>	<b>100%</b>	<b>39%</b>	<b>616</b>	<b>1,291,162</b>	<b>100%</b>	<b>42%</b>
Miami	386	982,444		34%	318	836,471		27%
Fort Lauderdale	292	583,780		20%	292	588,112		19%
Port Canaveral	69	169,576		6%	87	249,892		8%
Other East Coast Ports	27	46,399		2%	52	106,401		3%
<b>Total</b>	<b>1,340</b>	<b>2,922,235</b>		<b>100%</b>	<b>1,365</b>	<b>3,072,038</b>		<b>100%</b>
Port	2005				2006			
	Ship Calls	Passengers	Share of Gulf	Share of Total	Ship Calls	Passengers	Share of Gulf	Share of Total
Tampa	179	391,965	28%	13%	207	442,332	34%	14%
Galveston	220	527,889	37%	17%	245	610,954	48%	19%
New Orleans	119	305,780	22%	10%	34	75,401	6%	2%
Houston	55	97,005	7%	3%	30	58,237	5%	2%
Gulfport			0%	0%			0%	0%
Mobile	52	87,628	6%	3%	60	98,664	8%	3%
<b>Total Gulf</b>	<b>625</b>	<b>1,410,267</b>	<b>100%</b>	<b>45%</b>	<b>576</b>	<b>1,285,588</b>	<b>100%</b>	<b>41%</b>
Miami	316	850,581		27%	337	924,077		29%
Fort Lauderdale	260	521,119		17%	242	573,822		18%
Port Canaveral	73	226,810		7%	87	266,658		8%
Other East Coast Ports	56	126,586		4%	50	100,616		3%
<b>Total</b>	<b>1,330</b>	<b>3,135,363</b>		<b>100%</b>	<b>1,292</b>	<b>3,150,761</b>		<b>100%</b>

*Source: BRE A and Norbridge, Inc. analysis of MARAD data*

The Gulf Coast port industry increased its share of the Western Caribbean cruise market each year, growing from 39 percent in 2003 to 45 percent in 2005. The Gulf Coast's growth came at the expense of the major east coast Florida ports. Among the Gulf Coast ports, Galveston, Houston and Mobile gained share while Tampa and New Orleans lost share. New Orleans loss was due to the effects of Hurricane Katrina while Tampa's loss was due to a decline in overall cruise calls and embarkations.

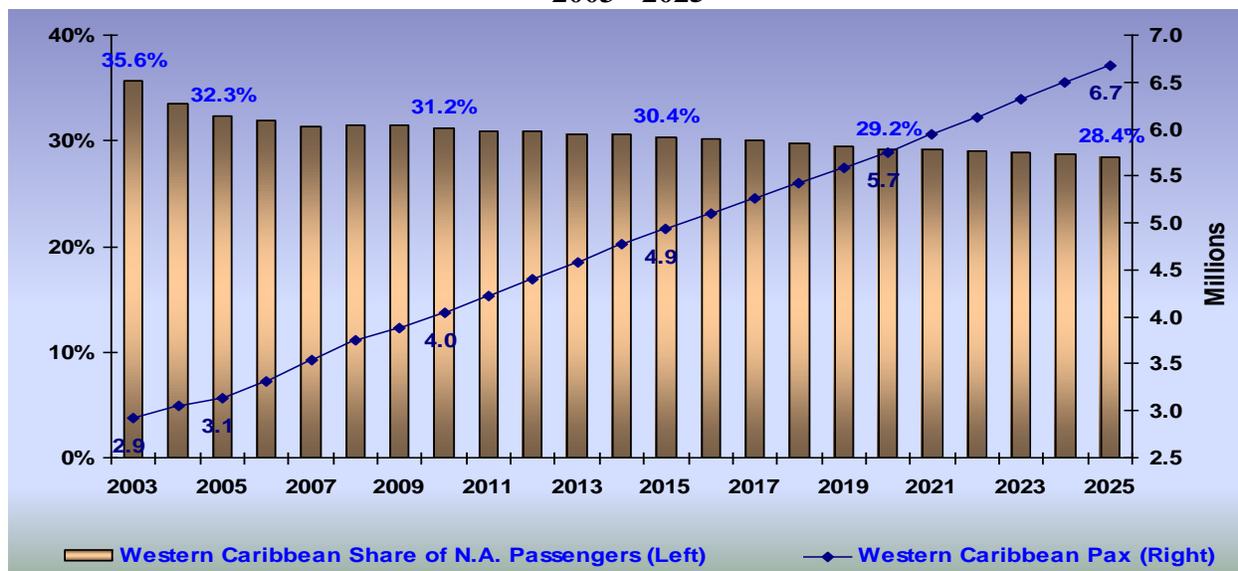
The ports of Tampa, Galveston and New Orleans accounted for 88 percent of the Gulf Coast embarkations during 2006. Tampa, which had been the largest source of passenger embarkations along the Gulf Coast, was overtaken by Galveston in 2004. Cruise ship calls in Tampa have declined since 2003. Based upon reported cruise ship calls for 2006, the average cruise in Tampa carried 2,136 passengers, while the average cruise in New Orleans and Galveston carried 2,218 and 2,494 passengers, respectively.

The Western Caribbean accounted for almost one-third of all cruise passengers in 2005-2006 (Exhibit IV-81). The Gulf Coast ports accounted for approximately 11% of all cruise passengers and 41 percent of the cruise passengers that visited the Western Caribbean destinations during 2006. Tampa's passenger embarkations accounted for 14 percent of the passengers that cruised to the Western Caribbean during 2006 while New Orleans accounted for 2 percent of Western Caribbean passengers and Galveston accounted for 19 percent. Combined, Houston and Mobile accounted for 5 percent of Western Caribbean passengers. Ports along the east coast of Florida (Canaveral, Everglades and Miami) accounted for 55 percent with the remaining 3 percent generated by the other East Coast ports (Baltimore, Cape Liberty, New York, etc.).

Overall, 1.3 million passengers embarked on 576 cruises from five Gulf Coast ports during 2006. Virtually, all of these cruises were destined for Western Caribbean destinations with the exception of a few repositioning cruises through the Panama Canal and cruises to the Eastern and Southern Caribbean. Tampa was somewhat more diversified than its Gulf Coast competitors with 11 of its cruises and 3 percent of its passengers destined for the Eastern and Southern Caribbean.

Despite steady growth in passengers, the Western Caribbean has been losing share of the total global passenger market over the past several years (Exhibit IV-81). BREA projects the Western Caribbean cruise market will continue to grow, reaching an estimated 4.0 million passengers in 2010, 5.0 million passengers in 2016 and 6.7 million passengers in 2025. This represents an average annual increase of 3.8 percent over the 2005-2025 timeframe. Much of this growth will shift from the traditional island destinations, such as Jamaica, the Cayman Islands and Cozumel, to recently developed and expanding Mexican destinations, such as Playa del Carmen, Progreso and Calica, and even more exotic and southern destinations, such as Belize, Roatan and Limon.

**Exhibit IV-81  
Projected Western Caribbean Cruise Passengers  
2003 - 2025**

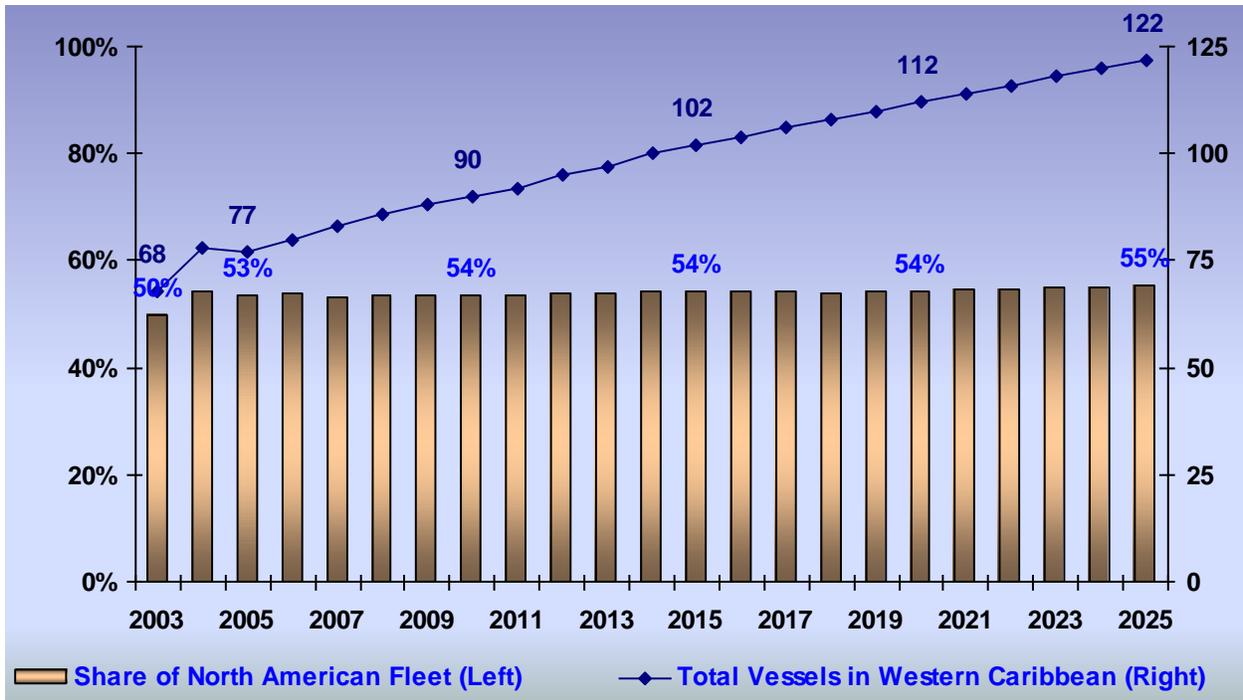


*Source: MARAD and BREA*

However, despite the projected growth, the Western Caribbean’s share of global passengers will steadily fall, declining to 28.4 percent by 2025. The decline in share will result from the industry’s shift of vessel deployments to Europe, the west coast of the U.S. and Mexico, to the Southern and Eastern Caribbean and ultimately to South America and Asia. It should be noted that Europe and the west coast of the U.S. are seasonal markets and, as a consequence, all of the Caribbean destinations and the U.S. homeports serving them will have the opportunity to increase the number of cruise calls during the peak Caribbean cruise season, i.e. November through April.

As the cruise industry expands globally over the next two decades, many ships will be deployed in multiple regions over the course of a year. Thus, the Caribbean is likely to see an increase in the percentage of ships serving the Caribbean in season. Assuming that 25 percent of the new vessel deliveries will be deployed to Caribbean in general on a full-year basis and the remaining 75 percent on a seasonal (half-year basis), BREA projects Western Caribbean vessel deployments will increase from an estimated 77 vessels in 2005 to 122 by 2025. Thus, approximately 2 additional ships on average are expected to be introduced into the Western Caribbean market every year. During the first five years the increase will be closer to three ships, but this will fall to two ships per year in the later years as passenger growth slows and the average size of the fleet increases. The Western Caribbean fleet is projected to increase its share of the global fleet from the current 53 percent to 55 percent by 2020 (Exhibit IV-82). This projected share increase is the result of the anticipated increase in ships serving multiple markets during the course of any particular year.

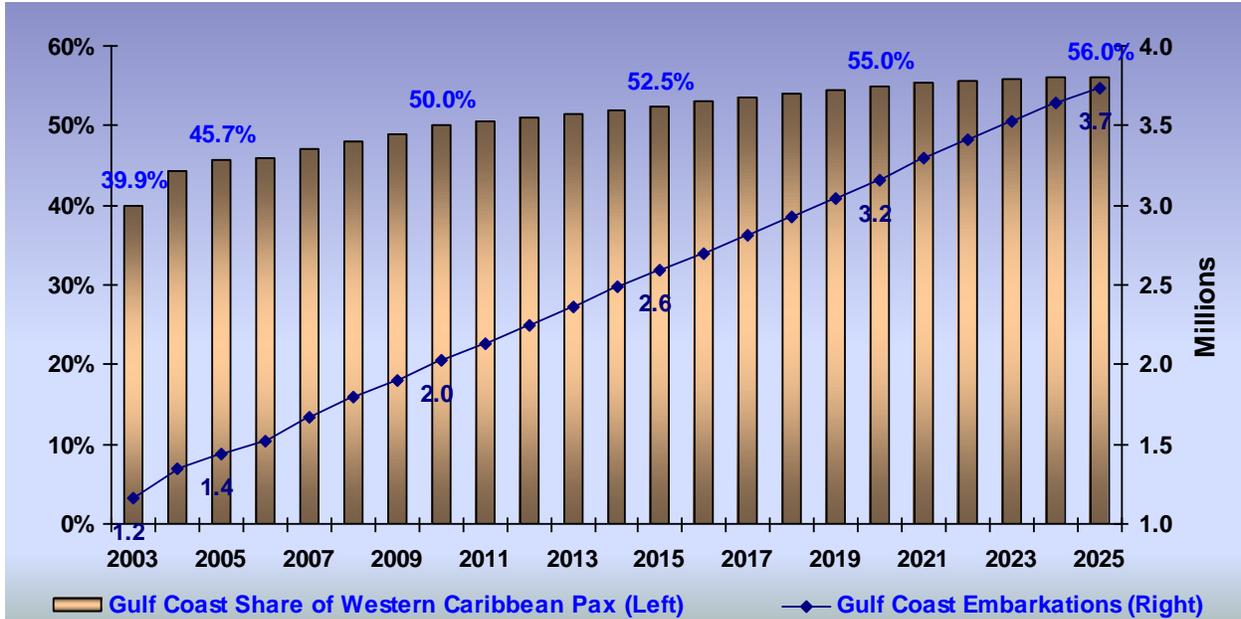
**Exhibit IV-82  
Projected Number and Size of the Western Caribbean Fleet  
2003 - 2025**



*Source: MARAD and BREA*

Based on BREA’s analysis of the historical and emerging trends in the Gulf Coast’s market share and discussions with industry executives on their short-term and long-term deployment plans, BREA projects Gulf Coast ports will continue to increase their market share of the Western Caribbean market, reaching an estimated 50 percent in 2010, 55 percent in 2020 and ultimately 56 percent in 2025 (Exhibit IV-83). Gulf Coast passenger embarkations are projected to increase to an estimated 2.0 million by 2010, 2.6 million by 2015 and 3.7 million by 2025. These projections reflect an average annual compound rate of increase of 4.9 percent over the 20-year period. This is just slightly higher than the projected global growth in cruise passengers of 4.5 percent per year, but well below the double-digit growth the region has experienced since 2000.

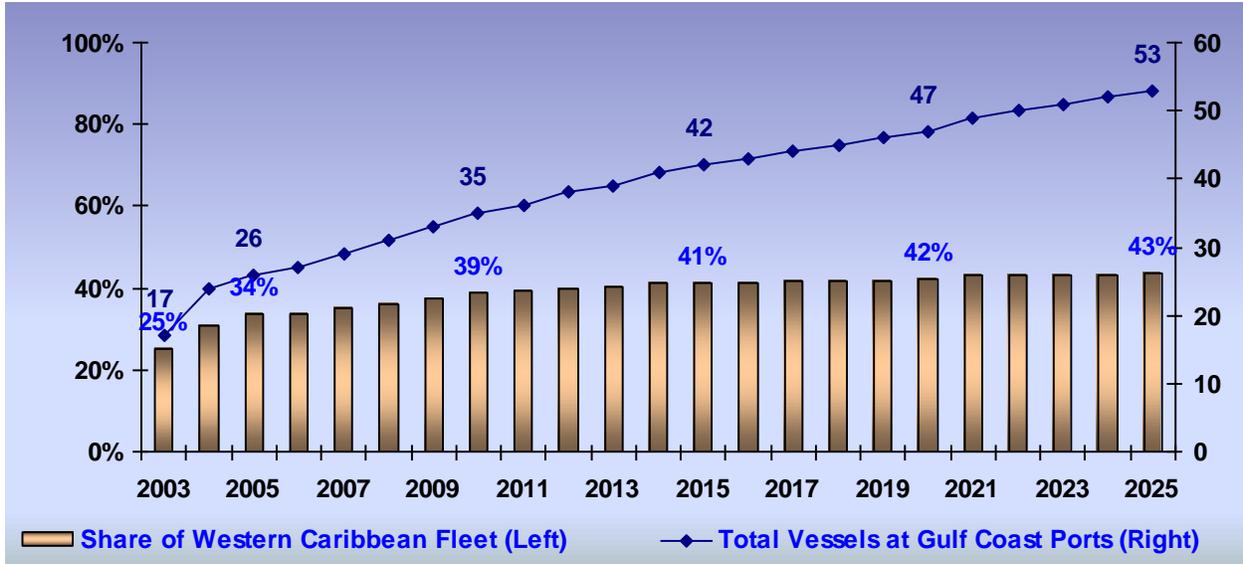
**Exhibit IV-83  
Gulf Coast Passenger Embarkations for the Western Caribbean  
2003 – 2025**



*Source: MARAD and BREA*

Currently, 26 cruise ships serve Gulf Coast ports. Given the projected increase in Gulf Coast market share, approximately 60 percent of the new vessels serving the Western Caribbean are expected to be employed at the Gulf Coast ports, mostly on a seasonal basis. The number of vessels operating at these ports is expected to increase by about three ships every two years to 53 ships by 2025. As a result, the Gulf Coast ports will see their share of the Western Caribbean fleet increase from the current 34 percent to 43 percent by 2025 (Exhibit IV-84). BREA’s cruise fleet projections are based on their ongoing analyses of the world cruise industry, interviews with cruise line executives and their internal analyses.

**Exhibit IV-84  
Projected Gulf Coast Cruise Vessel Fleet  
2003 - 2025**

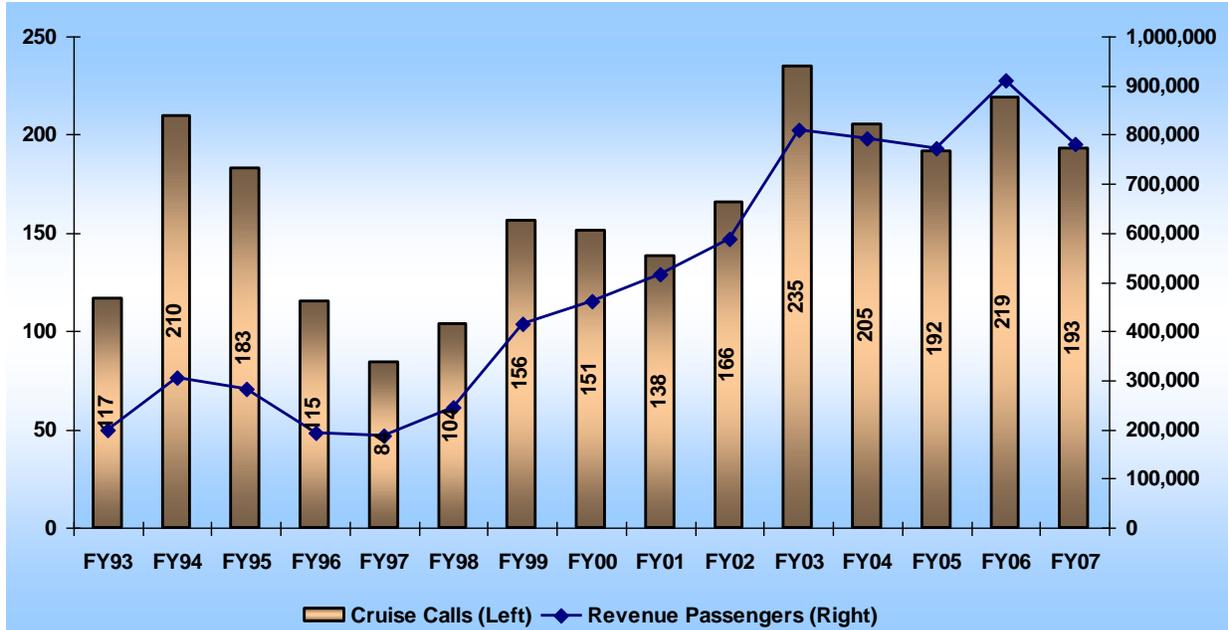


*Source: MARAD and BREA*

**5. The Port of Tampa Projections**

Tampa’s cruise traffic has followed a cyclical pattern (Exhibit IV-85). The cycle during the 1990s followed the industry pattern of passenger growth. From FY97 through FY03 the growth in passenger volumes in Tampa exceeded overall industry growth and increased at an average annual rate of 27 percent. At the same time sailings increased by 19% per year. Thus, by 2003, Tampa had become the fifth largest cruise port behind New York and the three major Florida east coast cruise ports.

**Exhibit IV-85**  
**Tampa Cruise Vessel Calls and Revenue Passengers**  
**FY93 to Estimated FY07**



*Source: Tampa Port Authority*

The downturn in passengers and sailings in FY04 and FY05 resulted from the redeployment of the Scotia Prince in FY04 and the redeployment of the Noordam in FY05. Cruise passenger traffic rebounded in FY06 in part due to the temporary redeployment of the Grandeur of the Seas from New Orleans as a result of Hurricane Katrina. FY07 vessel and passenger activity is in line with FY05 and reflects the redeployment of the Grandeur of the Seas back to New Orleans. The significant year to year changes in Tampa’s cruise business reflects the volatility that is inherent in the cruise industry.

The redeployment (seasonal or annual) of individual vessels can have a significant effect on a port’s cruise vessel and passenger traffic. For example, the redeployment of a 2,500 passenger vessel on a weekly itinerary can result in an increase or decrease of 52 vessel calls and 260,000 revenue passengers (130,000 individual passengers) in a year. Depending on a port’s cruise business, these changes can represent 25 percent to more than 50 percent of a port’s annual cruise activity. These types of year to year fluctuations in individual port’s cruise activity are likely to become more frequent in the future as more vessels are seasonally deployed. Consequently, Tampa should expect that its cruise business will likely experience periodic increases and decreases as the major cruise lines continuously refine and enhance their vessel deployments in response to seasonal market opportunities and yields.

Tampa accounted for 34 percent of Gulf Coast port passenger embarkations in 2006 which was nearly comparable to its 2003 share of 35 percent (see Exhibit IV-80 above). BREa collected data on port charges and fees for the Gulf Coast ports and conducted interviews with cruise industry executives as part of assessing the future growth prospects for the Port. BREa’s

assessment of the Port's competitive strengths and weaknesses, based on this research, are summarized as follows:

- Strengths:
  - Access to Western Caribbean destinations: sailing times to most destinations are comparable or shorter than from competitor ports.
  - Tampa is an established vacation market with a variety of recognized attractions and therefore is considered a more attractive destination for cruise passengers than Galveston or Mobile.
  - Tampa is a highly accessible market. Airlift is good with daily flights between most major population centers. Several of the largest discount air carriers (Southwest, Jet Blue) provide extensive service to Tampa which further enhances its competitiveness as a cruise gateway. In addition, the cruise terminals are easily accessible from the airport. Finally, the highway system also provides good access to the cruise terminal for the drive-to market.
  - Tampa has a large and growing drive to market. The Central-West Florida market is one of Florida's largest population centers and is one of its fastest growing. A majority of the population in this market can reach Tampa's cruise facilities in less than two hours.
  - Tampa cruise passengers' per capita on-board spending rate is reportedly among the highest in the industry makes the Tampa market very attractive to the cruise lines.
  - Port facilities are considered by the cruise lines to be superior to those of the other Gulf Coast ports.
  - Security arrangements are also considered to be superior to the other ports.
- Weaknesses:
  - The Sunshine Skyway Bridge and channel width are Tampa's greatest weakness, limiting the size of the ships that can call on Tampa. Only New Orleans is faced with similar channel constraints.
    - The TPA is currently engaged in planning a channel widening project which will create meeting lanes in lower Tampa Bay which if implemented will significantly reduce the potential for navigational delays in Tampa Bay.
- Opportunities:
  - Increased cruises to the Eastern Caribbean. Recent deployments have favored the Eastern over the Western Caribbean. Tampa has the highest share of Eastern Caribbean cruises among the Gulf Coast ports. However, it will continually compete with Florida's east coast ports, which are more favorably positioned geographically and have a major position in this market.
  - Attracting new cruise ships and itineraries:
    - Celebrity will be launching two new cruise ships and they have a history of serving Tampa.
    - MSC is dramatically growing its fleet and is competing directly with Costa and Carnival. So far, they have focused primarily on the Eastern and Southern Caribbean but will likely enter the Western Caribbean market in the future.

- Carnival and RCCL will continue to lead the industry in the number of new ships. The size of many of their new ships exceeds a “Tampamax” class vessel and therefore will be unable to call Tampa. However, both cruise lines are committed to the Western Caribbean and will add additional berths. Tampa can potentially benefit from the redeployment of the smaller cruise ships that are displaced as the new and larger cruise ships are introduced.
- Working with the cruise lines and travel agent community to increase the percentage of 5,5,4 cruises. These cruises are increasingly popular alternatives to the traditional seven day cruise in general and for the drive to and vacation markets in particular. The potential disadvantage of these cruises are they typically generate less local spending per passenger since many passengers do not arrive the day before vessel departure or stay beyond the day of vessel arrival.
- The Tampa-St. Petersburg-Clearwater metropolitan area had a 2004 population of 2.6 million residents providing the cruise port with a local population base that support further growth in the drive-to market.
- Threats:
  - Slower overall growth in the industry will only add to competitive pressures.
  - Europe, the Mediterranean and Asia will continue to absorb more capacity from the North American market.
  - Increased competition from Northeast ports offering seasonal and year-round cruises to the Caribbean.

BREA’s forecast for Tampa’s future cruise activity assumes that current cruise terminals and facilities remain unchanged with only standard maintenance and minor modifications and improvements. In addition, the cruise ship channel is also assumed to remain essentially unchanged so that the channel’s maximum turning radius will continue to limit cruise ships to less than 1,000’ of LOA. Thus, the effective constraints on Tampa’s cruise growth are: 1) the number of ships that can be berthed at the three terminals; 2) the passenger capacity (determined by the height of the Sunshine Skyway Bridge and the vessel’s LOA) of the ships that call Tampa; and, 3) the capacity utilization levels achieved by the cruise lines. While these constraints will not prevent Tampa’s cruise business from growing, they will potentially limit its rate of growth relative to both the market as a whole and Gulf Coast port competitors that do not have similar vessel restrictions.

During 2007, seven ships are sailing from the Port of Tampa to the Western Caribbean. Combined, these ships will generate approximately 193 cruise sailings. Two ships, the *Carnival Inspiration* and *Carnival Legend* (which recently replaced the *Carnival Miracle*) will sail from Tampa on a full-year basis. The *Carnival Legend* will sail on 7-day cruises while the *Carnival Inspiration* has a 5,5,4 schedule. The remaining ships will operate primarily on seasonal (half-year) schedules, offering a combination of 4-, 5-, 7-, 10- and 11-day cruises. Despite the number and variety of cruises, vessel embarkation dates are concentrated in the Thursday through Monday period with only a few actually embarking on Fridays.

During the 2005-2006 peak season (November through April), the Port of Tampa had six cruise ships sailing to the Western Caribbean offering between 5 and 7 cruises per week from its three

cruise terminals. On only about 14 Saturdays were cruise ships berthed at all three cruise terminals. Thus, there should be sufficient available berthing capacity at the Port, even during the peak weekend period, to support additional cruise ships.

The anticipated growth at the Port will not come directly from the introduction of new cruise ships, rather, it will come indirectly as the new cruise ships displace smaller ships in other markets which can then be deployed in Tampa. However, as noted above the Premium Lines, most notably, Celebrity and MSC will be introducing new cruise ships that can sail from the Port of Tampa. Nevertheless, Tampa will be face significant competitive pressures as ports along the Atlantic and Gulf coasts vie for the slowing increase in the supply of ships, particularly during peak seasons.

Tampa's growth will be dependent upon: 1) continued growth in the deployment of cruise ships in the Western Caribbean and to a lesser extent in the Eastern Caribbean, 2) the redeployment of ships under 1,000' LOA and with a capacity of between 2,000 and 2,500 passengers to Tampa, 3) its ability to continue to promote its destination attributes for cruise passengers and 4) continued penetration into the local drive-to market. BREA projects Tampa's revenue passengers to increase from 910,633 in 2006 to 1,139,369 in 2025 but its share of Gulf Coast passengers falls from the current 30 percent to 15 percent by 2025 (Exhibits VI-86 and VI-87). The growth in passenger activity steadily slows throughout the period as global passenger growth slows, the share of passengers cruising in the Western Caribbean declines and as the Port continues to lose market share to the other Gulf Coast ports as the newer, larger vessels that cannot call Tampa call at other Gulf Coast ports.

It is important to note that the BREA projections necessarily assume smooth growth trends based on its industry analyses and interviews with cruise line executives. However, as noted previously, actual growth will likely fluctuate on a year to year basis depending on each cruise line's vessel deployment strategies. Consequently, the Port's future cruise vessel calls and passenger throughputs will likely fluctuate, potentially significantly, on an annual basis although the long-term growth trends should reflect the BREA projections.

**Exhibit IV-86**  
**BREA Tampa Cruise Traffic Forecast**  
**2005-2025**

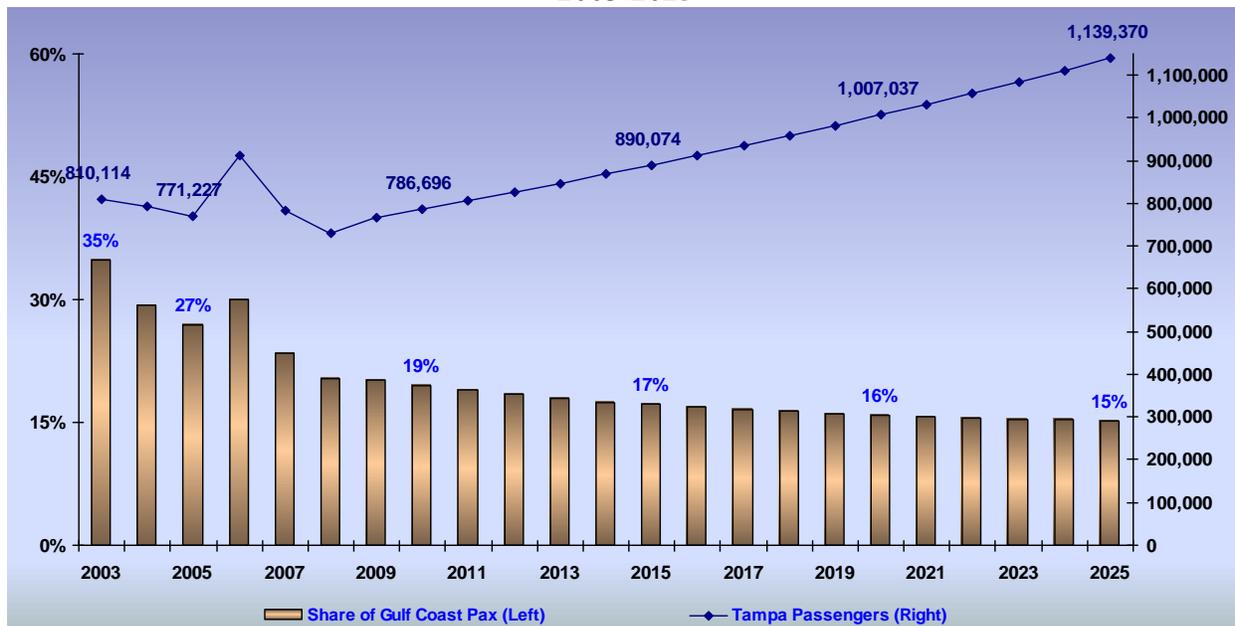
<b>Year</b>	<b>Passengers</b>	<b>Revenue Passengers</b>	<b>Share of Gulf Ports</b>	<b>Ship Calls</b>	<b>Ships</b>
<b>2006</b>	455,317	910,633	30%	219	7
<b>2010</b>	393,348	786,695	19%	243	9
<b>2015</b>	445,037	890,074	17%	278	11
<b>2020</b>	503,519	1,007,037	16%	301	12
<b>2025</b>	569,685	1,139,369	15%	324	12
<b>Average Annual Growth Rates</b>					
<b>2006-2010</b>	-3.6%	-3.6%		2.6%	6.5%
<b>2010-2015</b>	2.5%	2.5%		2.7%	4.1%
<b>2015-2020</b>	2.5%	2.5%		1.6%	1.8%
<b>2020-2025</b>	2.5%	2.5%		1.5%	0.0%

Note: The number of revenue passengers is twice the number of passengers as revenue is generated each time a passenger embarks or disembarks

*Source: MARAD and BREA*

The projected decline in the Port's share is in part driven by the inability of the Port to handle the larger cruise ships which will be able to call at the other Gulf Coast ports. Thus, the average passengers per sailing will only increase to about 2,250 by 2025 from the current average of 2,026 passengers (2007). By comparison, the current average sailing in New Orleans has 2,217 passengers (2006) and 2,493 passengers in Galveston (2006). Thus, the other Gulf Coast ports will continue to add significantly larger cruise ships and thus gain share on Tampa.

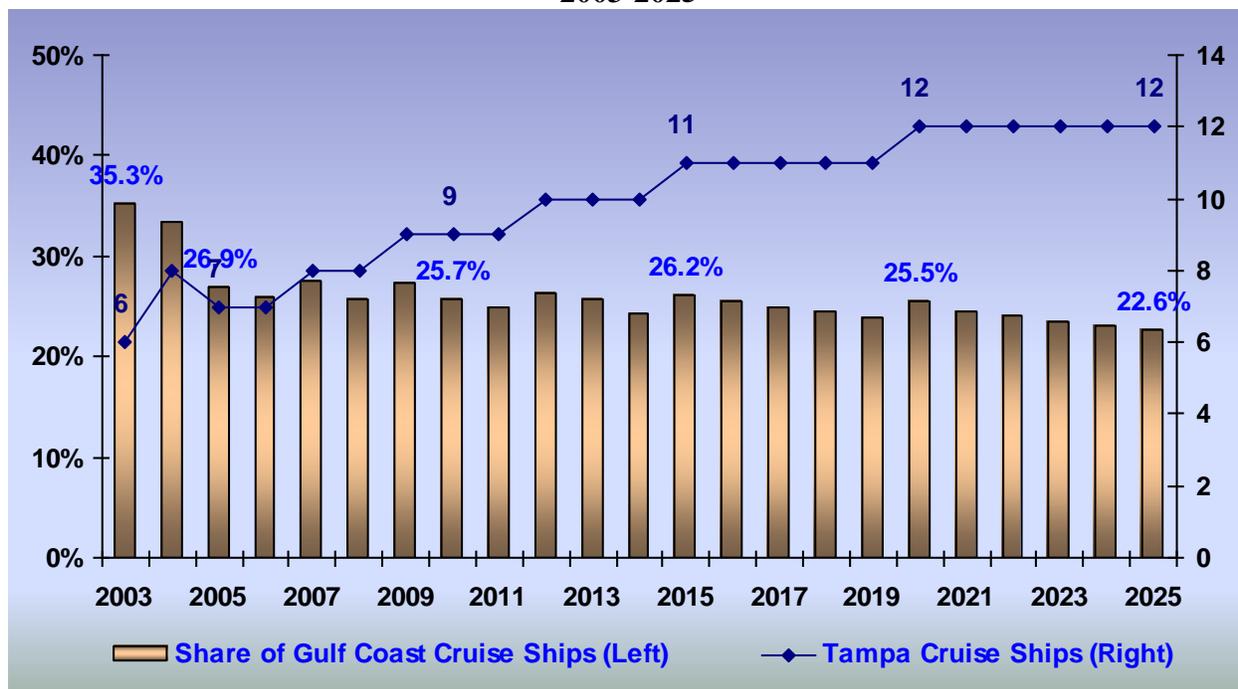
**Exhibit IV-87  
Tampa Revenue Passenger Projections – Base Case  
2003-2025**



*Source: MARAD and BREA with Norbridge, Inc. Analysis*

Assuming that most of the passenger growth will occur during the six-month high Caribbean season, the Port of Tampa will see a slow but steady increase in home porting cruise ships. The port is projected to see the number of home porting cruise ships increase to 12 by 2025 (Exhibit IV-88). This translates into one additional home porting cruise ship every three years. Even if three of these ships sailed on a 5, 5, 4 schedule, the port's current three terminals will be able to manage this number of cruise ships during the peak Thursday-Monday weekly embarkation period.

**Exhibit IV-88  
Tampa Cruise Ship Projections – Base Case  
2003-2025**



*Source: MARAD and BREA*

## G. Shipbuilding and Ship Repair

This section presents an assessment of the Port’s Shipbuilding and Repair Industry (SBRI). The assessment is based on site visits, interviews with each company involved in the SBRI, information supplied by the SBRI companies and the consulting team’s independent analyses. The assessment sequentially addresses an overview of the SBRI and its capabilities, competitive assessment, market assessment and presents a discussion of strategic considerations.

### 1. Overview of the Port’s SBRI

Three firms comprise the Port’s SBRI: Gulf Marine Repair Corporation (GM), International Ship Repair and Marine Services (ISR) and Tampa Bay Shipbuilding and Repair Company (TBS). Collectively, these firms provide the major commercial shipbuilding and repair services offered in the Port. GM’s facility is located along Berths 250-253 at Port Ybor and on property it owns directly south of Port Ybor (former TECO generating plant site). ISR’s facilities are located at two sites: the northern end of Ybor Channel which encompasses property leased from the TPA (Berths 263-265) and property owned by ISR at the northern and northeastern ends of Ybor Channel; and, at the northeastern corner of Hooker’s Point at Berth 200. TBS’s facilities are located on land leased from the TPA on the western side of Hooker’s Point.

The SBRI provides both ship repair and shipbuilding services to commercial and government vessel operators. The SBRI’s collective asset base occupies approximately 120 acres and its major components are summarized in Exhibit IV-89.

**Exhibit IV-89**  
**SBRI's Graving Dock, Dry Dock and Berthing Facilities**  
**2007**

Dock-Berth Type	Number of Docks - Berths	Reported Length (feet)	Dock-Berth Type
Graving Dry Docks	4	521'-907'	17'.1" - 23'.5"
Dry Docks	7	180'-650'	18'.6" max.
Outfitting Piers and Wet Berths	6	630'-950'*	21'.4" - 30'

\*Note: Net berthing space available after excluding estimated length of graving & dry docks

*Source: Norbridge analysis of company supplied information*

The SBRI has the most extensive (number and capability) graving and dry dock facilities in the east Gulf (Mississippi River to Key West) and includes the capability to dry dock Aframax vessels (length overall up to 907'). This capability enables the SBRI to serve a wide range of vessel types and dry dock (using dry docks or graving docks) up to 11 vessels at a time.

Collectively, the SBRI provides a range of ship repair and new construction services to the commercial market and U.S. government. The major categories of services include repair, conversion and modifications, new construction and utilities and related services (Exhibit IV-90). It is important to note that the range of service offerings varies by company based on its asset base, expertise and experience. In addition to the services listed in Exhibit IV-90, individual members of the SBRI have invested in off-site capabilities including machine shop, piping, and welding to provide ancillary support to core capabilities at the on port sites.

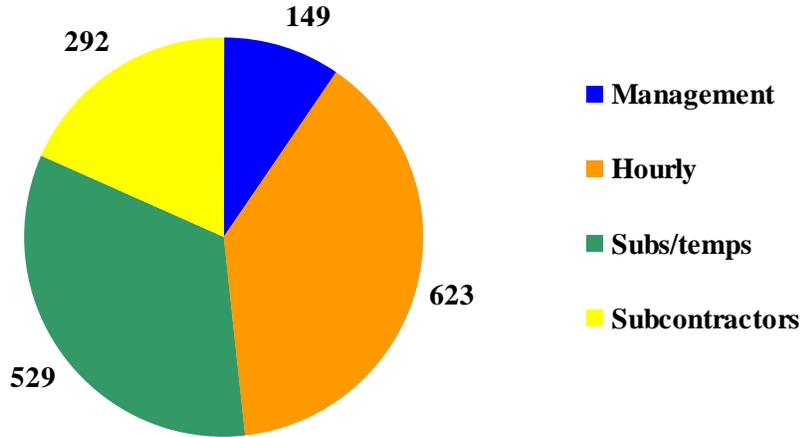
**Exhibit IV-90**  
**Summary Profile of SBRI Service Offerings**

Repair	Conversion and Modification	New Construction	Utilities and Services
<ul style="list-style-type: none"> <li>▪ Design</li> <li>▪ Fabrication: steel, pipe</li> <li>▪ Piping systems and valves</li> <li>▪ Machinery &amp; motors</li> <li>▪ Propellers &amp; shafts</li> <li>▪ Motors</li> <li>▪ Blasting, washing &amp; coating</li> <li>▪ Surveying &amp; underwater inspections</li> <li>▪ Riding crews</li> </ul>	<ul style="list-style-type: none"> <li>▪ Design</li> <li>▪ Lengthening</li> <li>▪ Repowering</li> <li>▪ Mission change</li> </ul>	<ul style="list-style-type: none"> <li>▪ Design</li> <li>▪ Construction</li> <li>▪ Panel line</li> <li>▪ Assembly building</li> </ul>	<ul style="list-style-type: none"> <li>▪ Electrical</li> <li>▪ Water</li> <li>▪ Sanitary systems</li> <li>▪ Steam</li> <li>▪ Fire protection</li> <li>▪ Burning gases</li> <li>▪ Tank cleaning</li> </ul>

*Source: Norbridge site visit, interviews and company brochures*

The SBRI reported that it employed 1,641 full time people during 2007 (Exhibit IV-91). Local employees represented 97 percent of the total.

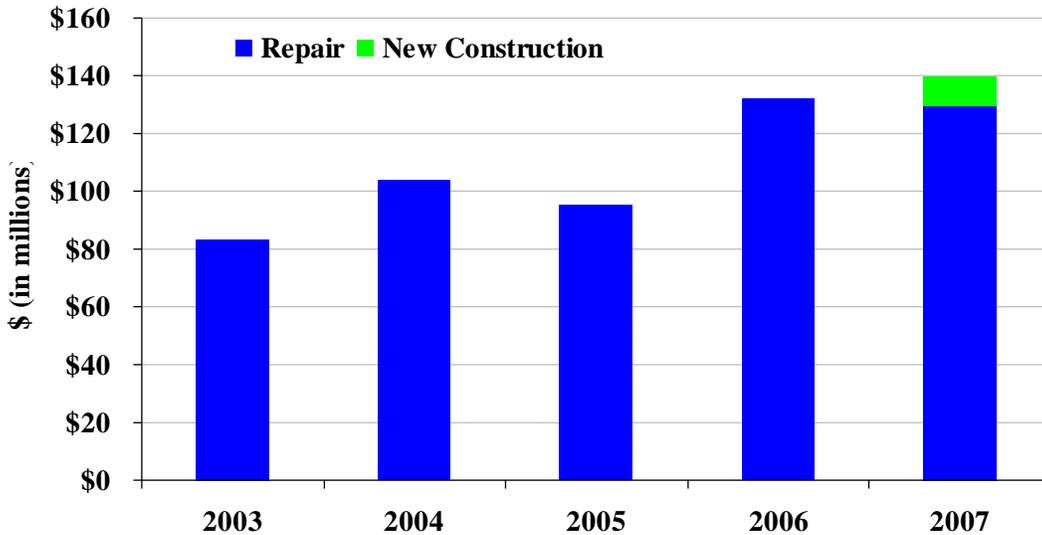
**Exhibit IV-91  
SBRI Employment: 2007**



Source: SBRI

The SBRI has experienced strong demand for its services during the past five years (Exhibit IV-92).

