RAIL CONNECTIVITY NEEDS ASSESSMENT

Florida Department of Transportation

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Florida Department of Transportation

with assistance from

Wilbur Smith Associates

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Chapter 1
INTRODUCTION

Continued growth has put a strain on Florida's highway system in many regions of the state and the problem is anticipated to intensify and grow to other areas. There is great interest in the state, as elsewhere, in encouraging more use of rail for the movement of both passengers and freight to maximize utility of the transportation system.

Intermodal transportation is the logical approach to achieve both goals – increased use of rail and maximized use of the transportation system. The last two federal transportation bills, the Intermodal Surface Transportation Efficiency Act (ISTEA) and the Transportation Equity Act for the 21st Century (TEA-21), were built on the same premise.

Study Purpose

Florida's intermodal system is currently being examined in an on-going statewide effort by the Florida Department of Transportation (FDOT) to define, and determine means to fund and manage a Strategic Intermodal System (SIS). There are also several corridor and regional mobility studies on-going in the state. This study is intended to compliment the others by examining in more detail one individual mode, rail, and *to identify the "gaps" or connectivity issues in rail service to Florida's rail intermodal facilities and define solutions*.

Study Scope

In order to meet expectations, the state's rail and rail-served intermodal system is reviewed by examining the various types of rail intermodal service, defining the system and its facilities, with emphasis on its larger components, and identifying issues and needs, as well as opportunities to increase use of the system.

The study examines and describes the major rail-served intermodal facilities in Florida, their physical characteristics and the use made of them, and how they fit into both the state's and the national intermodal systems. Specific facility rail access problems as well as broader issues are identified in the process. The benefits of rail intermodal service, both for the public and private sectors, are also presented. The potential for increasing the rail mode's share of Florida freight traffic is explored by examining both truck and rail commodity flows and flow patterns, their composition and characteristics. Opportunities are identified.

Companion Document

This report is a companion document to FDOT's *2002 Florida Rail System Plan*. [1] That document contains a variety of information about the state rail system and its use that is not repeated in this publication.

Document Contents

Chapter 2 – The following chapter discusses rail intermodal service in general and identifies and describes Florida's rail intermodal system and facilities in more detail. Major facilities which are to be examined for access needs are delineated.

Chapter 3 – The third chapter identifies benefits which can be attributed to intermodal transportation and discusses their quantification. Selected case studies reveal the magnitude of these benefits from several perspectives – statewide, regional and corridor-specific.

Chapter 4 – The potential for conversion of truck traffic to rail is approached by first examining truck freight movements in Florida and then determining how they would best move by rail. Both intermodal (trailer-on-flatcar/container-on-flatcar) and carload rail transport enter into the analysis. Truckload flows and volumes which might be considered as candidates are quantified.

[1] Florida Department of Transportation with assistance from Wilbur Smith Associates.

Chapter 5 – The results of the assessment of access needs for the selected rail intermodal facilities are the subject of this chapter. The needs are also quantified in monetary terms.

Appendices – The appendices contain summary descriptions of each of the intermodal facilities that were examined for rail access needs, a description of the Standard Transportation Commodity Code (STCC) at the 2-digit level, location mapping of major intermodal facilities in selected urban areas,[2] and a list of acronyms and abbreviations used in this document.

[2] Jacksonville, Southeast Florida, Tampa

Chapter 2
RAIL INTERMODAL SERVICE AND FACILITIES

At the heart of intermodal transportation is the use of each mode of transportation for the type of transport for which it functions most efficiently. Transfers of freight between modes are necessary in the process, and they occur in a variety of ways and facilities. This study, however, concentrates on the more easily recognized rail intermodal concepts and the larger facilities located in the state.

INTERMODAL FORMS

Trailer or Container on Flatcar

When rail intermodal service is mentioned, the most common association is the movement of semi-trailers (TOFC) and containers (COFC) on railway freight cars.

TOFC – The movement of highway trailers on railway flat cars (often called piggyback) is the oldest form of rail-highway intermodalism. At one time facilities were numerous when only a ramp was required for loading and unloading. As time progressed, volumes grew and service needs matured, the need for more efficient operations and the generation of sufficient volumes for dedicated intermodal trains resulted in the consolidation of facilities.

COFC – Another form of "piggyback" is the transport of containers on flat cars. The movement of containers occurs for both international and domestic traffic. The lack of wheels on containers led to the need for lift equipment to load and unload containers to/from railway cars and the eventual demise of railway ramp facilities. The need to justify investments required for lift equipment accelerated the consolidation of facilities. The heavy flow of marine containers cross country in land bridge service as well as to domestic market destinations led to development of double-stack railway intermodal equipment.

Alternate Forms – In an attempt to eliminate the cost of railway equipment to transport trailers and containers as well as the operating costs associated with moving it, alternative trailer designs have been advanced. One of the first of the "carless" trailer products was the RoadRailer, ® a reinforced trailer which had both rail and highway wheelsets. The extra weight of the rail wheel assembly, however, was a major disadvantage for over-the-highway movement. The design has been modified since so that a detachable rail bogie is now used. At least one other company has developed similar equipment.

Bulk Transfer

Although less commonly thought of when intermodal movement is mentioned, the transfer of bulk materials, both dry and liquid, between modes accounts for significant freight volumes. Transfers of commodities such as food products and chemicals, etc., shipped in bulk occur at private and railway facilities designed and equipped for that purpose, and at waterports. In the case of the first two, they are typically associated with rail-highway moves and the later with both domestic and international waterborne commerce.

Non-Bulk Transfer

A variety of non-bulk freight such as lumber, plywood, steel, various packaged products, etc., are transferred and sometimes stored at reload centers and warehouses, or railroad team tracks.

RAIL-SERVED INTERMODAL FACILITIES

For purposes of this study, three types of rail-served intermodal facilities were examined – TOFC/COFC, bulk transfer, and seaports. These are the major facilities depicted on the freight service version of the *Florida Public Transportation Facility* map which is Appendix A of the *2002 Florida Rail System Plan*. The facilities included in this evaluation are located on Exhibit 2-1 and are discussed in more detail on the following

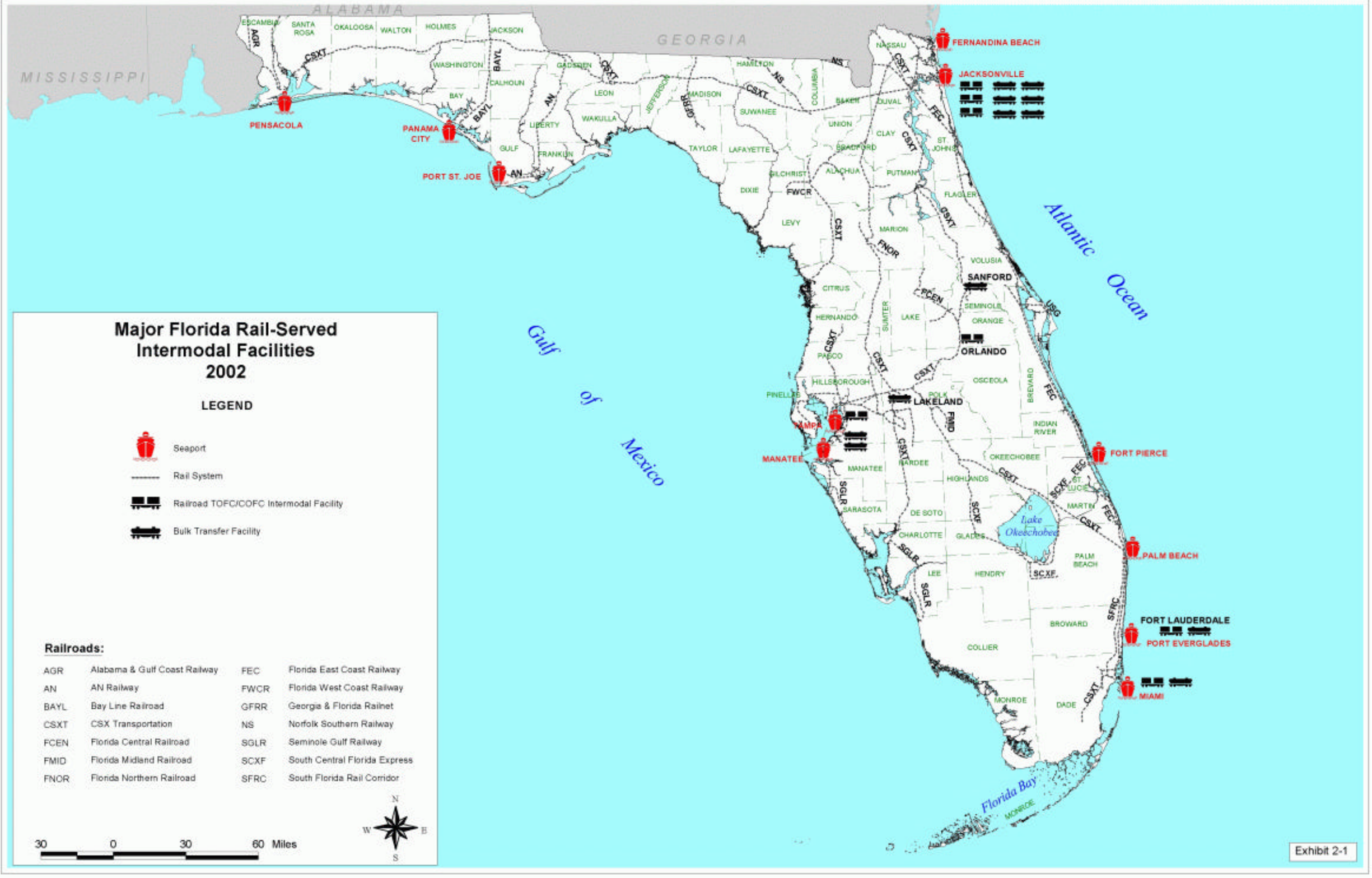

Major Florida Rail-Served Intermodal Facilities 2002
LEGEND
Seaport
Rail System
Railroad TOFC/COFC Intermodal Facility
Bulk Transfer Facility
Railroads:
AGR Alabama & Gulf Coast Railway
AN AN Railway
BAYL Bay Line Railroad
CSXT CSX Transportation
FCEN Florida Central Railroad
FMID Florida Midland Railroad
FNOR Florida Northern Railroad
FEC Florida East Coast Railway
FWCR Florida West Coast Railway
GFRR Georgia & Florida Railnet
NS Norfolk Southern Railway
SGLR Seminole Gulf Railway
SCXF South Central Florida Express
SFRC South Florida Rail Corridor
30 0 30 60 Miles
N W E S
ALABAMA
GEORGIA
MISSISSIPPI
Gulf of Mexico
Atlantic Ocean
Florida Bay
PENSACOLA
PANAMA CITY
PORT ST. JOE
FERNANDINA BEACH
JACKSONVILLE
SANFORD
ORLANDO
LAKELAND
TAMPA
MANATEE
FORT PIERCE
PALM BEACH
FORT LAUDERDALE
PORT EVERGLADES
MIAMI
Lake Okeechobee
ESCAMBIA
SANTA ROSA
OKALOOSA
WALTON
HOLMES
JACKSON
WASHINGTON
BAY
CALHOUN
GULF
FRANKLIN
GADSDEN
LIBERTY
WAKULLA
LEON
JEFFERSON
MADISON
TAYLOR
LAFAYETTE
HAMILTON
SUWANNEE
COLUMBIA
DIXIE
GILCHRIST
LEVY
BAKER
UNION
BRADFORD
ALACHUA
NASSAU
DUVAL
CLAY
PUTNAM
ST. JOHNS
FLAGLER
VOLUSIA
MARION
CITRUS
HERNANDO
SUMTER
LAKE
SEMINOLE
ORANGE
OSCEOLA
PASCO
HILLSBOROUGH
PINELLAS
POLK
BREVARD
INDIAN RIVER
OKEECHOBEE
HIGHLANDS
HARDEE
DE SOTO
SARASOTA
CHARLOTTE
GLADES
MARTIN
ST. LUCIE
PALM BEACH
LEE
HENDRY
COLLIER
BROWARD
MONROE
DADE
CSXT
AN
BAYL
GFRR
NS
FEC
FCEN
FMID
FNOR
SCXF
SFRC
SGLR

Exhibit 2-1

pages. Most of the facilities are also shown on exhibits in Appendix E which contains more detailed maps of the Jacksonville area, Southeast Florida, and the Tampa area.

TOFC/COFC Intermodal Facilities

Facility Locations - As listed in Exhibit 2-2 and shown on Exhibit 2-1, there are seven rail intermodal facilities in Florida which handle conventional trailers and containers. They are located in the major metropolitan areas of Ft. Lauderdale, Jacksonville, Miami, Orlando, and Tampa. Almost half of the facilities (3) are located in Jacksonville. Three of the metropolitan areas – Ft. Lauderdale, Jacksonville, and Miami – are also the home of major Atlantic coast seaports. Tampa is the site of a major Gulf coast seaport.