**Exhibit IV-92  
SBRI Revenues  
2003-2007**



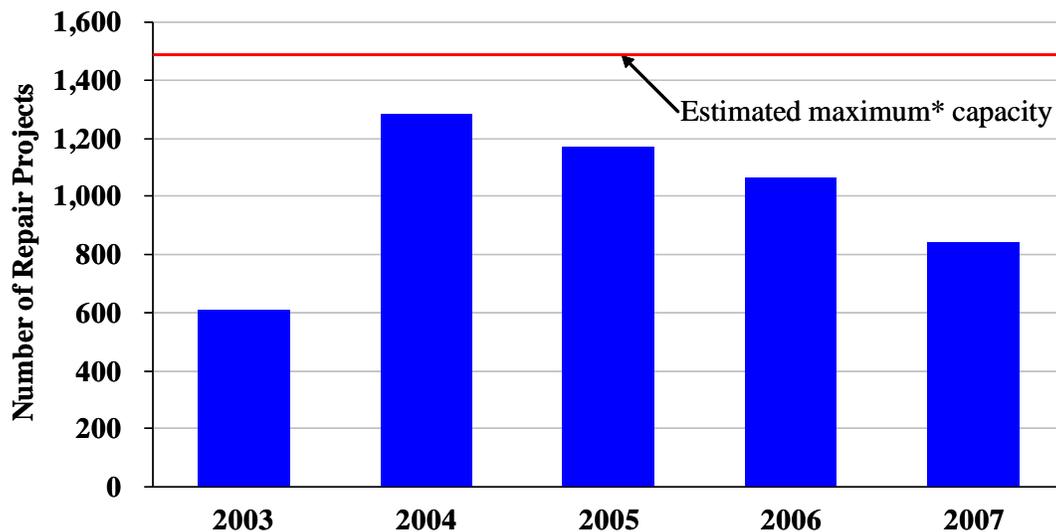
Source: SBRI

SBRI revenues increased from \$83 million in 2003 to \$129 million in 2007. Significant increases in ship repair and modification projects, in part due to the closure of other Gulf Coast shipyards due to hurricanes Katrina and Rita have driven the growth. Ship repair and conversion/modification projects have been the source of all the SBRI's revenues up until 2007. A majority (average 82 percent over the past five years) of the SBRI's revenue is earned from repair, modernization, conversion and construction of U.S. flag vessels in general and tankers,

integrated tug/barge units or ITBs, tank barges and tugs in particular. This business mix reflects several market factors including regulatory requirements, the size of the U.S. flag tanker/ITB/tank barge fleet that regularly calls the Port and the SBRI's ongoing relationships with U.S. flag operators.

While the SBRI's revenues have steadily increased, the actual number of projects completed has declined (Exhibit IV-93). The decline reflects a shift in the SBRI's business mix from smaller repair projects to larger, more extensive projects including modifications and conversions. These projects take longer to complete and generate substantially greater revenue per project than smaller repair projects as evidenced by the fact that the SBRI's revenue per project has increased significantly during the 2003-2007 timeframe.

**Exhibit IV-93**  
**SBRI Repair/Modification-Conversion/New Construction Projects**  
**2003-2007**



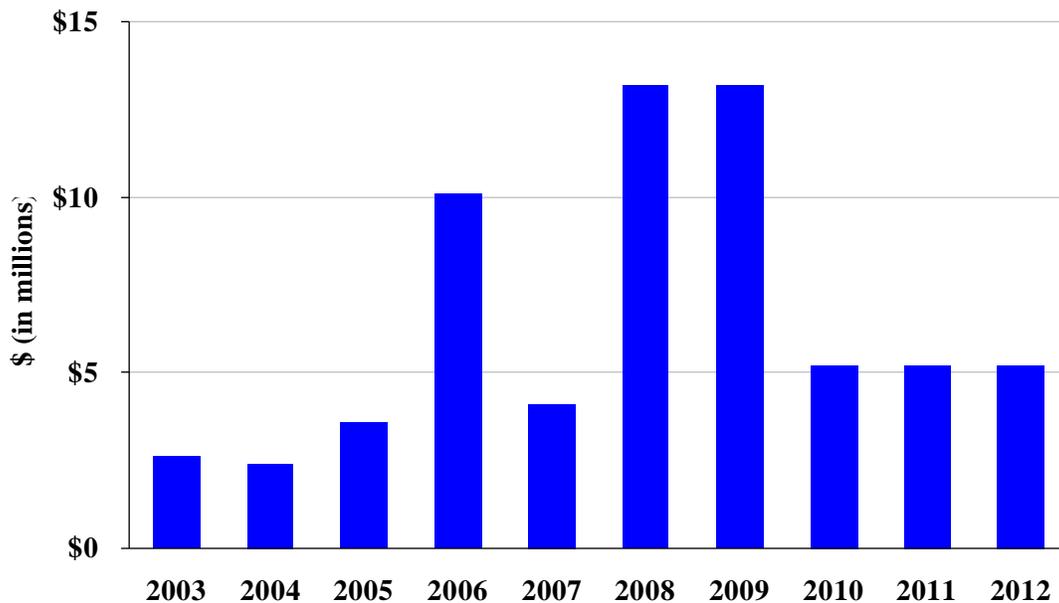
\*Note: 1,540 represents the sum of the maximum number of projects completed by each of the individual yards during the past five years

*Source: SBRI*

THE SBRI estimates its maximum project capacity to approximate 1,540 projects per year based on the maximum number of projects each of the three years has performed during the past three years. The actual capacity of each yard and the SBRI in total is a function of the type of projects and duration of each project. For example, the SBRI's capacity would be significantly less if all projects required dry docking. As an example, the SBRI has 11 graving/dry docks. If each job required a graving/dry dock and required one month to complete, then under this example the maximum annual capacity would be 132 projects (12 months x 11 graving/dry docks). The SBRI reports that its collective project backlog, particularly for projects involving dry docking services, is strong.

The SBRI has invested nearly \$23 million dollars in plant and equipment during the past five years (Exhibit IV-94). The investments have included land, capital maintenance and equipment. The SBRI projects it will invest an additional \$42 million in plant and equipment during the next five years. These investments are projected to include refurbishing and replacing dry-docks, crane upgrades and additions, roof replacement on one building, new lighting, adding on-site car parking, developing outfit area, adding a new assembly area, and adding transformers.

**Exhibit IV-94  
SBRI Historical and Projected Capital Investments  
2003-2012**



*Source: SBRI*

## 2. Competitive Assessment

The SBRI faces two sets of competitive challenges: intraport and interport. Intraport competition involves competition among the three companies that comprise the SBRI. The respective asset bases, service capabilities, experience bases, customer relationships and available capacity at any point in time have significant influence on the degree of interport competition. Competition among the three companies primarily occurs in the repair and conversion/modification segments of the market, those segments where the asset bases, skill sets, and experiences bases are most similar. However, even in these segments customer relationships, dry docking capabilities and business back logs focus the competition to certain vessel types, sizes and services. Customer relationships in particular have a significant effect on the level of interport competition. All three companies report that their repeat business is high and can range up to 85-90 percent of their total business. The companies attribute this high level of repeat business to their ability to consistently meet their customers' requirements on a timely basis and provide a reliable, quality service.

Interport competition primarily involves shipbuilding and repair facilities located along the Gulf Coast with Mobile providing the closest source of competition. In the case of Mobile, Bender, is the owner of TBS. TBS reports the Bender and TBS yards serve different markets based on the respective asset bases and skill sets and often cooperate. As an example, Bender supplies much of the steel used by TBS since it is located in close proximity to a major steel manufacturer and gains economies of scale in purchasing for the two shipyards. Given both the ownership relation between Bender and TBS and the fact that both have similar capabilities, Bender is shown as a potential competitor in Exhibit IV-95. The SBRI reports that Atlantic Marine in Mobile, Denton's in Charleston and BAE Systems in Norfolk are three of the consistent competitors of the SBRI.

The SBRI reports that the level of interport competition has been reduced as a result of significant damage to other Gulf Coast ship repair facilities resulting from hurricanes Katrina and Rita. It is not possible to predict the degree to which the damaged yards will recover and re-merge as competitors. The ability of these yards to compete on a sustained basis will also be in part determined by level of capital investment required to restore their collective pre-hurricane capability and rebuild their work force.

The SBRI's competitive advantages include:

- Graving dock/dry dock capacity: the SBRI has the most graving and dry docks of any of the Gulf Coast shipbuilding and repair centers
- The ability to dry dock up Aframax vessels
- The largest concentration of companies and services among the Gulf Coast shipbuilding and repair centers
- The SBRI reportedly has the largest labor pool available. The central and west Gulf yards have reportedly experienced difficulty in attracting and retaining skilled labor following hurricanes Katrina and Rita
- The weather in Tampa, especially during the winter months, enables the SBRI to operate year round

The SBRI's competitive challenges include:

- Significant interport competition during slow markets when the three yards have excess capacity in the repair of tugs, barges and small to medium size cargo and tank vessels
- Attracting, training, and retaining the skilled labor force required to supply the full range of services the SBRI offers to the market
- Comparatively smaller market catchment area relative to Texas and Louisiana yards, i.e. the number of vessels passing in close proximity to or calling at Tampa is less than the vessels calling the Mississippi River or the Texas Gulf Coast. Therefore the size of the SBRI's potential customer base is smaller
- A large number of Gulf Coast competitors serving similar market segments, i.e. the repair of tugs, barges, and small to medium size cargo and tank vessels (Exhibit IV-95).

## Exhibit IV-95 Overview of East Gulf Shipyards

Shipyard	Location(s)	Facilities	Major Types of Work	Reputation	Significant Competitive Advantages vs. Tampa Yards
Atlantic Marine Inc.	Mobile, Jacksonville	Mobile: 2 drydocks up to Aframax and 46,500 tons; 6,000 feet of pier space with 9 cranes up to 150 tons; 12,000 square meters of warehousing; full service new construction of small vessels. Jacksonville: 14,600 ton drydock and 2 marine railways; 1300 feet of pier space; shops and facilities for small vessel construction.	New construction; major repairs; conversions; naval and commercial, including large yachts	Excellent	New ownership and capitalization; superior facilities and management systems
Bender Shipbuilding & Repair Company	Mobile	Drydocks: 4,000; 18,000; 24,350; Seven launching ways; 523,000 square feet of welding and assembly space; 62,000 square feet of covered warehouse space; 25 cranes to 250 tons	New construction; major repairs; conversions	Mixed	Apparent focus on / dedication to SB/SR
Bollinger Shipyards	Various (14) in LA, TX	42 drydocks at 14 locations to 22,400 tons;	New construction and repair of small to medium vessels; conversions	Good	Flexibility of decision-making, operations
Conrad Shipyard	Morgan City	6 drydocks to 10,000 tons; two outfitting docks; three fabrication buildings; three cranes to 100 tons	New construction; major repairs; drydockings	Poor	
VT Halter Marine	Various	Multiple graving docks to 50,000t	New Construction	Gaining credibility following bankruptcy	Deep pockets from Singaporean owner
LEEVAC Industries	Jennings, LA	Drydock to 1500 tons and 200 feet; 400 foot graving dock; four outfitting docks; 78,000 square feet of fab buildings; 4000 square feet of craft shops; 5 cranes to 125 tons	New construction; major and minor repairs; conversions; primarily focused on offshore supply vessels	Good	Offshore focus
J. Ray McDermott	Veracruz, MX [Morgan City, LA]	Drydocks: 80,000t., 12,000t.; cranes to 100t.; 4,100' of wharves 2 Drydocks up to 100,000t., configurable for rigs or ships; cranes to 400t.	MX - offshore rig and vessel repair, N/C; Rig N/C @ MC	Good in offshore	Long history and relationships in offshore
Signal International AMFELS	6 yards - TX and MS	No data available on lift capacity	Offshore repair		Rig dedication, history and relationships
Curacao Drydock Company	Brownsville, TX	Drydocks: 150,000, 28,000, 10,000; 2,000m quays; 9 cranes to 75 tons	Offshore new construction and repair		Rig dedication, history and relationships
Braswell Services Group	Curacao	Drydocks: 104'x128', [2] smaller; cranes to 45t.	Repair; conversion	Good	
Grand Bahamas	Panama	Drydocks: 82,500, 30,000; two 305m quays; cranes to 50t.	Repair	Good	Location at eastern end Panama Canal "In" with cruise companies; lift
Earl Industries	Yard in Portsmouth, Va.; operation at Mayport NS	Multiple piers, berths, shops	Topside repair only, primarily for USN and auxiliaries		Minimal asset base
North Florida Shipyards	Jacksonville	9500 ton drydock; 1500 m quays; cranes to 300t.	Repair		
Derecktor	Dania, FL	600t. lift with side transfer; 160, 60t. travellifts; cranes to 35t.	Mega-yacht repair primarily	Good	Reputation; client base for new construction at other yards
Jones Boatyard	Miami, FL	Drydocks: 3,000t., 1,600t.; 1100' wharfage	Mega-yachts		Location
Bradford Marine	Ft. Lauderdale	250t. Synchrolift	Mega-yachts		Location
Bradford Marine	Freeport	Drydock: 1,200t.	Mega-yachts		Location
Merrill Stevens Drydock	Miami, FL	500t. Synchrolift; 500t. Railway; 70t. Travellift	Mega-yachts		Long history; also have a brokerage business

*Source: MMC data and analysis*

### 3. Market Assessment

This section presents an assessment of Port's SBRI market.

#### a) Current Market Overview

The Port's shipyards currently serve a number of market segments, while potential exists for others.

- Current Market Segments Served
  - Commercial vessel repair/refurbishment
  - Large commercial vessels (> 5,000 DWT)
    - Tankers
    - Large barges
    - Cruise Ships (emergent repairs)
  - Small commercial vessels (<5,000 DWT)
    - Ocean-going tugs and barges
    - Harbor craft including harbor tugs
    - Specialized vessels: dredges, cable-laying vessels
  - Modification/conversion
  - Double hulling of vessels or barges
  - Mid-bodies

- Commercial new construction
  - Barges
  - Small to medium size vessels

The SBRI's repair/refurbishment work comprises two segments: periodic and emergency. Periodic repair/refurbishment is associated with both ongoing capital maintenance of vessels by their owners and to comply with regulations, e.g. periodic dry docking for hull and propulsion inspections. Emergency repairs are typically associated with a significant equipment failure (e.g. engine, rudder, propeller) or incident (e.g. grounding, collision). The SBRI reports that their repair business has been steadily shifting to periodic repair/refurbishment work. This trend is the result of a number of factors including fewer emergencies due to better trained crews, improved navigation tools and techniques, and higher quality vessel construction. The increase in periodic repair/refurbishment work reflects a number of trends including customer relationships with key vessel owner/operators which leads to more and more steady business with fewer customers (an owner will schedule most of all of their fleet for periodic repair/maintenance with a single yard) and an increased focus on prolonging the life of existing assets in order to avoid higher replacement costs.

The SBRI also reports a significant increase in the modification/conversion segment of their business. This work has primarily been associated with the doubling hulling of tankers and tank barges to comply with new regulations.

Historically, new construction has represented a relatively small portion of the SBRI's business. This is primarily due an historic limitation on capability and the relative cost of construction vs. low cost international yards. New construction business has reportedly increased recently as a result of a new order placed by a U.S. flag vessel owner for the U.S. coastal (Jones Act) trades. Vessels must be constructed in U.S. shipyards in order to participate in these trades.

## **b) Market Outlook**

The market outlook for the SBRI is complicated by a number of factors specific to each segment. These factors include:

- Ship repair/refurbishment
  - Periodic market
  - Future growth in the U.S. Gulf international and domestic trades
  - The number of owners, the sizes and age profiles of their fleets
  - The number of new vessels entering the U.S. Gulf international and domestic trades in general and calling Tampa in particular
  - The future of the Jones Act
  - The future level of competition from Louisiana, Mississippi and Texas yards if they successfully recover from the effects of Hurricanes Katrina and Rita
  - The ability of the SBRI participants to maintain the reported high levels of repeat business and build new customer relationships that leads to further increases in repeat business
  - Emergency repair market

- Number and age of vessels regularly trading on routes in close proximity to the SBRI vs. other Gulf Coast ship repair centers
- The number and severity of incidents per year
- Conversion/modification
  - Future growth in the U.S. Gulf international and domestic trades in general and the cross-Gulf Jones Act petroleum trades in particular
  - The total number of tankers and barges that can be economically converted to comply with current regulations
  - The number of vessels that can benefit economically from lengthening (mid-bodies)
- New Construction
  - Future growth in the U.S. Gulf international and domestic trades in general and the cross-Gulf Jones Act petroleum trades in particular
  - The decision by Jones Act owners to construct new vessels rather than modify existing vessels

There are three market factors that may support and or enhance future SBRI demand. The first of these factors is continued growth in the U.S international and domestic waterborne trades. Long-term growth in U.S. international trade should average 4-6 percent in the container trades and 1-3 percent in the bulk trades. The cross-Gulf Jones Act petroleum trades will likely grow as the result of planned refinery expansions in the West Gulf Region.

The second factor is the expansion of the Panama Canal circa 2015. This, in conjunction with continued growth in the Gulf Coast economy, will likely result in a significant increase in vessels serving the Gulf. This in turn will increase opportunities for the SBRI.

Third, the Port's cargo base is projected to experience significant growth during the next twenty years (see Chapter V). This growth will result in significant numbers of vessel calls at the Port over the forecast horizon. This creates opportunities for the SBRI to develop additional customer relationships and build on its significant periodic repair business.

In addition to these market-based factors, there are a number of segment specific considerations that will influence future demand.

### ***(1) Large Commercial Vessel Repair/Refurbishment Market Segment***

This market segment is characterized by numerous and varied potential customers. These customers typically have a wide range of highly-variable decision criteria for selecting ship repair/refurbishment services. The principal segments of this market include tankers, dry bulk carriers and containerships. Key decision factors driving repair decisions in this segment include urgency (scheduled vs. emergency) of repair, trade route and sub-route, state of the ship repair industries within the trade routes the vessel operates, the owner's experience and relationships with various firms, whether repair agreements are already in place, price, and yard location.

There are several important industry trends that are important in assessing the potential of this segment. These trends include:

- In the next 3-5 years, it is estimated that 50%-70% of current U.S. flag tanker tonnage (Jones Act fleet) will be replaced which may lead to a reduced need for emergency repair services in the medium-term.
- The future mix of U.S. flag versus international flag vessels serving the Port's liquid bulk trades will potentially affect the size of the future market for small vessel repair services. International flag vessels typically purchase repair services in international markets where choices are greater and prices are generally more competitive.
- Vessel sizes are increasing, which require larger facilities (channel depths, dry-docks, machinery, cranes, supporting equipment) to economically serve these vessels.
- It is uncertain as to whether or not OPA 90 and the Jones Act will drive a significant additional increase in new/shuttle tanker construction.

### ***(2) Small Commercial Market Segment***

The commercial small vessel repair market is a core business for the Port's SBRI. Principal segments include local (vessels regularly calling the Port) bulk shipping (barges and tugs), ship handling (tugs), and small service and research vessels. Customers' repair decisions are typically driven by price, urgency of repair, existing relationship with the yard, and yard location.

Relevant market trends within this sub segment include:

- The growth prospects for the Port's bulk shipping sectors in general and the petroleum-based liquid bulk sector in particular. As discussed in Chapter VI, the outlook for the inbound petroleum products market is good while the outlook for the fertilizer and fertilizer-related trades is for continued long-term decline.
- Simple operating economics may drive consolidation of small vessel repair facilities. Future decisions regarding the purchase of vessel repair services may increasingly be made by corporate entities remote from Tampa. These "remote" decisions may be driven by pursuit of scale economies in purchasing ship repair services and repair capacity. These decisions may potentially lead to a consolidation of small and medium size yards in order to achieve the scale economies customers may increasingly seek in the future.
- An analysis of the catchment area shows that Tampa's facilities are capable of accommodating 100% of the market.

### ***(3) New Construction/Conversion Market Segment***

The market for new construction/conversion will continue to be a potential opportunity for portions of the SBRI based on current capabilities and experience base. The principal segments of this market are likely to include double-hulling articulated tug-barge units (ATBs) in response to OPA 90 regulation, construction of barges, and construction of small vessel designs including offshore support and small research and government vessels. Purchase decision drivers include

the shipyard's reputation and experience, availability of facilities, project price and schedule, and access to proprietary technologies and processes.

Market segment trends of relevance to SBRI expanding its vessel construction capability include:

- An increasing number of new Jones Act vessel orders, along with OPA 90, will likely mean older tonnage moving either down-market or retired; in addition there are decreasing opportunities for refurbishment/conversion, especially for large steel replacement or other lucrative jobs. In the mid-to-long-term, this could lead to a reduction in the number of new construction or major modification projects
- New vessel construction requires larger scale blasting/coating operations than the market has historically demanded. This could potentially require significant investment in expanded and enhanced environmental controls and compliance.
- The attraction and retention of skilled craftsmen necessary for new vessel construction may prove challenging without a sustainable backlog of work to attract and retain craftsmen.

#### *(4) Potential New Market Segments*

In addition to these market trends, there is the potential for the SBRI to enter new and or emerging market segments. Two of these new market segments are the repair/refurbishment of offshore oil supply vessels and new construction of small vessels such as harbor tugs, container feeder vessels and small barges. The size and future growth potential of these markets will be determined by the success of developing new oil fields in the east Gulf, a shift to tractor tug technologies in the U.S. harbor tug industry and development of coastal container feeder services in the U.S. Gulf and Caribbean.

#### **4. Strategic Considerations**

The SBRI reports that its recent and current business base is strong. The factors driving the strong demand include new regulatory requirements (OPA 90), the current age of the Jones Act petroleum tanker and tank barge fleet, and the growth in repeat business driven by the SBRI's customer relationships. While the SBRI expects demand to remain strong in 2008, there are several long-term strategic trends that will need to be carefully monitored and their potential effects evaluated. These trends include:

- **Future market developments.** As noted above there are several positive market fundamentals for the SBRI. These include continued growth in world trade, continued growth in the world fleets, the expansion of the Panama Canal, investment in new U.S. flag tanker and ATB capacity and anticipated growth in the cross-gulf Jones Act petroleum trades. There are also potential new market opportunities including the construction of a new generation of harbor tug as the current fleet retires and the development of offshore oil production in the east Gulf. The underlying drivers of each of these market segments will need to continue to be monitored and opportunistically pursued.
- **The ongoing consolidation and downsizing of the U.S. shipbuilding industry.** The long-term ability of the U.S. shipbuilding and repair industry to compete in international commercial markets continues to decline. The long-term decline is the result of a wide range

of factors including significantly higher management and labor costs, higher operating costs, higher land costs, lower scale economies and broader and more stringent legal, environmental and security regulations. As the industry's competitiveness wanes, its dependence on the U.S. Jones Act fleet as the major source of commercial demand for shipbuilding and repair services increases. In recent years, there have been a number of initiatives to rescind the Jones Act and open the U.S. coastal trades to international participation, a trend that is occurring throughout the world. To date, all of these initiatives have failed to gain the significant legislative support required to rescind the Jones Act. In addition to legislative support, the significant and ongoing investment of the U.S. flag shipping lines would need to be carefully considered in any attempt at rescinding the Jones Act. This is particularly true at this time since U.S. Flag operators are investing significant amounts in new capacity and or double hulling in order to conform to OPA 90 regulation. To date, the coalition of legislators, U.S. flag operators, the U.S. shipbuilding and repair industry and labor have successfully addressed all attempts to rescind the Jones Act. If at some point in the future the Jones Act were to be rescinded, the U.S. shipbuilding and repair industry would lose its largest and most significant competitive niche.

- **The attraction, training and retention of management and labor.** All three members of the SBRI stated that this issue is potentially the most difficult challenge they face. They report that while historically their turnover is low among management and craftsmen, there are significant concerns about the ability to attract new managers and craftsmen to the industry. The continued transition of the U.S. economy to a service economy increases the challenge of attracting and retaining new personnel. Increasing security regulations are also a potential constraint to hiring subcontractors to accommodate peaks in demand.
- **Security regulation.** The State of Florida has some of the most stringent security regulations in the U.S. The TPA is required to enforce these regulations within all restricted areas of the port. Background checks and the issuance of credentials to all persons entering restricted port areas are key elements of enforcing State of Florida security regulations. These processes take time and are costly. The SBRI members report these processes negatively affect their operations by delaying access to their facilities by the significant numbers of subcontractors and temporary laborers they employ as well as the crews and owner's representatives of their customers. In addition to the State of Florida requirements, the Transportation Security Administration (TSA) is in the process of implementing a Transportation Worker Identification Credential or TWIC card. All persons working in restricted port areas will be required to pass a background check and be issued a card. The TPA is currently working with the State of Florida Department of Legal Enforcement (FDLE) to gain an exempt status for the shipbuilding and repair industry in order to eliminate the current security requirements and or have the TWIC program fulfill both the federal and state security requirements. It is unclear at this time whether the TPA's efforts will be successful.
- **Environmental regulation.** The scope and complexity of environmental regulation and the number of agencies involved is increasing. Permitting process are becoming longer and more complex, mitigation requirements are expanding and the associated costs are increasing. The entire port industry faces major challenges in complying with environmental regulations and accommodating growth. The inherent nature of the shipbuilding and repair business

(blasting, coating, painting, handling of hazardous materials, etc.) makes compliance with evolving environmental regulation particularly challenging.

- **Urbanization.** The growth prospects for the City of Tampa and the region are strong. The expanding growth of downtown Tampa to the east will place increasing pressures on the Port in general and the SBRI and petroleum industries in particular. These pressures include rising land values and taxes, demands to mitigate air, noise and light impacts and demands to relocate these “incompatible”, industrial uses. The reported pending sale of ISR’s property along Ybor Channel to a commercial developer is the most salient example of these pressures.
- **Future Capital Investment.** The shipbuilding and repair business is a capital intensive business. The SBRI will likely face significant future capital investments to maintain, modernize and expand (assuming future demand warrants) its plant and equipment. In fact, as noted above the SBRI plans on investing \$42 million during the next five years in rehabilitating, modernizing and expanding its asset base. The pace at which vessel sizes continue to increase, the pace at which the SBRI seeks to expand into new markets, the age and capability of the current asset base, and the potential need to invest in new ship repair and construction technologies as they develop will all drive the timing and size of capital investment required to sustain the SBRI’s capabilities. The collective interaction of the strategic considerations presented in this section will all affect the SBRI’s ability to generate the capital required to sustain the business in the long-term.

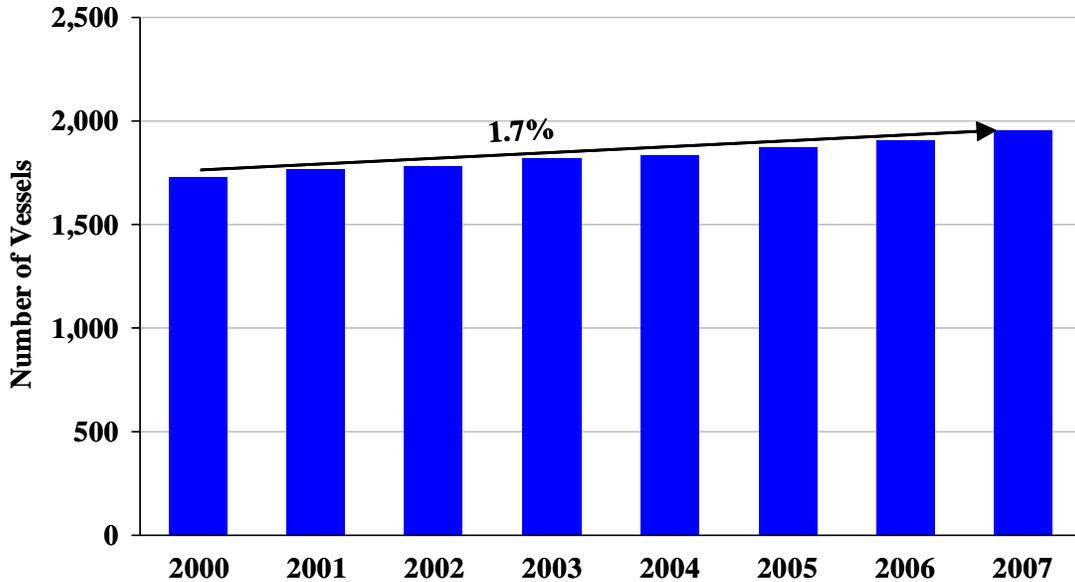
## **H. Roll-On/Roll Off Cargo Market Assessment**

### **1. RoRo Overview**

The Roll-On/Roll-Off cargo market refers to that portion of international and domestic waterborne trade that moves on Roll-On/Roll-Off or RoRo Vessels. RoRo vessels are equipped with one or more ramps that are used for loading and discharging cargo, i.e. the cargo is rolled on or rolled off the vessel as opposed to being lifted on or off. The interior of the vessel comprises a series of decks that are served via an internal ramp system that connects to the external ramp or ramps. The interior of the vessel generally resembles a parking garage. The major difference is that on many RoRo ships, particularly the larger vessels, the decks are collapsible. By collapsing one or more decks, the height of the remaining decks can be significantly increased to accommodate large cargoes such as construction equipment.

The world’s registered RoRo fleet, excluding vehicle carriers and ferries, totaled 1952 vessels as of January 2007. The number of RoRo vessels has increased steadily at a modest average annual rate of 1.7 percent.

**Exhibit IV-96  
The World's Roll-On/Roll-Off Fleet  
2000-2007**



Note: Indicates vessels in use on the January 1st of each respective year. Includes all Ro-Ro vessel subtypes except vehicle carriers

*Source: Lloyd's Fairplay 2000-2007*

The world's RoRo fleet is comparatively small in terms of size (based on deadweight tons) and comparatively old (Exhibit IV-97).

**Exhibit IV-97  
Age and Deadweight Tonnage Profile of the World's RoRo Fleet  
As of January, 2007**

Age Bracket								
DWT Category	0-5	5 to 10	10 to 20	20 to 30	30 to 40	40 to 50	50+	Total
<b>0-4,999</b>	113	70	146	326	237	44	29	965
<b>5,000-9,999</b>	34	70	76	114	31	1		326
<b>10,000-14,999</b>	29	25	28	53	17	1		153
<b>15,000-19,999</b>	16	6	16	33	14			85
<b>20,000+</b>	4		3	52	25			84
<b>Total</b>	196	171	269	578	324	46	29	1,613

Note: Only 1,613 of 2,004 vessels list DWT. Indicates vessels in use on the January 1st of each respective year. Includes all Ro-Ro vessel subtypes except vehicle carriers

*Source: Lloyd's Fairplay 2000-2007*

Nearly two thirds (61 percent) of the 1,613 vessels for which both age and deadweight are reported are 20 years or more in age. This distribution generally applies across all deadweight

segments including the larger (10,000 deadweight tons or more) size categories which comprise those vessels operating across the world's major RoRo trades. The aging of the fleet generally reflects the long-term trend toward the replacement of RoRo vessels by fully cellular container vessels. As container port infrastructure and container penetration of the world's general cargo trades have increased over time, container vessels have replaced RoRo vessels as the preferred mode of transport. The two exceptions to this are in short sea (e.g. North Europe or Mediterranean) trades and in certain niche segments of major trade lanes (e.g. U.S. Gulf to Middle East).

There are a wide range of cargoes that are typically carried on RoRo vessels. While these cargoes are technically breakbulk general cargoes, they are often referred to as RoRo cargo. Major categories of RoRo cargo include:

- Vehicles: automobiles, trucks, buses, pick-up trucks, etc.
- Construction equipment: excavators, backhoes, graders, etc.
- Farm equipment
- Machinery
- Project cargoes: typically subassemblies of major buildings or manufacturing facilities such as cracking units for refineries, rolling machinery for steel rolling mills, presses, etc.
- Rail equipment: locomotives and rail cars.

There are a number of distinct segments of the RoRo market that are served by distinct segments of the RoRo fleet. These segments include:

- International vehicle and light truck trades
- International multipurpose RoRo trades
- Short sea trades which today are primarily focused on North Europe, the Mediterranean and the Caribbean Basin.

As noted in Chapter V under the vehicles section, the international vehicle and light truck trades are dominated by relatively few shippers (major multi-national vehicle manufacturers such as Toyota, Nissan, Honda, Volvo, etc.) and carriers (NYK Line, K-Line, Mitsui, Wallenius-Wilhelmsen, Grimaldi, etc.). A majority of all vehicles transported internationally are carried in specialized RoRo vessels known as Pure Car Carriers (PCCs) or Pure Car Truck Carriers or PCTCs. These vessels are specially designed to carry large volumes (4,000-6,000+) vehicles and pickup trucks. The Port's potential to participate in this segment of the RoRo trade is covered under the Chapter V vehicle discussion.

The international multipurpose RoRo trades are also dominated by a relatively few types of cargoes, shippers and carriers. The major cargo types are discussed above. The major shippers tend to be multi-national manufacturing and construction companies. Major U.S. examples of these companies include John Deere, Caterpillar, Fluor Daniels and Bechtel. Examples of major multipurpose RoRo carriers include Atlantic Container Line, Grimaldi, Hoegh, National Shipping Company of Saudi Arabia, and Wallenius-Wilhelmsen. The multipurpose RoRo

carriers offer both traditional liner services (comparatively fixed routes and ports of call, similar in concept to a bus) and inducement or for hire services (limited number of load and discharge ports determined by the contracting shipper). The U.S. Gulf to the Middle East and Southeast Asia and the U.S. East Coast to Europe are examples of U.S. multipurpose Ro/Ro trades. The major U.S. ports for multipurpose Ro/Ro cargo include Baltimore, Savannah/Brunswick, Jacksonville, and Houston. These ports have established positions in the multipurpose RoRo trades on the basis of key infrastructure advantages and competitive access to cargo bases. The Port of Baltimore has had a long-term strategic focus on RoRo cargoes due to its advantageous highway connections and rail connections to major machinery manufacturers as well as a number of multipurpose general cargo facilities. Baltimore has long focused on the vehicle trades which are in part served by multipurpose RoRo carriers. Brunswick and Jacksonville's participation in the multipurpose RoRo trades is a direct result of the major position each of these ports has in the international vehicle trades and their strong interstate highway and rail connections. Jacksonville's position is further enhanced by its position as the gateway for trade with Puerto Rico. A large portion of the U.S.-Puerto Rico trade moves via RoRo vessels. Houston's participation is based on its major position in the oil and gas industry and the size and continued growth of the Texas economy. Large volumes of oil and gas related machinery, construction equipment and project cargoes move via Houston. Houston also has a number of private terminals that focus specifically on the breakbulk general cargo and RoRo trades as well as the Port of Houston's Turning Basin Terminal which is one of the largest multipurpose cargo handling facilities in the United States.

The Port lacks several of the key attributes of the major U.S. multipurpose RoRo ports, namely competitive access to major shippers, a local base of RoRo cargoes and consequently a lack of RoRo carriers. Consequently, the Port has not been a significant participant in this segment of the RoRo market. Unless the Port and the TPA are successful in establishing Tampa as a major vehicle gateway, their potential to become a significant participant in the international multipurpose RoRo trades is limited.

The Caribbean Basin short sea RoRo trades offers potentially greater opportunities for the Port and the TPA. As noted in Chapter IV, the Port is geographically well positioned to serve Central America and the western Caribbean. Several years ago the Port was served by short sea combination freight/passenger RoRo service operating between Mexico and the Port.

While there is not a consistent, publicly available database on the Caribbean RoRo trades, there are a large number of carriers that offer RoRo service between the U.S. (principally via Port Everglades and Miami) and the Caribbean Basin. The historical lack of modern container terminal infrastructure in many Caribbean and Central American ports enhanced the opportunities for RoRo operators. The historical lack of major global container operators in this trade also enhanced opportunities for RoRo carriers. However, as result of significant increases in container port capacity, which in turn has increased the opportunities for global container shipping lines, the trade has begun to transition to a container vessel dominated trade. Global operators such as APL and Maersk in particular have developed many new services in the past five years. This in combination with major regional carriers such as Crowley and Seaboard Marine's continued shift from RoRo vessels to container vessels have accelerated the conversion of the trade from RoRo to container. Norbridge believes the trend toward greater use of container vessels will continue, particularly in the Central American trades where the volume and value of

cargo can support the investment in modern container facilities. Consequently, the Port and TPA's long-term opportunities are most likely limited. The Port's one advantage is that has significant multipurpose cargo facility capacity to handle RoRo cargoes. It also has rail access to much of this capacity which is also an advantage. Short-sea RoRo cargoes may offer the Port and TPA occasional niche opportunities but it is unlikely to become a major, sustained segment of the Port or TPA's portfolios of cargo businesses. The one potential exception to this is Cuba which is discussed in the next section.

In the future, a new segment of the short-sea RoRo trade may emerge within the U.S. A coalition comprising the U.S. Maritime Administration, representatives of the U.S. shipbuilding industry, maritime labor organizations and other participants have been exploring the redevelopment of coastal RoRo and or container trades. This initiative has been driven by a number of trends including the aging of the U.S. interstate highway network, growing congestion on the nation's highways, rising fuel costs, shortages of truck drivers, the rapidly increasing size of the world's container fleet which limits the number of U.S. ports that very large container ships can serve and environmental considerations. The initiative is designed to prove the long-term viability of developing coastal short-sea operations as an alternative to continued use of the major north-south interstate highways serving the Atlantic (I-95, I-81), Pacific (I-5) and Gulf (I-10) coasts. To date, the coalition has completed a number of analyses and conducted several forums on the concept. Major challenges to the redevelopment of the U.S. coastal trades include:

- Service: coastwise waterborne transportation is significantly slower than truck and expedited intermodal rail even under growing congestion scenarios
- Port locations: many of the nation's Atlantic Coast ports are located comparatively far from major population centers and thus coastal services must include a significant truck component, e.g. Charleston or Savannah to Atlanta.
- Vessel costs: vessel construction and operating costs are comparatively high due to the requirement (Jones Act) that the vessels be constructed in U.S. shipyards and be owned and operated by U.S. citizens.

The ultimate scope and scale of coastwise container and RoRo services is uncertain. In all likelihood one or more services will develop in over the next five to ten years. Those routes that have the most favorable characteristics (long haul, high volume include the West Coast (Washington State to California) and Atlantic Coast (New York to south Florida). Cross Gulf Coast services are relatively less likely to develop in the short-to-mid-term due to the fact much of the domestic trade that would be the target of these services moves north south along the east coast between Florida and the Northeast.

In summary, RoRo market opportunities for the Port and the TPA are likely to be limited and opportunistic, i.e. associated with a specific operator on a specific trade. RoRo services, if they develop are likely to be associated with the development of a sustained vehicle trade, or the development of trade with Cuba (see below). In the long-term, the Port and the TPA may have opportunities to develop as a gateway for cross Gulf domestic services if they develop. Given the Port's position as the gateway to the West Central Florida market, it would be the natural terminus for a cross Gulf service.

## **2. Cuba Market Potential**

This section provides a brief strategic assessment of the market potential that may develop as a result of a re-opening of trade between the U.S. and Cuba. It begins with an overview of the Cuban economy based on the limited information that is available. It next assesses how U.S.-Cuba trade might evolve in the short-to-mid-term in response to a normalizing of relations between the two countries. It concludes with an assessment of the potential implications for the Port and the TPA. It is important to note that the Cuban government continues to strictly control information related to Cuba's economy and international trade. Consequently information is both limited and often not timely.

### **a) Overview of the Cuban Economy**

The Cuban economy remains a centralized, state controlled economy. Foreign investment is strictly regulated by the government. The major sectors of the economy include agricultural (tobacco and sugar cane), tourism, construction, minerals and petroleum and pharmaceuticals. Cuba's Gross Domestic Product is estimated to have approximated US\$44-\$45 billion dollars in calendar year 2006. This compares with the U.S. GDP of \$13 trillion, the Florida GSP of \$714 billion and the Puerto Rico economy of \$53 billion.

The three major sectors of the economy are reported to be services (two thirds), industry (about 25-30 percent) and agriculture (about five percent). The main industries in Cuba include construction, steel, nickel machinery, petroleum and machinery. Cuba's population is estimated at 11 million people. This compares to 299 million for the U.S., 18 million for the State of Florida and 4 million for Puerto Rico.

Its international trade is estimated to have totaled \$12.5 billion in 2006 with imports representing three quarters of the total. Cuba's major trading partners are reported to be:

- Imports: North Europe, the U.S. (almost entirely agricultural imports), China and Ireland
- Exports: Netherlands, Canada, China, Venezuela and Russia.

Cuba and Venezuela reportedly have been expanding trade (petroleum is the reported to be the mainstay) and political relations over the past several years. Venezuela has become the main supplier of Cuba's energy needs. As part of this expanding relationship, Cuban has been sending doctors and medical personnel to Cuba. This expanding relationship may affect if and or when relationships and trade are restored between Cuba and the U.S. given the current relationship between the U.S. and the Chavez government in Cuba.

Economic growth in Cuba, as reported by the Cuban government, is strong. GDP was estimated to have increased at a rate of 7.5 percent in 2006 and a similar rate of growth was anticipated for 2007. Foreign investment is reportedly expanding with European countries and companies (Netherlands, Germany, and Spain) and Canada being major sources of funding. Foreign investment has reportedly centered on tourism and construction. Cuban regulations require that all foreign investment (excluding Venezuelan companies and citizens) be made through joint ventures between the investors and the Cuban government or companies.

While the Cuban economy has reportedly experienced significant growth in recent years, it faces significant challenges that would affect the volume of trade that might develop as part of an opening of trade between Cuba and the U.S. These challenges include:

- Significant dependence on petroleum imports
- Challenges providing electric power to support rapid economic growth
- A weak currency that is not currently internationally traded
- An economy highly dependent upon the central government in terms of employment and services
- Government participation and or regulation of all aspects of the economy
- Aging infrastructure that will likely require significant capital investment in order to support sustained growth of a market-based economy.

### **b) Market Potential**

There are three major questions related to the future potential of the Cuban market:

- Will the Cuban economy become a free, market-driven economy that the U.S. is permitted to fully participate in?
- When will the Cuban economy begin the transition to a market-driven economy?
- How long will it take to successfully transition to a free market economy?

Each of these questions are difficult to answer given the number and complexity of ideological, political, economic, regulatory and competitive factors involved. The question of when Cuba will open to a free market economy has been debated for most of the past 20 years. The departure of Castro from power has long thought to have been the watershed event that would begin the transition. To date that has not happened despite his prolonged, health-related absence from government. Compounding the difficulty of addressing these questions are the major problems facing the Cuban economy. Aging infrastructure and utilities, inadequate power generating capability, high dependency on imports and a weak currency are significant challenges that will need to be addressed. Unwinding government involvement in the economy and replacing government with clearly defined, credible regulations that international investors can have confidence in is also key to responding to the key questions. Finally, there is the issue of what role U.S. companies will have in the Cuban economy in the future. European, Canadian and Latin American companies have been investing and continue to invest in Cuba. China is rising as both a supplier and investor in the Cuban economy. As the collective investments of these countries and companies grow, business and customer relationships grow and scale economies are built. U.S. companies will likely face significant challenges in entering the Cuban economy, particularly if they remain excluded for significant (five to ten years) into the future.

Assuming U.S. companies can and will play a role in a free market economy, the transition is likely to evolve through three or more phases. The phases include:

- A developmental stage: this stage is likely to primarily focus on the importation of basic goods and services required to support economic growth and improvement in the quality of

life of Cuban citizens. Commodity groups likely to dominate this first stage of development would likely include foodstuffs, medicines and basic health care goods, construction equipment, machinery and building materials. These goods would likely move on a combination of container and RoRo vessels.

- A transition stage: this stage is likely to follow a complete reformation of regulation and business practices and result in a rapid rise in the basic wealth of the country and its citizens. This in turn will create a new and growing market for consumer goods and inputs to new industries (tourism, bio-tech, medical, educational, financial services, etc.). This phase of trade would likely see a significant rise in consumer goods, machinery, and technology. During this stage of development, assuming anticipated investment in port facilities and infrastructure is completed, will likely see a major shift to container services. Dubai Ports is currently engaged in discussions to construct a major new container facility in Cuba.
- Maturation stage: this stage is likely to involve consolidation and investment in a group of core industries for which Cuba will have developed sustainable competitive advantage. This phase will likely reflect continued, albeit slowing growth in consumer goods to more sustainable levels. During this stage, a majority of Cuba's general cargo trade is likely to transition to containerized goods.

At this point, there is not a practical, quantifiable methodology for estimating either the ultimate size of the Cuban waterborne trade market, nor the pace at which it will develop. The primary trade opportunities for the U.S. will likely be in consumer goods, forest and agricultural products and potentially oil and gas exploration and production equipment. The former cargoes will likely move in containers, while the latter will likely move in a combination of breakbulk (including RoRo and refrigerated) and bulk vessels. Assuming in the long run that Cuba's per capital consumption of containerized goods ranged between the average for the U.S. and the average for Puerto Rico (an island economy), Cuba's future container trade could approximate an order of magnitude 2-3+ million TEUs as it reaches maturation. Today, the total Cuban container trades is estimated at 0.3 to 0.4 million TEUs.

### **c) Implications for the Port and the TPA**

The Port's geographic position, from a nautical distance perspective, is less favorable than the southeast Florida ports, and more favorable than Jacksonville, Mobile or New Orleans (Exhibit V-98). From an origin-destination perspective, the Port's competitive function will be driven by the commodities and the U.S. origins or destinations from and to which Cuban trade moves.

**Exhibit IV-98**  
**Distance Between Select U.S. and Cuban Ports**  
**(Nautical Miles)**

<b>U.S. Port</b>	<b>Havana</b>	<b>Cienfuegos</b>	<b>Matanzas</b>
Miami	238	682	190
Port Everglades	255	699	258
Canaveral	381	837	354
Tampa	307	832	325
Jacksonville	531	987	504
Mobile	637	1,019	640
New Orleans	689	1,035	692

*Source: Veson Distance Tables and TPA*

U.S. Midwest origins and destinations would generally favor the use of New Orleans or Mobile depending on the type of commodity, mode of transport (water, rail, truck) and the specific locations. Southeast origin-destinations would generally favor Charleston, Savannah, Brunswick or Jacksonville depending on the type of cargo, the mode of transport and the specific origins and destinations. Within the State of Florida the Port has a competitive advantage in much of the West Central Florida market. While Port Canaveral is generally similarly situated, it currently lacks the infrastructure (except RoRo) and capacity to handle significant volumes of containerized cargo.

In terms of infrastructure, the Port, Jacksonville and Port Everglades are most advantaged. Collectively they have the basic infrastructure, capacity, expansion potential and inland connections to compete for the potentially significant growth in trade with Cuba. The Port's ultimate volume potential will be primarily driven by inland transport economics. Given the Port's geographic location versus southeast and central Gulf ports, participation in the Cuba trade will likely be focused on consumer and agricultural products moving between West Central Florida and Cuba. However, even comparatively small shares of a 2-3 million TEU trade would have a significant, positive effect on the Port and the TPA.

## **V. Land Use**

### **A. Introduction**

This chapter defines the Port Activity Center and the Tampa Port Authority's recommended long-term land use vision.

### **B. Port Activity Center**

#### **1. Introduction**

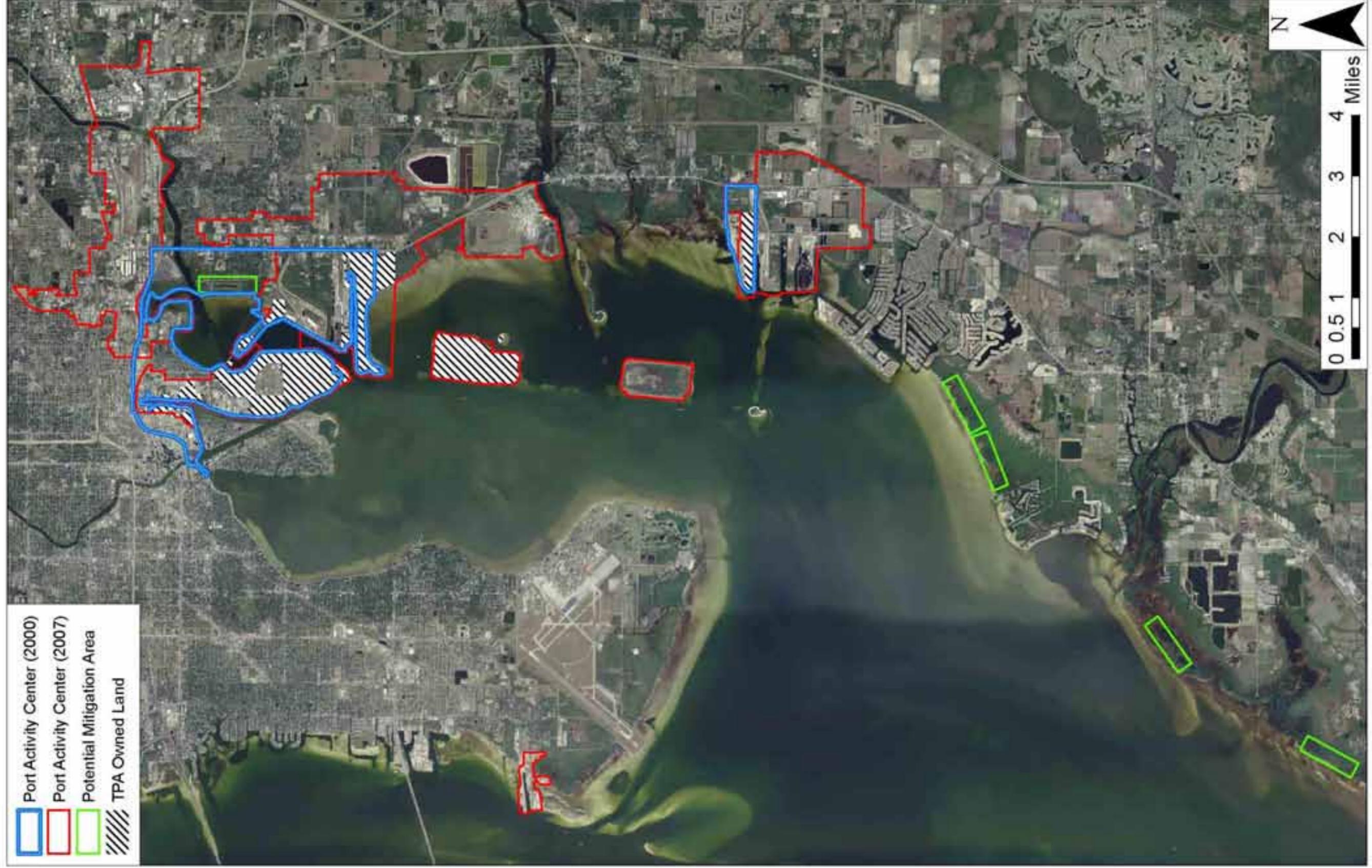
The Hillsborough County Port District is the Hillsborough County line. The Port Activity Center is a designated sub-district of the Port District boundary, and comprises an area in which port and port-related land uses are best situated or conducted. It includes properties currently being used for port-related activities, properties in the vicinity of existing port-related activities where compatibility issues need to be considered, and properties in the area of the Port having a future industrial land use designation, which may or may not be used for port-related activities in the future. The TPA desires to ensure compatibility between port-related industrial and other land uses and retain an adequate amount of land suitable for industrial development that allows for growth of port-related activities.

The purpose of the Port Activity Center boundary is to identify those properties where interagency and governmental coordination is needed when considering future land use changes. The Port Activity Center is not a regulatory district, but does call for an increased level of review. It will be included in the Comprehensive Plans of Hillsborough County and the City of Tampa. New Comprehensive Plan policies and project review criteria will be developed to assist in evaluating issues of compatibility of land uses, understanding the impact of new projects on Port operations, and determining the need to preserve land for port-related uses.

#### **2. 2000 Port Activity Center**

The 2000 Port Activity Center, as was defined in the TPA's 2000 Master Plan, is shown in Exhibit V-1. This area generally encompasses a portion of downtown Tampa (south and east of the CSX railroad), Channelside North, Port Ybor, Hooker's Point, East Port, and the coastal areas west and east of U.S. 41 and north of Big Bend and south of Pendola Point. The 2000 Port Activity Center also includes the coastal areas west of U.S. 41 at Big Bend. Residential neighborhoods in the 2000 Port Activity Center include the Palmetto Beach and Channelside neighborhoods and portions of Historic Ybor and East Ybor neighborhoods.

Exhibit V-1  
2000 and 2007 Port Activity Centers, and TPA-Owned Land



Source: TPA 2000 Master Plan, Renaissance Planning Group, and Moffat and Nichol

Exhibits V-2, V-3 and V-4 summarize existing and generalized future land uses within the 2000 Port Activity Center. The 2000 Port Activity center encompassed 5,435 acres, of which 574 acres (10.6%) were identified as vacant (Exhibit V-2). The predominant existing land use in the 2000 Port Activity Center was public/quasi-public (41.6%). Industrial lands comprised 10.1 percent of the 2000 Port Activity Center and residential areas comprised 6.9 percent.

**Exhibit V-2**  
**2000 and 2007 Port Activity Centers Generalized Existing Land Use**

Land Use Category	2000 Port Activity Center		2007 Port Activity Center	
	Acres	Percent	Acres	Percent
Industrial	548	10.1%	3,588	27.7%
Public/Quasi-Public	2,261	41.6%	2,889	22.3%
Vacant	574	10.6%	1,860	14.4%
Agricultural	26	0.5%	1,152	8.9%
Commercial	169	3.1%	428	3.3%
Residential	378	7.0%	278	2.1%
All Other	1,479	27.2%	2,736	21.2%
Total	5,435	100%	12,931	100%

*Source: Port of Tampa Master Plan, 2000, Hillsborough County City-County Planning Commission, Moffatt & Nichol and Renaissance Planning Group, 2007*

The greatest share of land in the 2000 Port Activity Center was designated for future industrial use (57.9 percent per Exhibit V-3). Residential future land use designations comprised 11.2 percent of the total area and mixed use categories represented 5.3 percent of the area (Exhibit V-3). Of the 574 acres of vacant lands in the 2000 Port Activity Center, 69.3 percent was designated under industrial future land use categories; 15.1 percent was designated residential future land use categories and 8.1 percent was designated under mixed use future land use categories (Exhibit V-4).

**Exhibit V-3  
2000 and 2007 Port Activity Centers Generalized Future Land Use**

Land Use Category	2000 Port Activity Center		2007 Port Activity Center	
	Acres	Percent	Acres	Percent
Industrial	3,147	57.9%	10,871	84.1%
Commercial	105	1.9%	8	0.1%
Public/Quasi-Public	118	2.2%	166	1.3%
Agricultural	0	0.0%	0	0.0%
Residential	610	11.2%	156	1.2%
Mixed Use	290	5.3%	362	2.8%
All Other	1,164	21.4%	1,368	10.6%
<b>Total</b>	<b>5,435</b>	<b>100%</b>	<b>12,931</b>	<b>100%</b>

*Source: City of Tampa Comprehensive Plan and Hillsborough County Comprehensive Plan*

**Exhibit V-4  
Vacant Lands by Generalized Future Land Use Category**

Land Use Category	2000 Port Activity Center		2007 Port Activity Center	
	Acres	Percent	Acres	Percent
Industrial	398	69.3%	2,587	92.8%
Commercial	15	2.6%	1	0.0%
Public/Quasi-Public	0	0.0%	0	0.0%
Mixed Use	46	8.0%	0	0.0%
All Other	115	20.0%	201	7.2%
<b>Total</b>	<b>574</b>	<b>100%</b>	<b>2,789</b>	<b>100%</b>

*Source: City of Tampa Comprehensive Plan, Hillsborough County Comprehensive Plan, Port of Tampa Master Plan, 2000, Hillsborough County City-County Planning Commission, Moffatt & Nichol and Renaissance Planning Group, 2007*

### **3. 2007 Port Activity Center**

A component of the current Master Plan update was the evaluation of the 2000 Port Activity Center within the context of the area's ability to accommodate existing and future port-related land uses and activities over the 20-year Master Plan horizon. The objective was to define a new 2007 Port Activity Center where needed lands would be protected from encroachment by

incompatible or competing non-water related or dependent land uses. Any proposed land uses within the 2007 Port Activity Center would be subject to additional scrutiny by the local government jurisdiction evaluating a proposed land use for consistency with the comprehensive plan. The 2007 Port Activity Center is shown in Exhibits V-1 and V-5.

The 2007 Port Activity Center generally encompasses Port Tampa, the downtown Tampa Channel District, Hooker's Point and coastal areas east and west of U.S. 41 to the Hillsborough/Manatee county line. This area includes port-dependent and port-related uses and activities. Port-dependent uses are those which can only be carried out on, in or adjacent to water areas because the use requires access to the water body for waterborne transportation. Port-related uses are those uses and activities that are not directly dependent upon water access but provide goods and services that are directly associated with Port-dependent uses.

Also included in the 2007 Port Activity Center are industrially-designated lands with rail access north of the Selmon Crosstown Expressway and south of I-4 between 22<sup>nd</sup> Street and U.S. 301. This area also includes port-related uses and activities.

Aggregated acreage totals for land use in the 2007 Port Activity Center are presented in Exhibits V-2, V-3 and V-4. The generalized existing land uses within the 2007 Port Activity Center are depicted in Exhibit V-5.

There are approximately 12,931 acres in the 2007 Port Activity Center, a proposed increase of 7,496 acres from the 5,435 acres in the 2000 Port Activity Center. The predominant existing land uses in the 2007 Port Activity Center are industrial (27.7%) and public/quasi-public (22.3%).

The predominant share of land in the 2007 Port Activity Center has an industrial future land use designation (84.1%). The generalized future land uses within the 2007 Port Activity Center are depicted in Exhibit V-6.

Of the 2,789 acres of vacant lands in the 2007 Port Activity Center, 92.8 percent are designated for future industrial use. Exhibit V-4 shows vacant lands with other future land use designations that could potentially support industrial uses. Vacant lands within the 2007 Port Activity Center are depicted in Exhibit V-7.

Exhibit V-5  
 2007 Port Activity Center Generalized Existing Land Use



Source: Renaissance Planning Group



Exhibit V-7  
2007 Port Activity Center Vacant Land

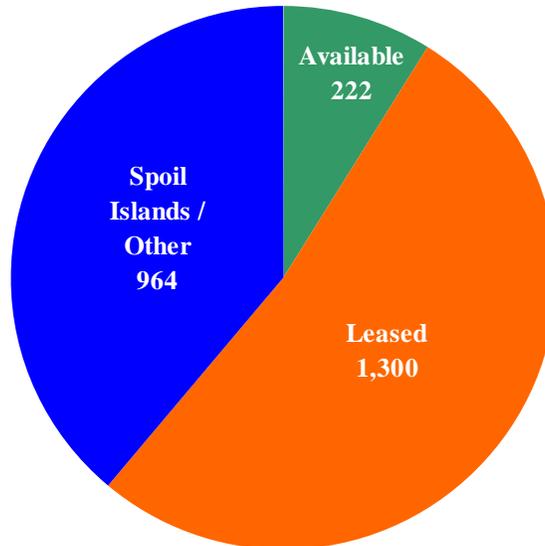


Source: Renaissance Planning Group

### C. TPA-Owned Land

The TPA owns approximately 2,500 acres, with about 222 available (as of mid-year 2007) for lease (Exhibit V-8). TPA-owned properties in the 2007 Port Activity Center are shown in Exhibit V-9.

**Exhibit V-8  
TPA-Owned Land**



*Source: TPA, Moffatt & Nichol, and Norbridge, Inc. analysis*



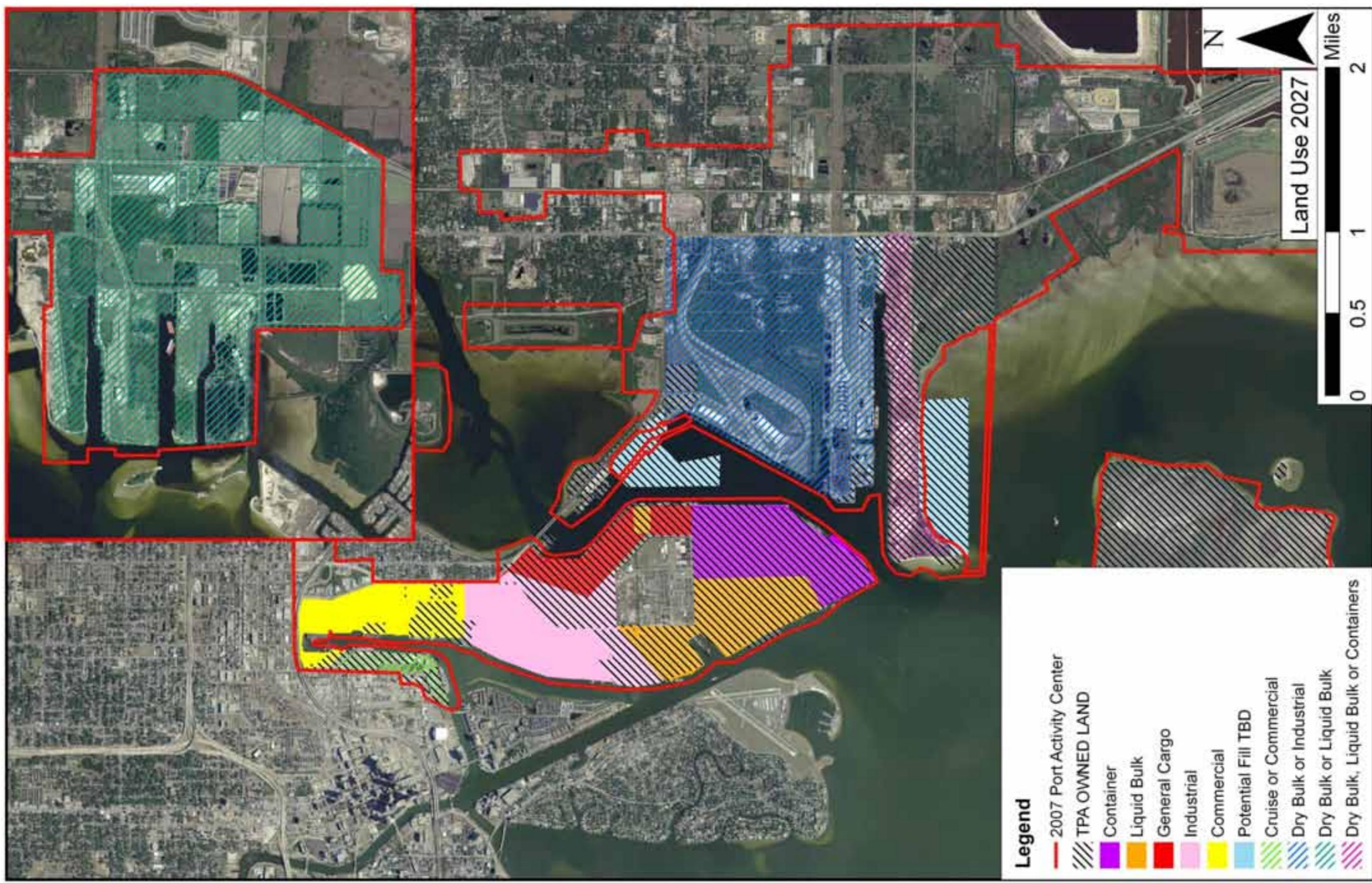
## **D. Proposed TPA Twenty Year Land Use Vision**

A proposed long-term TPA land use vision has been created as part of the Master Plan process. This vision provides a context for planning future land development and use, and provides guidelines for making strategic decisions related to land use. The land use vision reflects expected future demand growth, strategic challenges to achieve the land use vision, and considers anticipated evolution of the Port and neighboring properties. Proposed long-term land use goals include:

- Rationalizing and segregating, where commercially and operationally feasible, incompatible uses: e.g. anhydrous ammonia vessels, petroleum products vessels and cruise vessels in Sparkman Channel
- Diversifying the location of petroleum products terminal, trucking and pipeline operations where commercially, operationally and environmentally feasible to minimize the effects of incompatible uses that may develop with continued growth of the City of Tampa and to reduce the future potential of a shut down of the Port's major petroleum facilities due to a major weather or security related incident. Strategic triggers that drive the opportunity to diversify include anticipated volume growth, the continued urbanization of port areas, the expiration of leases and the development of new terminals
- Continuously seeking to diversify trucking operations throughout the Port to maximize the long-term efficiency and capacity of Port and regional roadways and reduce the potential for traffic congestion, particularly during peak periods
- Focusing Hooker's Point on container, breakbulk and Central Florida Pipeline operations

The proposed 20-year land use vision for the Port is shown in Exhibit V-10. The vision includes TPA-owned and privately owned properties.

Exhibit V-10  
TPA 2027 Land Use Vision



Source: Norbridge, Inc. and Moffatt & Nichol

## **1. Port Ybor and Port Tampa Port Areas**

Continued growth in the City of Tampa's population and economy is anticipated to result in a continued urbanization of industrial properties within and adjoining the City. This will place increasing pressure on these industrial sites to convert to compatible uses. In the long-term, this could lead to the transition (through change in zoning or sale) of the privately owned marine terminals in these areas to commercial and or residential use. In addition to these trends, the average size tank vessel (ship and barge) is likely to increase over the 20 year planning horizon. Depending on the rate at which vessel sizes increase, a portion of the existing liquid bulk marine terminals in these areas may become physically and or commercially obsolete. The TPA, as part of its recommended land use vision and resulting MP, needs to anticipate these potential developments and provide potential opportunities for relocating, through joint venture initiatives with the private owners, facilities to other areas of the Port.

## **2. Hooker's Point**

Liquid Bulk: Privately-owned liquid bulk terminal operators in the northwest portions of Hooker's Point may face the urbanization pressures discussed above for the Port Ybor and Port Tampa port areas. In addition, consistent with the TPA's desire to segment potentially incompatible uses, it is recommended the TPA's MP consider potential future opportunities to relocate, through joint venture initiatives with the private owners, facilities to other areas of the Port. On south Hooker's Point, access to the Central Florida Pipeline should be preserved for liquid bulk operations.

Containers: Projected container volumes are currently capable of being accommodated on an expanded footprint on the southeast side of Hooker's Point.

General Cargo: The location, configuration and capability of the Hooker's Point General Cargo facilities are sufficient to accommodate future demand although additional acreage may be required depending on the future volume and mix of general cargoes.

Industrial: Industrial uses including shipyards, warehousing and other port services will be grouped together

## **3. Channelside District**

Cruise: The current location addresses many of the key attributes of successful cruise facilities including easily accessible to an airport, in close proximity to tourist attractions and downtown hotels. Additionally, the current area can accommodate the projected growth in cruise activity.

Commercial: Land may become available on north Hooker's Point if petroleum companies are pressured to relocate. This land could then be used for commercial purposes.

## **4. East Port**

Dry Bulk: East Port is an optimal location for dry bulk business. Any private property that becomes available should be considered for expanded dry bulk and other compatible cargo uses.

## **5. Pendola Point/Port Sutton**

Dry and Liquid Bulk Operations: current bulk activities should be preserved and enhanced consistent with customers' future requirements.

Future Development: the south side of Pendola Point is one of two sites that offers significant long-term potential for filling to create additional land. Potential uses compatible with this area include container, general cargo, dry bulk and or liquid bulk.

## **6. Big Bend**

Dry Bulk and or Liquid Bulk Operations: The TPA, under long-term lease with an aggregates company, is in the process of developing an aggregates terminal at the TPA-owned Port Redwing site. Port Redwing is a long-term attractive location for the development of additional bulk marine terminal facilities. Widening and deepening the Big Bend Channel would be a prerequisite to pursuing the site's full potential.

Future Development: The Big Bend port area is a highly attractive location for the long-term development of marine terminal facilities. In addition, the potential availability of nearby industrial property provides the opportunity to develop off-port activities (tank farms, truck terminals, warehousing, etc.).

## **7. East Bay**

Future Development: The East Bay is a second (south Pendola Point is the other) site that offers long-term potential as a fill site for creating additional port land. The site, (south of Causeway Boulevard, east of Berths 204-209, west of East Port) provides a potential location for creating additional land to accommodate a wide range of marine uses including container, general cargo, liquid or dry bulk operations, cruise and industrial uses.

## **E. Challenges to Achieving the Twenty Year Land Use Vision**

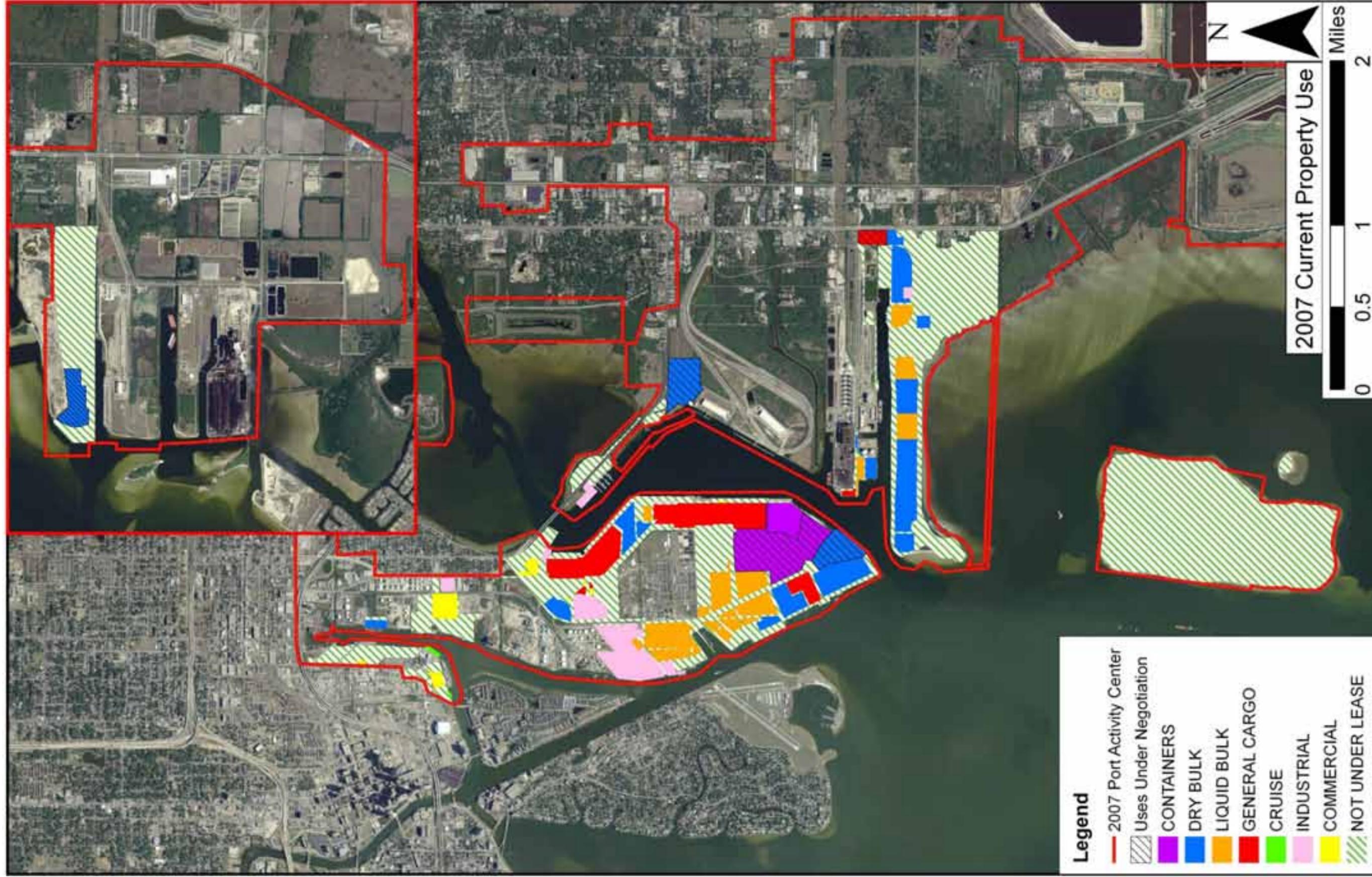
The proposed land use vision serves as a long-term guide to the TPA and its Master Plan. It provides a concept of what the future layout and development of the Port could be. The TPA and the private sector face a number of challenges in pursuing the 20 year land use vision in its entirety. The most significant challenge for the TPA is that it does not own much of the property included in the vision (Exhibit V-6). The TPA has limited ability to influence the use of property it does not own. It can be assumed that each individual land owner will do what is in its own best interest, which may conflict with TPA's interests or those of the Port as a whole. Even on property which TPA owns, it will face challenges. Refer to Exhibits V-11 and V-12 for some of TPA's significant challenges to achieving its twenty year land use vision for TPA-owned property.

**Exhibit V-11  
Significant Challenges to Achieving 20 Year Land Use Vision**

<b>Location</b>	<b>Berth</b>	<b>Land Use Vision</b>	<b>Tenant</b>	<b>Challenge</b>
Hooker's Point	219	Liquid Bulk	Tarmac America	Aggregate lease through 2021/2051
Hooker's Point	215	Container	Votorantim	Aggregate lease through 2037/2067
Hooker's Point	206	Container or General Cargo	Ports America	Location of proposed new reefer warehouse requires careful consideration to avoid potential long-term conflicts with container business
Hooker's Point	242-258	Commercial or Liquid Bulk	Private petroleum companies	Land is privately owned, and TPA has limited ability to influence land use
Big Bend	300	Liquid Bulk or Dry Bulk	Andino Cements, USA	Need to widen and deepen Big Bend Channel Much of the property is privately owned

*Source: Norbridge, Inc. and TPA*

Exhibit V-12  
TPA Current 2007 Land Uses



Source: TPA and Moffatt & Nichol

## **VI. Future Facility Demand, Capacity and Requirements**

### **A. Introduction**

This chapter provides a description of TPA's facilities and operations and determines the current and future capacity necessary to meet the market outlook and demand forecasts presented in Chapter IV. The commodity and cargo forecasts and range of expectations of future volumes are converted to facility requirements in order to provide a basis for strategic and physical planning for next 20 years. The requirements for each major operation are then compared to the available and potential future capacity to estimate the potential future investment requirements for additional capacity. These requirements provide the basis for the TPA's MP. The specific infrastructure and access needs for each cargo type and location are assessed in Chapter VII.

Quantifying current capacity and comparing it to forecasted demand is an important step in determining future physical requirements. It is important to note, however, that this type of analysis cannot predict how private companies who lease property from TPA (and consequently control the capacity) will use or utilize this capacity in the future. Furthermore, other factors such as individual company priorities and market expectations, lease renewals and expirations, infrastructure conditions, strategic initiatives by TPA, other Port of Tampa residents and/or competitors, and actions by third parties such as USACE can all affect the need for additional capacity.

The following cargoes are assessed in this chapter:

- Liquid bulk
  - Petroleum products
  - Other liquid bulk
- Dry bulk
  - Construction materials and aggregates
  - Other dry bulk
- Containerized General Cargo
- Breakbulk/General Cargoes that includes:
  - Forest products
  - Other general breakbulk cargo
  - Refrigerated cargo
  - Scrap metal
  - Steel products
  - Vehicles
- The Cruise business
- The Shipyard business

## **B. Liquid Bulk**

### **1. Petroleum Products – Hooker’s Point/Port Ybor**

#### **a) Facilities and Capacity**

Two groups of petroleum terminals are located on the west side of Hooker’s Point (Exhibits VI-1 and VI-2): non- TPA owned property and TPA – owned property.

##### *(1) Non – TPA Owned Property:*

Five private petroleum products terminals are located along the east side of Ybor and Sparkman Channels in Upper Ybor, Port Ybor and Hooker’s Point (Exhibit VI-2). These five terminals are owned and operated by:

- Amerada Hess
- BP Products
- Central Oil Company
- CITGO
- Marathon Ashland Petroleum

With the exception of CITGO, these companies do not have access to the Central Florida Pipeline (CFP) whose terminus is located near Berths 223 and 224 on Hooker’s Point.

Exhibit VI-1  
Location of Petroleum Terminals



Source: TPA

**(2) TPA – Owned Property:**

Four companies lease terminal space from the TPA in the vicinity of Berths 223-227 which are located on the southwestern portion of Hooker’s point. The four companies are:

- TransMontaigne
- Murphy Oil
- Amalie Oil
- Kinder Morgan/Central Florida Pipeline

Kinder Morgan and TransMontaigne have access to the CFP, which is owned and operated by Kinder Morgan.

**Exhibit VI-2  
Petroleum Products Companies in Tampa Bay**

TPA Tenant	Location	Company	Berth
Yes	Hooker’s Point	Amalie Oil	227
		Kinder Morgan	223, 226
		Murphy Oil	227
		TransMontaigne	227
	Pendola Point	Martin Gas	24b
		Sea-3	30
No	Hooker’s Point	Amerada Hess	258
		BP Products	243
		Central Oil Company	243
		CITGO	244
		Marathon Ashland	254
	Port Tampa	Chevron	
		Motiva Enterprises	

*Source: TPA.*

In addition there are private facilities at Port Tampa, including Chevron and Motiva Enterprises (Exhibit VI-1 and VI-2).

Four petroleum products tenants use the REK Pier (Berth 226 and 227) (Exhibits VI-3 and VI-4). The pier has four header systems that serve Murphy Oil, TransMontaigne, Amalie Oil, and Kinder Morgan. It also has an unloading arm for ammonia for the nearby CF Industries ammonia terminal. TPA also has plans to initiate the design and construction of a new petroleum products berth (Berth 222) along Cut D north of Berth 220 in 2008. This project is the requisite first step

to rebuilding the REK Pier. It provides, together with an expanded Berth 220, the berthing capacity required to accommodate demand while Berths 226 and 227 are reconstructed.

Exhibit VI-3  
Liquid Bulk Terminals Serviced by REK Piers



**Exhibit VI-4**  
**General View of REK Pier and Basin**



*Source: TPA.*

**b) Capacity and Requirements: Tank Storage**

TPA petroleum product tenants had a combined 2007 throughput of 7.7 million tons. These tenants have an estimated total static storage tank capacity of 350,000 tons. This level of static capacity implies that the tenants collectively experienced an average storage tank capacity turn time of 16 days. Discussions with petroleum terminal companies indicate it is practical to reduce tank turn times to a 7-10 day range for a truck-served terminal, and to five days for a pipeline-served terminal based on demand requirements. Assuming a 60:40 truck to pipeline mix, this would suggest that TPA's petroleum product tenants have a total average annual storage tank capacity of 17 to 18 million tons.

In addition, Kinder Morgan has plans to build a pipeline from its Hooker's Point facility to Tampa International Airport, and add storage tanks which would increase its capacity by an estimated 45 percent. TransMontaigne also added a new storage tank recently. Consequently, the 17-18 million ton capacity estimate may be conservative, and suggests that tank storage capacity will likely be adequate during the twenty year planning period.

**c) Capacity and Requirements: TPA Berths**

Petroleum products are currently handled at TPA’s Hooker’s Point Berths 220, 223, 226, and 227 and Pendola Point Berths 30 and 24B. Berths 223-227 handle the vast majority of TPA petroleum cargoes. The MP berth capacity analysis focuses on the REK berths (Exhibit VI-5).

Current berth utilization at TPA Berths 223, 226, and 227 is generally high and approaching industry benchmarks for maximum utilization levels (45 percent to 50 percent) for a single berth. These levels represent the maximum levels at which a berth can accommodate random vessel arrivals without berthing delays. A single berth, with careful scheduling among customers, can sustain higher levels of utilization, to avoid vessels being delayed.

**Exhibit VI-5  
Petroleum Berth Occupancy Metrics**

<b>Berth</b>	<b>Hours Berth Is Occupied</b>	<b>% of Total Available Hours Per Berth (14,616)</b>
223	5,004	34%
226	7,619	52%
227	6,052	41%
<b>Average</b>	<b>6,225</b>	<b>43%</b>

Note: Analysis Period: 21 months (January 4, 2005 – September 30, 2006)

*Source: Norbridge, Inc. analysis of TPA data*

In 2007, Berths 223, 226 and 227 handled an estimated 6.9 million tons of petroleum products while operating at an average utilization level of about 43 percent. While berthing delays do occur at these berths today, analyses indicate the delays are neither extended nor particularly onerous from a commercial perspective. Berthing delays, to a degree, are inherent to the petroleum products industry given the nature of tanker and barge vessel operations. There are a number of initiatives that the TPA, in conjunction with its petroleum tenants, vessel owners/operators and their agents can take to increase throughput at Berths 223-227 in the short-term. These initiatives, several of which are employed today include:

- Continuously updating all parties as to utilization and scheduling of the berths
- Coordinating vessel arrivals and departures to minimize delays
- Maximizing the capability and capacity of the manifolds at each berth to insure all products can be delivered via either berth to any tenant or tenant location.
- Notifying customers as far in advance as practical regarding potential for delays so they can plan accordingly
- Carefully scheduling vessels with hazmat cargoes to minimize the potential for restricting cargo operations to one berth, i.e. either Berth 226 or Berth 227

The strategic challenge for the TPA and its tenants is the deteriorating physical condition of Berth 226 and Berth 227. It is strongly recommended that these berths be reconstructed in order to avoid a failure and accommodate projected long-term demand. In order to reconstruct the berths, they need to be taken out of service for a minimum of 12 to 16 months. Removing these berths from service requires the TPA provide alternative capacity to accommodate tenant's ongoing requirements. The recommended plan, as defined in the TPA's strategic plan, involves the following steps:

- Expand the manifold capability and capacity at Berth 220 to maximize its petroleum product throughput potential and access to TPA's four petroleum tenants
- Construct a new petroleum product berth, Berth 222, that is capable of accommodating deep draft (45-50 foot) tankers and barges, that has a manifold capability and capacity to handle the requirements of a majority of the Hooker's Point tenants (short-term the four tenants served at Berths 223-227 and in the longer-term the private petroleum operators in northwest Hooker's Point and Port Ybor areas.
- Utilize available capacity at Berth 223 as required to supplement Berth 220 and 222 capacity
- Reconstruct Berths 226 and 227.

Time is of the essence in completing this expansion/modernization program and therefore it is recommended the TPA accelerate its planning for these projects.

## **2. Petroleum Products – Port Ybor/Port Redwing**

The petroleum product facilities located in Ybor Channel and the northwest section of Hooker's Point are privately owned. In the long-term, these privately owned facilities face a number of potential challenges. These challenges include:

- Potential berth constraints due to a combination of comparatively shallow drafts and an anticipated increase in the average size of tankers and barges delivering petroleum products to the Port during the 20 year planning horizon
- Urbanization and the associated pressure to convert port uses to commercial and residential uses as the City of Tampa and its economy continue to grow
- The potential for increased road congestion on 20<sup>th</sup> Street, SR 60 and other port roadways as demand across most lines of business and commodities continues to grow
- Lack of access to the CFP to serve the Central Florida market

Collectively, these challenges could potentially result in the closure of one or more of the private terminals. Strategically, it is in the interests of the TPA and the private operators to insure the Port has sufficient capacity to serve the West Central market. As recommended in the TPA's strategic plan, the TPA should assume a leadership role in working with the Port's private petroleum terminal operators to develop plans to address these challenges. Two options the TPA and the private petroleum operators should consider as part of their long-term planning are:

- Evaluating the long-term feasibility of relocating the private petroleum terminals from Ybor Channel to a Redwing/Big Bend greenfield site. This option is discussed in Chapter VII: Recommended Capital Investment Plan, Section C, Hooker's Point
- In the mid-to-long term, depending on the evolution of the tanker and barge fleets calling the Port, evaluate the feasibility of constructing a pipeline to connect the privately owned Ybor Channel and northwest Hooker's Point petroleum terminals with the TPA's deep draft tanker Berths 220, 222 and ultimately the reconstructed 226 and 227. This option is discussed in Chapter VII: Recommended Capital Investment Plan, Section E, Big Bend/Port Redwing, 2. Liquid Bulk.

### **3. Other Liquid Bulk Products**

#### **a) Facilities, Capacity and Requirements**

Installed capacity of other liquid bulks are located on approximately 49 acres at Port Sutton Berths 2, 21, 22, and 24b and on 44 acres at Hooker's Point Berths 220, 223, 224, and 226 (Exhibit VI-6). Commodities include sulphur and ammonia both of which are projected to decline from historical peaks. Most facilities are projected to handle lower volumes of cargo in the future. Given that existing capacity covered the peaks and the facilities are private, sufficient capacity is assumed to exist and therefore no further capital investment in additional capacity is anticipated to be required during the 20 year planning horizon.

**Exhibit VI-6  
Port Locations: Other Liquid Bulk**

Port Area	Commodity	Acres	Nearest Berth
Port Sutton	■ Molten sulphur	4	2
	■ Grain (for ethanol)	35	21,22
	■ Sulphur		
	■ Sulphur ■ Other liquid bulk	10	24b
Hooker's Point - West	■ Sulphur	9	220
Hooker's Point - REK	■ Ammonia ■ Caustic soda ■ Other liquid bulk	35	223, 224, 226
Port Sutton	■ Molten sulphur	4	2

*Source: Norbridge, Inc. and TPA.*

### **C. Dry Bulk**

#### **1. Aggregates - Hooker's Point, Port Sutton/Pendola Point, East Port, Big Bend/ Port Redwing**

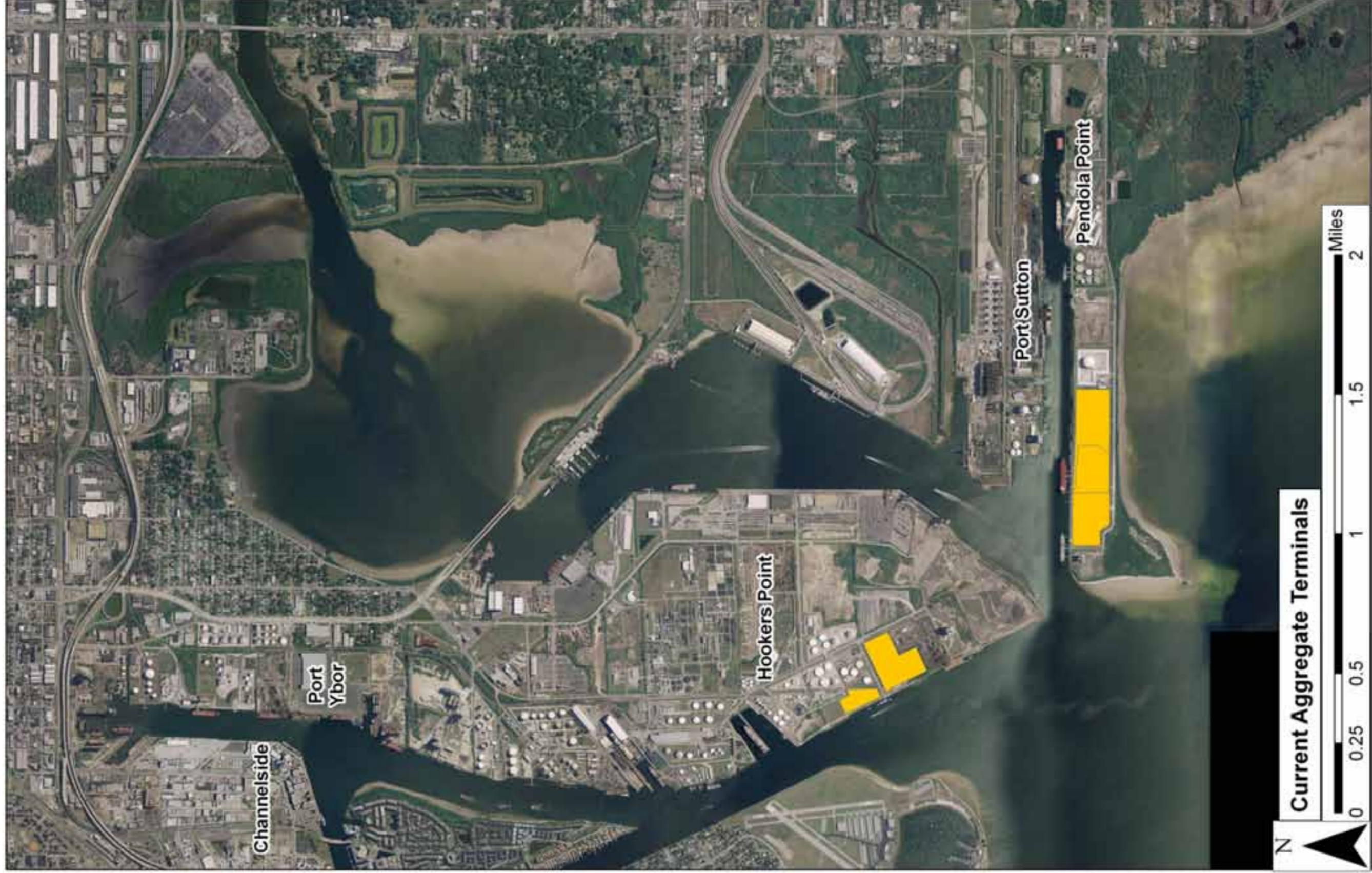
##### **a) Facilities**

Aggregate terminals are generally semi-specialized, single berth installations designed by and for the specific needs of the company leasing and or operating the terminal. While it is technically and operationally possible for a terminal operator to handle the imports of a number of companies, the nature of the product, handling equipment, storage requirements and load out needs generally dictate the dedication of a terminal or terminal area to a single user. The aggregate terminals at TPA are single user facilities ranging in size from five acres to 16 acres, with several larger terminals up to 37 acres under development or in the planning process.