Exhibit 2-2
TOFC/COFC INTERMODAL FACILITIES IN FLORIDA

Location	Owner	Serving Railroad
Ft. Lauderdale	FEC	FEC
Jacksonville	CSX Intermodal	CSXT
Jacksonville	FEC	FEC
Jacksonville	NS	NS
Miami	FEC	FEC
Orlando	CSX Intermodal	CSXT
Tampa	CSX Intermodal	CSXT

FEC = Florida East Coast Railway; CSXT = CSX Transportation;
NS = Norfolk Southern Railway;

As also shown in Exhibit 2-2, three of the intermodal facilities -- Jacksonville, Orlando, and Tampa -- are CSX Intermodal (CSXI) facilities and are served by CSX Transportation (CSXT). Both companies are wholly owned subsidiaries of CSX Corporation. Three are Florida East Coast Railway (FEC) facilities -- Ft. Lauderdale, Jacksonville, and Miami. FEC also handles intermodal business for both CSXI and NS. The Norfolk Southern Railway (NS) owns two Jacksonville facilities -- one for traditional TOFC/COFC traffic, and the other a hub for the previously mentioned RoadRailer® service provided by Triple Crown, a wholly owned subsidiary of NS.

Facility Characteristics - The major attributes of Florida's seven TOFC/COFC intermodal facilities are summarized in Exhibit 2-3. More descriptive abstracts of each are located in Appendix A. The CSXI facility in Jacksonville is not only a terminal for loading/unloading trailers and containers, but serves as a mixing facility where intermodal trains are broken and made up for specific lanes. It is also the only TOFC/COFC facility that does not lie immediately adjacent to a railroad mainline. The terminal is located on a seven-mile-long track which connects CSXT's north-south main to Waycross with its east-west Panhandle line (see Exhibit E-1). The route to South Florida diverges from the Panhandle line at Baldwin on the western edge of the Jacksonville area.

Exhibit 2-3
SELECTED ATTRIBUTES OF FLORIDA'S TOFC/COFC INTERMODAL FACILITIES

Facility	Type of Service Provided				Capacity & Parking			Type of Lifts		
	TOFC	COFC	Stack Car	Size (Acres)	89' Rail Cars	Wheeled Units	Stacked Containers	Side Lifts	Overhead Cranes	Top Lifts
Ft. Lauderdale - FEC	☞	☞	☞	13	N.A.	N.A.	N.A.	1	2	1
Jacksonville - CSXI	☞	☞	☞	224	N.A.	N.A.	N.A.	5	0	0
Jacksonville - FEC	☞	☞	☞	42	N.A.	N.A.	N.A.	0	4	4
Jacksonville - NS	☞	☞	☞	35	60	600	120	0	5	0
Miami - FEC	☞	☞	☞	73	178	1,250	1,620	3	6	9
Orlando - CSXI	☞	☞	☞	157	N.A.	N.A.	N.A.	2	0	0
Tampa - CSXI	☞	☞	☞	47	N.A.	N.A.	N.A.	2	0	0
Totals										

Source: Various provider websites, IANA Intermodal Directory (1997, 1998), and the Official Railway Guide, 2002.