Aggregate terminals currently occupy five berths and approximately 66 acres of TPA's total port assets. Two aggregate terminals are currently located on TPA-owned property at Hooker's Point and three at Port Sutton/Pendola Point (Exhibit VI-7). This infrastructure is in good condition and the tenants are responsible for most of the facility maintenance.

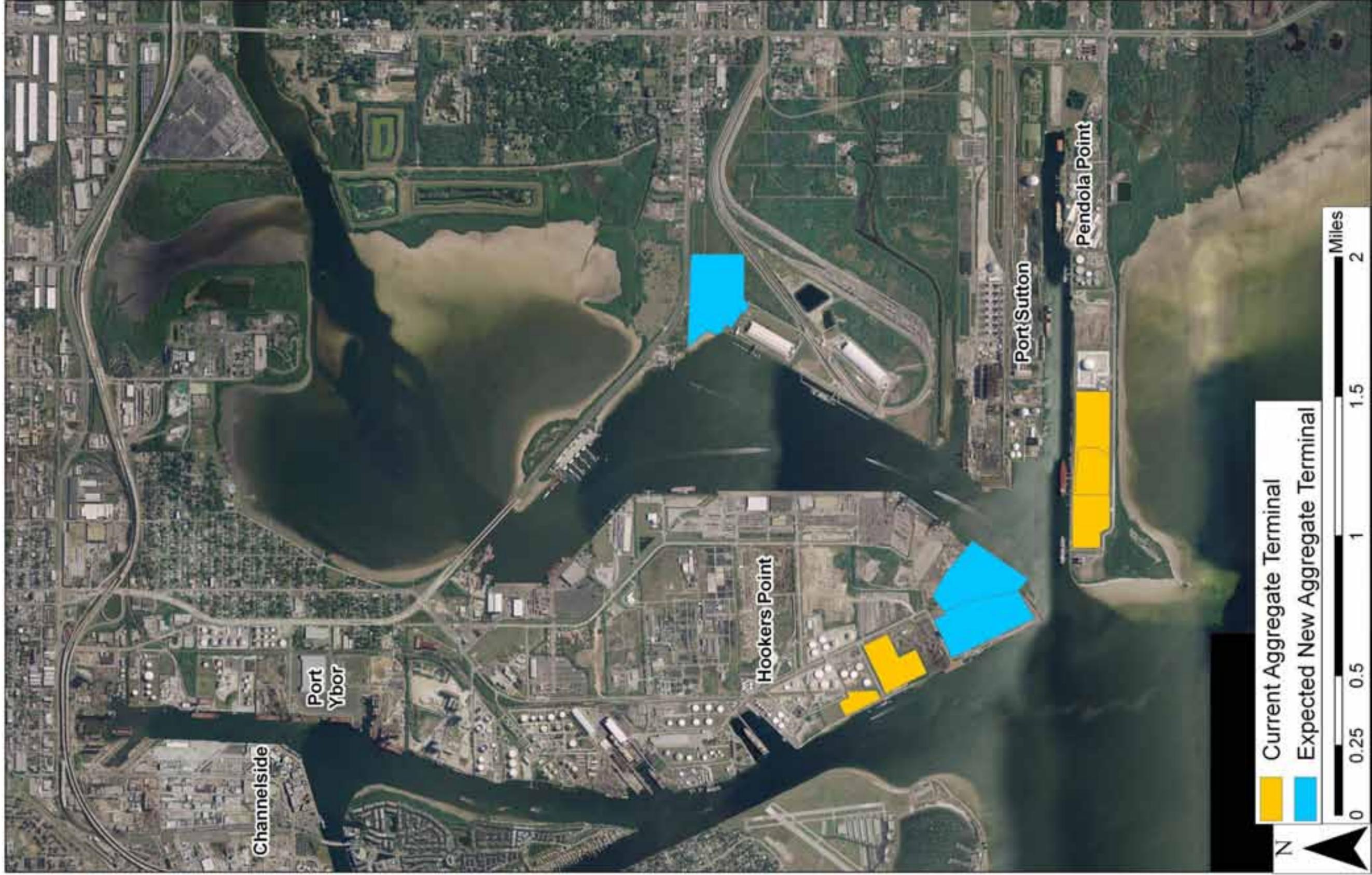
The TPA anticipates four new aggregate terminal developments in the short-term. These new terminals will be located at Hooker's Point, East Port, and Big Bend (Exhibit VI-8). These terminals are expected to become operational in 2009 and 2010, although it is expected to take several years for the new tenants to reach their maximum throughputs as defined in their lease agreements.

**Exhibit VI-7  
TPA Current Aggregate Terminals**



Source: TPA

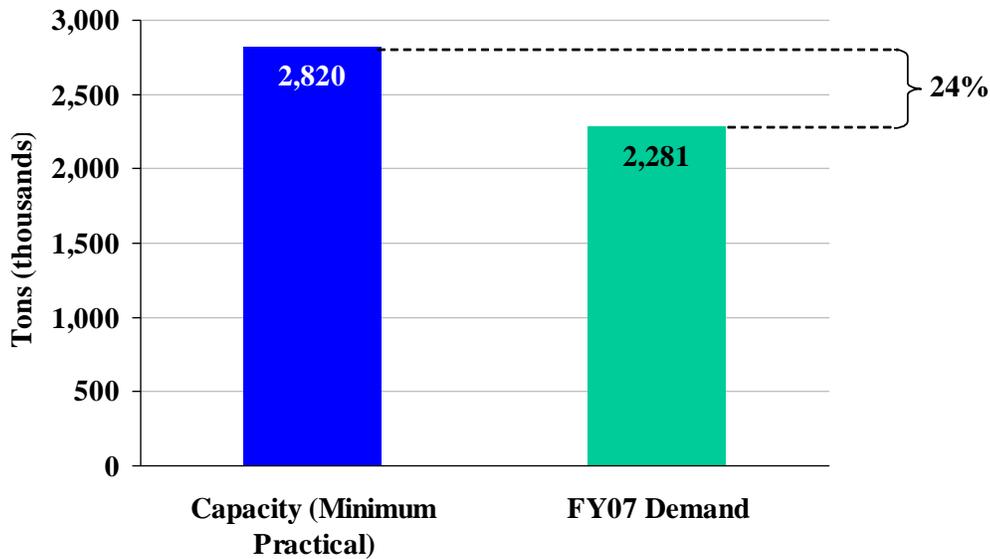
Exhibit VI-8  
TPA Expected New Aggregate Terminals



### b) Storage Throughput Capacity and Requirements

The current annual storage throughput capacity is estimated to be 2.8 million tons, which exceeds TPA's 2007 aggregate volume by about 24% (Exhibit VI-9). Norbridge has assumed that the TPA's aggregate tenants have considered their long-term throughput requirements in negotiating their marine terminal lease agreements with the TPA. Consequently, it is assumed that they will be able to achieve the tonnage guarantees to which they agreed in their lease contracts. Consequently, these tonnage guarantees, in total, are assumed to be the minimum practical storage capacity for TPA's aggregate terminals.

**Exhibit VI-9**  
**Existing Aggregate Terminals: Estimated Current Minimum Practical Throughput Capacity vs. FY07 Demand**

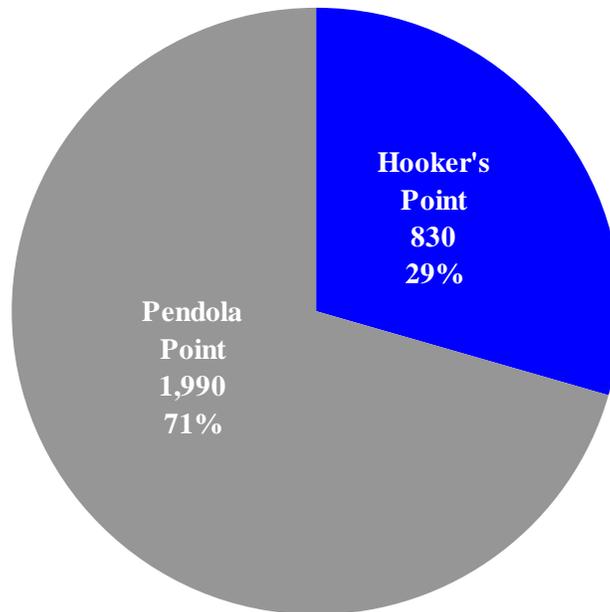


Note: Includes only signed leases as of October 1, 2007

Source: Norbridge, Inc. and TPA.

Of the 2.8 million tons of annual storage throughput capacity, about 2.0 million tons, or about 70%, is located on Pendola Point (Exhibit VI-10).

**Exhibit VI-10**  
**Existing Aggregate Terminals: Estimated Current Minimum Practical Storage**  
**Throughput Capacity by Location**  
**(thousands of tons)**

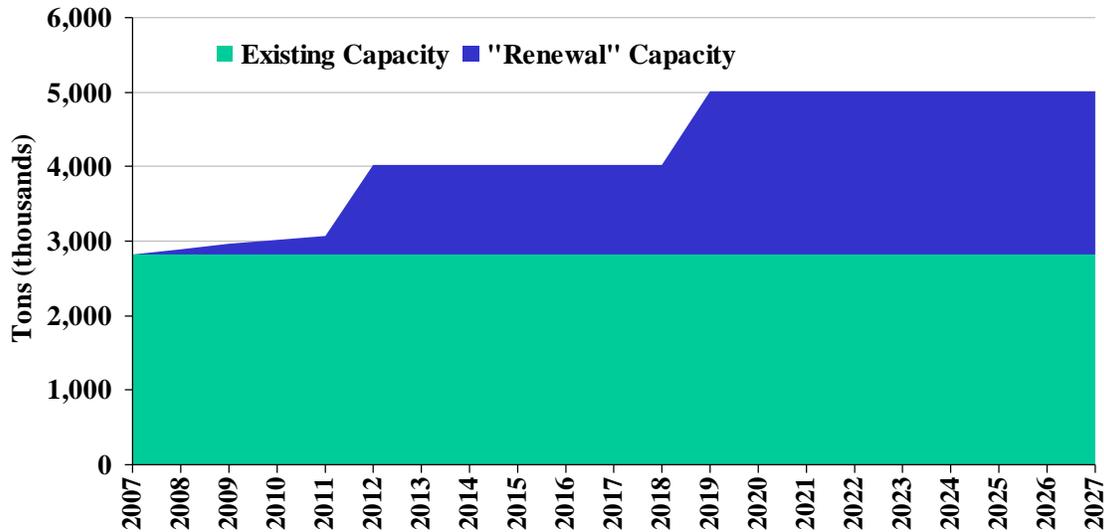


Note: Includes only signed leases as of 10/1/07. Total = 2.8M tons per year

Source: Norbridge, Inc.

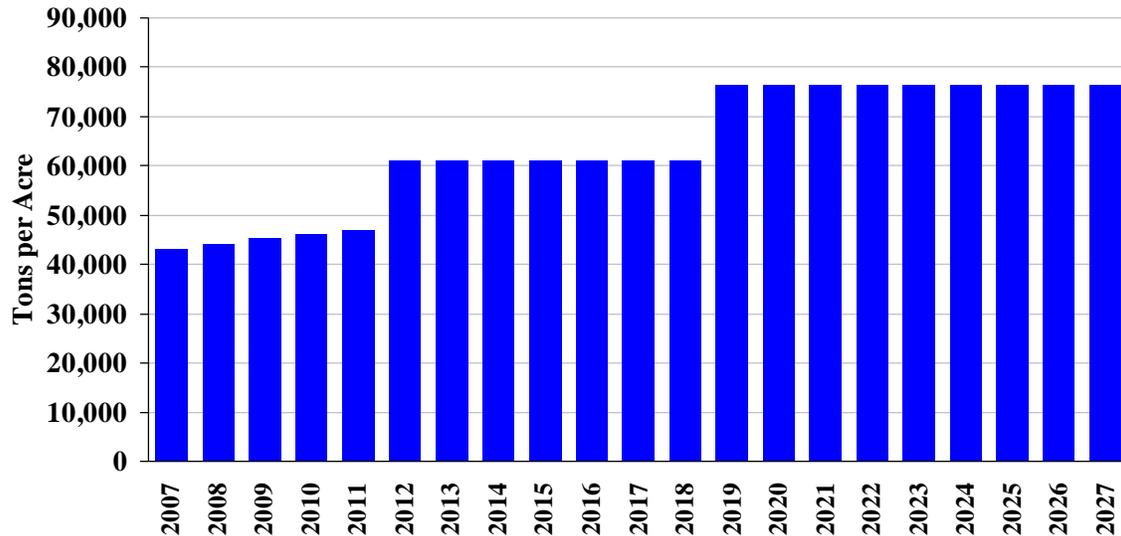
In both 2012 and 2019, existing aggregate tenant leases expire, which will provide TPA with the opportunity to increase, through lease negotiations, minimum throughput guarantees for these facilities. The current throughput guarantees are significantly lower than recently concluded agreements. Renewing these two leases at higher throughput guarantees could increase storage capacity at existing terminals by nearly 80%, or to 5.0 million tons (Exhibit VI-11). The corresponding increase in annual minimum throughput capacity per acre for existing terminals would then increase from about 43,000 tons per acre today to more than 77,000 tons per acre (Exhibit VI-12).

**Exhibit VI-11**  
**Existing Aggregate Terminals: Projected Future Minimum Practical Storage Capacity**  
**2007 - 2027**



*Source: Norbridge, Inc., and TPA.*

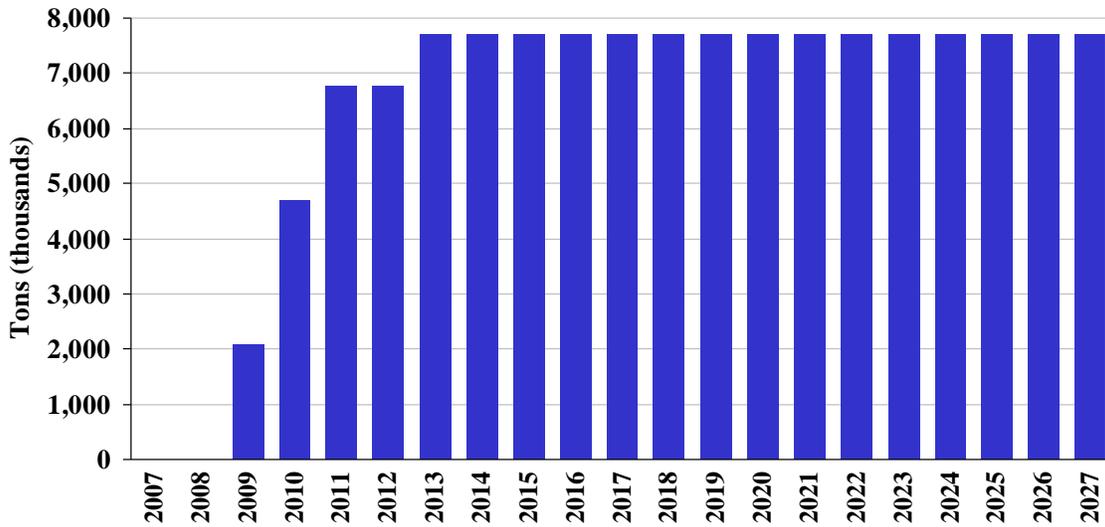
**Exhibit VI-12**  
**Existing Aggregate Terminals: Average Throughput Capacity per Acre**  
**2007-2027**



*Source: Norbridge, Inc. and TPA.*

As previously mentioned, four new aggregate terminal are anticipated to become operational over the next few years. As these additional terminals come on line, they will add nearly 8 million tons of additional minimum practical storage capacity (Exhibit VI-13).

**Exhibit VI-13**  
**Anticipated Aggregate Terminals: Minimum Practical Storage Capacity**  
**2007 - 2027**

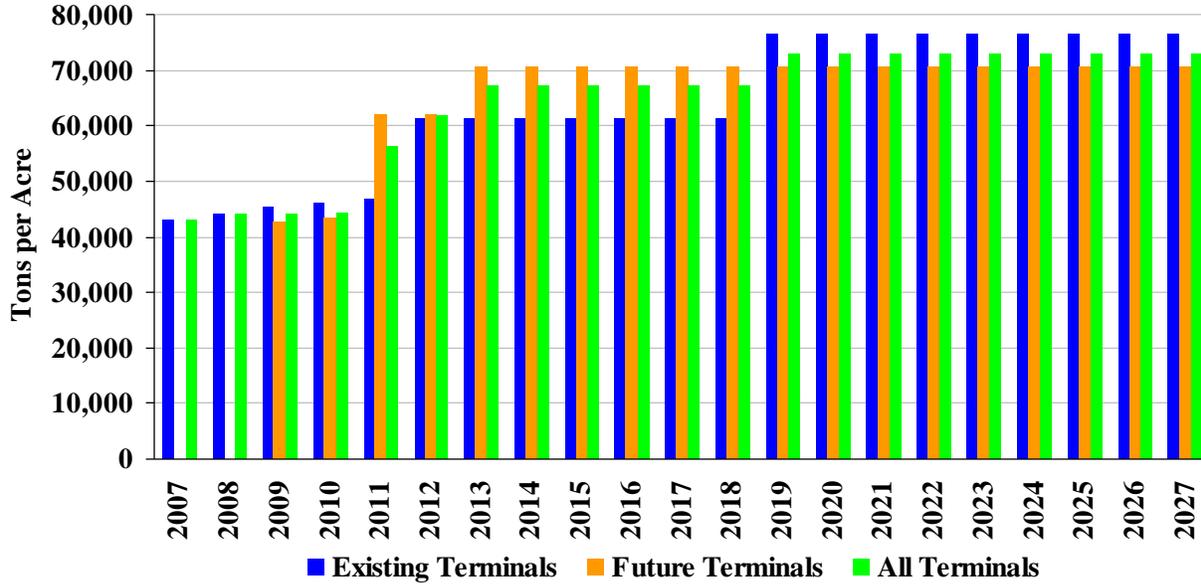


Note: Includes LOI's as of October 1, 2007

Source: Norbridge, Inc. and TPA.

By 2019, the average annual minimum throughput per acre for all aggregate properties should surpass 70,000 tons per acre (Exhibit VI-14).

**Exhibit VI-14**  
**Expected Average Throughput Capacity per Acre: Aggregate Terminals**  
**2007 – 2027**

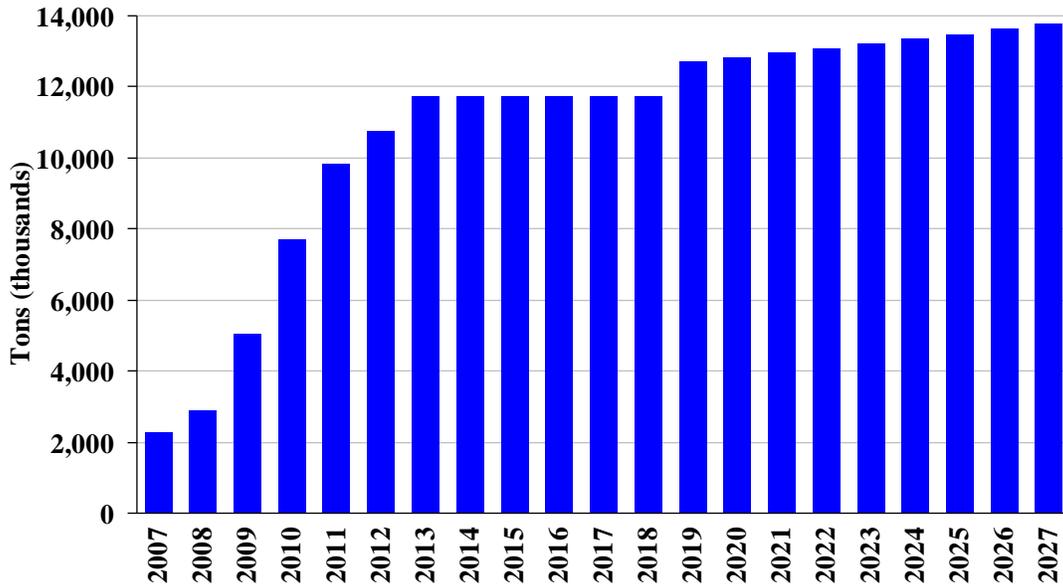


Note: Includes signed leases and LOI's as of October 1, 2007

Source: Norbridge, Inc. and TPA.

Once the new aggregate terminals are operational , TPA’s total annual aggregate minimum practical storage capacity is expected to be exceed 12 million tons in 2019, and increase by a projected 1 percent annually thereafter due to anticipated capital and process improvements at existing terminals (Exhibit VI-15).

**Exhibit VI-15  
Existing and Anticipated Aggregate Terminals: Minimum Practical Storage Capacity  
2007 – 2027**

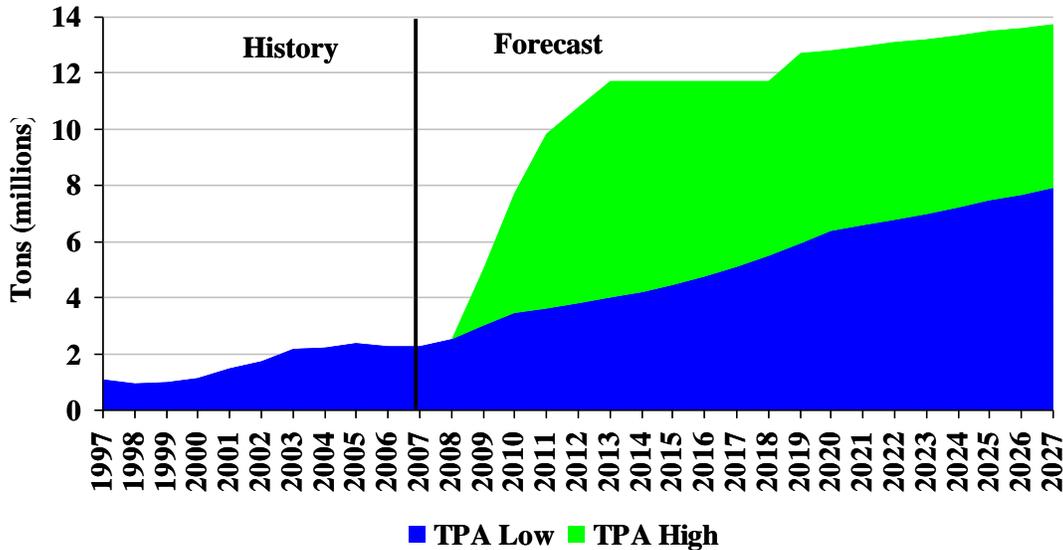


Includes signed leases and LOI's as of October 1, 2007

*Source: Norbridge, Inc. and TPA.*

TPA's forecasted aggregate volume is expected to range between 7.9 and 13.8 million tons by 2027 (Exhibit VI-16), compared to 2007 throughput of 2.3 million tons.

**Exhibit VI-16  
Projected Aggregate Demand  
2007 - 2027**



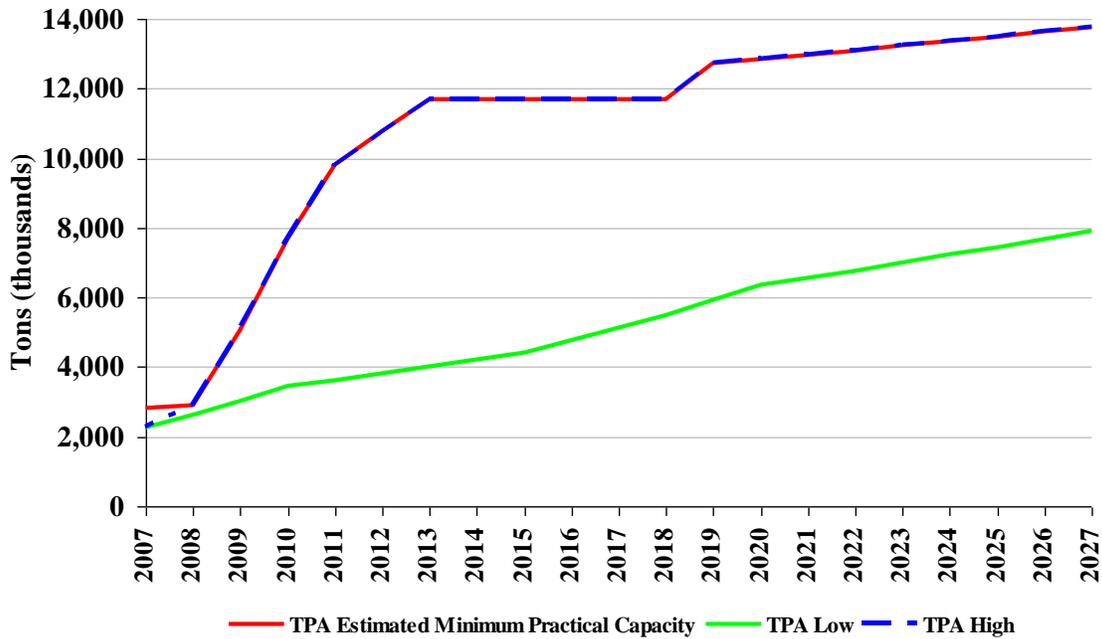
Note: Includes signed leases and LOI's as of October 1, 2007

*Source: Norbridge, Inc. and TPA.*

Total aggregate storage capacity is expected to be adequate for both the low and high forecast demand scenarios (Exhibit VI-17), and consequently no additional terminals are expected to be required to meet projected demand over the next twenty years. As Exhibit VI-17 shows, the low demand forecast is well below the estimated minimum practical storage capacity. The high demand forecast, which is based on the contracted minimum annual throughput guarantees, does not exceed the minimum storage capacity, i.e. the minimum annual guarantees. In all likelihood, the TPA's aggregate tenants have the ability to expand capacity significantly beyond the negotiated minimum annual guarantees that equate to the high forecast. Potential options for increasing capacity include accommodating more ships per year, stockpiling the aggregate higher, and increasing truck or rail load out operations. Based on the foregoing, the capacity throughput estimate represents a floor or minimum capacity and the TPA's aggregate tenants will likely have the ability to accommodate significantly higher growth should it materialize.

Given the potentially significant latent capacity that exists in the current and new aggregate facilities being developed, the MP does not anticipate a need for additional aggregate terminal investment during the planning period. However, if such a need arises, the Port Redwing area provides a logical location, subject to other future demand, for developing additional aggregate terminal capacity.

**Exhibit VI-17**  
**Aggregate Terminal Estimated Storage Capacity\* vs. Projected Demand**  
**2007 - 2027**



\*Note: As discussed in this section, the high forecast is equal to the sum of the minimum annual guarantees (MAGs) in the TPA's aggregate terminal lease agreements. Since the lessees have committed to move volumes equal to or greater than the MAGs, then the minimum practical capacities of the terminals must equate at least to the MAGs. The Master Plan therefore assumes the high forecast and the minimum practical berth and storage capacities of the aggregate terminals equal the terminal MAGs.

*Source: Norbridge, Inc., TPA and Moffatt & Nichol.*

**c) Berth Capacity and Requirements**

As discussed earlier, aggregate terminals are generally semi-specialized single berth installations designed for the specific needs of the tenant company. Each TPA aggregate customer has its own berth which has been designed with tenant input. Therefore, it is assumed berth capacity is sufficient to accommodate demand over the lease period.

**2. Other Dry Bulk**

**a) Facilities, Capacity and Requirements**

Installed capacity of other dry bulk cargoes is located on approximately 44 acres at Port Sutton Berths 3, 24, 26, and 31, and approximately 25 acres at Hooker's Point Berth 219 (Exhibit VI-18). Commodities include cement and coal, each of which are projected to remain below historical peaks throughout the planning horizon. Given that existing capacity was adequate for prior peak volumes, and that the facilities are private, sufficient capacity is assumed to exist and no further investments in additional capacity are required over the forecast horizon.

**Exhibit VI-18  
Port Locations: Other Dry Bulk**

Port Area	Berth	Commodity	Acres
Port Sutton	3	▪ Cement	6
	24	▪ Cement ▪ Gypsum ▪ Coal	5
	26	▪ Cement	5
	31	▪ Cement	28
Hooker's Point	219	▪ Cement	25

*Source: Norbridge, Inc. and TPA.*

## **D. Containerized Cargo**

### **1. Containers – Hooker's Point**

#### **a) Facilities and Capacity**

The TPA's container cargo operations are located on the southeast side of Hooker's Point at Berths 212 and 213 (Exhibit VI-19). Ports America operates the facility under a concession agreement with the TPA using three cranes, 1,750 feet of berth and 24 acres of container storage yard. The terminal lies within the flight envelope of the Peter O. Knight Airport, which is to the west of the container terminal and on the southeast corner of Davis Island. Improvement projects currently in progress or scheduled to begin shortly include:

- Construction of an entrance gate south and east of the Guy N. Verger Boulevard – GATX Drive intersection
- Expansion of the storage yard by 12 acres behind Berth 213
- Fencing and security improvements
- Extension of Berth 213, which will add approximately 266 feet of berth, for a total of 1,266 feet

**Exhibit VI-19**  
**Hooker's Point Container Terminal**



*Source: TPA.*

**b) Yard Capacity and Requirements**

Current annual throughput capacity of the storage yard (based on 36 gross terminal acres) is estimated to approximate 132,000 TEUs (Exhibit VI-20), and is insufficient to meet projected demand under the high forecast through 2009 (Exhibit VI-21). The container terminal capacities have been developed through the use of Moffatt & Nichol's container terminal capacity models.

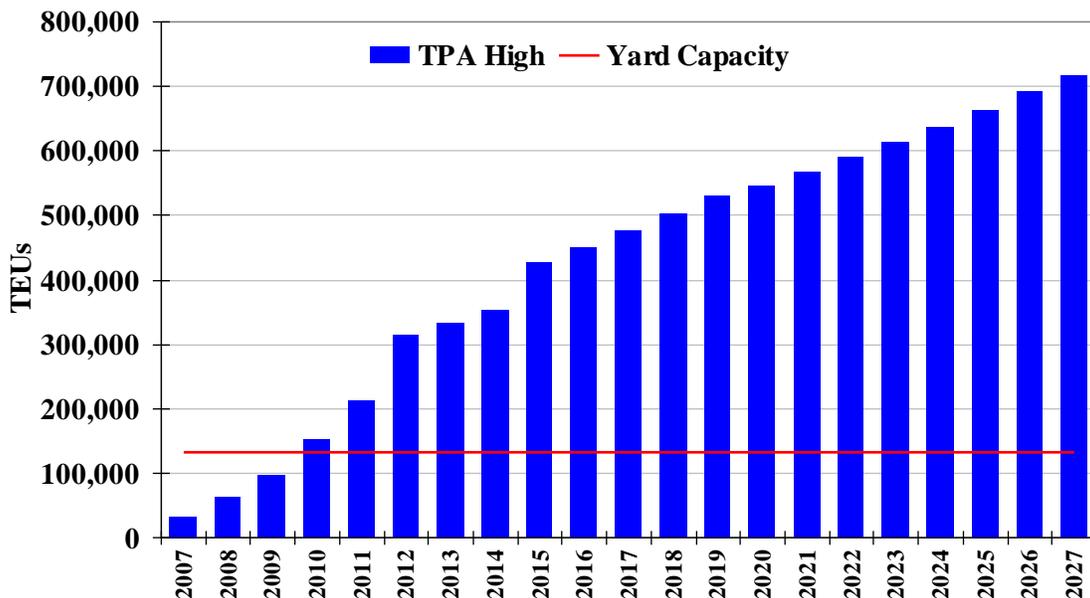
**Exhibit VI-20**  
**Estimated Long-Term Capacity – Hooker’s Point Terminal**

Option Area	Total Terminal Area (acres)	Berth Length (feet)	Total Terminal Throughput (TEUS per year)
Current	36	1,750	132,000
1	56	2,016	290,000
2	116	2,534	739,500

*Source: Moffatt & Nichol.*

As of 2010, demand under the high forecast will exceed estimated capacity and the terminal will therefore need to expand to meet projected demand.

**Exhibit VI-21**  
**Container Yard Capacity vs. High Demand**  
**2007 – 2027**



*Source: Norbridge, Inc. and Moffatt & Nichol.*

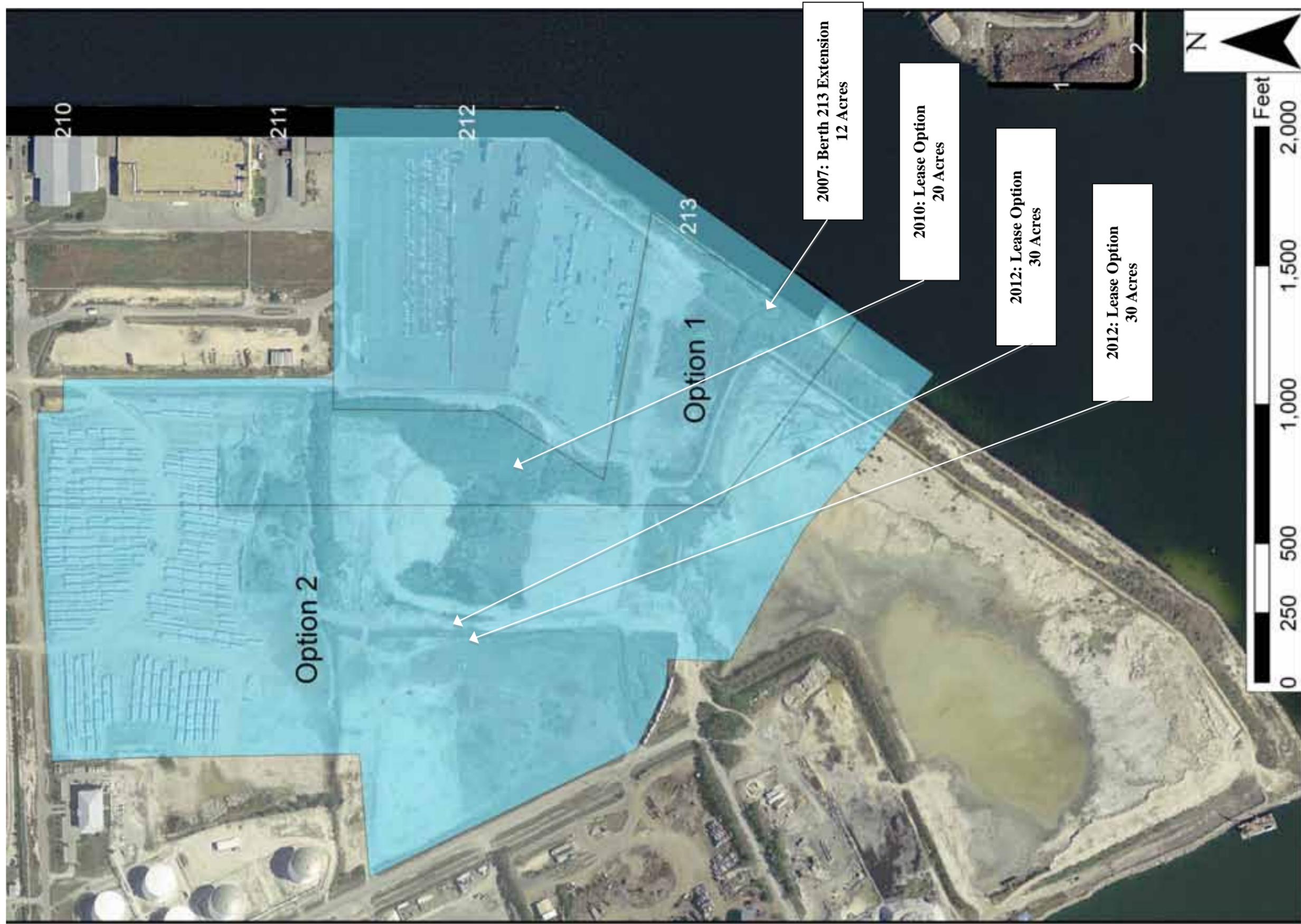
Ports America, via its operating concession with TPA, has the option of expanding its container terminal footprint (Exhibit VI-22). This expansion includes two separate areas which are commonly referred to as Option Area 1 (20 acres) and Option Area 2 (60 acres). Ports America will need to exercise these options in order to meet the high demand forecast beyond 2009. The rate at which they expand into these areas will be determined by the number of new container lines attracted to the Port, the vessel call patterns of these new customers and the average number of containers loaded and discharged from each vessel. The contiguous nature of the expansion properties, in combination with the fact that the major investment requirements are not complex

(paving, equipment) should provide Ports America significant flexibility to size its expansion reasonably closely to demand.

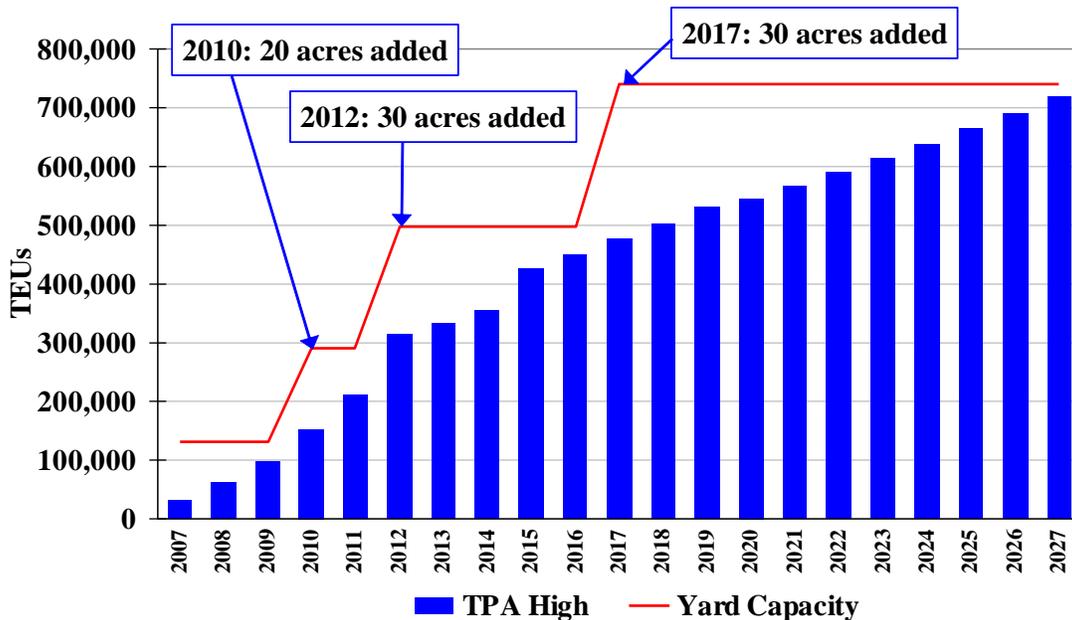
Assuming continued use of a top-pick operation, all 116 acres will be required to meet the projected high forecast in 2027. A top-pick operation provides several advantages to Ports America including low capital investment, lower manning levels, significant operational flexibility and the ability to transition from a low density stack operation to a medium density stack operation as demand requires. Including the addition of the 12 acres at Berth 213 (previously discussed), the container terminal size should be adequate if 20 acres (Option Area 1) are added in 2010, 30 acres of Option Area 2 are added in 2012 and the remaining 30 acres of Option Area 2 are added in 2017 (Exhibit VI-23).

Ports America's option areas (Option Areas 1 and 2), while being adequate in size, are not ideally configured for an efficient container terminal operation. The area tends to be "deep" (the storage areas are relatively far from the berth areas) compared to the berth geometry. This may necessitate additional drivers and yard hustlers to support medium to high productivity vessel stevedoring operations. Should demand require an expansion of the current concession area, then the TPA and Ports America should carefully consider expanding northward into Berth 211 and Berth 210 (as required) and adjust the option expansion areas to align with this development. The goal of the alignment should be to create depth to berth length ratios of ideally 1.5:1 to 2:1. The result would be a terminal with significant berth capacity and a backland area more ideally suited to support efficient, productive, high capacity operations.

**Exhibit VI-22  
Container Terminal Expansion Area**



**Exhibit VI-23  
Projected High Demand vs. Container Yard Capacity Requirements  
2007 – 2027**



*Source: Norbridge, Inc. and Moffatt & Nichol.*

**c) Berth Capacity and Requirements**

Container berth capacity is a function of the interaction of a number of complex factors including total demand, the number of vessel calls per week, the size and arrival departure patterns of each vessel, hours of operation, the number of gantry cranes available to work the vessels, crane productivity and commercial considerations related to the container shipping lines’ needs and the competitive positioning of the Port.

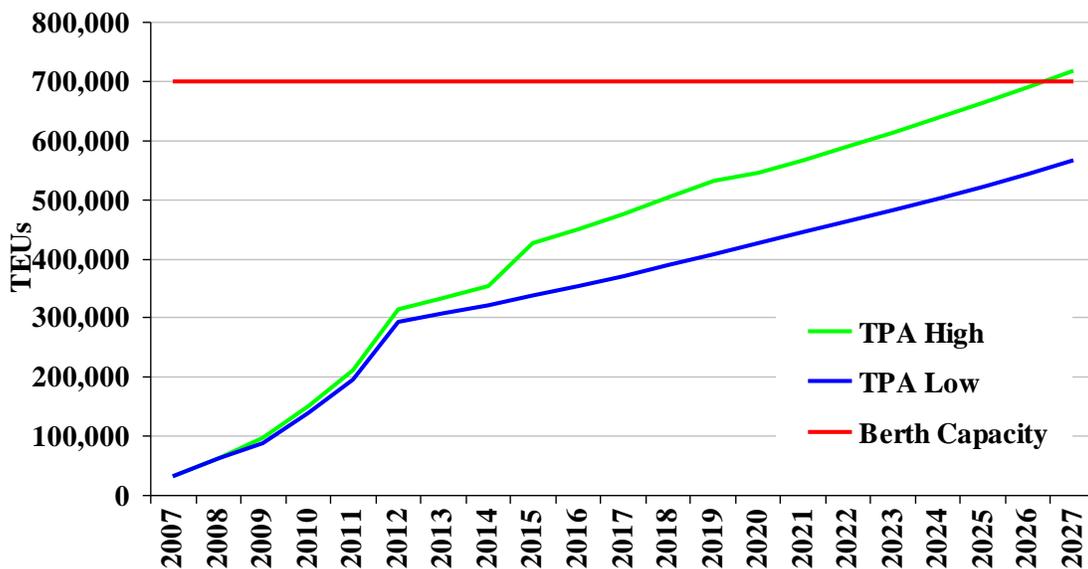
The capacity of Berths 212-213 is currently estimated to approximate 700,000 TEUs per year (Exhibit VI-24). To achieve this maximum practical capacity, two additional container gantry cranes will likely be required by 2010 and three to five between 2012 and 2026, net of replacements. Additional berth length and cranes may be required depending on the number of container services, vessel call patterns, and vessel load/discharge requirements which develop over the twenty year planning period. Two alternatives are recommended for expansion to accommodate the high demand forecast as follows:

- Carefully consider options to expand southwestward into Berth 214 and the current aggregate facility. This will require either relocating the aggregate tenant to Hooker’s Point or Big Bend/Port Redwing:
  - Hooker’s Point: relocating the aggregate berth further south and west to allow for the addition of 1,100 feet of marginal container wharf beyond the current Berth 213 extension. This would also likely require a reconfiguration of the aggregate leasehold behind the Berth 214

- Big Bend/Port Redwing: relocating the aggregate tenant to Port Redwing. This would likely require widening and deepening the access channel which ultimately will be required to support sustained development of the Big Bend/Port Redwing area
- Carefully consider incremental expansion into Berth 211 and then Berth 210 to accommodate growth. As noted above this should include a reconfiguration of the concession area in order align the storage areas to the berth areas

The selection of a preferred option will require a detailed analysis of the capacity, operational, economic, competitive and financial effects of each option. The analysis will also require a joint effort on the part of the TPA and Ports America to be successful.

**Exhibit VI-24  
Projected Container Demand vs. Current Berth Capacity  
2007 – 2027**



*Source: Norbridge, Inc. and Moffatt & Nichol.*

According to the concession agreement between Ports America and TPA, Ports America will be financially responsible for acquiring the additional container gantry cranes required to handle forecasted container volumes. Hence, no investment for cranes and other equipment is included in the TPA’s capital investment program. Ports America and TPA should periodically review equipment requirements.

## **E. Breakbulk Cargo**

### **1. Breakbulk – Hooker’s Point/Port Ybor/Port Sutton**

#### **a) Facilities and Capacity**

The largest volume breakbulk cargo groups projected to be handled at the TPA’s breakbulk marine terminals are:

- Steel products
- Scrap metal
- Vehicles
- Refrigerated products
- Other miscellaneous breakbulk cargo.

These cargoes are handled primarily on the east side of Hooker's Point (Exhibit VI-25), the southwest side of Hooker's Point (scrap metal), Port Sutton (scrap metal), and Port Ybor as illustrated in Exhibit VI-26.

**Exhibit VI-25**  
**Hooker's Point Breakbulk Cargo Berth 208**



*Source: TPA.*

Exhibit VI-26  
Hooker's Point and Port Ybor Breakbulk Cargo Berths  
(Excluding Scrap Metal Berths)



Source: TPA

It is important to note that with few exceptions, breakbulk commodities are basic commodities that tend to fluctuate significantly year to year. New sources of competition (sourcing, shipping line, beneficial cargo owners, ports) tend to emerge and or disappear relatively quickly. Consequently, planning for and investing in breakbulk general cargo facilities, absent long-term contracts, can be risky. In order to reduce risk, flexibility needs to be emphasized in planning breakbulk facilities. Breakbulk facilities, within reasonable technical and financial boundaries, need to be designed to handle the widest range of breakbulk cargoes possible. While the pursuit of this “design guideline” is comparatively straightforward regarding berths, it becomes significantly more complex when backland storage areas are considered. For example, key factors to be considered are the locations and mix of open and covered storage, dry versus temperature controlled covered storage, the comparative need and layout of rail facilities and pavement types and thicknesses.

In today’s increasingly complex and volatile breakbulk markets, the best design guideline is a medium to long-term contract with guarantees between a port and breakbulk cargo customer. The recommended MP for the TPA’s breakbulk cargo business incorporates consideration of the foregoing challenges and criteria.

The Ports America general cargo (break bulk) concession covers Berths 201-202, 206, 208-211 on the east side of Hooker’s Point (Exhibit VI-27):

- Berths 201 and 202: General cargo facility with 186,000 square feet of storage in two transit sheds. Ports America, Cargill, and Tropical operate there
- Berth 206: Currently an embankment berth used for vessel service. Contains a newly constructed 100,000 square foot transit shed
- Berth 208: Marginal wharf with a container freight station and bonded warehouse.
- Berth 209: Marginal wharf for miscellaneous general cargo. Contains an office building and warehouse used by Ports America
- Berth 210: Marginal wharf for miscellaneous general cargo
- Berth 211: Marginal wharf for miscellaneous general cargo. Contains dockside cold storage (Harborside refrigerated warehouse), open shed buildings, and truck loading docks.

Tampa Juice Services, a TPA tenant, is located at Berth 205, on the east side of Hooker’s Point. Scrap metal terminals are located on the southwest side of Hooker’s Point at Berth 219 and at Port Ybor Berths 251 and 252. The Port Ybor berths are marginal wharves with two large cross-dock distribution centers totaling 438,000 square feet. Currently there are no marine terminal tenants at these locations.



## **b) Storage Capacity and Requirements**

Breakbulk cargo, excluding scrap metal, is projected to increase from 438,000 tons in 2007 to about 712,000 tons under the low forecast, and 1,185,000 tons under the high forecast. TPA's current annual storage throughput capacity (open and covered), excluding scrap metal, is estimated to be 810,000 tons. This is based on the Ports America concession, which covers 104 storage acres. Sufficient capacity exists to meet the low forecast, but by 2027 an estimated 60 acres of additional storage area may be required to meet the high forecast (Exhibit VI-28). The ultimate capacity required will depend on a number of factors including mix of cargoes, the mix and respective growth rates of individual commodities, the number of customers and their requirements and Ports America's ability to align customers, commodities and facility capabilities. The additional capacity requirement could potentially be met through productivity improvements, reduced dwell times, the reconfiguration of land uses north and or south of the City of Tampa waste water treatment plant, the development of off-dock storage facilities or some combination of these initiatives.

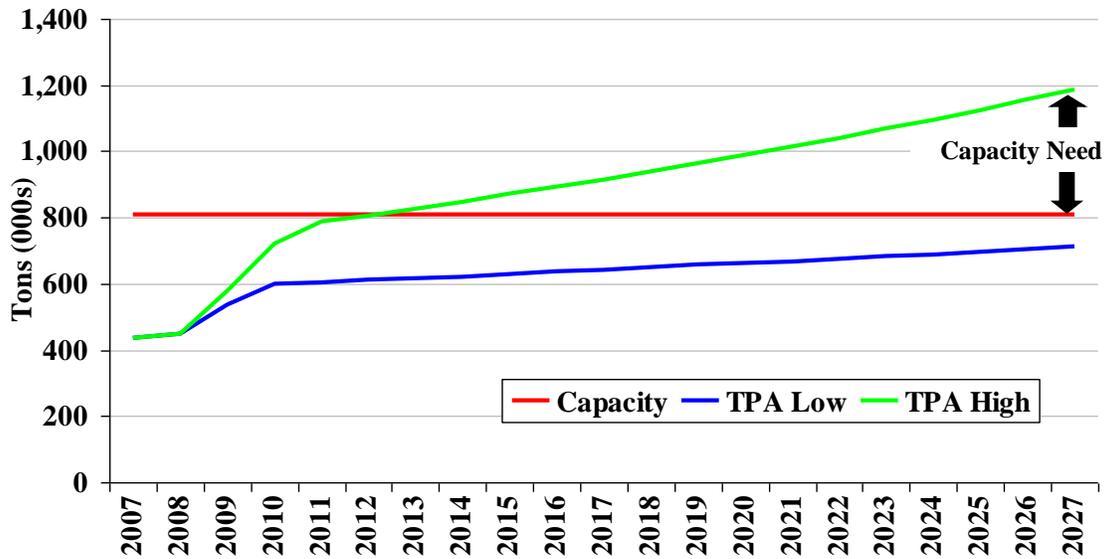
- South of the water treatment plant: TPA should preserve the long-term ability to use land west of Guy N. Verger Boulevard, north of GATX Drive, and east of Maritime Blvd. for potential additional breakbulk and or container storage. TPA should also consider reconfiguring this area and the current Ports America concession areas to better align Ports America's option areas with Berths 210-212, provide long-term access to portions of this reconfigured area for breakbulk operations and optimize short to medium use of the areas as demand warrants
- North of the water treatment plant: This property is bounded by Guy N. Verger Boulevard on the east, Maritime Boulevard on the north and west and the Waste Water Treatment Plant on the South. There are a number of tenants and uses in this area that are not directly related to the storage and handling of cargo and or could be located off port. TPA should continuously monitor the future demand for breakbulk storage and utilize lease expirations to preserve significant portions of this area for future cargo operations.

The TPA, in conjunction with its breakbulk stakeholders, is currently evaluating the market and financial feasibility of developing a new temperature controlled warehouse facility within the breakbulk terminal area. The current refrigerated warehouse at Berth 211 has limited remaining life, and will need to be demolished shortly. A new refrigerated warehouse, if built, should be located near Berths 206 or 208, and its construction phased to accommodate the future needs of customers as they evolve, subject to the negotiation of a financially feasible contract.

Covered breakbulk storage capacity should be sufficient through the forecast horizon. However, the TPA will need to continuously monitor and evaluate the commercial, operational and financial feasibility of modernizing existing storage capacity versus constructing additional new capacity. Covered storage needs for forest products, steel products, and other general cargo will continue to evolve as TPA's breakbulk cargo volumes grow.

Scrap metal terminals are single user facilities, with dedicated berths and storage yards. They are designed with input from the tenants, and as such it is assumed that they are properly sized for the needs of the individual tenants.

**Exhibit VI-28  
Ports America Concession: Breakbulk Storage Capacity vs. Projected Demand  
2007-2027**



*Source: Norbridge, Inc. and Moffatt & Nichol.*

Evolving covered storage requirements for steel products may necessitate investment in additional covered storage. Refrigerated storage capacity will also need to be replaced in the next three to five years. Berth 206-208 is the recommended location for a new temperature controlled warehouse should demand develop and a financially feasible agreement be concluded with the TPA’s proposed partners.

**c) Berth capacities**

The TPA’s breakbulk berth capacity is estimated from the master planning team’s collective experience. The TPA currently has a total of six breakbulk cargo berths covered by the Ports America breakbulk concession, each of which averages 500 feet to 650 feet in length (this excludes temporary berth 206). This provides the TPA and Ports America the ability to simultaneously berth between four and six breakbulk (tweendeck general cargo vessels, dry bulk carriers or some combination thereof) vessels. At an estimated transfer capacity of 300,000 tons per berth per year, the estimated berth capacity of the six breakbulk berths is 1.8 million tons of mixed breakbulk cargoes. Based on this estimated capacity there is sufficient berth capacity to accommodate the projected growth in breakbulk cargo throughout the forecast horizon. Berth capacity would be reduced to 1.5 million tons when container operations are expanded into Berth 211, however there is sufficient berth capacity to accommodate the projected growth in breakbulk cargo throughout the forecast horizon.

A berth utilization analysis was prepared to supplement the breakbulk capacity analysis. The berth utilization covered the period January 5, 2005 through September 30, 2006. Each berth was analyzed in terms of the percent of total available hours the berth was occupied. The results of the berth utilization analysis are summarized in Exhibit VI-29. The TPA’s two container cargo berths, Berths 212 and 213 were included in the analysis. With the exceptions of Berth 208 and

209, the TPA’s general cargo berths generally are available for berthing vessels most of the time. The comparatively high utilization of Berths 208 and 209 reflect the physical attributes of these berths, i.e. closer to the main navigation channels and access channels, a continuous berthing area and large rectangular open storage area immediately behind the berths. Berths 208 and 209 are the only general cargo berths where the potential for berthing delays exists. However, with coordinated scheduling among the TPA, Ports America, the shipping lines, consignees and owners’ agents, any significant potential for delay can be minimized. The berth utilization analysis supports the conclusions of the berth capacity analysis, i.e. sufficient berth capacity exists to accommodate projected demand.

**Exhibit VI-29**  
**TPA General Cargo Berth Utilization Analysis**

Berth	Hours Berth is Occupied	% of Total Available Hours Per Berth (14,616)
200	3,168	22%
201	3,550	25%
202	3,429	24%
204	3,728	26%
205	1,965	14%
206	4,728	33%
208	7,393	52%
209	6,215	44%
210	3,380	24%
211	2,270	16%
212	2,570	18%
213	382	3%

Note: Analysis Period: 21 months (January 4, 2005 – September 30, 2006)

*Source: Norbridge, Inc. analysis of TPA data*

In the long-term, should the TPA’s breakbulk traffic begin to increase significantly beyond projected and or historical peaks, the TPA and Ports America have a number of options for increasing berth capacity. These options include:

- Reducing free time and increasing demurrage charges to reduce dwell times
- Increase the effective utilization of storage areas by storing cargoes more densely. Given current volumes, there is no need to incur the potentially higher operating costs to implement these practices today
- Move cargo to off-terminal storage facilities
- Work with consignees to deliver cargo over extended periods, i.e. 12-16 hours a day/five days per week, 6-12 hours per day on Saturday and ultimately 24/7 if required

- Begin planning the development of new breakbulk terminal berth and storage capacity. Additional locations, depending on future developments, could include:
  - Northwest Hooker’s Point if rationalization of petroleum facilities occurs
  - Big Bend/Port Redwing
  - Potential landfill locations in East Bay or South Pendola point.

Pursuit of any of these options requires an evaluation of the market, operational, commercial and financial feasibility of the option.

## **F. Cruise**

BREA, as part of its cruise work, assessed the berth capacity of the TPA’s cruise berth facilities. BREA’s analysis included reviewing TPA cruise vessel call data and completing interviews with the major cruise lines that have traditionally called Tampa and control a majority of the world’s vessel capacity.

In evaluating cruise berth capacity, it is important to understand the nature of the cruise business. The cruise business is a peak period business, i.e. there are a limited number of days per week and hours per day the cruise industry requires access to cruise ship berths in home ports such as Tampa. The peak days tend to be Saturday, Sunday, Friday and Monday. The peak hours generally tend to be between 7AM and 6PM. It is on these days and during these times that most cruise vessels arrive at a port, discharge their passengers, replenish supplies, embark a new complement of passengers and begin their voyages. It is within the context of these operations that BREA reviewed the TPA’s cruise berth utilization.

During 2007, seven ships sailed from the Port of Tampa to the Western Caribbean. Combined, these ships will generate approximately 193 cruise sailings. Two ships, the *Carnival Inspiration* and *Carnival Legend* (which recently replaced the *Carnival Miracle*) sailed from Tampa on a full-year basis. The *Carnival Legend* sailed on 7-day cruises while the *Carnival Inspiration* has a 5,5,4 schedule. The remaining ships will operate primarily on half-year schedules, offering a combination of 4-, 5-, 7-, 10- and 11-day cruises. Despite the number and variety of cruises, embarkation dates are generally concentrated in the Thursday through Monday period with only a few actually embarking on Fridays.

During the 2005-2006 peak season (November through April), the TPA had six cruise ships sailing to the Western Caribbean offering between 5 and 7 cruises per week from its three cruise terminals. On only about 14 Saturdays were cruise ships simultaneously berthed at all three cruise terminals. Thus, there is sufficient unused berthing capacity at the TPA’s cruise facilities, even during the peak weekend period, to support additional cruise ships. To capitalize on the growing trend toward larger cruise ships, the Port of Tampa needs to explore alternatives to alleviate the aircraft restriction caused by the Sunshine Skyway Bridge. As part of its long-range master planning, the TPA should identify and evaluate practical alternatives to successfully address the aircraft restrictions posed by the Sunshine Skyway Bridge. The TPA should also continuously monitor the design aircrafts of all cruise ship orders to determine what percentage of the world fleet will be restricted from calling the Port. If the aircraft limitation becomes a significant impediment to the sustainability of the Port’s cruise business, then the TPA will need

to evaluate the financial, technical, operational and environmental feasibility of pursuing identified options.

## **G. Shipbuilding and Ship Repair**

This section provides an overview of the TPA marine facilities and infrastructure that support the Shipbuilding and Repair Industry (SBRI). Its purpose is to identify the TPA assets supporting the SBRI and assess their physical condition. The condition assessment, together with the Chapter II Mission, Objectives and Master Plan Policies and the Chapter IV Market Assessment provide the collective foundation for the Chapter VII SBRI capital investment recommendations.

The Shipbuilding and Ship Repair Industry (SBRI) comprises three companies and five locations in the Port. The companies and their locations are:

- International Ship Repair & Marine Services, Inc. (ISR):
  - North end of Ybor Channel:
    - Own approximately 20 acres on the north end and northeast corner of Ybor Channel
    - Lease Berths 263-265 and approximately six acres of uplands from the TPA. The initial term expires on September 30, 2008 and includes three options: a one year option and two six month options
  - Hooker’s Point Berth 200: ISR leases Berth 200 and adjoining uplands approximating four acres through January 31, 2016
  - Hooker’s Point Berth 206: ISR leases the berth and an access route to the berth approximating one acre through January 31, 2016
    - Berth 206 is unimproved, i.e. there is no berth structure, only rip-rap and appurtenances for tying up small vessels and barges
- Gulf Marine Repair: Port Ybor
  - Berth 250: non-exclusive right to use Berth 250 and a portion adjoining wharf area for five years with three option periods of five years each. The initial period began circa July 2006
  - Berths 251-252: non exclusive right to use Berths 251 and 252 and a portion of the adjoining wharf, subject to Roll On/Roll Off or other general cargo operations.
  - Berth 253: exclusive right to use Berth 253 and lease approximately 8.8 acres of adjoining uplands for ten years with three option periods of ten years each. The initial period began circa July 2006
  - Own approximately 32 acres at the former Tampa Electric site directly south of the Berth 250 South Slip. Gulf Marine currently uses the south and east sides of South Slip for topside repair work
- Tampa Bay Shipbuilding and Repair Company Hooker’s Point:
  - Berths 235-241 (235,237,239, 240, and 241): right to use the berths and a lease covering approximately 53 acres of adjoining uplands

The following paragraphs provide an assessment of marine terminal infrastructure and assets owned by the TPA.

## **1. ISR**

ISR operates at three locations in the Port. The largest operation is at the north end of Ybor Channel. ISR leases Berths 263-265 and six adjoining upland acres from the TPA under short-term lease. Berths 263-265 were originally constructed in 1920 for use as light-to-medium weight breakbulk general cargo berths. As noted in Chapter III (Exhibit III-19), the berths are in serious condition and generally cannot support the heavier machinery and vehicles associated with ISR's topside repair operations which are conducted at this location. This requires ISR to use longer boom cranes to operate from behind the berths and to stage machinery and equipment behind the aprons. The berths would need to be rebuilt in order to fully accommodate ISR's topside repair operations. The current estimated cost to reconstruct Berths 263-265 approximates \$27 million.

ISR owns the floating drydocks, berthing areas on the north and east (directly across from Berths 263-265) sides of Ybor Channel, backlands and buildings. ISR is responsible for the maintenance, repair, and modernization of its plant and equipment as well as compliance with all laws, environmental regulation and permitting. Consequently, TPA has no responsibility for the maintenance or repair of this infrastructure and therefore it is not included in the TPA's MP. ISR reports that it is in full compliance with all relevant regulations and permitting requirements at each of its three locations.

ISR reports that its parent company has recently entered into an agreement to sell its approximately 20 acre site to a developer. The specific terms, condition and timing of the sale are in the process of being negotiated. In anticipation of a successful closure of the agreement, ISR has begun exploratory discussions with the TPA regarding relocation to another site within the Port.

ISR also provides vessel repair services at Berth 200 on Hooker's Point. Berth 200 and approximately four acres of adjoining uplands are leased from the TPA. Berth 200 is in serious physical condition and would need to be rebuilt in order to support ISR's ship repair operations on a long-term basis. The current estimated cost to reconstruct Berth 200 is \$10 million. ISR owns four buildings located on the Berth 200 uplands. These buildings include a main building housing management, a paint building, metal garage and guard shack and reportedly were constructed in the late 1970s and early 1980s. ISR is responsible for the maintenance and repair of these buildings and they are therefore excluded from the TPA MP.

ISR's third location is at Berth 206 on Hooker's Point. Berth 206 is unimproved, i.e. there is no berth structure. ISR uses Berth 206 and an approximately one acre access route to the berth for mooring vessels. Ports America, as part of its general cargo concession agreement with the TPA, uses the backlands at Berth 206 for breakbulk operations and has recently built a 100,000 square foot transit shed.

## **2. Gulf Marine Repair**

Gulf Marine Repair's (GMR) operations are located at Port Ybor and the former Tampa Electric site directly south of the Berth 250 South Slip. GMR has exclusive use of Berth 253 and leases 8.8 acres of adjoining uplands. Berth 253 is in critical condition. It requires replacement in order

to sustain GMR's ship repair operations on a long-term basis. The current estimated cost of rebuilding Berth 253 is \$15 million. GMR, under the terms of its lease, is reportedly responsible for the maintenance and repair of Berth 253 during the lease period. GMR owns eleven buildings located on the 8.8 acre upland site. These buildings were constructed between the late 1970s and early 1980s with the exception of the Metal Manufacturing Building which was reportedly constructed in 1966. GMR is responsible for maintenance and repair of all buildings and equipment on the site as well as complying with all laws, environmental and permitting regulations. GMR reports that it is in full compliance with all governing laws and regulations. GMR's buildings, plant and equipment have been excluded from the TPA's MP since GMR has responsibility for all capital investment. This also applies to Berth 253 which GMR under the terms of its lease with the TPA.

GMR also has use of Berths 250-252, subject to the needs of Roll On/Roll Off or general cargo operations. Berths 150-152 were recently rebuilt and consequently their condition is "like new". Other than ongoing scheduled maintenance, there is not significant need for capital investment in these berths.

### **3. Tampa Bay Shipbuilding & Repair Company (TBS)**

TBS provides shipbuilding and repair services at Berths 235-241 on the west side of Hooker's Point. TBS also leases 53 acres of adjoining uplands from the TPA. Berths 235-241 include five (235, 237, 239, 240 and 241) berths that are a combination of marginal wharves and finger piers. A summary of each berth and its condition is as follows:

- Berth 235: marginal wharf located at the south end of the TBS facility and Graving Dock #4. The wharf is a steel bulkhead wharf. It has incurred significant corrosion, particularly in the splash zone. The cap wall requires restoration. The overall condition of Berth 235 is poor to serious.
- Berths 237-239: finger pier separating Graving Dock #2 and #3. Berths 237-239 are a pile supported finger pier. The condition of the finger pier is good.
- Berth 240: pile supported berth located on along the north side of Graving Dock #2. A twenty foot section of the berth has failed and the overall condition of the berth is serious.
- Berth 241: is a marginal, pile supported structure along Sparkman Channel at the north end of the TBS facility. The pilings have significant corrosion, particularly in the splash zone, and are generally in need of replacement. The overall condition of the berth is serious.

The current estimated cost to reconstruct Berths 235, 240 and 241 approximates \$18 million. There are 14 buildings on the upland leased area. These buildings are of various designs and construction and were for the most part built during the 1960s, 1970s and early 1980s. The buildings range from a main assembly building and panel line to office and storage buildings. TBS is responsible for all infrastructure and equipment on the leased property. This includes maintenance, repair, and compliance with all laws, codes, environmental regulation and permitting. TBS reports that it is fully compliant with all applicable laws, codes and permits. Since TBS has capital investment responsibility for the buildings, they have been excluded from TPA's Master Plan.

## **VII. Recommended Capital Investment Plan**

### **A. Introduction**

This chapter presents the TPA's recommended capital investment plan. The plan integrates the TPA's strategic plan and priorities, the master plan priorities and the analytical results of Chapters II through VI. The plan presents recommended capital investments in navigation, the TPA's major lines of business by major port area, and the TPA's newest port areas, i.e. Port Redwing and East Port. The plan also presents a series of potential future capital investments to be considered by the TPA. The feasibility of these investments are dependent upon future market developments, the conclusion of mutually acceptable development and or lease agreements with current and or future tenant. These investments are discussed in Section G.

All of the capital recommendations presented in this section are subject to the feasibility (market, financial, technical, operational, and environmental) of each project.

The capital investment cost estimates presented in this chapter have been estimated using engineering unit cost estimates for the Tampa Region and estimated quantities. The engineering unit costs are in 2008 dollars and are based on actual industry data whenever possible. Similarly the projected years in which any given project is initiated are based on actual industry data, experience and the professional judgment of the consulting team and the TPA. However, as with any forecast or estimate, capital cost estimates are subject to change. A 30 percent contingency has been included in the capital investments to account for potential adjustments related to changes in unit prices, quantities, inflation, changes in regulation, etc. In addition to the provision for contingencies in the capital cost estimates, it is also important to recognize that the timeframe and schedule for individual projects could change. Causal factors driving such changes include market conditions, market expectations, the economy, lease renewals and expirations, strategic initiatives by other Port of Tampa entities and/or competitors, and actions by third parties such as USACE, regulatory and permitting processes and overall market demand for engineering and construction services.

The recommended MP is a 20 year road map that is subject to continuous refinement over time as the Port's and the TPA's businesses and customers' requirements evolve and the ultimate feasibility (market, financial, technical, operational, and environmental) of projects are determined.

### **B. Navigation and Dredge Material Management**

#### **1. Navigation Requirements**

##### **a) Channel Width**

TPA is working with the USACE to widen Cut A and Cut B in the main navigation channel from 500 feet to 600 feet. This will extend unlimited two way traffic east of the Sunshine Skyway Bridge, allow more flexibility when planning vessel movements, particularly as it pertains to one way traffic, and reduce vessel delays associated with one way vessel traffic. The USACE

expects to complete this project in 2010 at a total estimated cost of \$30 million. The TPA, as local sponsor for the project, will be responsible for funding 25% of the project cost or an estimated \$7.5 million.

**b) Channel Depth**

Virtually all of the channel depth design criteria for U.S. ports are driven by future vessel size, and those for the Gulf Coast and East Coast ports have traditionally been closely linked to the size limits imposed by the Panama Canal. Recognizing the limitations of the existing Canal locks, the Panama Canal Authority has prepared an expansion plan to construct a second set of locks to meet the demands of larger vessels. This proposal was approved by the Panamanian Government and supported by a national referendum in 2006. Work has begun on the project and is expected to be completed in at 2014-2105 timeframe.

The addition of the second sets of locks will remove the traditional Panamax size limit classification and establish a new set of dimensional limits for future vessels and therefore influence the design vessel U.S. ports consider in planning future deepening projects. The final dimensions and configuration of the new locks are still under study and may change during the final design process. However the present proposal provides an indication of the probable new standard for a Post Panamax, or New Panamax ship vessel. The current and expected dimensions for the locks and the maximum vessel sizes are shown in Exhibit VII-1.

**Exhibit VII-1  
Current and Proposed Dimensions for the Panama Canal Locks**

	Length (ft)		Width (ft)		Depth (ft) (Draft)	
	Current	Proposed	Current	Proposed	Current	Proposed
Locks	1,000	1,400	110	180	41.5	60
Limiting Vessel Size	965	1,200	106	160	39.5	50

*Note: Depths are freshwater. Draft requirements in salt water would be less.  
Source: ACP.*

It is important to note that the Panama Canal is a fresh water canal. A given vessel will have a deeper draft in fresh water than in salt water due to the respective densities of fresh and salt water. Consequently, a 50 foot freshwater draft approximates a salt water draft of 47 feet to 48 feet depending on the density of the salt water. Given this fact and the fact that tidal ranges in many ports can be significant, the optimum design draft for harbor deepening projects could potentially be less than 50 feet. Other factors must also be considered including the volume of cargo projected to be handled on a given trade lane, the ability of vessel owners to achieve the scale economies associated with larger, deeper draft ships, water depths at competitor ports serving the same trade lanes and markets, and the fact that most container ships operating on most trade lanes do not consistently attain their fully loaded draft since container cargoes tend to be lighter consumer related goods.

***(1) Channel Depth: Container Vessels***

Exhibit VII-2 shows a range of potential vessel sizes and controlling dimensions for the classes of container ships that could potentially transit the Panama Canal and serve U.S. Atlantic and Gulf Coast ports following the completion of the canal expansion circa 2015.

**Exhibit VII-2  
Typical Dimensions of Existing and Future Container Vessels**

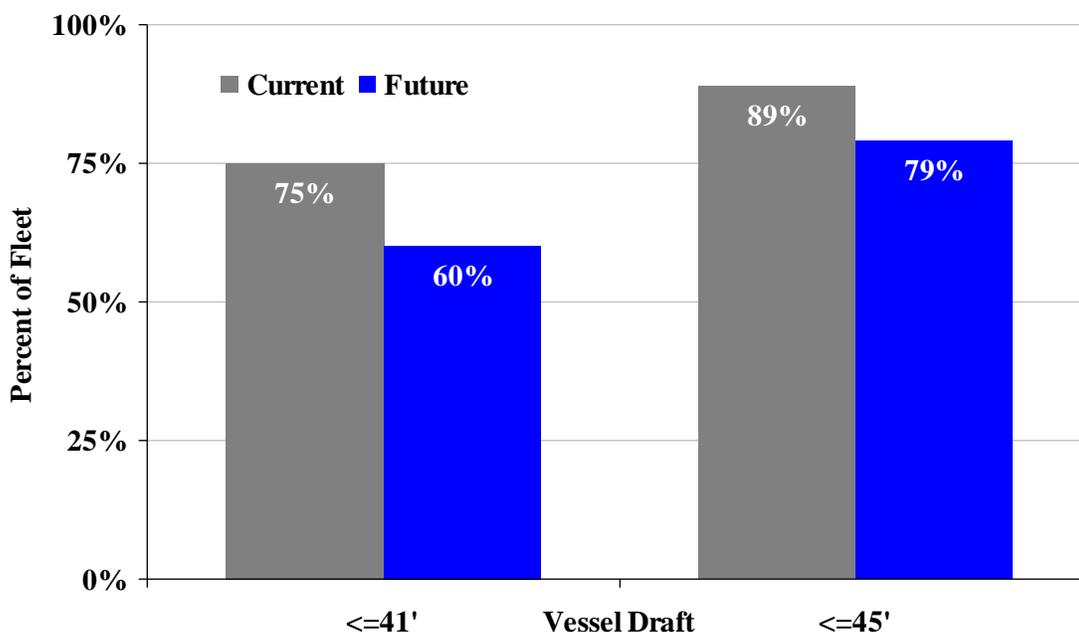
Vessel Class	DWT	Capacity (TEUs)	Containers Across Deck	Length (ft)	Beam (ft)	Draft (ft)
3rd Generation	43,000	3,000	12	900	104	41
Panamax	70,000	4,000	13	967	105	41
Post Panamax	105,000	6,250 – 7,500	18	1,035	144	45-47
New Locks Standard	105,000+	10,500 – 12,000	19 - 20	1,200	160	50

*Source: Moffatt & Nichol.*

The size of container vessels calling at TPA can be expected to increase in future years. Vessel size is likely to increase for several reasons including continued increase in the average size container vessel in the world fleet, the anticipated rapid expansion of the TPA’s container traffic, the opening of the Choctaw Container Terminal in Mobile and the displacement of medium (3,000-6,000 TEU vessels) from the Asia-Europe and Asia-US West Coast trades by the larger container ships currently on order and in the process of being delivered. These larger vessels will likely call Tampa as part of a multi-port itinerary that calls several U.S. South Atlantic and or U.S. Gulf ports. In the long-run, container shipping lines are likely to introduce more dedicated U.S. Gulf services as the market expands due to the major container terminal expansions occurring in Houston, Mobile and Tampa.

To achieve acceptable load factors on larger container vessels deployed on a dedicated U.S. Gulf route, vessel operators will likely have to call Houston, Mobile, and Tampa. Consequently, TPA needs to be able to accommodate the largest vessels that can call at Houston and Mobile. At the same time, there is no significant advantage in being able to accommodate container vessels larger than can be accommodated at Houston or Mobile. Currently, Houston and Mobile can handle 45 foot draft vessels, and neither are on record as having plans to dredge deeper. Mobile reportedly has the permits in place and the capability to dredge to 50 feet. If the main channel in Tampa Bay is dredged to handle vessels with 45 feet of draft, TPA will be able to handle 89% of the current container vessel fleet and an estimated 79% of the vessels currently on order (Exhibit VII-3). Container vessels with more than a 45 foot draft, i.e. container vessels in the 6,000 plus range are most likely be deployed on high volume lanes serving East and West Coast ports, and are less likely to be deployed into the lower volume Gulf of Mexico trades.

**Exhibit VII-3  
World Container Vessel Fleet by Draft**



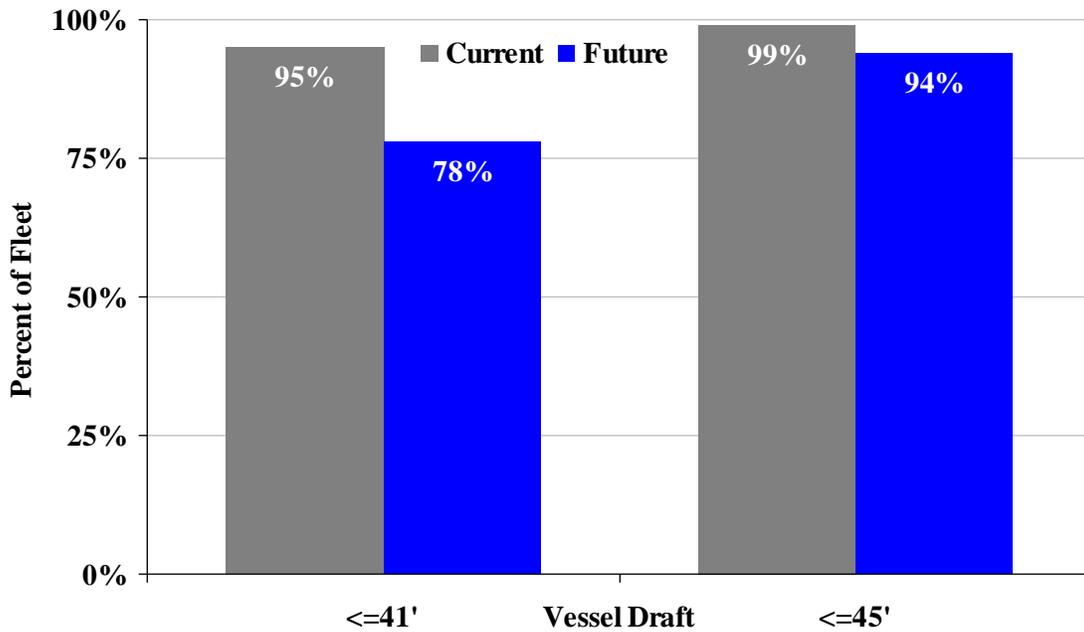
Note: Total current vessels = 4,339; Total future vessels: 1,183

Source: Norbridge Inc. analysis of Fairplay fleet statistics.

**(2) Channel Depth: Tanker Vessels**

With a current main channel that can accommodate vessels with a 41 foot draft at mean low water, the Port can accommodate 95% of the world tanker fleet which is likely to call at TPA facilities, i.e. tankers of 80,000 DWT tons or less (Exhibit VII-4). Vessels in this size class carry a majority of the world's refined petroleum products and petrochemical feedstocks. In the long-term, the potential exists for the size of the tanker fleet calling the Port to increase. This potential increase in the average size tanker calling the Port would be driven by a number of factors including continued increases in the average size tanker in the world fleet, larger integrated tug-barge units in U.S. domestic fleet and a potential increase in petroleum product imports which benefit from the lower transportation costs associated with larger vessels. Dredging to accommodate vessels with 45 foot drafts would enable the Port to accommodate 99% of tankers under 80,000 DWT, and 94% of the 1,620 tankers under 80,000 DWT currently on order.

**Exhibit VII-4  
World Tanker Fleet Under 80,000 DWTs by Draft**



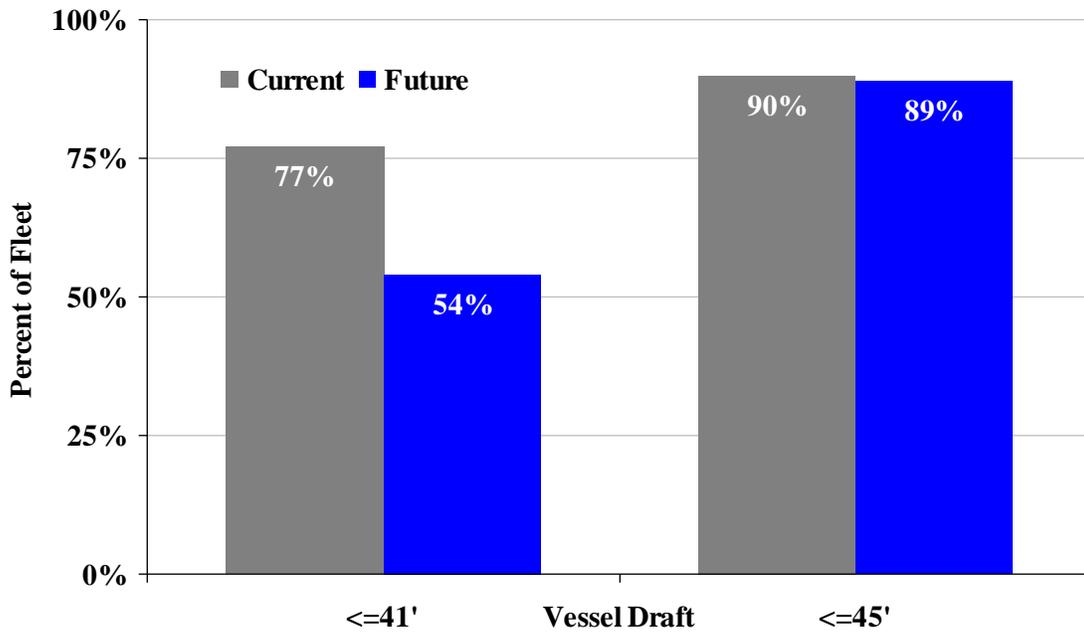
Note: Total current vessels = 11,561; Total future vessels: 1,620

Source: Norbridge Inc. analysis of Fairplay fleet statistics.

**(3) Channel Depth: Dry Bulk Vessels**

The size of bulk vessels calling at TPA can also be expected to increase in future years. TPA has recently signed leases with new aggregate and cement tenants, and is currently negotiating with several more. The expected increase in TPA aggregate and cement tonnage will likely cause an increase in the average size bulk carrier calling the Port over the twenty year planning period. Dredging to accommodate vessels with 45 foot drafts would enable the Port to accommodate 90% of the current dry bulk fleet under 80,000 DWT, and 89% of the 839 bulk vessels under 80,000 DWT currently on order (Exhibit VII-5).

**Exhibit VII-5  
World Bulk Carrier Fleet Under 80,000 DWTs by Draft**



Note: Total current vessels = 6,518; Total future vessels: 839

Source: Norbridge Inc. analysis of Fairplay fleet statistics.

### c) Recommended Navigation Projects

When considering deepening projects it is important to consider vessel navigation requirements. Industry design guidelines for deepening projects typically require between two and four feet of under keel clearance beyond the maximum navigation draft of a channel. The additional under keel clearance is to allow for the combined effects of wave action and squatting, i.e. as a vessel increases its speed the stern of the vessel tends to sink or squat lower into the water due to the natural suction created by its propeller. The lower end of the range typically applies to sheltered waters where wave action is less and vessel speeds are lower. The higher end of the range typically applies to more open waters (e.g. west of the Sunshine Skyway Bridge) where wave action can be significant. These design guidelines have been factored into the deepening recommendations which follow. Specifically, although the project descriptions below address the maximum navigational draft, the cost estimates reflect an additional two to four feet of dredging depending on the project.

Four significant navigation projects are recommended for the TPA's consideration (Exhibit VII-6):

- **Widen Cut A and Cut B:** As previously discussed, significant efforts are underway to advance the project to widen Cut A and Cut B from their current 500 feet to 600 feet to expand two way traffic in lower Tampa Bay and thus reduce the potential for vessel delays. This project is scheduled for 2010 and is estimated to cost \$30.0 million, with TPA's share estimated at \$7.5 million.

- East Port: Dredging at East Port is required for vessel access to Berth 150. This berth is being built for an aggregate tenant. Dredging to 43 feet is estimated to cost \$12.8 million and be completed in 2009.
- Big Bend: The first portion of Port Redwing is currently being developed for a new aggregate customer. Port Redwing currently contains one of the TPA's largest parcels of undeveloped waterfront property and therefore has significant long-term potential for future marine terminal development. The TPA, in order to fully utilize the long-term development potential of Port Redwing, will need to consider widening and deepening Big Bend Channel. The 200 foot wide channel, currently authorized to a width of 250 feet, will need to be widened to a minimum of 300 feet to accommodate larger bulk carrier and tanker vessel traffic on a one-way basis. The channel will also need to be deepened from its current 34 feet to initially 43 feet (project depth) and ultimately to 47 feet (project depth) in order to take full advantage of the current and proposed deeper shipping channels. TPA will be responsible for 25% of the cost of dredging to 43 feet. The TPA will also be partially responsible for dredging the portion of the channel directly adjacent to the berths (this portion of the channel is not currently a Federal channel). TPA, with or without the future participation of tenants, will be responsible for future berth deepening and maintenance. The total cost of widening and deepening Big Bend Channel is estimated at \$24 million with TPA's estimated share at \$7 million (including the portion directly adjacent to the berths). TPA's total cost of berth-related dredging is estimated at \$2.3 million. It should be noted that, although the TPA would be the local project sponsor, various sharing cost sharing methods are possible.
- Main Channel and Berth Deepening: Deepening the main channel to a project depth of 47 feet to accommodate 45 foot draft vessels will be the most significant improvement to the main Tampa Bay Navigation Channel in more than three decades. This project will take many years to plan and obtain final approval. This project is targeted for completion in about 2017-2018, at a total estimated cost of \$130 million. TPA, as the project sponsor, will be responsible for 25% of the project cost, or an estimated \$32 million. A number of TPA berths, i.e. those berths that will most benefit from the deeper water, will also require deepening to a project depth of 47 feet to accommodate deeper vessels (Exhibit VII-7). This effort should be completed at the same time as the main channel, and is estimated to cost \$5.7 million with TPA, with or without the support of the respective tenants, responsible for 100% of the cost. Improvements to Berth 213 and 223 toe walls will be required to support deepening to 47 feet at an estimated cost of \$8.3 million in 2017.