Triple Crown – A wholly owned subsidiary of NS, this intermodal provider uses the carless Roadrailer? equipment discussed earlier. The equipment operates over a limited network of lanes where commodities and flows are suitable for its unique

features. It has one facility in Florida, located in Jacksonville adjacent to the railroad's Simpson Yard and conventional intermodal terminal.

Intermodal Network - The intermodal network in Florida basically serves the most populous areas of the state. This network extends beyond Florida connecting with the national and international intermodal network through CSXI and NS. The resulting network is the subject of Exhibit 2-4.

Note that Jacksonville is the intermodal gateway to Florida, the point of convergence of CSXI lanes, terminus of the NS route, and the north end of the FEC. The FEC both originates and terminates intermodal traffic in Jacksonville and interchanges with both CSXT and NS.

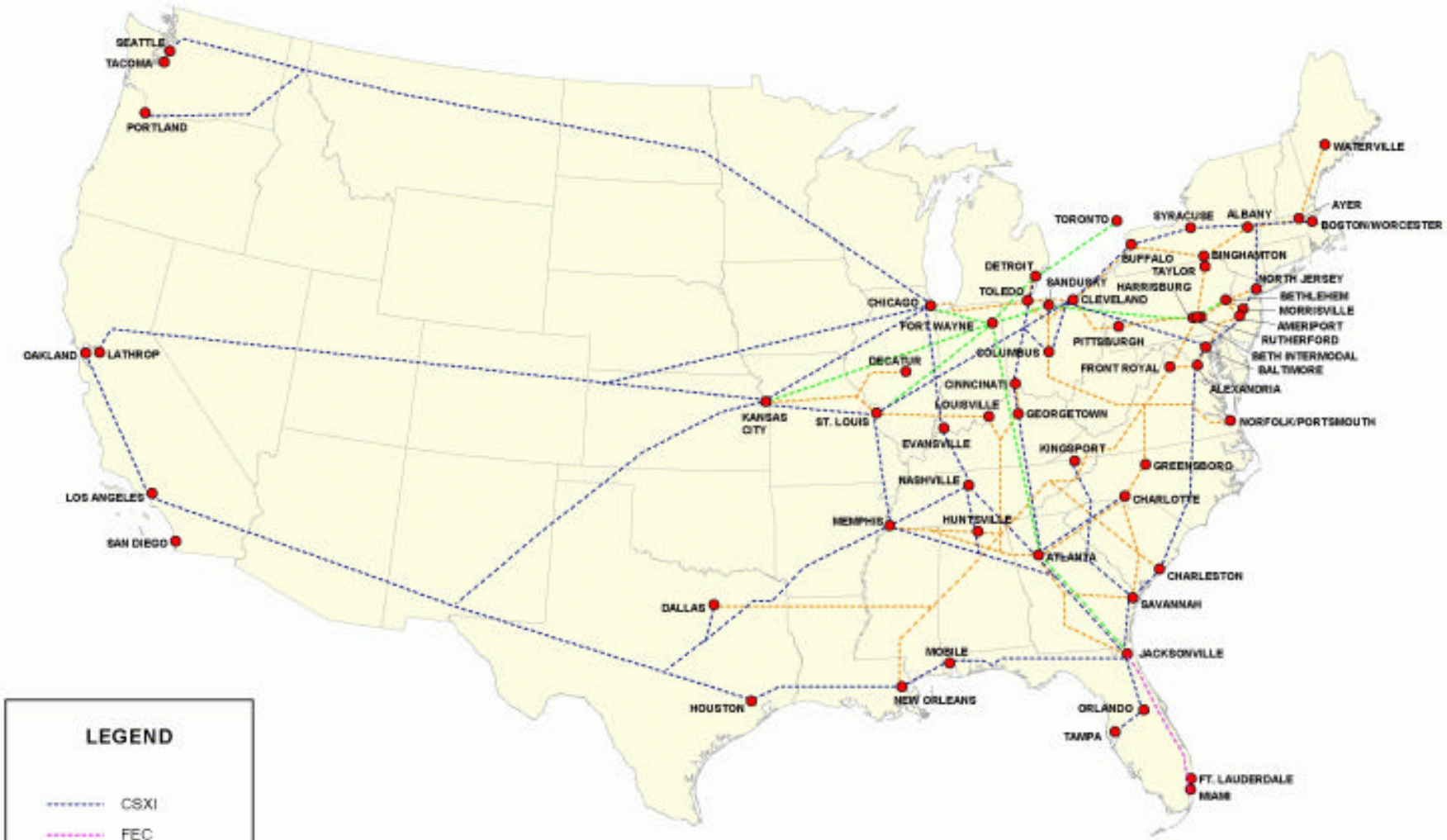
Bulk Transfer Facilities

Some Florida bulk transfer terminals are owned by the railroads, although usually operated under contract by an outside party, while others are privately owned and operated, many associated with trucking companies. All of the facilities covered in this study effort are listed as components of the respective railroad transfer facility networks.

Facility Locations - The attributes of the bulk transfer facilities shown on Exhibit 2-1 are contained in Exhibit 2-5. Note that the largest number of facilities (six) are located in Jacksonville. Appendix B contains facility description abstracts.

The bulk transfer facilities possess the necessary equipment to transfer a variety of products, including hazardous materials, efficiently and safely (however, all products are not handled at all terminals). They permit industries that are not directly rail served to take advantage of the benefits of bulk shipment by rail, and at the same time feel assured that the products will be properly handled without contamination. Simultaneously, the facilities provide the railroads with markets they would not otherwise be able to serve. This listing does not, however, include the large purpose-built bulk transfer facilities such as CSXT's Rockport Terminal at the Port of Tampa, nor privately

Intermodal Network of Florida's Railroads



Source: Railroad Web Sites

Exhibit 2-4

owned terminals handling products such as aggregates and cement for individual businesses.

EXHIBIT 2-5
BULK TRANSFER FACILITIES IN FLORIDA

			Handling	
Location	**Serving RR(1)**	**Operator**	**Dry**	**Liquid**
Ft. Lauderdale	CSXT	TRANSFLO, Inc.	✍	✍
Jacksonville	NS	Bulkmatic Transport	✍	✍
Jacksonville	CSXT	C&C Bulk Liquid Transfer, Inc.		✍
Jacksonville	NS	ITAPCO		✍
Jacksonville	CSXT	Petroleum Fuel & Terminal Co.	✍	✍
Jacksonville	CSXT	TRANSFLO, Inc.	✍	✍
Jacksonville	TTR	Westway Terminal Co., Inc.		✍
Lakeland	CSXT	Carry Transit	✍	✍
Miami	FEC	Florida Bulk Transfer	✍	✍
Sanford	CSXT	TRANSFLO, Inc.	✍	✍
Tampa	CSXT	Central Florida Pipeline		✍
Tampa	CSXT	TRANSFLO Inc.	✍	✍

(1) FEC = Florida East Coast Railway; CSXT = CSX Transportation; NS = Norfolk Southern Railway; TTR = Talleyrand Terminal Railroad.
Source: Various provider websites, the Official Railway Guide, 2002.

Other Rail-Highway Facilities – CSX Transportation's TRANSFLO subsidiary provides a variety of transloading and storage services. While its bulk transfer network is comprised of 81 terminals in 23 states, TRANSFLO's TRANSMODE adds a network of over 400 rail-served public distribution centers. These facilities handle a variety of commodities such as forest, pulp and paper, and food products, as well as other consumer packaged merchandise. Metal products are similarly handled through the 60-facility METALNET distribution service network.

Facilities served by Norfolk Southern fall under its MODALGISTICS^{sm} business unit. The associated network includes 174 rail transfer facilities; 124 lumber reload, 71 metals distribution, 7 plastics warehouse/distribution, and 4 JIT rail auto parts centers.

Within Florida, the reloads and warehouses mentioned above are not only located on the two Class 1 carriers, but also on the state's short lines. In all, 45

warehouses (including temperature–controlled facilities) and reloads are listed on railroad websites as part of their respective networks. Also, the railroads operate eight automobile unloading facilities in Florida. In addition, there are two rail-served automobile facilities located at JAXPORT – one on Blount Island, the other at the Talleyrand Terminal. No different from the other intermodal services, this alternative offers the economics of rail long-haul combined with local truck delivery and distribution. The facilities are located throughout the state as shown on Exhibit 2-6. They were not investigated as part of this study effort but included for information purposes only.