In addition to the foregoing cost estimates, an additional \$16 million is estimated to be required during the 20 year planning horizon to fund studies, designs, applications, and cost estimates related to the recommended deepening projects.

It is important to note the Big Bend, Main Channel and Berth Deepening projects should only be undertaken after completing a preliminary feasibility study of the costs and benefits of each project. The criteria to be used in determining feasibility, as described in the TPA's strategic plan include commercial, competitive, technical, and environmental criteria as well as financial feasibility and the opportunity for long-term cost recovery.

The USACE has sole responsibility for maintaining the depth of federal navigation channels, which includes all cuts in the main navigation channel, and most access channels. The TPA is

responsible, with or without the participation of its tenants as defined in the lease agreements, for maintaining the dredge depth at its berths. Consequently, the TPA regularly conducts maintenance dredging, which annually generates on average about 125,000 cubic yards of dredge material. The TPA funds, with or without the participation of its tenants as defined in the lease agreements, 100% of the berth maintenance dredging costs, which approximate \$3.1 million per year or \$63 million over the 20 year planning horizon.

**Exhibit VII-6  
Summary of Recommended Major TPA Dredging Projects**

Description	Estimated Project Cost		Timeframe	Improvement Type
	Total	TPA Portion		
Main Channel (Cuts A & B)	\$30M	\$8M	2010	Widen
East Port	\$13M	\$13M	2009	New
Big Bend Startup Improvements - Total	\$26M	\$10M*	2009	Widen
Channel Widening and Deepening	\$24M	\$7M	2009	Widen/Deepen
Berth Dredging	\$2M	\$2M	2009	New
Deepening for 45' Vessels				
Main Channel	\$130M	\$32M	2017-2019	Deepen
Berths	\$6M	\$6M	2017-2019	Deepen
Berth Maintenance	\$63M	\$63M	2008-2027	Maintenance
Studies, Designs, Applications, Cost Estimates	\$16M	\$16M	2008-2027	Misc.

\*Note: Does not add up due to rounding

*Source: TPA and Norbridge, Inc. analysis.*

**Exhibit VII-7**  
**Recommended TPA Berths Deepening Projects\***

Port Area	Berth Number
Port Sutton	26, 30, 31
Hooker's Point	208-213, 219, 220, 222, 223, 226, 227
East Port	150
Big Bend	300-302

\*Note: The recommended berth deepening projects are based on the commodities that are handled at these berths and the future vessel fleet likely to call at these berths. These berths are likely to experience the greatest demand for deeper drafts and therefore have the highest potential to realize significant benefits (higher volumes, more revenue, greater scale economies). The TPA will need to continuously monitor the evolving demand for deeper drafts at all its berths and based on evolving demand, the costs of deepening, lease financial terms and conditions, and anticipated revenue streams refine and or update the recommended berth deepening projects.

*Source: Norbridge, Inc.*

## 2. Dredge Spoil Material Management

Material excavated during dredging projects, is usually disposed of in one of four locations:

- Spoil Island 2D
- Spoil Island 3D
- An ocean dredge material disposal site about 18 miles west of the sea buoy
- Beneficial use sites (creating uplands from submerged lands, filling deep holes within Tampa Bay, or beach refurbishment).

In general, material from channel dredge sites south of Gadsden Point Cut is placed in the ocean dredge material disposal site, while material from maintenance dredging and navigation channels located north of Gadsden Point Cut is placed on the two spoil islands. These practices reflect the lowest cost disposal option for the given locations.

- Spoil Island 2D: Spoil Island 2D currently has about 9.7 million cubic yards of capacity as the result of a TPA funded capacity improvement project which is nearing completion. TPA incurred \$10.3 million in costs to complete this project. An additional 2.8 million cubic yards of capacity can be added, if needed, at an additional estimated cost of \$6 million.
- Spoil Island 3D: Spoil Island 3D, which is used for material dredged from USACE projects, has about 3.5 million cubic yards of capacity remaining before additional capacity will need to be added. The Big Bend dredging project will require an estimated 1.7 million cubic yards leaving a balance of one million cubic yards.

It is anticipated that, in the future, the USACE will use Spoil Island 3D and the offshore site as their primary disposal sites, while TPA will use Spoil Island 2D. Even with this arrangement, dredge material is likely to be disposed of in the most economical manner, which may result in TPA and the USACE exchanging capacity, or agreeing to other arrangements on a project specific basis. In addition, capacity can be added to either island when needed. Given this, and

the existing capacity at Spoil Island 2D, it is anticipated that TPA should have sufficient capacity to dispose of its anticipated dredge material (Exhibit VII-8) over the twenty year planning period. While Spoil Island 3D does not currently have sufficient capacity for anticipated dredging projects, it is assumed that the USACE will add capacity as required, and allocate these costs to the associated dredging project. The TPA can reduce the disposal portion of its share of dredging costs by using the dredged material to create new land for future terminal development. Two fill sites have been identified for TPA’s future consideration: one in East Bay and one on the south side of Pendola Point. Depositing dredged materials in one or both of these sites preserves the capacity of Spoil Island 2D and reduces the total cost of creating additional port lands through filling. The recommended fill projects should only be undertaken if they are determined to be feasible, i.e. the market, financial, technical, operational and environmental feasibility of each fill project supports the requisite investment.

**Exhibit VII-8  
Dredge Material Generated from Significant Dredging Projects**

Description	Material Generated (CY)	Disposal Site		
		2D	3D	Off Shore
Main Channel Widening (Cuts A & B)	1.9M			1.9M
East Port	0.5M	0.5M		
Big Bend Startup Improvements	1.7M		1.7M	
Deepening for 45’ Vessels				
Main Channel	14.4M*	4.1M	6.0M	4.4M
Berths	0.6M	0.5M	0.1M	
Berth Maintenance	2.5M	2.5M		
Total	21.6M	7.6M	7.8M	6.3M
Current Capacity		9.0M	1.0M**	-

\*Note: Does not total due to rounding

\*\*Note: Spoil Island 3D capacity of 1.0M CY is after the current Big Bend dredging project

Source: TPA, Norbridge, Inc., & Moffatt & Nichol.

### 3. Existing/Ongoing Projects

The following projects are currently in progress or contracted on an annual basis, and are part of TPA’s existing capital investment plan:

- Consistent with Master Plan recommendations, railroad and grade crossing improvements for eight to ten locations are incorporated in the recommended Capital Improvement Plan (CIP) for the 2008 to 2010 period, followed by improvements to eight to ten locations in 2018. These projects include changes to grade intersections at various locations throughout the Port that are expected to improve rail and truck flow. The estimated cost for these improvements is \$10 million.

- As discussed previously, Spoil Island 2D capacity is being expanded to about 9.7 million cubic yards. In 2008, TPA is expected to incur about \$1 million of capital expense to complete this capacity expansion project. The total project cost is estimated at \$10.3 million.
- Annual consultant services contracts for environmental engineering, geotechnical testing, and general engineering consulting for 2008 through 2027 are estimated to approximate \$25 million.
- Annual construction contracts for marine, environmental cleanup and uplands construction services are estimated to approximate \$41 million for the 2008 through 2027 period.
- Annual construction contracts for miscellaneous contractor services for tenant, paving, drainage and roadway projects are estimated to approximate \$60 million for the 2008-2027 timeframe (\$3 million per year).
- Based on the facilities assessment Berths 4, 224, 267 and 268 require repair at a total estimated cost of \$3.5 million in 2009.
- Cumulative annual maintenance dredging costs (discussed previously) are estimated to total \$63 million for the 2008 through 2027 period.

## **C. Hooker's Point**

Capital investment recommendations for Hooker's Point include investments in dry bulk (aggregates), liquid bulk (petroleum products), container, and breakbulk cargo facilities and infrastructure.

### **1. Dry Bulk (Aggregates)**

#### **a) Short Term Recommended Capital Improvements**

In the short term, no significant investment is required at Hooker's Point for aggregate cargoes. Two new aggregate terminals are expected to become operational by 2010. These terminals, in combination with other current and planned aggregate terminal expansions throughout the Port, should provide adequate aggregate capacity for TPA and its tenants.

#### **b) Medium and Long Term Recommended Capital Improvements**

The recommended 2027 Port Land Use Vision recommends the development of the southern portion of Hooker's Point for container and petroleum products, subject to future demand. Consistent with this vision, the TPA should consider relocating aggregate tenants located in the southern portions of Hooker's Point to other port areas as their leases expire. The long-term land use vision recommends consolidating aggregate tenants at East Port, Pendola Point, and Port Redwing, while concentrating current and future breakbulk, container, and CFP-related liquid bulk operations on Hooker's Point. As an example, the Florida Rock/LaFarge lease for five acres on Hooker's Point expires in 2013. TPA, in conjunction with the tenant, should explore the market, technical, operational, environmental and financial feasibility of relocating Florida Rock/LaFarge to one of the recommended ports areas.

## 2. Liquid Bulk (Petroleum)

### a) Short Term Recommended Capital Improvements

In the short term, TPA faces several significant issues related to its petroleum products business:

- Concentration of Petroleum Products at TPA Berths: The vast majority of TPA petroleum products volume is handled at Berths 226 and 227. These berths are actually two sides of the same pier (REK Pier), with vessels able to discharge from each side simultaneously under certain conditions. If this pier were to become inoperable, TPA would not be able to handle most of its petroleum products business until the pier was placed back in service.
- Condition of REK Pier: As previously discussed, the REK Pier is in poor physical condition and its remaining useful life is estimated to be less than five years. Reconstructing the Pier to accommodate projected petroleum operation over the next 20+ years will take several years. Consequently, TPA needs to immediately begin planning the reconstruction of the REK Pier.
- REK Maximum Vessel Size Capability: Berths 226 and 227 reportedly cannot handle vessels longer than 675 feet (Berth 227 reportedly can handle vessels of 680 feet with tug assistance). REK berthing capability is also limited by the proximity of the main shipping channel and the turning radius required to approach the REK Pier slip from the main shipping channel. During the 20 year planning horizon, the average size tanker and tug-barge unit calling the Port is likely to increase.

To address these issues, the following improvements are recommended:

- Upgrade Berth 220 to maximize its petroleum products throughput capacity. Upgrades should include piping and manifold improvements necessary to serve both existing tenants who currently use Berths 226 and 227, future tenants and potentially tenants in upper Port Ybor.
- Evaluate the feasibility to expand the receiving and distribution capability of the Berth 223 manifold and piping to also serve the Berth 226 and Berth 227 tenants and the full range of liquid bulk products they handle and the feasibility of deepening Berth 223 from 34 feet to 41 feet.
- Construct a new multi-user / multi-product liquid bulk berth at Berth 222. Berths 220 and 222, from a capacity standpoint, should then be able to substitute for Berths 226 and 227 while they are rebuilt (discussed below). Berth 222 should be constructed to accommodate 50 foot depths. The initial project depth should be 43 feet. It should also have the manifold and piping capacity and functionality to serve the current and potential needs of the Berth 223-227 users, future tenants and potentially tenants in upper Port Ybor.
- Begin reconstruction of Berths 226 and 227 immediately upon completion of the Berth 220 and Berth 222 projects and the Berth 223 improvements (if feasible). The new pier should be built to handle the maximum length vessel feasible without interfering with safe navigation in the adjacent shipping channel or maneuvering between the channel and the berths. It also needs to be designed to accommodate a berth project depth of 50 feet (to accommodate a vessel with a 48 foot draft). Manifolds and piping should be installed to serve all TPA tenants as well as potential new tenants and the petroleum companies located in upper Ybor, the

maximum range of anticipated vessels (including barges) and the maximum practical range of petroleum and other liquid bulk products.

The combined capability of Berths 220, 222 and 223 should accommodate TPA's projected Hooker's Point petroleum and liquid bulk products throughput while Berths 226 and 227 are rebuilt. Once Berths 226 and 227 are returned to service, the combination of Berths 220, 222, 223, 226 and 227 should provide sufficient berth capacity for the twenty year planning period and beyond. The five Hooker's Point liquid bulk berths will also provide TPA with a redundancy in berths should one become inoperable. Total estimated cost of the recommend petroleum berth improvements is \$53 million.

#### **b) Medium and Long Term Recommended Capital Improvements**

In the long-term, the Port and the TPA should anticipate that selected areas of the Port are likely to come under increasing pressure from commercial and residential uses and developers. The ongoing urbanization of the Channelside District and the reported sale of the International Ship Property to commercial property developers at Upper Ybor Channel are two salient examples of the types of pressures port industrial properties and uses will likely encounter in during the 20 year planning horizon. Port areas likely to face the most significant pressure include Upper Ybor Channel, Port Tampa and Rattlesnake. Port uses in these areas today are privately owned.

In addition to urbanization pressures, these areas may also face challenges related to draft/vessel access capability and landside truck access. The petroleum fleet (vessels and barges) serving the Port is likely to continue to slowly increase in size and draft. This trend may result in a reduction in the number of vessels capable of calling at the shallower draft petroleum facilities in the Upper Ybor Channel area, Rattlesnake and Port Tampa. This may limit the commercial feasibility of these facilities in the long-term. Finally, the significant growth in the Port's cargo traffic will result in significant increases in truck traffic in general and in the Upper Ybor Channel and Hooker's Point port areas in particular. This growth, in combination with the City of Tampa's continued growth, is expected to pose increasing challenges to roadway capacity in general and to and from Upper Ybor Channel and Hooker's Point areas in particular.

Based on the foregoing, the TPA in conjunction with the private sector needs to begin developing contingency plans to address these pressures and challenges should they develop. A potential option for the TPA and the upper Ybor Channel petroleum companies it consider is connecting the Upper Ybor Channel petroleum facilities via pipeline to the deep draft petroleum berths (Berths 220, 222, 223, 226 and 227). This option would provide deep draft access to these facilities should the current comparatively shallow channel and berth drafts in Upper Ybor Channel become a constraint. It could also provide the potential to access to the Central Florida Pipeline. The estimated cost of this development approximates \$5 million. While this option would address potential berth constraints of Upper Ybor Channel petroleum users, it would not address the potential long-term need to relocate port users from the Rattlesnake and Port Tampa port areas, should such a relocation become necessary or desirable.

### **3. Container**

Container operations currently occur at Berths 212 and 213. The capacity analysis has indicated that these berths, subject to the acquisition of additional container gantry cranes and dependent upon the number and call patterns of future container services, should be adequate to accommodate projected demand. Under the TPA's concession agreement with Ports America, Ports America is obligated to provide the additional cranes if both parties agree they are required. Given that berth capacity is anticipated to be sufficient, the recommended capital investments primarily address the expansion of the container terminal storage area.

One issue the Port faces is the FAA height restriction from the Peter O. Knight Airport which affects the maximum height of container gantry cranes at Berths 208 to 215. This issue needs to be resolved in the short term so as not to hamper the Port's future container growth. A higher FAA clear height is needed to insure the taller container gantry cranes required to handle future container vessels can be acquired and placed on the berths. The U.S. Coast Guard has raised two safety concerns regarding airport operations: navigation of vessels past the end of the runway during landings and takeoffs and the location of petroleum and liquid bulk storage areas relative to the landing and takeoff patterns.

The Peter O. Knight airport is a small aircraft airport with two runways. For years the airport has operated with an operations plan to minimize noise over the residential area of Davis Islands. Currently small aircraft, during approach and takeoff, fly over Hooker's Point and cruise and hazardous cargo ships passing directly in front of the runways along the Hillsborough "D" Cut Channel. Height restrictions along the Airport's approaches constrain the TPA's ability to install the newer generation container cranes that will likely be required to insure the Port can handle future generations of container ships. These newer cranes have maximum elevations approaching 400 feet when the booms are stowed in their upright positions during berth operations. The FAA's current maximum allowable height at Berths 212 and 213 is 190 feet.

The TPA and Ports America should begin to work with the FAA and the management of Peter O. Knight airport to identify, evaluate, prioritize and implement a program to successfully address the height restrictions affecting the TPA's Hooker's Point cargo complex.

#### **a) Short Term Recommended Capital Improvements**

The current container terminal area comprises:

- 36 gross terminal acres
- three container gantry cranes
- Top pick container handling equipment.

The current terminal capacity is estimated to be 132,000 TEUs per year (Exhibit VII-9), including the current Berth 213 extension (265 feet) project. As discussed in Chapter VI and shown in Exhibit VI-23, this capacity is expected to be sufficient only through 2009 under the high forecast.

Additional terminal improvements are recommended in order to handle projected container volumes as follows: (see Chapter VI, Exhibit VI-24, and Exhibit VII-9 of this chapter):

- 2008-2009: Repave/grade existing 21.4 acres
- 2008-2011: Reconfigure Berth 211 as demand warrants. Reconfiguration will need to include removing the former Harborside refrigerated warehouse, truck loading docks, and Buildings C and D, rebuilding Berth 211 to handle large container vessels and gantry cranes, adding crane rail to accommodate 100 foot gauge, 22 wide container gantry cranes, paving the area, and adding infrastructure to secure the area. A new refrigerated warehouse, if feasible, should be constructed in the Berth 206/208 area. The Berth 211 improvements should only be undertaken if demand (annual throughput, number and deployment pattern of container vessel calls) supports the investment
- 2009: Construct crane maintenance facility
- 2010: Add 20 acres (Option Area 1) in 2010 which will boost terminal capacity to 290,000 TEUs per year
- 2010: Build gate complex
- 2011: Add crane rail at Berth 211
- 2011: Construct terminal operator M&R facility
- 2012: Add 30 acres (Option Area 2) in 2012 which will boost terminal capacity to 497,000 TEUs per year
- 2017: Add 30 acres in 2017 (Option Area 2) which will boost terminal capacity to 737,000 TEUs per year.

The total estimated capital cost for these improvements approximates \$94 million with TPA's portion approximating \$50 million. Once these improvements are made, the container terminal capacity of 737,000 TEUs per year is expected to be sufficient for the twenty year planning period under the high forecast. The TPA and Ports America should continuously review recommended improvements within the context customers' evolving needs in order to align the phasing and timing of the recommended improvements with customers' evolving requirements.

**Exhibit VII-9**  
**Functional Requirements to Meet Future Container Demand**

Installed/Required Facility	Berth 212/213	Option 1	Option 2	Berth 211
Annual Throughput (TEU)	132,000	290,000	739,500	850,000
Net C. Y. Area Required (Acres)	16.7	36.6	93.3	107.3
Buildings & Gatehouse	8.6	8.6	9.9	11.1
Berths	10.8	10.8	12.8	17.4
Intermodal				
Gross terminal area (Acres)	36.0	56.0	116.0	135.8
Approximate TEU's per Gross Acre	3,662	5,180	6,376	6,261
<b>Yard Equipment Required</b>				
RTG's	0	0	0	0
Top Picks - Export	2	3	9	10
Side Picks (Empty Handlers)	0	1	3	3
Top Picks - Import	3	7	17	19
Crane Requirements	2	4	9	10
Total Berth Length (ft)	2,134	2,134	2,534	3,441
Additional berth length (feet)			400	907

*Source: Moffatt & Nichol.*

**b) Medium and Long Term Recommended Capital Improvements**

On an ongoing basis, TPA and Ports America should consider reconfiguring the Ports America concession container expansion option areas to optimally align the expansion areas with the berth area and thus maximize efficiency and capacity of the container terminal. Gantry crane requirements should also be monitored regularly. Finally, the air draft restrictions on the east side of Hooker's Point should be addressed.

**4. Breakbulk**

Most of the Port's breakbulk cargo operations and tonnage are handled at Berths 200-211 on the east side of Hooker's Point.

**a) Short Term Recommended Capital Improvements**

As discussed in Chapter VI and shown in Exhibit VI-28, sufficient capacity exists to meet the low forecast, but by 2027 a total of approximately 60 acres of additional storage area may be required to meet the high forecast. The ultimate need for this additional storage acreage will be dependent upon the ultimate timing of growth, the mix of cargoes and customers, customers' future requirements and the future rate of productivity improvement. Additional storage area may become available north and/or south of the City of Tampa water treatment plant as current leases expire. The TPA should carefully consider the mix of tenants and uses in these two areas

and evaluate the feasibility of relocating them to other port areas (Redwing) or to off port locations (tenants and uses not directly associated with the movement of breakbulk cargoes over Berths 200-211).

Covered storage needs for forest products, steel products, and other general cargo will continue to evolve as volumes increase. By 2027, TPA is estimated to potentially require a total of 309,000 square feet of covered storage. Current dry covered storage is an estimated 365,000 square feet which meets this requirement. However covered storage needs should continue to be monitored and needs adjusted to meet the evolving mix of customers, commodities and requirements.

Managing free time, demurrage charges and the potential use of off-terminal storage may reduce or eliminate the need for additional breakbulk storage capacity investments in the Berth 200-211 area. Continuously aligning current and future breakbulk cargo demand with the capabilities and capacities of individual berths and supporting backland areas will enhance efficient use of existing facilities and reduce the long-term need for additional capital investment.

Recommended uses include:

- Berths 200, 201 and 202: Miscellaneous breakbulk cargoes, vehicles, and small vessels
- Berths 206 and 208: Steel products, refrigerated cargoes, and vehicles. The TPA and Ports America should periodically review the market and financial feasibility of constructing a high capacity Berth 206
- Berths 209, 210 and 211: Steel products, multi-purpose, vehicles and refrigerated cargoes. The latter use should continue only until such time as the existing temperature controlled warehouse is demolished. At that point, refrigerated cargoes should be relocated to the Berth 206-208 area assuming the proposed new temperature controlled facility is proven to be feasible and constructed.
- Other: Utilize 15 acres site across Guy N. Verger Boulevard for breakbulk storage

In the short term (2008-2009), consider locating the proposed new temperature controlled warehouse on the property southwest of the newly constructed Ports America Transit shed at Berth 206 provided the parties involved collectively agree on the market and financial feasibility of the development. Circa 2009-2010, demolish the former Harborside Refrigerated warehouse, truck loading dock, and Buildings C and D at Berth 211. The estimated cost of this project to TPA is approximately \$7 million.

#### **b) Medium and Long Term Recommended Capital Improvements**

In the medium to longer-term, continuously monitor growth/need for additional covered storage and vehicle storage acres, and in the long term, monitor growth/need for additional acreage. The TPA and Ports America should also continuously identify, evaluate, prioritize and implement practical options for improving the operational efficiency, productivity and velocity of breakbulk cargoes in order to maximize the berth and storage capacities of the existing breakbulk general cargo asset base.

## **D. Channelside District**

### **1. Cruise**

The Channelside district is expected to remain an attractive location for TPA's cruise business due to its close proximity to other tourist attractions and downtown hotels.

#### **a) Short Term Recommended Capital Improvements**

Parking at Channelside is limited and will continue to be, as residential, retail and other developments continue to expand at the north end of Ybor Channel. This expansion will generate the potential need for additional parking structures. Parking expansion is scheduled for completion in 2008. In addition, upgrades to Cruise Terminal 6 are scheduled for 2008-2009. The total capital costs of these improvements are estimated to approximate \$7 million.

#### **b) Medium and Long Term Recommended Capital Improvements**

The TPA's current cruise terminals should be sufficient to accommodate the projected cruise business throughout the planning horizon. The TPA needs to continuously monitor the evolution of its cruise business in terms of cruise lines, vessels, itineraries, load factors and berth utilization in order to proactively identify and address potential infrastructure needs as they evolve.

## **E. Big Bend/Port Redwing**

Big Bend/Port Redwing recommendations cover dry bulk (aggregates) and liquid bulk (energy) operations. As previously discussed, the southern half of Port Redwing is a greenfield site (Exhibit VII-10) that has been approved for industrial development through the master plan and permitting processes. A portion of this area has been prioritized for development of an aggregate terminal. Port Redwing could also be the potential site relocating petroleum operations that may need to relocate due to the need for deeper channels and berths, larger berths and or the result of the anticipated increase in commercial and residential areas in and around Upper Ybor Channel, Port Tampa and Rattlesnake.

**Exhibit VII-10**  
**Aerial View of Big Bed / Port Redwing**



*Source: TPA.*

## **1. Dry Bulk**

As discussed earlier, Big Bend/Port Redwing is the site for a new TPA aggregate tenant, Andino Cementos. Future aggregate facilities can be developed as part of either the relocation of existing Hooker's Point facilities associated with lease renegotiations or as new demand develop. Consistent with the recommended 2027 land use vision, the TPA will need to continuously monitor lease expiration and demand over the forecast period to determine whether relocation of aggregate facilities is necessary or desirable. .

### **a) Short Term Recommended Capital Improvements**

The current focus of the development at Big Bend is aggregates. The recommended development of the Redwing portion of the Big Bend port area includes:

- Commencing planning for dredging the channel to a project depth of 43 feet
- Dredging Berth 300 and the areas associated with future Berths 301 and 302
- Land acquisition
- Construction of Berth 300 as part of the recently concluded lease agreement
- Upland improvements including utilities, rail access, gate security, and access road development during the first phase of the project to accommodate the aggregates operation under the recently completed lease agreement.

The total estimated cost to TPA is approximately \$33 million excluding dredging which is estimated at \$10 million.

### **b) Medium and Long-Term Recommended Capital Improvements**

Dredging and widening the channel to 43 feet would take place in the medium term. In the longer term TPA should consider other uses at Big Bend including relocating aggregate tenants to Big Bend from Hooker's Point as leases expire in order to provide expansion for container and breakbulk operations and/or relocating liquid bulk companies to Big Bend as discussed below.

## **2. Liquid Bulk (Petroleum)**

As discussed earlier, a need may evolve to accommodate private petroleum terminal operations potentially displaced from Ybor Channel, Port Tampa and or Rattlesnake. The Redwing/Big Bend port area is a potential site for accommodating this relocation per the recommended 2027 land use vision. The area is remote from commercial and residential development, can be developed to accommodate deep draft vessels, can potentially access the Central Florida pipeline, diversifies highway traffic, offers the potential for significantly improved rail access, and offers the potential to develop scale economies in berth and tank farm operations. The capital improvements for the Redwing/Big Bend expansion project are as follows:

### **a) Short Term Recommended Capital Improvements**

In the short term, the relocation of private terminal operations to this area would require some form of agreement among the TPA and the various terminal operators that need/decide to relocate. It may also require additional property acquisitions in the short term. The companies that could, in the long run, potentially benefit from such a relocation include: Hess, Marathon, Marathon Asphalt, CITGO, BP / Amoco, Gulf Sulphur, Central Oil, and companies currently located at Port Tampa.

### **b) Medium and Long Term Recommended Capital Improvements**

In the longer term, the relocation to Port Redwing /Big Bend would require:

- Dredging approach channels to 45' and minimum 400'-600' wide
- Building two or more multipurpose marginal berths as demand requires
- Acquiring property to accommodate a common user tank farm with truck rack and rail rack load out capability
- Insuring manifolds and piping have flexibility in terms of products and tank access
- Constructing, under a joint venture arrangement among the petroleum companies, a terminal operator and the TPA, an offsite, common user (condominium concept) tank farm and truck distribution center with rail capability as required
- Constructing dedicated roadway access to U.S. 41
- Addressing rail/U.S. 41 grade separation issues.

This would be a 10+ year development that would be phased to demand requirements. Capital investments would include building berths, a tank farm and a pipeline from berths to storage tanks, a truck rack and potentially rail car loading facilities. The estimated cost of this phase of development is approximately \$280 million. The costs associated with demolition, roadway access and relocating customers would also need to be considered.

As noted above, pursuit of this development requires the joint participation of the TPA and the private petroleum terminal operators currently operating in Upper Ybor Channel, Rattlesnake and Port Tampa. The development is also dependent upon the completion of a comprehensive feasibility study (market, financial, technical, operational, environmental, legal) and obtaining the requisite permits.

## **F. East Port**

The TPA recently acquired 36 acres of property at East Port which is located on the northeast shore of East Bay.

### **1. Short Term Recommended Capital Improvements**

East Port is the site for terminal and berth development for new aggregate tenant, Cemex, formerly Rinker. The development is based on a 40 year lease and involves dredging

approximately 780,000 cubic yards, backland development and construction of Berth 150. The capital costs for dredging will be shared between TPA and Cemex; all other construction costs are Cemex's responsibility. TPA's estimated costs, excluding dredging, are approximately \$4.5 million from 2008 to 2009 and include the costs for studies, design and cost estimates and environmental mitigation.

The TPA is planning to expand East Port by creating (filling) 15 acres of new land northwest of the Berth 150 development along Causeway Boulevard. The fill will be obtained from Spoil Island 2D. The estimated cost of this expansion (this includes mining approximately 5 million cubic yards of material and pumping it to East Port, berth construction, upland improvements and environmental mitigation) is \$57 million.

## **2. Medium and Long Term Recommended Capital Improvements**

TPA should consider continued terminal development at East Port by creating new port property via landfill. This concept is discussed below in Section G: Future Facilities.

### **G. Potential Future Market-Driven Capital Investment Opportunities**

The TPA has a number of capital investment opportunities which may or may not ultimately prove feasible (market, financial, technical, environmental and legal). These opportunities require major (tens or hundreds of millions of dollars) capital investment in facilities and infrastructure with extended (25+ years) lives. These opportunities need to be carefully considered over the 20 MP planning horizon and pursued, provided they prove to be feasible and are consistent with the TPA's long-term financial self-sufficiency requirements. The following paragraphs describe three of the most salient, potential market-driven capital investment opportunities.

This section also presents a series of capital investments associated with the SBRI. These investments require the TPA and individual SBRI members reach consensus on the scope and timing of the improvements, the design of consensus improvements, and conclusion of new agreements. The potential SBRI-related improvement opportunities are also presented in this section.

#### **1. Potential East Port Land and Terminal Development Project**

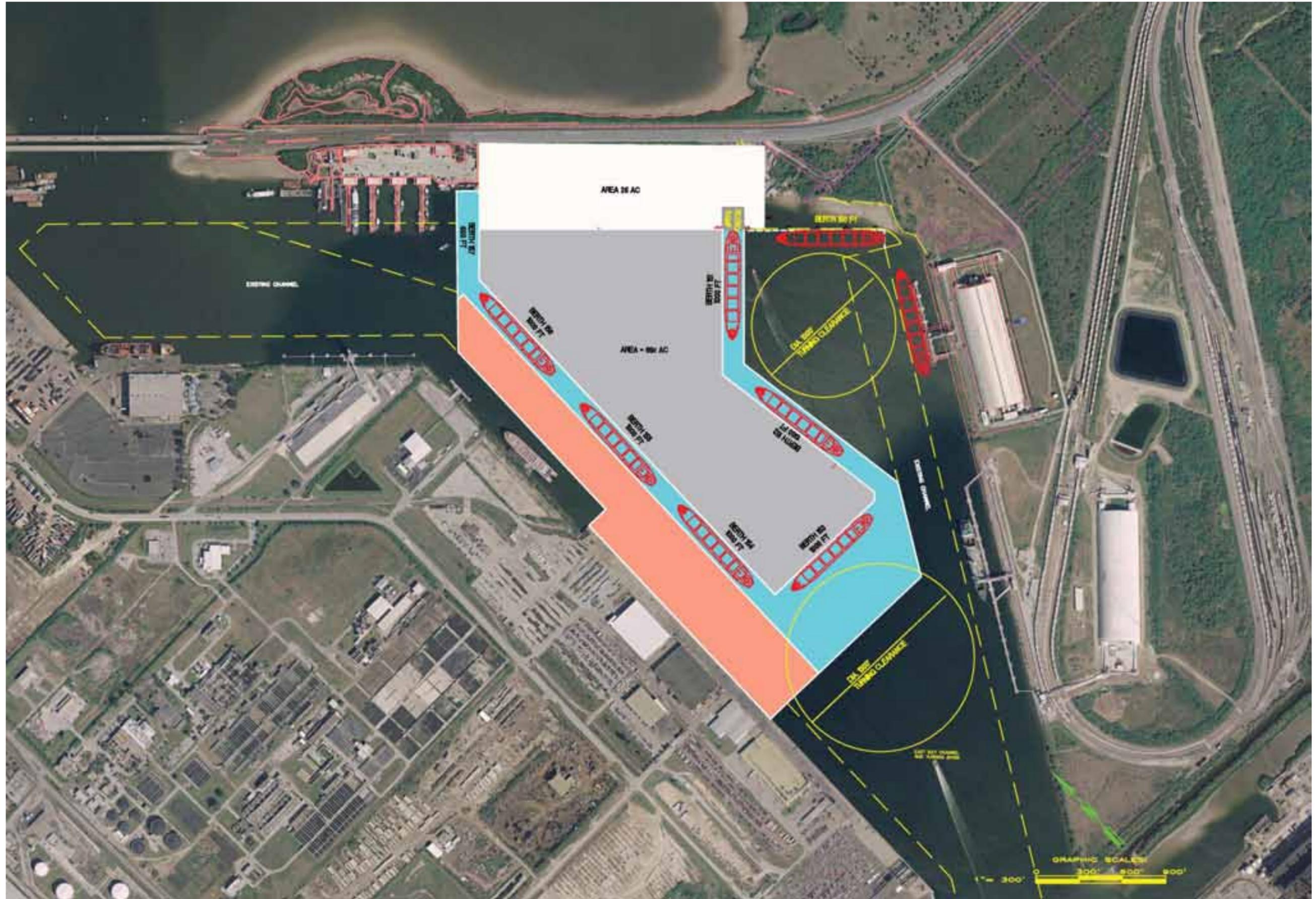
As waterside land becomes more scarce and valuable, TPA should evaluate the feasibility of creating new port property via landfill. One potential option is to develop additional land in East Bay. The TPA has prepared a concept plan for approximately 100 acres of property at the north end of East Bay (Exhibit VII-11). The proposed site extends southward from Causeway Boulevard, between the shrimp docks and the new Berth 150 aggregate terminal in East Port. Landside access would be direct from Causeway Boulevard. The site could potentially accommodate up to seven berths with a combined lineal footage approximating 7,000 feet. The total estimated development cost for bulkheading, dredging, transporting, hydraulic unloading, surcharging and upland development of the property is estimated at approximately \$221 million. The actual total cost will be a function of the type of upland development required and the source of fill material.

Major issues which would have to be addressed include:

- Cost: The cost of developing the facility is comparatively high versus existing sites
- Landside access and congestion: Road access to/from Causeway Boulevard, the capacity of Causeway Boulevard, traffic circulation and the potential requirement for queuing lanes would all need to be carefully considered.
- Navigation: Vessel traffic on the west side of the proposed development and the adjoining Berths 200-210 would be limited to one way.
- Site geometry: The site is not a uniform rectangle which is the preferred geometry for a modern marine terminal. Careful consideration would need to be given to aligning berths, backland and circulation areas to maximize the efficiency and capacity of the site.
- Rail: Although the potential exists to bring rail onto the site, the site geometry would pose significant challenges to access, rail yard storage alignment and capacity, train lengths and operations.
- Impact on other business: The shrimp docks currently located in East Bay may require relocation. Given the uncertainty regarding the long-term sustainability of the shrimp business, the TPA would need to very carefully consider the market, technical and financial feasibility of relocating this facility.
- Environmental: As is the case with any major development, the proposed site would require extensive environmental analysis. The environmental characteristics of East Bay are favorable, i.e. they lack significant flora and fauna and East Bay was previously dredged to 20 feet in the late 1960s with the creation of CSX Rockport. Consequently, mitigation requirements may be less than in other areas of Tampa Bay. Traffic and tidal effects would also need to be carefully studied.

The TPA will need to complete a comprehensive feasibility (market, financial, technical, operational, environmental and legal) study of this concept before undertaking this potential development project.

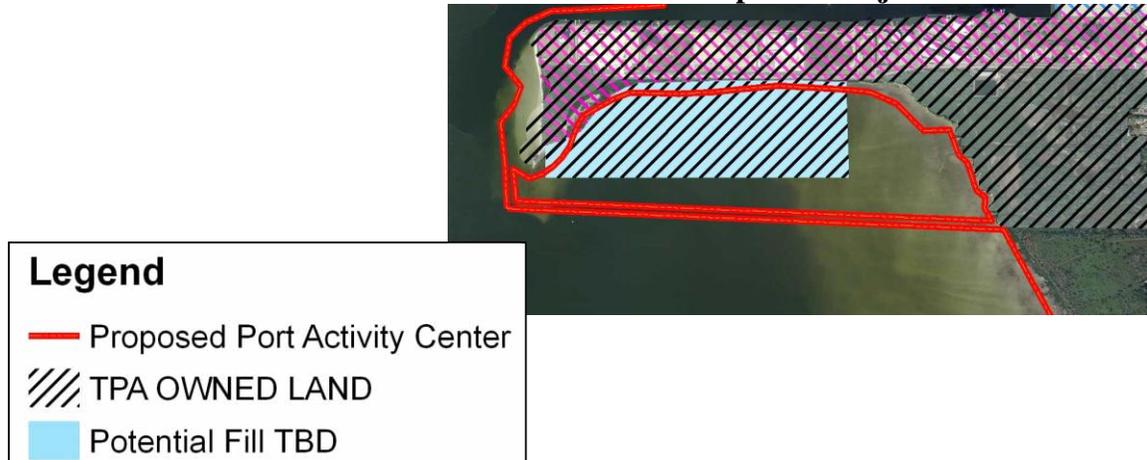
Exhibit VII-11  
East Port Terminal Development Project



## 2. Potential Pendola Point Land and Terminal Development Project

A second potential site for land development is located on the south side of Pendola Point (Exhibit VII-12). The site lies directly south of the existing Pendola Point port area and is partially sheltered by the Spoil Islands 2D and 3D.

**Exhibit VII-12**  
**Potential Pendola Point Land Development Project**



*Source: TPA and Moffatt & Nichol.*

This site could encompass upwards of 150 acres of property and up to six berths of 1,000 feet each. The property has a favorable geometry in that it is long, rectangular in shape and the berths could be developed continuously in line in phases as demand required. Its contiguous location to the existing port site would facilitate landside access, although Pendola Point Road would likely need to be expanded. Rail could be brought onto the site via the existing rail line.

While the site has many favorable attributes, it also faces multiple challenges including:

- **Cost:** The ultimate development cost would need to be carefully studied before the ultimate feasibility of the project could be determined.
- **Environmental:** The waters south of Pendola Point reportedly contain sea grasses and habitats. The perpetual conservation easement that was previously granted to the State for the Port's Pendola Point mitigation site that extends into Tampa Bay would need to be modified to allow Port development within the easement. Permitting and filling this area may be difficult and time consuming to acquire and may require extensive mitigation.
- **Dredging:** The site would require extensive dredging of a new access channel and berth area. The fill from this operation may not be adequate to fill the site. If this is the case, then fill would need to be brought to the site which could prove costly. The recommended channel deepening project may provide a cost-effective source of additional fill
- **Road and rail access:** Road and rail access would need to be carefully studied, particularly as it relates to the intersection of Pendola Point Road and U.S. 41. Depending on the development and the associated volume of traffic, a grade separated intersection might be

required and or desirable. Pendola Point Road would likely require expansion in order to support port operations at both the existing marine facilities and new marine terminals developed on South Pendola Point.

The ultimate feasibility of either fill site would need to be carefully considered within the context of existing sites. The TPA will need to conduct a complete feasibility analysis of both fill sites and other waterfront sites if and when they become available. These feasibility analyses would need to be developed within the context of current and emerging demand and the respective costs and benefits of each site carefully weighted against the long-term capacity of each site to meet future demand. The estimated cost of the Pendola Point project including design, fill, bulkhead, and upland development is approximately \$276 million.

### **3. Potential Land Acquisition**

In recent years, the TPA has been leasing 50 to 100 acres each year for marine terminal and related development. The TPA's inventory of available properties is limited and cannot sustain this rate of development going forward. Should future demand exceed the current demand projections, the TPA will require additional property. Section 2 addressed the current land fill options available to the TPA. This section addresses property acquisitions. The land acquisition categories and their related issues are discussed as follows:

- Mitigation for environmental impacts requires improving and/or developing wetland sites. The acreage required to mitigate an impact varies significantly with the type and quality of the impacted area and can only be accurately determined through detailed environmental studies and the various permitting processes on a project specific basis. This requirement limits the TPA's ability to accurately project its future mitigation-related land requirements. Mitigation ratios, i.e. the ratio of acres of environmental mitigation land to be developed per acre of port land developed can range from less than one to higher than 4-to-1.
- TPA recently expanded the capacity of its Spoil Island 2D. The capacity was increased by raising the retaining dikes. The USACE is currently planning to undertake a similar expansion of Spoil Island 3D. The use of Spoil Island 2D is restricted during bird nesting season (October 1 to May 15th). This limitation constrains the TPA's and USACE's ability to efficiently schedule and complete dredging operations that involve Spoil Island 2D. Given these restrictions, ongoing maintenance dredging requirements and the potential channel deepening project, the TPA and the USACE will likely need to consider the acquisition and permitting of a third dredge spoil site within Tampa Bay. The two fill sites previously discussed should be the first priority if they can be permitted and they offer an economically viable option since they produce the added benefit of creating additional port land.
- Port Redwing mitigation was performed on site at the cost of valuable land adjacent to the berths. The TPA is currently evaluating the feasibility of purchasing this site for future port development and relocating the mitigation site to another location. The TPA's challenges include identifying an acceptable site, permitting and developing the site and funding the acquisition and development since it is a non-revenue generating activity.
- Access improvements for the CIP projects and existing facilities are needed to minimize traffic impacts. Land acquisition costs are included as required for the specific projects.

- Property for capacity expansion in the Port of Tampa includes opportunistically acquiring properties and waterfront facilities from private entities as they become available

Potential land acquisition costs to support implementation of the TPA’s CIP projects are estimated to approximate \$75 million. This includes land acquisition for Port Redwing development and expansion (discussed above) plus an additional \$47 million for:

- Mitigation sites: \$19 million
- Access improvements: \$3 million
- Port capacity expansion: \$25 million

Expanding the TPA’s land inventory through the optimal combination of acquisition and fill is a strategic priority. The TPA will need to continuously integrate and update its land development needs as a part of its ongoing strategic and master planning initiatives. This includes integration of the following initiatives:

- Working with its tenants and private sector partners to continuously improve marine terminal management and operations to maximize efficiency and capacity
- Continuously monitoring property availability within the Port Activity Center
- Completing conceptual planning studies and developing a prioritized, phased development program for the two fill projects as demand warrants
- Opportunistically acquiring additional waterfront and supporting land as it becomes available, consistent with the Port’s anticipated land development requirements and the financial feasibility of each acquisition.

#### **4. Potential SBRI-Related Investments**

The TPA-owned berths that support the SBRI require various levels of investment to sustain SBRI operations during the master plan horizon. The requisite levels of investment range from continued investment in normal, periodic maintenance and repair to complete reconstruction of berths. There are a number of strategic factors that need to be evaluated in considering reinvestment in these berths. These factors include:

- The market outlook for SBRI. As discussed in Chapter IV, the current SBRI market is strong and likely to remain so for the next couple of years. In the longer-term, the SBRI faces a number of strategic considerations that will shape future demand.
- The SBRI generates significant economic impacts to the Port in terms of employment. Consistent with the TPA’s mission to benefit the regional economy, the TPA needs to consider these impacts.
- The specialized nature of several of these berths. Berths 235-241 and 253 are essentially dedicated to SBRI uses. Their location, physical configuration, and upland developments do not provide the flexibility to accommodate other marine uses. Consequently, from a use perspective they are dedicated berths. Berths 263-265 are located in the Channelside District. The 2027 land use vision for this area is commercial and cruise activities. In addition, ISR has recently sold its property and thus will vacate its Ybor Channel location and as a result

presumably vacate Berths 263-265 and the adjoining uplands since they are insufficient to support ISR's Ybor Channel activities.

- The TPA's mission requires it use sound business, financial and environmental management practices in investing in marine terminals and supporting infrastructure.

Consistent with these factors, the TPA's mission and its marine terminal leasing practices, Norbridge recommends the TPA and the SBRI jointly consider the following steps for evaluating reinvestment in the SBRI berths:

- Berths 235, 240 and 241: Repair and or reconstruction of Berths 235, 240 and 241 is subject to the TPA and TBS addressing the following conditions:
  - Agreeing the berths should be repaired and or reconstructed
  - Reaching consensus on the physical specifications of the work to be performed in order to insure the investment meets TBS' long-term requirements
  - Preparing a business plan that provides the market-driven foundation for the investment
  - Agreeing on who will invest in the capital improvements and how that investment will be reflected in a new lease agreement
  - Negotiating a new lease agreement that enables TPA to recover its investment costs if it undertakes the investment or reflects TBS' investment if it undertakes the investment. The TPA has recently entered into long-term lease agreements where the tenant has agreed to construct the berth
- Berths 263-265
  - Remove the berths from service and cordon them off following ISR vacating its property as a result of the sale of its property
  - Consistent with the recommended 2027 Land Use Vision, redevelop them for commercial use in the future provided a compensatory agreement with a tenant can be concluded and the redevelopment is feasible (market, financial, technical, operational, environmental and legal)
  - Continue its ongoing discussions with ISR regarding a possible relocation. This initiative will require a comprehensive feasibility study (market, financial, technical, operational, environmental and legal), a consensus on a location and conceptual development plan, a business plan and long-term lease agreement.

## **H. Landside Access Potential Improvements and Operational Approaches**

### **1. Potential Improvements**

#### **a) Through 2012**

There are two planned transportation improvements that should significantly benefit Port of Tampa truck access:

- The I-4/Crosstown Connector will provide a vital link between these two major divided highways, with a connecting ramp serving Hooker's Point. This will eliminate the need for

port trucks to use 21st/22nd streets to access I-4, reducing congestion on these streets as they cross SR 60 and travel through the heart of the Ybor City entertainment district. The initial construction phase(s) is currently expected to be completed by 2012.

- The widening of Causeway Boulevard (22nd Street) to four lanes between U.S. 41 and U.S. 301 will improve capacity and performance on this important east-west connector.

Additional improvements that should be considered to accommodate projected port truck traffic include:

- Expansion of truck processing capacity at the Hooker's Point security gate. Operations are considered adequate at present, but significant increases in truck traffic are likely to require additional truck queuing space and/or more advanced processing technology.
- Roadway improvements on Hooker's Point to make all terminals accessible via bi-directional 4-lane roadways. Currently many terminals are served by two lane roadways. There has been some discussion of creating a one-way loop road system, but it is believed this would be less beneficial. In parallel, to the extent practical, improvements to reduce the number of at-grade rail crossings of terminal access roads should be undertaken.
- Development of new terminals at Redwing and East Port may require the construction of new truck access roads/access points.
- Development of all new terminals should allow for the potential for future rail access and service, even if the commodity type is not currently "rail friendly." Conditions change, as do commodity types, and the physical asset should be adaptable as appropriate.

These projects are illustrated in Exhibit VII-13. Under the high forecast, all of these should be considered by 2012. Under the low forecast, improvements at Hooker's Point would be needed, but the "additional improvements" relating to other terminals could be deferred.

#### **b) Through 2017**

There are two planned transportation improvements that should significantly benefit Port of Tampa truck access:

- Additional phase(s) of construction of the I-4/Crosstown Connector.
- Widening of Progress Boulevard.

Additional improvements that should be considered to accommodate projected port truck traffic include:

- Widening Madison Avenue.
- Widening of, or equivalent capacity improvements to, U.S. 41 between Madison Avenue and I-4.
- Relocating the rail spur serving Rockport/East Port. The concept would be to eliminate the current crossing of U.S. 41 just below Causeway Boulevard, and instead serve Rockport/East Port via the crossing of U.S. 41 just north of Madison Avenue, which currently serves Port Sutton/Pendola Point. This would eliminate rail crossing blockages at the U.S. 41/ Causeway

Boulevard intersection. Additional rail improvements within the Rockport/East Port terminal area would be required to connect to the existing on-dock rail loop track, and this proposed concept would need to be carefully reviewed with CSX. If desired, U.S. 41 could then be elevated over this rail spur, which would insure rail traffic bound for Rockport/East Port and Port Sutton/Pendola Point would not cross U.S. 41 at grade.

- Elevating Causeway Boulevard over the CSX mainline and, if desired, continuing the elevated section to provide a grade separation with U.S. 41. With the Rockport/East Port rail spur eliminated, U.S. 41 could remain at grade. This would substantially improve flow on both roads.
- Similarly, elevating SR 60 over the CSX mainline and, if desired, continuing the elevated section to provide a grade separation with U.S. 41.
- Improving truck access to Yeoman and Uceta yards. The current access traverses local residential streets, and should be relocated to a major street. This is more of a general freight issue than a port issue; FDOT is considering several options but has not released its recommendations at this time.

These projects are illustrated on Exhibit VII-14. Under the high forecast, all of these proposed improvements should be carefully evaluated by 2017. Under the low forecast, the widening of Madison Avenue and U.S. 41 could be deferred.

### **c) Through 2027**

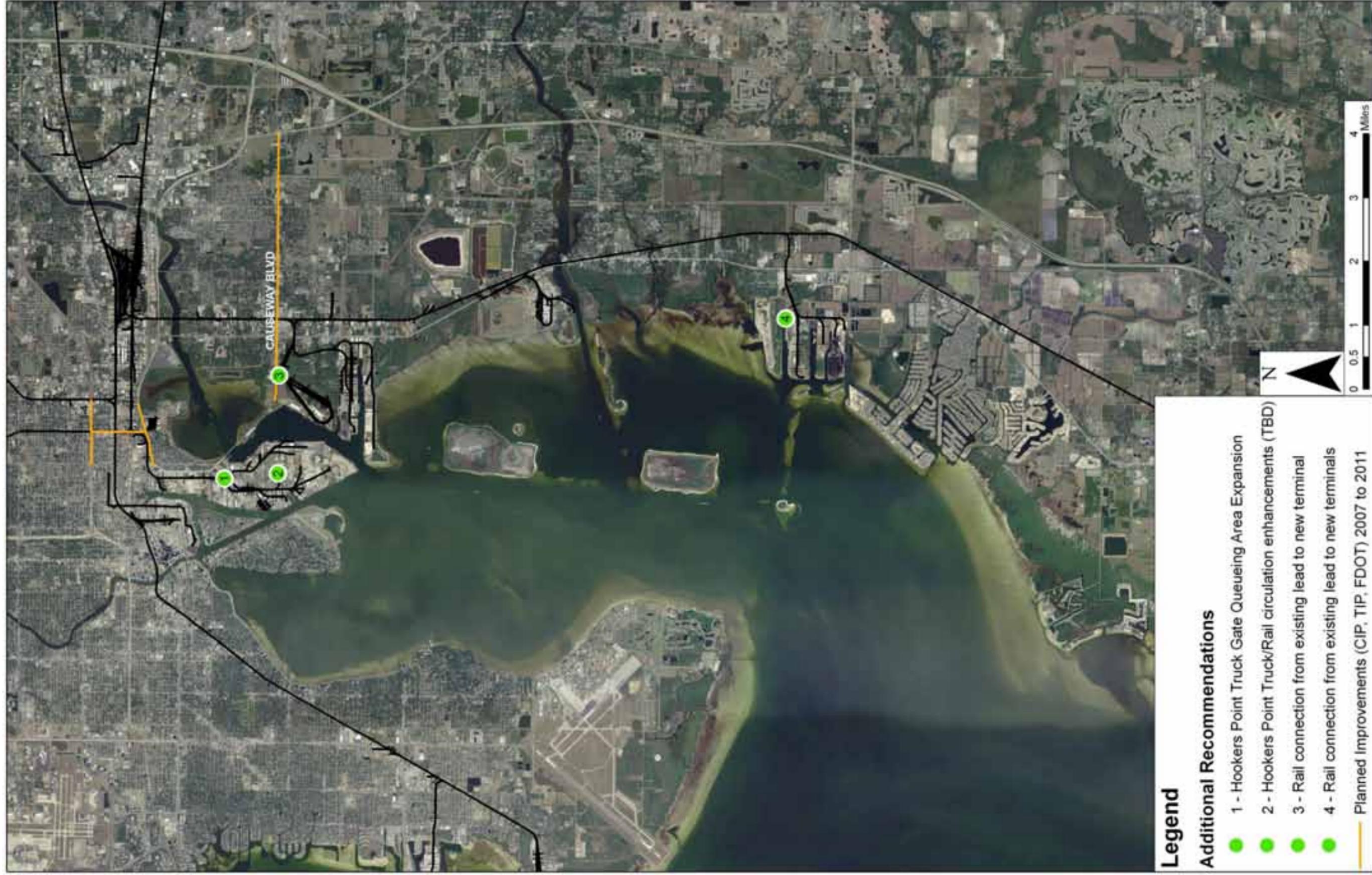
There are several planned transportation improvements that should significantly benefit the Port's truck access:

- Final phase(s) of construction of the I-4/Crosstown Connector.
- Improvements to I-275, I-4, and the Crosstown Expressway
- Improvements to U.S. 41, U.S. 301, and SR 60
- Widening Causeway Boulevard between Hooker's Point and Rockport

Additional improvements that should be considered to accommodate projected port truck traffic include:

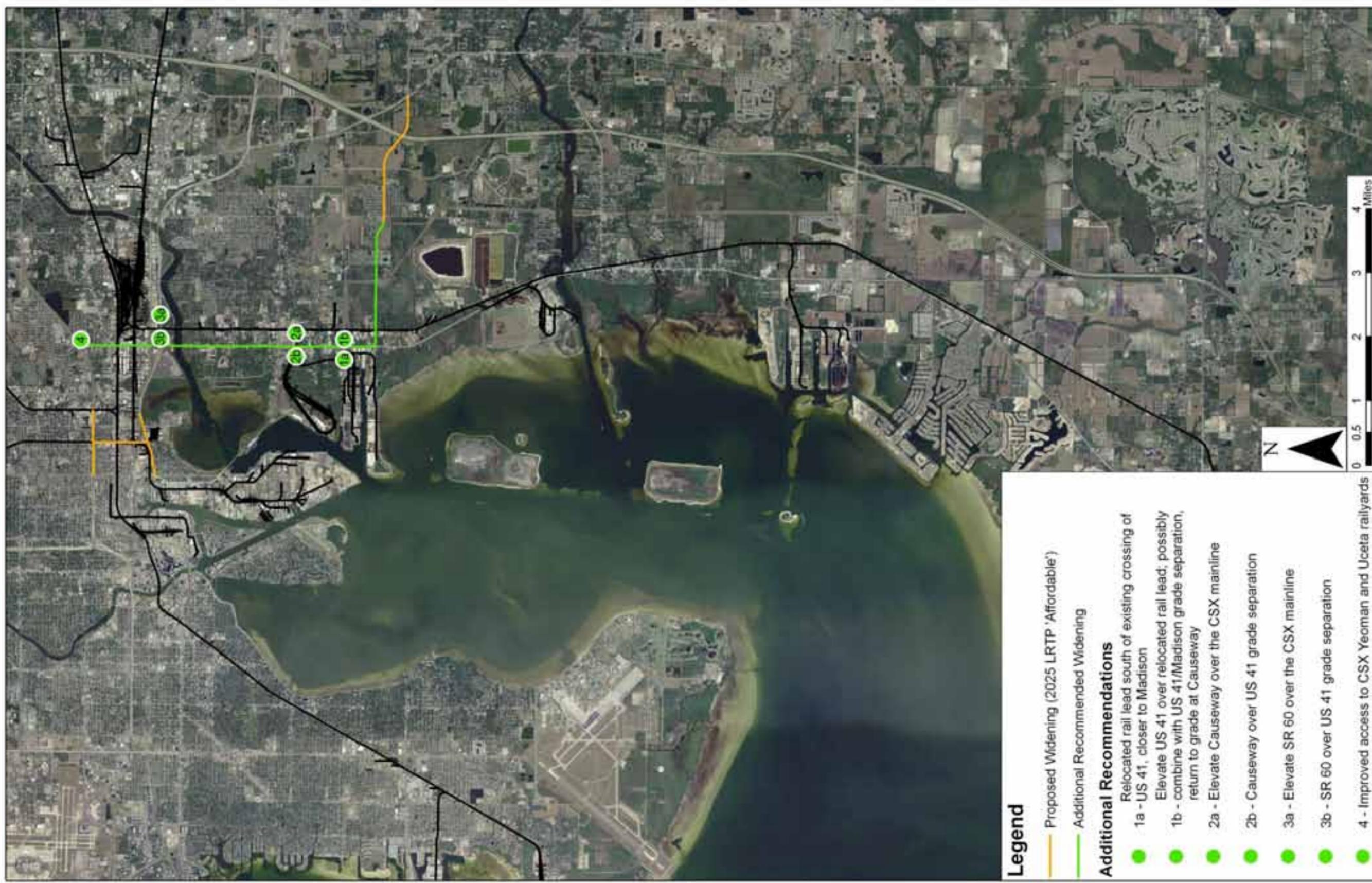
- For the low forecast scenario, all "additional improvements" discussed above for the 2012 and 2017 periods should be fully implemented.
- Additionally, for the high forecast scenario only, further improvements that should be considered include widening Big Bend Road, grade separating U.S. 41 over the rail lead to Port Redwing/Big Bend, and widening U.S. 41 between the Alafia River and Big Bend Road.

Exhibit VII-13  
Planned and Potential Transportation Improvements through 2012



Source: Cambridge Systematics

Exhibit VII-14  
 Planned and Potential Transportation Improvements through 2017



Source: Cambridge Systematics

## **2. Operational Approaches**

Terminal operators and customers – not the TPA– determine hours of terminal operation and the use of trucking versus rail. However, to the extent practical, several operations and management-based approaches to landside access should also be considered:

- Encouraging maximum use of rail. The port’s major growth commodities – aggregates, cement, containers, and petroleum – are not significant rail users today. For the foreseeable future, the great majority of shippers and receivers of these commodities will be located in the Tampa and West-Central Florida Region. The relatively short travel distances associated with serving these markets are generally unfavorable for rail service given the cost structure and service constraints of rail transportation, compared to trucking. Even so, there could be opportunities to develop short-haul rail services, especially if they can be linked to high-volume inland consolidation points. This is considered a long-term, opportunistic strategy that requires ongoing monitoring and therefore should not be considered as viable alternatives to the recommended highway improvements.
- Encouraging off-peak trucking. Petroleum trucks operate on a 24-hour day but most other terminals are currently limited to daytime operations. If terminals operated longer hours, it could help minimize peak-period highway activity. There are three significant obstacles to extending gate operations at marine terminals: (1) terminals labor costs for off peak periods tend to be very high compared to regular operating hours; (2) shippers and receivers at the other end of the trip are often not open for business outside of regular hours; and (3) depending on the location, night-time truck movements could have undesirable effects (noise, etc.). Nevertheless, the approach is worth considering and port industry best practices in extending marine terminal operating hours should be continuously monitored.

## **3. Long-Range Transportation Issues**

Other access needs, even very long range ones, may warrant action today. In particular:

- With increased container activity, the Tampa Bay region will need to be served by additional warehouse/distribution space. Land use policies that lead to “clustering” of this space are desirable, because it allows for identification and improvement of appropriate access corridors. This must be a cooperative effort of the Port and local/regional planning agencies.
- It might ultimately be desirable to link Rockport/East Port and Port Sutton/Pendola Point with I-75 via a dedicated truck way or designated freight corridor. Options for doing so appear limited, but use of existing industrial property and power line rights of way could be explored.

## **I. Environmental**

### **1. Sovereign Lands Management Program**

#### **a) Sovereign Lands Management Rules**

In April 1994 the TPA adopted comprehensive regulations for the management of the sovereign lands that fall under its jurisdiction. The regulations were subsequently updated in 1998 and 2003, and replace those regulations previously adopted in 1983. These regulations, including updates, were adopted pursuant to Section 6 of Chapter 84-447, Laws of Florida. Periodic updates will continue to be made in the future as needed.

The 1994 regulations establish detailed procedures for the granting of approvals for the use of sovereign lands. Various types of approvals are required for different uses, ranging from Consent by Rule for certain small private structures to easements and leases for larger public and commercial uses. The rules also establish new or revised procedures for real estate transactions involving sovereign lands.

The 1994 regulations require intergovernmental coordination of TPA actions on sovereign lands with the Planning Commission and the Environmental Protection Commission of Hillsborough County. The regulations also call for appropriate coordination of actions taken pursuant to these rules with other governmental units such as the FDEP, the SWFWMD, the City of Tampa, and the City of Temple Terrace.

A key component that was added to the 1994 regulations is the classification of sovereign lands and the establishment of Aquatic Resource Protection Areas (ARPA). Lands are now classified into the following categories:

- Tidal Waters: Commercial, Urban and Rural.
- Rivers: Downtown, Urban, Rural.
- Lakes: Thonotosassa, Keystone.
- Aquatic Resource Protection Areas: Cockroach Bay, Bullfrog Creek, McKay Bay, Gadsden Point, Wolf Branch, Upper Old Tampa Bay, Pendola Point, Egmont Key, Aldermans Ford Park, Upper Hillsborough River.

The regulations establish general policies and detailed criteria for the issuance of approvals for use of sovereign lands and a requirement for a determination that proposed uses are not contrary to the public interest. For those lands within an ARPA, the proposed use must be consistent with applicable land or state management plans. The Standards for Use for each category have been developed to allow for uses compatible with the approved land uses of adjacent uplands while concurrently protecting significant natural resources. Thus, the regulations for urban tidal lands in residential canals are quite different than those for a rural tidal area or an ARPA.

### **b) Sovereign Lands Management Initiatives**

The TPA Board has endorsed a program to establish a more comprehensive management program for these lands by supporting various sovereign lands management initiatives. To assist with the development and management of its sovereign lands management program, the TPA has established a Sovereign Lands Management Advisory Committee made up of individuals representing local planning and environmental agencies, and citizen's representatives, to advise the TPA staff about management initiatives and other matters.

Initiatives supported by the TPA include the development of management plans for the Bullfrog Creek ARPA, the McKay Bay ARPA and the Cockroach Bay ARPA. Funding support was also provided for environmentally friendly shoreline stabilization projects, exotic vegetation eradication, sea grass planting, and projects for manatee protection. Future programs may include the development of public information programs, research efforts in support of management initiatives, and support of restoration and resource protection initiatives within TPA sovereign lands.

### **c) Marine Construction Permitting Program**

Through its enabling legislation, the TPA has the authority for local marine construction permitting throughout most of Hillsborough County. TPA staff issue an average of approximately 300 permits annually in accordance with the TPA Sovereign Lands Management Rules and in concert with local, state, and federal requirements.

## **2. Spoil Island Management**

The TPA holds title to two large spoil disposal islands in Hillsborough Bay. These islands were designated DA2D (2D) and DA3D (3D) during their construction as part of the Tampa Harbor Deepening Project in the late 1970s and early 1980s. DA2D lies east of the main shipping channel between Pendola Point and the Alafia River. DA3D lies east of the channel between the Alafia River and the Big Bend Channel. The primary function of the islands is for disposal of dredged material by the USACE and the TPA. Another very important function of these islands is to provide a safe, protective and productive area for colonial nesting birds.

### **a) Dredged Material Disposal**

The primary purpose of both of these islands is for the disposal of material generated by the maintenance dredging of the channels, turning basins, and berths throughout the northern portion of the port complex, generally from the Gadsden Point Widener north. These islands are subject to perpetual easements to the federal government for use as disposal areas for maintenance of the Tampa Harbor Project. The islands also offer the only significant disposal areas for disposal of material from the maintenance dredging of public and most private berths in the Port of Tampa.

### **b) Wildlife Habitat Management**

In the period since their construction in about 1980, DA2D and DA3D have become nesting areas for significant numbers of migratory birds. These islands support one of the largest breeding colonies of laughing gulls in the state, and along with the nearby National Audubon

Society Tampa Bay Sanctuary islands, are part of the region's most important complex of nesting areas for colonial nesting birds. Among other breeding birds utilizing disposal islands 2D and 3D are American Oystercatcher, Black-necked Stilt, Willet, Caspian Tern, Royal Tern, Sandwich Tern, Least Tern and Black Skimmer.

To protect the ecological value of the islands to nesting birds, the TPA worked with the USACE in drafting the Federal Migratory Bird Protection Plan and drafted a TPA Bird Habitat Management Plan for the islands. These plans call for a variety of management actions, including:

- Restrictions on the use of the islands for dredged material disposal during the annual nesting season, except under specific circumstances;
- The posting of active nesting areas during the nesting season; and
- Actions to discourage nesting by birds in areas where they are apt to be disturbed by scheduled disposal activities.

Valuable resource management input is received from the TPA Migratory Bird Protection Committee.

### **3. Oil/Hazardous Materials Response Program**

The U.S. Coast Guard Sector St. Petersburg, FL has responsibility for developing and implementing the Area Contingency Plan (ACP) for Tampa Bay. The ACP addresses oil and hazardous substance spill response in the coastal zone and has been developed to comply with the requirements 4202 of the Oil Pollution Act of 1990 (OPA'90) and the National Contingency Plan. The ACP must be adequate to remove a worst-case discharge of oil or hazardous substance and to mitigate or prevent a substantial threat of such a discharge from a vessel, offshore facility, or onshore facility operating in or near the geographic area.

The ACP is a "living" document that is updated periodically and implemented through an "Area Committee" comprised of qualified personnel from federal, state, and local agencies. The primary role of the Area Committee is to act as a preparedness and planning body. The Committee operates under the direction of the Federal On-Scene Coordinator, which for Tampa Bay is the USCG Captain of the Port. Each Area Committee is responsible for working with state and local officials to pre-plan for joint response efforts, including appropriate procedures for mechanical recovery and dispersal of oil; shoreline cleanup; protection of sensitive environmental areas; and protection, rescue, and rehabilitation of fisheries and wildlife. The Tampa Bay Area Committee is comprised of three subcommittees - Scientific Support, Resources, and Preparedness. The TPA Operations Director serves on the Preparedness Subcommittee, and the TPA Environmental Manager serves on a component of the Scientific Support Subcommittee. The ACP contains substantial information for use in responding to a spill incident. Its contents include maps of sensitive habitat areas identifying for each area the type of resource present, protection priorities, boom placement plans, and information on access to the area. Other portions of the ACP identify human and equipment resources available in the area, and contact networks for bringing those resources into action.

The ACP establishes the responsibilities and roles of each agency that might be involved in a spill response, thus ensuring an efficient and effective overall program. The overall responsibility for response to an incident lies with the National Response Team and the On-Scene Coordinator. The effectiveness of the ACP was demonstrated in 1993, when a vessel collided with barges carrying petroleum products at the mouth of Tampa Bay. While there was a significant spill, and some damage to beach areas, the response of the Coast Guard and other local, state, and federal agencies helped abate what might have been a major ecological incident.

#### **4. Stormwater Management**

Storm water management is a key component of the TPA environmental responsibilities.

The TPA operated under the provisions of the U.S. Environmental Protection Agency (USEPA) General Industrial Baseline NPDES Permit for non-point sources until 1998. Since 1998, the TPA has operated under the USEPA Multi-Sector General Permit. In compliance with those permits, the TPA has developed and implemented Storm Water Pollution Prevention Plans (SWPPP) for TPA-owned common use properties.

Under the SWPPP, tenants of the TPA are responsible for obtaining their own Notice of Intent (NOI) and preparing a SWPPP, (if applicable), for their leaseholds. The TPA program has been developed in coordination with its tenants. Several tenant firms have extensive individual storm water management programs, particularly those firms involved in the transport of petroleum products.

The SWPPP preparation included the development of detailed drainage maps delineating topography, drainage basin boundaries, drainage structures, lease areas, existing pollution control facilities, the location of exposed materials, and the locations of past spills of potential contaminants. Preparation of these maps included extensive field investigations of cargo operations throughout the port. Comprehensive surveys of outfalls throughout the TPA properties were done to ascertain that there are no non-storm water discharges to these outfalls.

The SWPPP contains recommended Best Management Practices (BMPs) for the types of regulated operations that occur on TPA properties. These operations include the following cargo operations: scrap metal, dry bulk, liquid bulk, fueling, and general cargo, along with such activities as marine repair, vehicle maintenance, and open storage. The SWPPP also calls for training regarding the implementation of the SWPPP, use of the BMPs, material inventory and handling, and spill prevention and response. This program has been initiated and is on-going. The SWPPP calls for the formation of a Pollution Prevention Team staff, charged with overseeing the continuing implementation and updating of the SWPPP.

The SWPPP is a dynamic plan which has been and will be revised as appropriate to reflect any change occurring in facility operations or effectiveness in providing storm water pollution prevention.

## **5. Environmental Issues Related to Long-Term Development Plans**

WRS Infrastructure & Environment, Inc. (WRS) investigated a large portion of the Tampa Bay Area in the vicinity of the existing Port to evaluate potential long-term (25-30 year) development plans, improvements and expansions for future port facilities and supporting infrastructure development. The investigation included both offshore marine, near-shore and nearby land-based areas for supporting port activities and supporting industrial uses. The recommendations and conclusions of this report follow.

In general, the area to the north of the Alafia River appears to present more limitations for future port development than the area to the south from an environmental and permitting perspective. Many areas are already developed, especially north of Madison Avenue. McKay Bay is shallow water with much development surrounding it. East Bay is deep but areas surrounding it are already developed.

The Apollo Beach area, located at the south of the study area, has deep waters to support large vessels. There are also large tracts of undeveloped properties close to the coast that could support construction of the land-based support operations.

### **a) Potential Environmental Constraints**

A variety of regulatory issues may be considered integral parts of any proposed port facility expansion, including but not limited to:

- Wetlands jurisdictions performed by qualified wetlands scientists and approved by regulatory agency personnel;
- Threatened and endangered species;
- Historical and existing proposed dredge sediment and receiving water quality conditions;
- Aerial and depth dredge requirements (e.g. maintenance or new);
- Upland dredge material disposal site availability (note reuse potential);
- Potential mitigation (on-site, banks, habitat restoration);
- Site accessibility and ownership;
- Contaminated sites and remediation;
- Existing institutional controls;
- Public Interest Factors; and
- Acknowledgement of Applicable Exemption Criteria & Regulatory Thresholds.

### **b) Recommendations For Phase II Environmental Constraint Analyses**

Upon selection of a preferred alternative for port expansion it is recommended that meetings be scheduled and held with select environmental permitting regulatory agency staff, commenting agencies such as the USFWS, and others to formally present proposed plans. At this time much

information will be made available to support planned objectives that meet permit criteria. Input from agency personnel would be considered for incorporation into the formal application(s). Discussions and recommendations should be thoroughly documented since staff turnover and “recall” is subject to change when it may become important to note agency commitments that influence proposed port expansion needs.

## **J. TPA Security**

The Port presents significant challenges to TPA and security governing agencies in complying with current and emerging security regulations. The Port includes eight distinct areas, most of which are not contiguous. Private property is interspersed with TPA property and facilities. Land use is highly diversified, with tenants operating the majority of TPA property under leases.

Many Port areas have multiple entry points which need to be secured. A significant part of the throughput at the Port consists of a range of hazardous cargoes. The Port is regularly visited by commercial and cruise vessels serving many of the global trade routes, along with commercial fishing and recreational vessels.

Many trucking companies also serve the Port. The operational bases and ownership of these companies are dispersed over a broad geographical area. A large and diverse workforce (longshoremen, industrial workers, office workers, and a large variety of vendors) also enters and exits the Port daily.

The Port’s proximity to a major population center and central business district creates unique security challenges, as do the presence of two major interstate highways, regional roads, military (MacDill AFB) and power generation infrastructure (TECO, Progress Energy, and Crystal River Nuclear Plants).

State of Florida statewide minimum standards for seaports are contained in Florida Statute Chapter 311.12. Since September 11, 2001, security requirements for seaports have drastically increased with additional Federal legislation. In addition, TPA is required to comply with multiple regulations affecting and mandating security.

- Florida Statute 311.111 – 311.12: In 2001, minimum security standards for Florida seaports were enacted
- International Maritime Security Requirements: The International Ship and Port Facilities (ISPS) Code, an Annex to The United Nations’ “Safety of Life at Sea” (SOLAS) Convention was enacted. The ISPS Code requires security threat assessment and security plans based on those assessments.
- MSTA: The United States’ Maritime Transportation Security Act, enacted in 2002 as 33 Code of Federal Regulations, Parts 101-106 brings U.S maritime law into compliance with the ISPS Code. The U.S. Coast Guard is assigned responsibility for oversight and enforcement.
- SAFE Port Act of 2006: On October 13, 2006, the Federal “Security and Accountability for Every Port” (SAFE Port) act of 2006 became law.

The regulations specify requirements for:

- Security assessments, development of security plans, implementation of measures to address access control, security monitoring, and physical, passenger, personnel, baggage and cargo security
- Drills and Exercises
- Designation of security personnel for each vessel or facility
- Installation of Automatic Identification System (AIS), equipment that automatically sends detailed ship information to other ships and shore-based agencies

The regulations apply to those entities that may be involved in a transportation security incident, including various tank vessels, barges, large passenger vessels, cargo vessels, towing vessels, offshore oil and gas platforms, and port facilities that handle certain kinds of dangerous cargo or services provided by the above listed vessels.

TPA has invested over \$50 million to comply with mandated security measures. Additional security measures include a modern access control system and fences, lighting and cameras. Security currently accounts for 20 percent of TPA's operating budget and the TPA is working with public and private entities to comply with security requirements while endeavoring to minimize the effects on Port operations. The State of Florida has more stringent security requirements than any other state in the nation, and, to meet these standards, the TPA is working with port users and the government to implement security measures in an efficient manner without unduly affecting Port operations. The Tampa Bay Harbor Safety and Security Committee represent local interests on a national level.

Since the *Tampa Port Authority Master Plan Update in 2000* mission statement was published, the events of 9/11 required U.S. infrastructure authorities to make security among their highest priorities. In the post-9/11 climate, security measures have been implemented to efficiently manage port movements and meet federal guidelines as established by the Department of Homeland Security. For example, the TPA has established and now operates a layered security system that oversees its terminals through the Tampa Bay Harbor security community. An important addition to security throughout the Port of Tampa was the inauguration of a 12,000-square-foot Security Operations Center in 2005.

TPA will implement use of the Transportation Worker Identification Credential (TWIC) program in coordination with DHS. Security controls now in place as a result of DHS regulation measures restrict access to Port facilities that fall within designated boundaries. Skilled workers who may have a standing record of specific felony convictions cannot obtain clearance for these secure areas within the port complex, and are thus excluded from the labor pool serving port activities within these restricted areas.

TWIC is a security measure that will ensure individuals who pose a threat do not gain unescorted access to secure areas of the Nation's maritime transportation system. Those seeking unescorted access to secure areas aboard affected vessels, and all Coast Guard credentialed merchant mariners must possess a TWIC. TWIC was established by Congress through the Maritime Transportation Security Act (MTSA) and is administered by the Transportation Security

Administration (TSA) and U.S. Coast Guard. TWICs are tamper-resistant biometric credentials for workers who require unescorted access to secure areas of ports, vessels, and outer continental shelf facilities. It is anticipated that more than 750,000 workers including longshoremen, truckers, port employees and others will be required to obtain a TWIC. TWIC is being implemented across the Nation by prioritizing the ports based on risk, and requires that the TWIC program be implemented according to the following schedule:

- Top ten priority ports by July 1, 2007;
- Next forty priority ports by January 1, 2008
- All other ports by January 1, 2009.

Enrollment and issuance began at the Port of Wilmington, Delaware October 16, 2007 and will continue through calendar year 2008. To obtain a TWIC, an individual must provide biographic and biometric information such as fingerprints, sit for a digital photograph and successfully pass a security threat assessment conducted by TSA. TSA has determined that the information collection and card issuance portion of the TWIC fee is \$132.50.

**Originally TWIC rules mandated a card reader system be put in place; however, the final rule determined that implementing the reader requirements as envisioned would not be prudent at this time.**

The TWIC provides greater reliability than existing visual identity badge systems because it represents a uniform appearance with embedded features on the face of the credential that make it difficult to forge or alter. When presented with a TWIC, security personnel familiar with its security features are immediately able to notice any absence or destruction of these features, making it less likely that an individual will be able to gain unescorted access to secure areas using a forged or altered TWIC. Additionally, the Coast Guard will conduct unannounced checks of the cards while visiting facilities and vessels. The Coast Guard will use handheld readers to check the biometrics on the card against the person presenting the card. These unannounced checks are an important component of the security efforts at ports. Locations that are considered critical and provide the greatest number of individual applicants are among the earliest enrollment sites.

## **1. Security Costs**

The TPA faces significant increases in security costs in the future. Security costs have been escalating rapidly since 9/11 due to a number of factors including increasingly complex regulation and enforcement requirements, expanded technology requirements and inflation. The TPA has little or no control over these costs since they are for the most part driven by regulatory processes.

The Florida Ports Conference adopted specific security fee criteria and rates which took effect on or prior to January 1, 2006. The FPC is a consortium of the state's 13 deepwater Florida seaports which has been authorized by the Federal Maritime Commission to establish minimum rates, charges, and practices governing the use and operation of the conference members' public wharves and other terminal facilities. The FPC was forced to take the action "to address rapidly

increasing security costs caused by unfunded mandates imposed by state and federal agencies which control seaport security protocols and procedures.”

<b>FLORIDA PORTS CONFERENCE Member Ports</b>	
Canaveral Port Authority	Port of Palm Beach District
Broward County (Port Everglades)	Panama City Port Authority
Jacksonville Port Authority	City of Pensacola (Port of Pensacola)
Port of Key West	City of St. Petersburg (Port of St. Petersburg)
Manatee County Port Authority	Port of St. Joe
Miami-Dade County (Port of Miami)	Tampa Port Authority
Ocean Highway and Port Authority (Port of Fernandina)	

The security fee rates adopted by the conference are as follows:

- Dockage: 5% of dockage fee
- Wharfage:
  - Breakbulk: \$0.10/short ton
  - Bulk: \$0.02/short ton
  - Liquid Bulk: \$0.02/short ton
  - Containers: \$2 per box
- Passengers: \$1 per embarking multi-day passenger.

These are minimum rates, and member ports that can justify higher fees are permitted to charge them. The effective date was January 1, 2006, but individual ports may or may not, at their discretion, implement the security fees.

Security surcharges have been implemented by the South Carolina State Ports Authority, Virginia Port Authority, North Carolina State Ports Authority, Georgia Ports Authority, Jacksonville Port Authority, Port of Portland (OR) Port of Redwood City, Port of Stockton, Port of Corpus Christi Authority, and are in various stages of implementation by other U.S. Gulf ports acting in concert through the Gulf Seaports Marine Terminal Conference (GSMTC) and the Florida Ports Council.

## **K. Summary of Recommended Capital Investment Plan**

Exhibit VII-15 summarizes the capital investment required in the short-, medium-, and long-term to support the recommended, market-driven capital investments discussed in this chapter. The recommended capital investment program totals an estimated \$1.3 billion excluding contingencies and \$1.8 billion including contingencies. An estimated \$304 million to \$395 million (including contingencies) is required in the short-term (2008-2012). An estimated \$408 million to \$530 million (including contingencies) is required in the medium term (2013-2017). An estimated \$635 million to \$825 million (including contingencies) is required in the long term (2018-2027).

Close to 60 percent or \$797 million of the total \$1.3 billion (excluding contingencies) in capital investment is for pursuing, subject to the completion of comprehensive feasibility studies (market, financial, technical, operational, environmental and legal) and conclusion of compensatory lease agreements, potential future market driven capital investment opportunities including Port Redwing Land and Terminal Development, East Port Land and Terminal Development, Pendola Point Land and Terminal Development, and shipbuilding and repair industry berth improvements. Schedules of the program by existing and new port area, line of business (dry bulk, liquid bulk, container, etc.) and year are provided in Chapter VIII.

**Exhibit VII-15**  
**TPA Capital Investment Program Summary by Project (excluding Contingencies)**  
**2008-2027**

PROJECT	TPA PROGRAM BUDGET			
	2008 - 2012 Short term	2013 - 2017 Medium term	2018 - 2027 Long term	2008-2027 Total
<b>Capital Improvement Projects</b>				
Consultant Services for Port (Annual Contracts)	\$ 6	\$ 6	\$ 13	\$ 25
Contractor Unit Price Services for Port (Annual Contracts)	\$ 14	\$ 9	\$ 18	\$ 41
Contractor Miscellaneous Services for Port (Annual Contracts)	\$ 31	\$ 31	\$ 61	\$ 123
Existing Facilities Improvements at Port	\$ 6	\$ -	\$ 5	\$ 11
Channelside - Cruise Terminal & Parking	\$ 7	\$ -	\$ -	\$ 7
Berths - Maintenance and Repair	\$ 4	\$ -	\$ -	\$ 4
Hooker's Point Container Storage Yard Development	\$ 40	\$ 10	\$ -	\$ 51
Big Bend/Port Redwing Development	\$ 33	\$ -	\$ -	\$ 33
East Port Aggregate Development	\$ 15	\$ 57	\$ -	\$ 71
Navigation	\$ 15	\$ 21	\$ 25	\$ 62
Hooker's Point Berth Improvements Needed as a Result of Dredging to 47 ft	\$ -	\$ 8	\$ -	\$ 8
Reconfigure Breakbulk Operations Out of Hooker's Point Berth 211	\$ 7	\$ -	\$ -	\$ 7
Build and Upgrade Petroleum Piers Hooker's Point West	\$ 40	\$ 13	\$ -	\$ 53
Access Improvements (Hooker's Point & Pendola Point)	\$ 0	\$ 8	\$ -	\$ 9
Land Acquisition	\$ 38	\$ 3	\$ 7	\$ 47
<b>Total Capital Improvement Projects</b>	<b>\$ 255</b>	<b>\$ 167</b>	<b>\$ 129</b>	<b>\$ 550</b>
<b>Contingencies (30%)</b>	<b>\$ 76</b>	<b>\$ 50</b>	<b>\$ 39</b>	<b>\$ 165</b>
<b>Total Capital Improvement Projects with Contingencies</b>	<b>\$ 331</b>	<b>\$ 217</b>	<b>\$ 167</b>	<b>\$ 715</b>
<b>Potential Market Driven Expansion Programs:</b>				
Port Redwing Land and Terminal Development Project	\$ -	\$ 187	\$ 94	\$ 280
East Port Land and Terminal Development Project	\$ 28	\$ 51	\$ 143	\$ 221
Pendola Point Land and Terminal Development Project	\$ 3	\$ 4	\$ 270	\$ 276
Ship Building and Repair Berth Improvements	\$ 19	\$ -	\$ -	\$ 19
<b>Potential Market Driven Expansion Programs</b>	<b>\$ 49</b>	<b>\$ 241</b>	<b>\$ 506</b>	<b>\$ 797</b>
<b>Contingencies (30%)</b>	<b>\$ 15</b>	<b>\$ 72</b>	<b>\$ 152</b>	<b>\$ 239</b>
<b>Total Potential Market Driven Expansion Programs with Contingencies</b>	<b>\$ 64</b>	<b>\$ 314</b>	<b>\$ 658</b>	<b>\$ 1,036</b>
<b>Total All Capital Investment Projects</b>	<b>\$ 304</b>	<b>\$ 408</b>	<b>\$ 635</b>	<b>\$ 1,347</b>
<b>Contingencies (30%)</b>	<b>\$ 91</b>	<b>\$ 122</b>	<b>\$ 190</b>	<b>\$ 404</b>
<b>Total Capital Investment Projects with Contingencies</b>	<b>\$ 395</b>	<b>\$ 530</b>	<b>\$ 825</b>	<b>\$ 1,751</b>

Source: Norbridge Inc., Moffatt & Nichol, TPA

## VIII. Financial Overview and Capital Investment Plan

### A. Introduction

This chapter presents an overview of the TPA's historical financial results, projected financial results, and recommended future capital investment plans. The expected future financial results contained in this chapter are based on the low and high volume forecasts discussed in Chapter IV: Market Assessment.

The objective of this chapter is to quantify the upside and downside financial results associated with each of the TPA volume forecasts. These financial results provide a context for the discussion of the capital investment plan. The pro forma financial data presented in this section is in 2008 dollars. This financial information excludes consideration of inflation.

### B. Overview of TPA Historical Financial Results

From 2002 to 2007, TPA's operating revenue grew from \$25.6 million to \$37.9 million, or by an average of 8.2 percent annually (Exhibit VIII-1). Operating income declined an average of 14.8 percent annually, from \$4.0 million to \$1.8 million, with most of the decline occurring in 2007. The 2007 decline occurred due to a decline in TPA volumes, particularly cement, liquid sulphur, steel products, and phosphate chemicals. From 2002 to 2006, operating income actually grew from \$4.0 million to \$7.7 million, or an average of 17.8% annually.

**Exhibit VIII-1**  
**TPA Operating Income**

(amounts in \$ millions)	2002	2003	2004	2005	2006	2007	CAGR
Operating Revenue	\$25.6	\$29.1	\$31.6	\$34.9	\$40.2	\$37.9	8.2%
-Operating Expenses	\$21.7	\$25.2	\$27.4	\$29.6	\$32.5	\$36.0	10.7%
Operating Income	\$4.0	\$3.9	\$4.2	\$5.3	\$7.7	\$1.8	-14.8%

Note: Operating expenses include depreciation and amortization

Source: TPA.

Total assets as of year-end 2007 were \$558.9 million, up from \$473.8 million in 2002. This represents an average annual growth rate of 3.4 percent (Exhibit VIII-2). Liabilities declined at an average annual rate of 2.0 percent, from \$190.6 million in 2002 to \$172.5 million in 2007. Net assets, driven mainly by capital assets net of related debt, grew from \$283.2 million to \$386.4 million or 6.4 percent annually from 2002 to 2007.

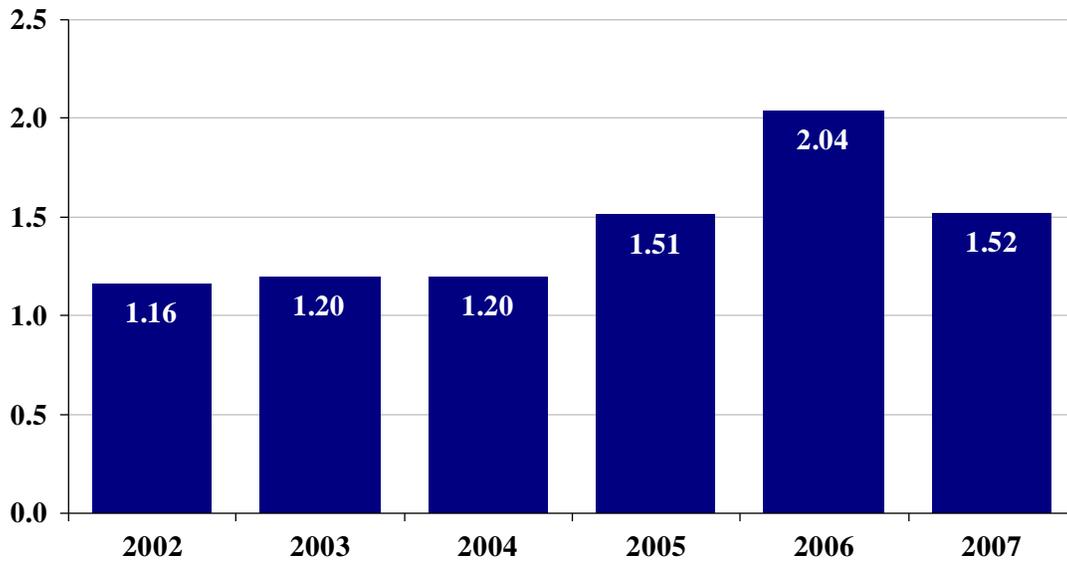
**Exhibit VIII-2  
TPA Net Assets Summary**

(amounts in \$ millions)	2002	2003	2004	2005	2006	2007	CAGR
Operating Revenue	\$25.6	\$29.1	\$31.6	\$34.9	\$40.2	\$37.9	8.2%
-Operating Expenses	\$21.7	\$25.2	\$27.4	\$29.6	\$32.5	\$36.0	10.7%
Operating Income	\$4.0	\$3.9	\$4.2	\$5.3	\$7.7	\$1.8	-14.8%

*Source: TPA.*

TPA's debt service coverage ratio, a measure of its revenues available for debt repayment, has increased since 2002 (Exhibit VIII-3), and in 2007 was 1.52, which is significantly above its minimum requirement of 1.25. The 2007 decline in TPA's debt service coverage ratio (from 2.04 in 2006) was due to a decline in operating revenue.