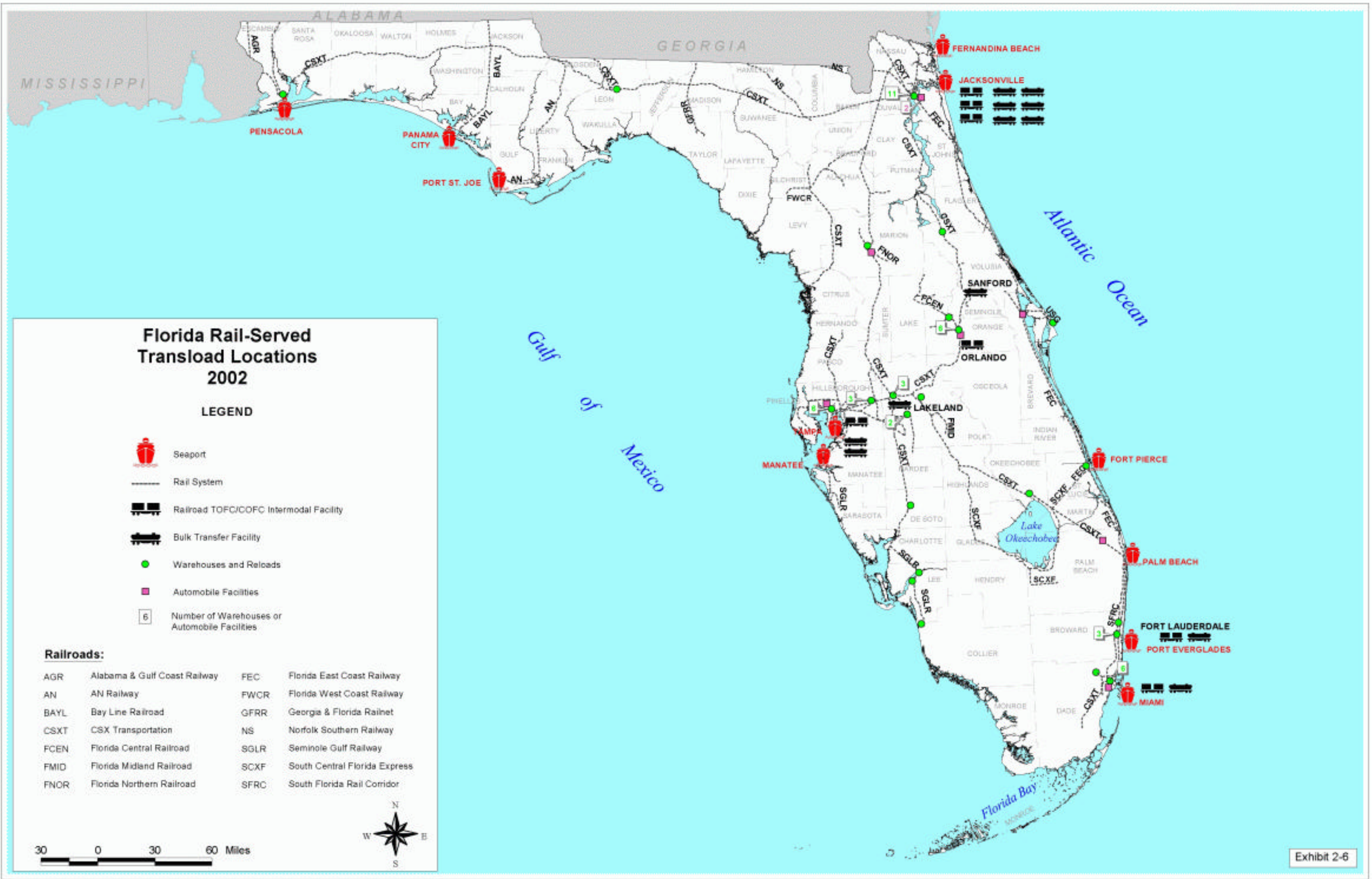
Seaports

International trade is a principal component of Florida's economy. Two-thirds (as measured by value) of Florida's international commerce moves by water through its deepwater seaports. Florida's railroads provide landside transport of commodities in bulk, break-bulk and containerized form to and from the ports, making them intermodal partners with these ports.

Rail Access - The rail-served ports are listed in Exhibit 2-7. All of the ports have on-terminal rail lines although the use of each varies. At three of the ports – Jacksonville, Manatee, and Palm Beach – rail service is provided by port-controlled terminal railroads. More information on individual seaports is contained in Appendix C.

Unlike the TOFC/COFC and bulk transfer facilities, many of the seaport terminals[1] are not located immediately adjacent to or just short distances from railway mainlines. In Jacksonville, for example, Jaxport's Talleyrand Terminal is 7-8 miles away from both CSXT and NS mainlines. The Dames Point and Blount Island Terminals are eighteen miles distant and the Port of Fernandina is 33 miles from the nearest mainline. The lines to these individual sites all spring from the same branch, however, CSXT's Kingsland Subdivision (see Exhibit E-1), and the Talleyrand Terminal can also be reached over NS' St. Johns River Terminal Company.

[1] Some of the ports have multiple terminals in different locations. Only terminals related to public port authorities are included.



Florida Rail-Served Transload Locations 2002

LEGEND

- Seaport
- Rail System
- Railroad TOFC/COFC Intermodal Facility
- Bulk Transfer Facility
- Warehouses and Reloads
- Automobile Facilities
- 6 — Number of Warehouses or Automobile Facilities

Railroads:

AGR	Alabama & Gulf Coast Railway	FEC	Florida East Coast Railway
AN	AN Railway	FWCR	Florida West Coast Railway
BAYL	Bay Line Railroad	GFRR	Georgia & Florida Railnet
CSXT	CSX Transportation	NS	Norfolk Southern Railway
FCEN	Florida Central Railroad	SGLR	Seminole Gulf Railway
FMID	Florida Midland Railroad	SCXF	South Central Florida Express
FNOR	Florida Northern Railroad	SFRC	South Florida Rail Corridor

N W E S

30 0 30 60 Miles

Exhibit 2-6

Exhibit: 2-7
RAIL ACCESS TO FLORIDA'S SEAPORTS

Seaport	On-Terminal Carriers	Off-Terminal Connections
Everglades	Florida East Coast Railway	Florida East Coast Railway
Fernandina	CSX Transportation	CSX Transportation
Fort Pierce	Florida East Coast Railway	Florida East Coast Railway
Jacksonville--Blount Island & Dames Point	CSX Transportation	CSX Transportation
Talleyrand Terminal	Talleyrand Terminal RR	CSX Transportation Norfolk Southern Railway Florida East Coast Railway
Manatee	Port Manatee Terminal RR	CSX Transportation
Miami[1]	Florida East Coast Railway	Florida East Coast Railway
Palm Beach	Port of Palm Beach District RR	Florida East Coast Railway
Panama City	Bay Line Railroad LLC	Bay Line Railroad LLC
Pensacola	CSX Transportation	Alabama & Gulf Coast Railway CSX Transportation
St. Joe	AN Railway	AN Railway
Tampa	CSX Transportation	CSX Transportation

1) FEC also provides service for both CSXI and NS.

The Port of Miami is reached over FEC's Downtown Lead (Exhibit E-2), some five miles from the main track. The lead track to the Port of Panama City is over four miles long, and while it is just less than a mile from CSXT's main track, the lead track to the Port of Pensacola, in large part, lies in the middle of Tarragona Street. Terminals at the Port of Tampa lie on different braches (Exhibit E-3) which extend at least three miles beyond the end of CSXT's main track in Tampa.

Port Activity – Of the ports listed in Exhibit 2-7, one, Port St. Joe is inactive but actively seeking future business opportunities, and Fort Pierce is currently handling little rail business. Both Tampa Bay ports, Tampa and Manatee, are bulk ports, although they are developing container capabilities. The two Panhandle ports, Pensacola and Panama City, are general cargo oriented. The remaining ports are container ports although other cargos are handled at each of them.

The level of activity at each of the rail-served ports is shown in Exhibit 2-8. Note the relationship between port tonnage and container activity as discussed earlier. More details on the activity at each port are part of the port abstracts contained in Appendix C.

Exhibit 2-8
FLORIDA PORT ACTIVITY
FY 01-02

	Tonnage (million tons)			
Port	**International**	**Domestic**	**Total**	**Containers (1,000 TEUs)**
Everglades	11.5	12.2	23.7	621.4
Fernandina	0.5	---	0.5	26.0
Fort Pierce	0.06	0.02	0.08	---
Jacksonville	7.9	10.1	18.0	698.9
Manatee	5.2	---	5.2	7.0
Miami	8.2	---	8.2	955.7
Palm Beach	1.6	1.7	3.3	197.5
Panama City	0.9	0.05	0.9	---
Pensacola	0.3	0.3	0.6	287
Tampa	15.5	30.6	46.1	4.1
TOTALS	56.3	55.1	111.4	2,511.8

Source: 2001/2002 - 2005/2006 Seaport Mission Plan

While all of the listed waterports have direct rail service, not all container ports have on-dock rail-served container facilities. Only Jacksonville's Talleyrand Terminal, Port of Fernandina, and Port of Palm Beach have on-dock rail-served container facilities. Containers are drayed between port terminals and railroad COFC/TOFC facilities at the other ports.

Chapter 3
BENEFITS OF RAIL TRANSPORTATION

Although the potential benefits of rail intermodal will vary on a project-by-project basis, they generally fall into broad categories such as the following.

1. Further environmental objectives including reduced fuel consumption and improved air quality.
2. Reduce transportation costs to shippers.
3. Reduce traffic congestion.
4. Reduce pavement damage.
5. Improve transportation safety.

Each of these categories is discussed in turn below. In addition, selected case studies that quantify the benefits of improved rail service are presented.

Further Environmental Objectives

Projects that result in the shift of freight movements from truck-only to rail-only or to truck-rail intermodal have the potential to generate positive environmental benefits. The composition and magnitude of these benefits will, of course, vary from case to case and must be determined on a project-specific basis. Generally speaking, however, most shifts of freight movements from truck to rail will reduce the amount of fuel consumed and will therefore reduce the amount of harmful pollutants released into the air. Such projects may also generate other environmental benefits that are directly related to the scope and nature of the project. For example, a project that results in a shift of an amount of freight from truck to rail significant enough to preclude or postpone the need to expand an existing highway facility would have environmental benefits spanning a wide range of categories such as those related to construction activity and land use impacts.

Fuel Consumption – Fuel consumption in rail transportation is considerably less than for trucks. For example:

- According to the Association of American Railroads (AAR)[1], railroad fuel efficiency has increased 72 percent since 1980, when a gallon of diesel fuel moved a ton of freight an average of 235 miles. In 2001, railroads moved a ton of freight an average of 406 miles per gallon.
- Another measure generated by the AAR is based on revenue ton – miles per gallon (RTMG), or consumption associated with loaded miles. Class 1 railroads average 396 RTMG, while trucks, based an average weight of lading and fuel consumption, would produce about 88 RTMG.
- According to information compiled annually by the Oak Ridge National Laboratory for the U.S. Department of Energy, the energy intensity of Class I railroads in 2000 was 328 Btu per ton-mile compared to 3,307 Btu per ton-mile for trucks.[2]

Air Quality – The following factors are compiled by the American Association of Railroads[3].

- The Environmental Protection Agency (EPA) estimates that a typical truck emits roughly three times more nitrogen oxides and particulates for every ton-mile than a locomotive. Other studies indicate that the relationship may be 6 to 12 times more depending upon the pollutant measured.
- Also according to the EPA, railroads account for just 9 percent of total transportation-related NOx emissions and less than five percent of transportation-related particulate emissions, even though railroads account for more than 40 percent of the nation's intercity freight ton-miles.
- Carbon dioxide and carbon monoxide emissions from trains are lower than ships, trucks or airplanes. According to the American Society of Mechanical

[1] "Railroads: Building a Cleaner Environment," One of a series of summary background papers posted by the Association of American Railroad on its web site: http://www.aar.org.
[2] *Benefits of Rail Freight Study*, prepared for Washington State DOT by HDR, Inc. and Denver Tolliver, Ph.D., February 2001.
[3] "Railroads: Building a Cleaner Environment"

Engineers, if ten percent of intercity freight now moving by highway were shifted to rail, 2.5 million fewer tons of carbon dioxide would be emitted into the air annually.

- A single intermodal train can take the equivalent of 280 trucks off the highway, while a single conventional train can almost double that number of trucks. Since a single combination truck requires the same highway capacity as up to four automobiles, a typical freight train can represent the equivalent of more than 1,000 fewer cars on the highway.

Another view of pollutant generation is provided in Exhibit 3-1 which compares four primary pollutants:

- Carbon Monoxide (CO);
- Nitrous Oxides (NO_x);
- Hydrocarbons (HC) or Volatile Organic Compounds (VOC); and
- Particulate Matter (PM) less than 10 microns in diameter.