**Exhibit VIII-3  
TPA Debt Service Coverage Ratio**



*Source: TPA*

**C. TPA Pro-Forma Financial Results**

**1. Methodology and Major Assumptions**

Excel-based pro forma financial statements were created for the TPA using a custom built activity based model. The volumes used in the model correspond with the volume forecasts previously discussed. The financial results for the low scenario correspond with the low volume forecast, while the financial results for the high scenario correspond with the high volume forecast.

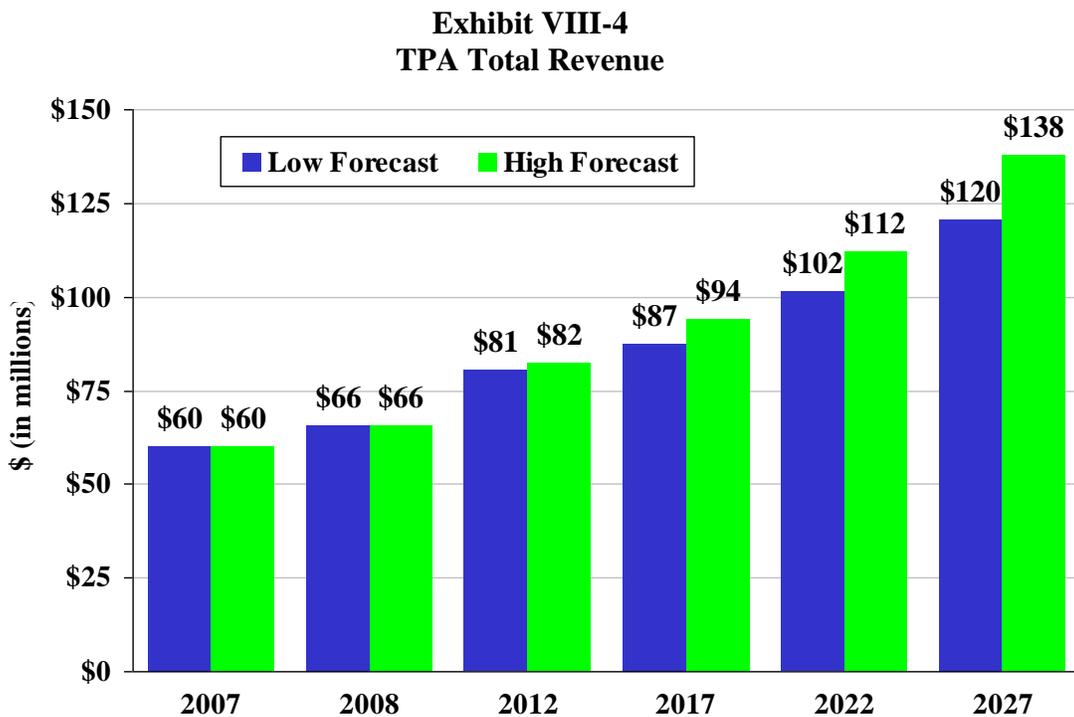
All of the pro forma financial data presented in this section is in real dollars. This financial information does not consider adjustments to account for inflation. Real rate increases in unit

revenues and expenses were assumed for Land and Building Lease Revenue (1% annually), Personnel Salaries & Benefits Expense (3%), and Administrative Expense (2%). No increases in unit revenue or expenses were assumed for other revenues or expenses, including TPA's tariff.

## 2. Results

### a) Revenue

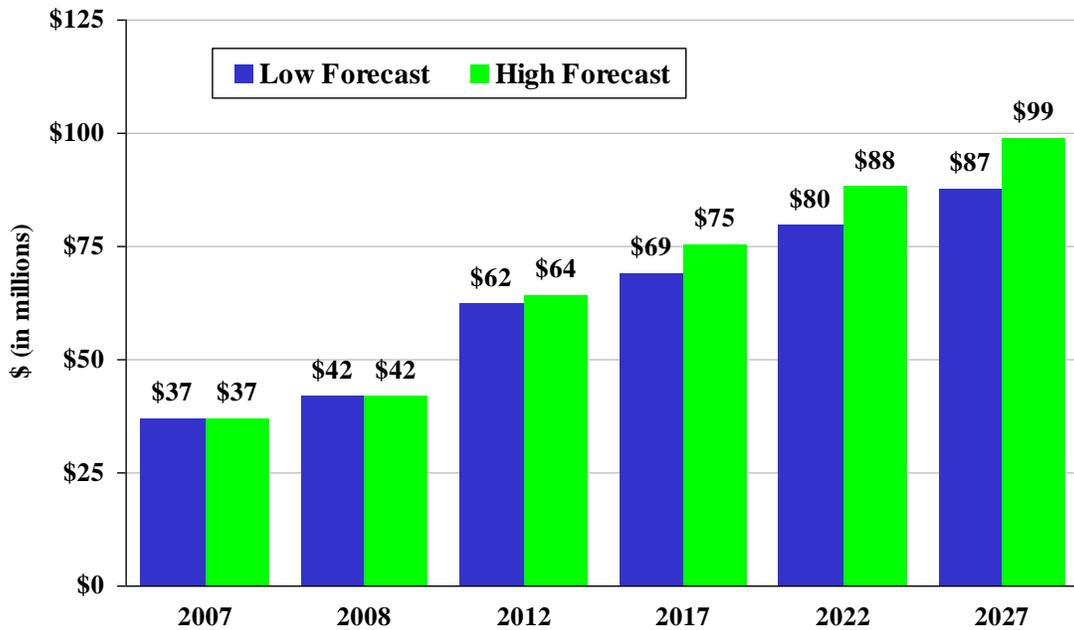
TPA's total revenue is forecasted to grow over the twenty year planning period from \$60 million in 2007, to between \$120 million (low forecast) and \$138 million (high forecast) (Exhibit VIII-4), or on average between 3.5 percent and 4.3 percent annually. Major revenue components include operating revenue, ad valorem tax receipts and grant revenue.



*Source: Norbridge Inc. analysis.*

TPA’s operating revenue is forecasted to grow over the twenty year planning period from \$37 million in 2007, to between \$87 million (low forecast) and \$99 million (high forecast) (Exhibit VIII-5), or on average between 4.4 percent and 5.0 percent annually. Major operating revenue components include dockage, wharfage, and land and building lease revenue.

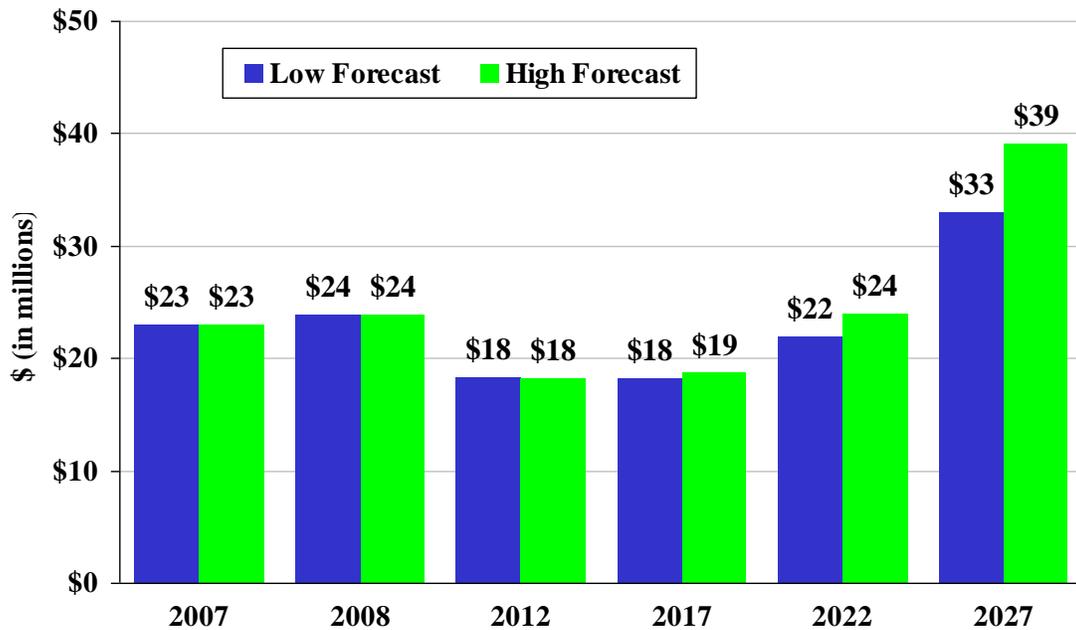
**Exhibit VIII-5  
TPA Operating Revenue**



*Source: Norbridge Inc. analysis.*

TPA’s non-operating revenue is forecasted to grow over the twenty year planning period from \$23 million in 2007, to between \$33 million (low forecast) and \$39 million (high forecast) (Exhibit VIII-6), or on average between 1.8 percent and 2.7 percent annually. Non-operating revenue includes primarily interest income and ad valorem tax receipts (assumed to remain flat). The decline in non-operating revenue in the 2012-2017 timeframe is driven mainly by a reduction in interest income, which is caused by an assumed draw down in the TPA’s cash due to its capital investment program. Actual interest income will vary depending on the timing of capital projects.

**Exhibit VIII-6  
TPA Non-Operating Revenue**

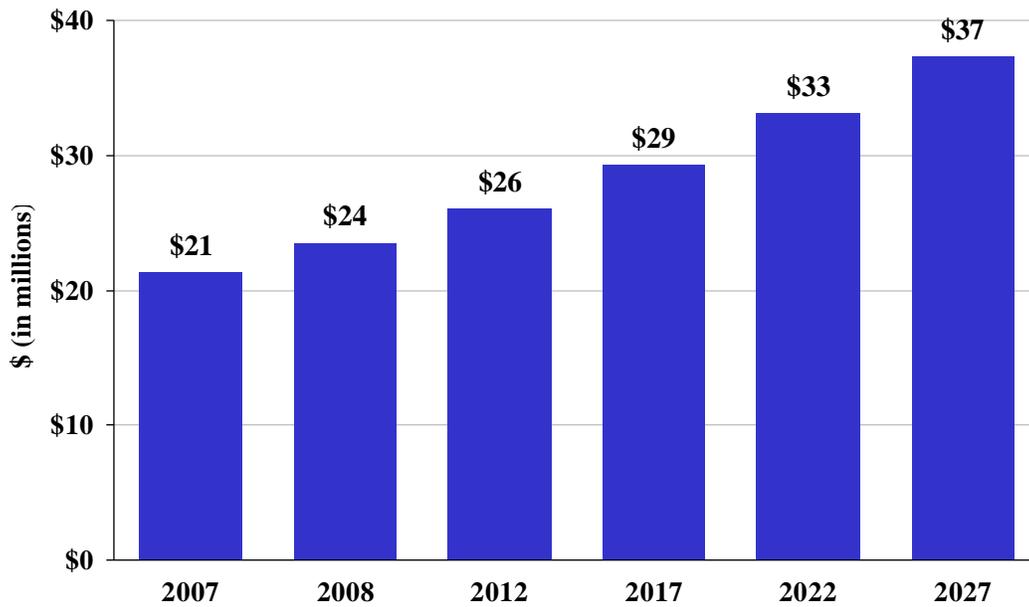


*Source: Norbridge Inc. analysis.*

## b) Expenses

TPA's operating expenses are projected to increase over the twenty year planning period from \$21 million in 2007, to \$37 million in 2027 (Exhibit VIII-7), or by an average 2.8 percent annually. TPA's operating expenses are composed mainly of personnel salaries and benefits and administrative expenses. These costs are not directly driven by TPA's volumes, and consequently are forecasted to be the same under both the low and high scenarios.

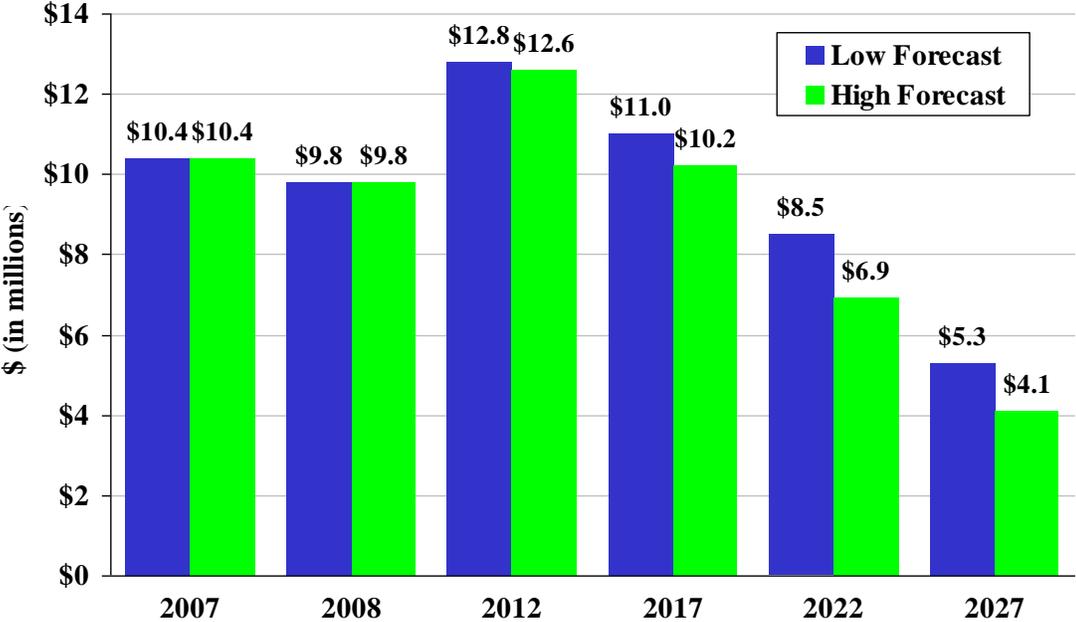
**Exhibit VIII-7  
TPA Operating Expenses**



*Source: Norbridge Inc. analysis.*

TPA’s non-operating expenses are forecasted to vary over the twenty year planning (Exhibit VIII-8). Fluctuations are driven mainly by the fluctuation in interest expense. The high forecast results in lower interest and therefore non-operating expenses since the higher operating revenues reduce the TPA’s borrowing requirements.

**Exhibit VIII-8  
TPA Non-Operating Expenses**

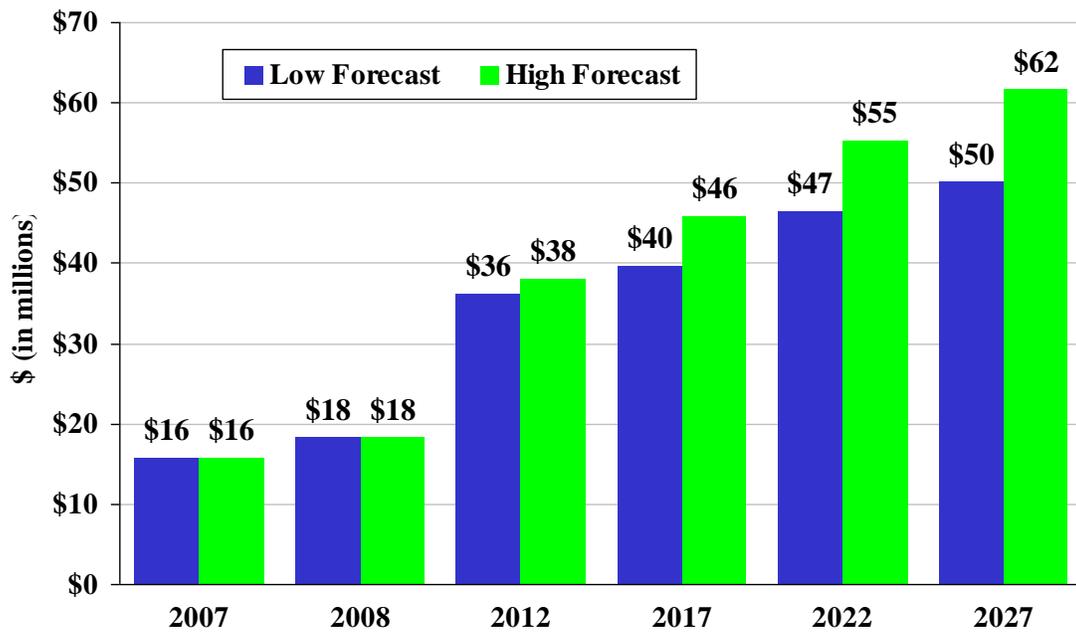


Source: Norbridge Inc. analysis.

### c) Income

TPA's operating income is forecasted to grow over the twenty year planning period from \$16 million in 2007, to between \$50 million (low forecast) and \$62 million (high forecast) (Exhibit VIII-9), or on average between 6.0 percent and 7.1 percent annually. The significant increase between 2008 and 2012 is driven mainly by the anticipated growth of the TPA's container business. Expected growth in TPA's aggregate, cement, and petroleum products businesses also contribute to this growth.

**Exhibit VIII-9  
TPA Operating Income**

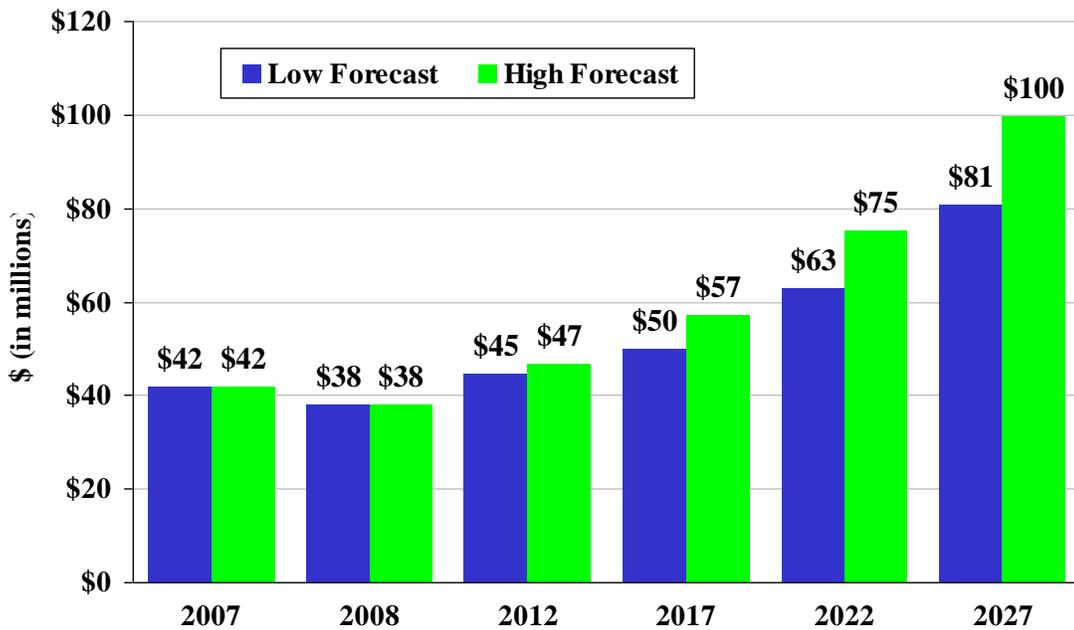


*Source: Norbridge Inc. analysis.*

TPA’s net income (before depreciation and amortization) is forecasted to grow over the twenty year planning period from \$42 million in 2007, to between \$81 million (low forecast) and \$100 million (high forecast) (Exhibit VIII-10), or on average between 3.3 percent and 4.4 percent annually. Net income represents the difference between total revenue and total expenses.

The short-term decline in net income is driven mainly by an assumed decline in capital and operating grants. In 2007, these grants totaled \$16.7 million, and they are projected to total \$5.6 million in 2008 and \$3.0 million in all subsequent years. This reduction is based on the assumption that, in general, grants will be more difficult to secure in the future, and the grant amounts smaller, although it must be noted that the availability of grants and the amounts that would be directed to the TPA is very difficult to predict.

**Exhibit VIII-10  
TPA Net Income**



*Source: Norbridge Inc. analysis.*

## **D. Capital Investment Program**

### **a) Capital investment**

This section provides a summary of capital investment required to support the recommended MP. The capital investments are categorized as:

- Short-term: 2008-2012
- Medium-term 2013-2017
- Long-term 2018-2027.

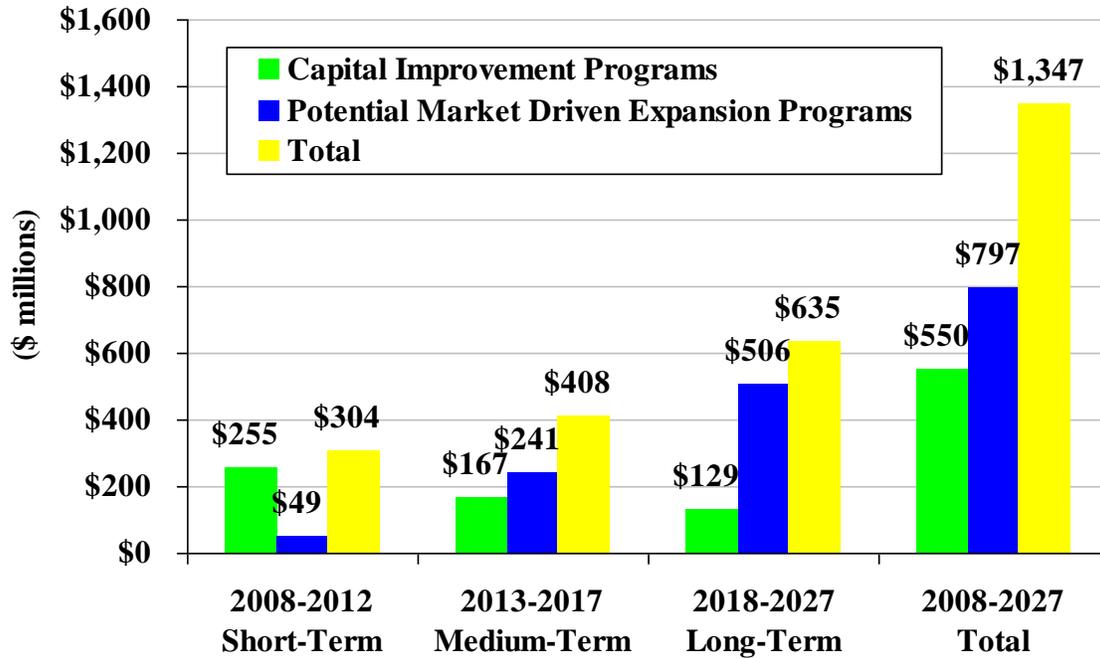
The capital investments are presented in real dollars, i.e. they exclude inflation, by port area and by cargo type.

TPA's future capital investments are estimated to range between \$1.3 billion and \$1.8 billion over the 20 year planning horizon 2008 through 2027. These estimates include a 30% contingency (see Chapter VII, Exhibit VII-15). Capital investments by time frame are:

- Short-term (2008-2012): an estimated \$304 million to \$395 million including contingencies
- Medium-term (2013-2017): an estimated \$408 million to \$530 million including contingencies
- Long-term (2018-2027): an estimated \$635 million to \$825 million including contingencies

Approximately 53% or \$712 million of the \$1.3 billion are primarily short to medium term capital improvements with the remaining 47% consisting of long term capital investment. Close to 60 percent or \$797 million of the total \$1.3 billion (excluding contingencies) in capital investment are, subject to the completion of comprehensive feasibility studies (market, financial, technical, operational, environmental and legal) and conclusion of lease agreements, long-term market driven programs including Port Redwing Land and Terminal Development, East Port Land and Terminal Development, Pendola Point Land and Terminal Development, and shipbuilding and repair industry berth improvements (Exhibit VIII-11).

**Exhibit VIII-11**  
**TPA Short-, Medium- and Long-Term Capital Investment (excluding Contingencies)**  
**2008-2027**



*Source: Norbridge, Inc., Moffatt & Nichol, TPA.*

A summary of recommended capital investments by port area and time period is provided in Exhibit VIII-12. Key investment recommendations include:

- Big Bend/Port Redwing: \$313 million over the twenty year planning horizon
  - \$33 million in the short term
  - \$280 million in the medium and long term
- East Port: \$292 million over the twenty year planning horizon
  - \$42 million in the short term
  - \$250 million in the medium and long term
- Pendola Point: \$283 million over the twenty year planning horizon
  - \$4 million in the short term
  - \$279 million in the medium and long term
- Hooker’s Point: \$142 million over the twenty year planning horizon
  - \$107 million in the short term
  - \$35 million in the medium term.

**Exhibit VIII-12**  
**TPA Capital Investment by Port Area (excluding Contingencies)**  
**2008-2027**  
**(millions of dollars)**

Port Area	2008-2012 Short- Term	2013-2017 Medium- Term	2018-2027 Long- Term	2008-2027 Total
<b>Capital Improvement Projects</b>				
Hooker's Point	\$ 88	\$ 35	\$ -	\$ 122
Channelside	\$ 9	\$ -	\$ -	\$ 9
Port Sutton/Pendola Point	\$ 1	\$ 5	\$ -	\$ 6
Big Bend/Port Redwing	\$ 33	\$ -	\$ -	\$ 33
East Port	\$ 15	\$ 57	\$ -	\$ 71
Port	\$ 110	\$ 70	\$ 129	\$ 308
<b>Total Capital Improvement Projects</b>	<b>\$ 255</b>	<b>\$ 167</b>	<b>\$ 129</b>	<b>\$ 550</b>
<b>Potential Market Driven Expansion Programs</b>				
Hooker's Point	\$ 19	\$ -	\$ -	\$ 19
Channelside	\$ -	\$ -	\$ -	\$ -
Port Sutton/Pendola Point	\$ 3	\$ 4	\$ 270	\$ 276
Big Bend/Port Redwing	\$ -	\$ 187	\$ 94	\$ 280
East Port	\$ 28	\$ 51	\$ 143	\$ 221
Port	\$ -	\$ -	\$ -	\$ -
<b>Total Potential Market Driven Expansion Programs</b>	<b>\$ 49</b>	<b>\$ 241</b>	<b>\$ 506</b>	<b>\$ 797</b>
<b>Total All Capital Improvement Programs</b>				
Hooker's Point	\$ 107	\$ 35	\$ -	\$ 142
Channelside	\$ 9	\$ -	\$ -	\$ 9
Port Sutton/Pendola Point	\$ 4	\$ 10	\$ 270	\$ 283
Big Bend/Port Redwing	\$ 33	\$ 187	\$ 94	\$ 313
East Port	\$ 42	\$ 107	\$ 143	\$ 292
Port	\$ 110	\$ 70	\$ 129	\$ 308
<b>Total All Capital Improvement Programs</b>	<b>\$ 304</b>	<b>\$ 408</b>	<b>\$ 635</b>	<b>\$ 1,347</b>
<b>Capital Improvement Projects</b>	<b>\$ 255</b>	<b>\$ 167</b>	<b>\$ 129</b>	<b>\$ 550</b>
<b>Potential Market Driven Expansion Programs</b>	<b>\$ 49</b>	<b>\$ 241</b>	<b>\$ 506</b>	<b>\$ 797</b>
<b>Total All Capital Improvement Programs</b>	<b>\$ 304</b>	<b>\$ 408</b>	<b>\$ 635</b>	<b>\$ 1,347</b>

Note: Totals may not add due to rounding.

*Source: Norbridge Inc., Moffatt & Nichol, TPA.*

A summary of recommended capital investments by cargo type/activity and time period is provided in Exhibit VIII-13. Key investment recommendations include:

- Dry bulk: \$595 million over the twenty year planning horizon
  - \$71 million in the short term
  - \$524 million in the medium and long term
- Liquid bulk: \$334 million over the twenty year planning horizon

- \$41 million in the short term
  - \$293 million in the medium and long term
- Annual contracts/berth repair: \$134 million over the twenty year planning horizon
  - \$35 million in the short term
  - \$99 million in the medium and long term
- Dredging: \$133 million over the twenty year planning horizon
  - \$39 million in the short term
  - \$94 million in the medium and long term

**Exhibit VIII-13**  
**TPA Capital Investment by Cargo Type/Activity (excluding Contingencies)**  
**2008-2027**  
**(millions of dollars)**

Cargo Type/Activity	2008-2012	2013-2017	2018-2027	2008-2027
	Short-Term	Medium-Term	Long-Term	Total
<b>Capital Improvement Projects</b>				
Dredging (includes maintenance) <sup>1</sup>	\$ 39	\$ 37	\$ 57	\$ 133
Dry Bulk	\$ 41	\$ 57	\$ -	\$ 98
Liquid Bulk	\$ 41	\$ 13	\$ -	\$ 54
Container	\$ 40	\$ 10	\$ -	\$ 51
Breakbulk	\$ 7	\$ -	\$ -	\$ 7
Cruise	\$ 9	\$ -	\$ -	\$ 9
Annual Contracts/Berth Repair	\$ 35	\$ 39	\$ 60	\$ 134
Land Access	\$ 5	\$ 8	\$ 5	\$ 19
Land Acquisition	\$ 38	\$ 3	\$ 7	\$ 47
<b>Total Capital Improvement Projects</b>	<b>\$ 255</b>	<b>\$ 167</b>	<b>\$ 129</b>	<b>\$ 550</b>
<b>Potential Market Driven Expansion Programs</b>				
Dry Bulk	\$ 30	\$ 55	\$ 413	\$ 498
Liquid Bulk Petroleum	\$ -	\$ 187	\$ 94	\$ 280
Ship Building and Repair Berth Improvements	\$ 19	\$ -	\$ -	\$ 19
<b>Total Potential Market Driven Expansion Programs</b>	<b>\$ 49</b>	<b>\$ 241</b>	<b>\$ 506</b>	<b>\$ 797</b>
<b>Total All Capital Improvement Programs</b>				
Dredging (includes maintenance) <sup>1</sup>	\$ 39	\$ 37	\$ 57	\$ 133
Dry Bulk	\$ 71	\$ 111	\$ 413	\$ 595
Liquid Bulk	\$ 41	\$ 200	\$ 94	\$ 334
Container	\$ 40	\$ 10	\$ -	\$ 51
Breakbulk	\$ 7	\$ -	\$ -	\$ 7
Cruise	\$ 9	\$ -	\$ -	\$ 9
Annual Contracts/Berth Repair	\$ 35	\$ 39	\$ 60	\$ 134
Land Access	\$ 5	\$ 8	\$ 5	\$ 19
Land Acquisition	\$ 38	\$ 3	\$ 7	\$ 47
Ship Building and Repair Berth Improvements	\$ 19	\$ -	\$ -	\$ 19
<b>Total All Capital Improvement Programs</b>	<b>\$ 304</b>	<b>\$ 408</b>	<b>\$ 635</b>	<b>\$ 1,347</b>
<b>Capital Improvement Projects</b>	<b>\$ 255</b>	<b>\$ 167</b>	<b>\$ 129</b>	<b>\$ 550</b>
<b>Potential Market Driven Expansion Programs</b>	<b>\$ 49</b>	<b>\$ 241</b>	<b>\$ 506</b>	<b>\$ 797</b>
<b>Total All Capital Improvement Programs</b>	<b>\$ 304</b>	<b>\$ 408</b>	<b>\$ 635</b>	<b>\$ 1,347</b>

<sup>1</sup>Includes Channel widening (Cuts A&B), Big Bend Channel, main Channel, berth deepening to 47', Spoil Island D, maintenance dredging and studies, designs and applications. Excludes berth dredging related to specific port area projects.

Note: Totals may not add due to rounding.

Source: Norbridge Inc., Moffatt & Nichol, TPA

A summary of recommended capital investments by port area and cargo type/activity and time period is provided in Exhibit VIII-14. Key investment recommendations include:

- Big Bend/Port Redwing
  - Liquid bulk (petroleum) expansion project of \$280 million
    - \$280 million in the medium and long term

- Port Sutton/Pendola Point
  - Dry bulk expansion project of \$276 million
    - \$3 million in the short term
    - \$273 million in the medium and long term
- Port investment (includes dredging, annual contracts, land acquisition, and land access)
  - Dredging of \$133 million
    - \$39 million in the short term
    - \$94 million in the medium and long term
  - Annual contracts of \$126 million
    - \$35 million in the short term
    - \$91 million in the medium and long term
- East Port
  - Dry bulk expansion project of \$221 million
    - \$28 million in the short term
    - \$193 million in the medium and long term
- Hooker's Point
  - Liquid bulk (petroleum) operations of \$54 million
    - \$41 million in the short term
    - \$13 million in the medium term
  - Container operations of \$51 million
    - \$40 million in the short term
    - \$11 million in the medium term

Overall, in the short term the primary investment focus is on Hooker's Point whereas the primary investment focus in the medium to long term is for development at Big Bend/Port Redwing.

**Exhibit VIII-14**  
**TPA Capital Investment by Port Area and Cargo Type/Activity (excluding Contingencies)**  
**2008-2027**  
**(millions of dollars)**

Port Area/Cargo Type/Activity	2008-2012	2013-2017	2018-2027	2008-2027
	Short-Term	Medium-Term	Long-Term	Total
<b>Hooker's Point</b>				
Breakbulk	\$ 7	\$ -	\$ -	\$ 7
Container	\$ 40	\$ 10	\$ -	\$ 51
Land Access	\$ 0	\$ 3	\$ -	\$ 3
Berth Improvement	\$ -	\$ 8	\$ -	\$ 8
Liquid Bulk - Petroleum	\$ 41	\$ 13	\$ -	\$ 54
Ship Building & Repair Berth Improvement - Expansion Project	\$ 19	\$ -	\$ -	\$ 19
<b>Total</b>	<b>\$ 107</b>	<b>\$ 35</b>	<b>\$ -</b>	<b>\$ 142</b>
<b>Channelside</b>				
Cruise	\$ 9	\$ -	\$ -	\$ 9
<b>Port Sutton/Pendola Point</b>				
Land Access	\$ -	\$ 5	\$ -	\$ 5
Berth Improvement	\$ 1	\$ -	\$ -	\$ 1
Dry Bulk - Expansion Project	\$ 3	\$ 4	\$ 270	\$ 276
<b>Total</b>	<b>\$ 4</b>	<b>\$ 10</b>	<b>\$ 270</b>	<b>\$ 283</b>
<b>Big Bend/Port Redwing</b>				
Dry Bulk	\$ 25	\$ -	\$ -	\$ 25
Liquid Bulk - Petroleum - Expansion Project	\$ -	\$ 187	\$ 94	\$ 280
<b>Total</b>	<b>\$ 25</b>	<b>\$ 187</b>	<b>\$ 94</b>	<b>\$ 306</b>
<b>Eastport</b>				
Dry Bulk	\$ 15	\$ 57	\$ -	\$ 71
Dry Bulk - Expansion Project	\$ 28	\$ 51	\$ 143	\$ 221
<b>Total</b>	<b>\$ 42</b>	<b>\$ 107</b>	<b>\$ 143</b>	<b>\$ 292</b>
<b>Port</b>				
Annual Contracts	\$ 35	\$ 31	\$ 60	\$ 126
Dredging (includes maintenance) <sup>1</sup>	\$ 39	\$ 37	\$ 57	\$ 133
Land Access	\$ 5	\$ -	\$ 5	\$ 10
Land Acquisition	\$ 38	\$ 3	\$ 7	\$ 47
<b>Total</b>	<b>\$ 117</b>	<b>\$ 70</b>	<b>\$ 129</b>	<b>\$ 315</b>
<b>Grand Total</b>	<b>\$ 304</b>	<b>\$ 408</b>	<b>\$ 635</b>	<b>\$ 1,347</b>

<sup>1</sup> Includes Channel widening (Cuts A&B), Big Bend Channel, main Channel, berth deepening to 47', Spoil Island D, maintenance dredging and studies, designs and applications. Excludes berth dredging related to specific port area projects

Note: Totals may not add due to rounding.

Source: Norbridge Inc., Moffatt & Nichol, TPA.

A summary of recommended capital investments by cargo type/activity and port area time period is provided in Exhibit VIII-15. Key investment recommendations include:

- Dry bulk (aggregates)

- East Port projects of \$292 million
    - \$42 million in the short term
    - \$250 million in the medium and long term
  - Port Sutton projects of \$276 million
    - \$276 million in the medium and long term
- Liquid bulk
  - Big Bend/Port Redwing projects of \$280 million
    - \$280 million in the medium and long term
- Annual Contracts
  - Port projects of \$126 million
    - \$35 million in the short term
    - \$91 million in the medium and long term
- Dredging
  - Port projects of \$133 million
    - \$39 million in the short term
    - \$94 million in the medium and long term

**Exhibit VIII-15**  
**TPA Capital Investment by Cargo Type/Activity and Port Area (excluding Contingencies)**  
**2008-2027**  
**(millions of dollars)**

Cargo Type/Activity/Port Area	2008-2012 Short- Term	2013-2017 Medium- Term	2018-2027 Long- Term	2008-2027 Total
<b>Dredging (includes maintenance)<sup>1</sup></b>				
Port	\$ 39	\$ 37	\$ 57	\$ 133
<b>Dry Bulk</b>				
Big Bend/Port Redwing	\$ 25	\$ -	\$ -	\$ 25
Eastport	\$ 42	\$ 107	\$ 143	\$ 292
Port Sutton/Pendola Point	\$ 3	\$ 4	\$ 270	\$ 276
<b>Total</b>	<b>\$ 70</b>	<b>\$ 111</b>	<b>\$ 413</b>	<b>\$ 594</b>
<b>Liquid Bulk - Petroleum</b>				
Hooker's Point	\$ 41	\$ 13	\$ -	\$ 54
Big Bend/Port Redwing	\$ -	\$ 187	\$ 94	\$ 280
<b>Total</b>	<b>\$ 41</b>	<b>\$ 200</b>	<b>\$ 94</b>	<b>\$ 334</b>
<b>Container</b>				
Hooker's Point	\$ 40	\$ 10	\$ -	\$ 51
<b>Breakbulk</b>				
Hooker's Point	\$ 7	\$ -	\$ -	\$ 7
<b>Cruise</b>				
Channelside	\$ 9	\$ -	\$ -	\$ 9
<b>Annual Contracts/Berth Improvement</b>				
Port	\$ 35	\$ 31	\$ 60	\$ 126
Hooker's Point	\$ -	\$ 8	\$ -	\$ 8
Port Sutton/Pendola Point	\$ 1	\$ -	\$ -	\$ 1
<b>Total</b>	<b>\$ 36</b>	<b>\$ 39</b>	<b>\$ 60</b>	<b>\$ 135</b>
<b>Land Access</b>				
Hooker's Point	\$ 0	\$ 3	\$ -	\$ 3
Port	\$ 5	\$ -	\$ 5	\$ 10
Port Sutton/Pendola Point	\$ -	\$ 5	\$ -	\$ 5
<b>Total</b>	<b>\$ 5</b>	<b>\$ 8</b>	<b>\$ 5</b>	<b>\$ 19</b>
<b>Land Acquisition</b>				
Port	\$ 38	\$ 3	\$ 7	\$ 47
<b>Ship Building &amp; Repair Berth Improvement</b>				
Hooker's Point	\$ 19	\$ -	\$ -	\$ 19
<b>Grand Total</b>	<b>\$ 304</b>	<b>\$ 408</b>	<b>\$ 635</b>	<b>\$ 1,347</b>

<sup>1</sup>Includes Channel widening (Cuts A&B), Big Bend Channel, main Channel, berth deepening to 47', Spoil Island D, maintenance dredging and studies, designs and applications. Excludes berth dredging related to specific port area projects.

Note: Totals may not add due to rounding.

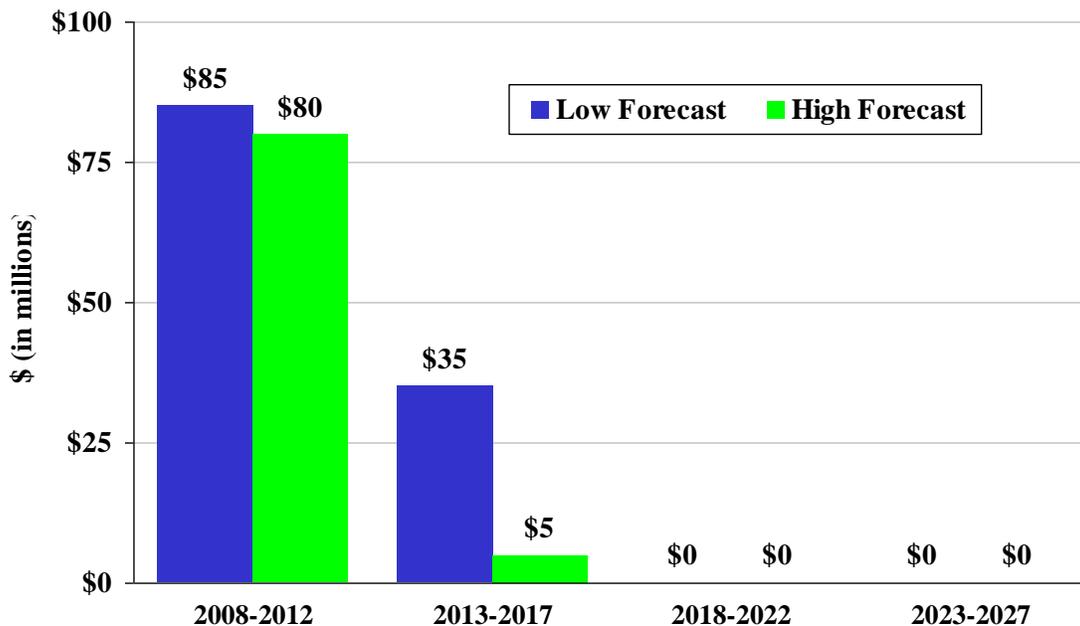
Source: Norbridge Inc., Moffatt & Nichol, TPA.

## b) Borrowing Needs

The TPA's projected borrowing requirements are based on its expected financial results, cargo volumes, and corresponding infrastructure investment needs. Given the volumes, financial results and capital requirements (including contingencies, but excluding potential future market-driven capital investment opportunities), the TPA will likely need to borrow \$80 million (high demand forecast) to \$85 million (low demand forecast) in the 2008-2012 timeframe (Exhibit VIII-16). The TPA's borrowing requirements are higher under the low forecast scenario, as lower volumes result in lower operating revenues, which increase the TPA's borrowing requirements.

Given the number and complex interaction of factors that will likely drive TPA's long-term borrowing requirements, it is not practical to develop a long-term projection. Factors to be considered include the time and magnitude of future cash flows, debt coverage ratio and bond covenant requirements, interest rates, credit requirements, conditions in credit markets and the future size of TPA's financing requirements.

**Exhibit VIII-16**  
**TPA Borrowing Needs**  
**2008-2027**



*Source: Norbridge Inc. analysis.*