The exhibit compares emission standards in grams per gallon for locomotives and heavy diesel trucks manufactured in 2002. Actual emissions will vary with operating speeds, conditions, and other factors.

Exhibit 3-1
2002 RAIL AND TRUCK EMISSION STANDARDS
(Grams per Gallon)

Pollutant	Railroad	Truck
CO	26.6	322.4
HC	9.8	27
NO_x	139	83.2
PM	6.7	2.1

Source: *Cascade Gateway Rail Study*

Reduce Transportation Costs to Shippers

Truck-rail intermodal combines the efficiency of rail transportation with the convenience and flexibility of trucks. By using rail for the long-haul portion of the movement, truck-rail intermodal transportation offers shippers a lower cost option than a comparable motor carrier movement, while the truck portion of the movement offers the flexibility of door-to-door service. Intermodal rates are typically 15 to 20 percent below motor carrier rates for comparable moves, but transit times may be 2 or 3 days longer and more variable, depending on the length of haul.[4] For similar reasons, rail service through bulk transfer facilities and other transload operations have the potential to reduce transportation costs to shippers.

Reduce Traffic Congestion

The capacity of a highway is measured using six service levels, A through F. Service level A, as contained in the *Highway Capacity Manual*,[5] is a free flow speed of 70 to 75 mph under ideal conditions. As the level of service deteriorates to D, speeds begin to decline, maneuverability becomes limited and even minor disruptions can cause delays. At level of service E, the theoretical lane capacity (2,400 passenger cars per hour per lane) is reached and further deterioration results in unstable speeds with frequent speed-change cycles. Trucks can impact capacity. Based on data contained in the *Highway Capacity Manual*, each additional truck is equivalent to 1.5 automobiles on freeway segments with level terrain, 2.5 with rolling terrain, and 4.5 with mountainous terrain.

Congestion costs are based on marginal costs per vehicle-mile of travel and are shown in Exhibit 3-2 by highway and vehicle type under a range of operating conditions. The costs exhibited are incremental travel time and vehicle operating costs above those associated with normal traffic flows.

[4] *Demand for Intermodal Transportation in Arkansas*, John Ozment, University of Arkansas.
[5] Transportation Research Board, 2000.

Exhibit 3-2
MARGINAL EXTERNAL CONGESTION COST
(Cents per Vehicle-Mile)

	Rural Highways			Urban Highways		
	High	**Middle**	**Low**	**High**	**Middle**	**Low**
Automobiles	3.76	1.28	0.34	18.27	6.21	1.64
Pickups and Vans	3.80	1.29	0.34	17.78	6.04	1.60
Buses	6.96	2.37	0.63	37.59	12.78	3.38
Single Unit Trucks	7.43	2.53	0.67	42.65	14.50	3.84
Combination Trucks	10.87	3.70	0.98	49.34	16.78	4.44
All Vehicles	4.40	1.50	0.40	19.72	6.71	1.78

Source: Federal Highway Administration, *1997 Federal Highway Cost Allocation Study* taken from *Cascade Gateway Rail Study*.

Reduce Pavement Costs

With the exception of studded-tire wear (not a problem in Florida), automobiles have very little impact on pavements. Pavement wear, cracking and rutting, is caused principally by heavy trucks. The Federal Highway Cost Allocation Study provided marginal cost estimates for pavement damages under varying conditions. For a 60,000-lb. combination truck, one which represents the typical weight for a railroad intermodal shipment, the 2000 cost per vehicle-mile traveled is 3.3 cents on a rural interstate highway and 10.5 cents on an urban interstate.[6] Due to the high pavement design standards for the interstate highway system, the pavement damage costs are much lower than would be experienced on a lower class roadway. For example, a study in Kansas (discussed later) determined that pavement costs associated with grain transportation averaged 17 cents per mile, but could be as much as twice that amount. These costs are offset, however, by fuel taxes and other truck use fees which can total in excess of 10 cents per mile.

Improve Transportation Safety

Reduction of highway use will lower the number of accidents and this improves safety. Diversion of truck traffic will reduce highway use and therefore improve safety.

[6] *Cascade Gateway Rail Study*, working paper prepared for Whatcom Council of Governments by Wilbur Smith Associates with Denver Tolliver, Ph.D., November 2002.

Safety benefits are typically measured by the reduction in accidents and the associated costs which are related to property damage, injury, and fatality.

These factors can be estimated through use of the Highway Economic Requirements System (HERS).[7] HERS is a comprehensive highway performance model used in preparing the U.S. Department of Transportation's biennial report on the "Status of the Nation's Surface Transportation System" to Congress. It uses the Highway Performance Monitoring System (HPMS) database which is a stratified random sample of each state's highway system containing traffic, pavement, ride quality, and other highway data.

Case Studies

Several recent studies have quantified the level of benefits which result from the use of rail transportation versus highway transport, all or in part. The cases selected consider major interstate routes as well as local roadways, and both urban and rural locations.

Washington State - The *Benefits of Rail Freight Study*[8] quantified the benefits of railroad freight transportation in Washington State. The intent of the study was to show the value of the rail system as part of the statewide transportation system. This is done by examining the impacts of additional truck traffic on highway capacity, safety and the physical plant. The impacts are quantified in monetary terms.

Benefits are estimated for two hypothetical cases or scenarios. In the first scenario, all freight moving by rail is shifted to combination trucks. The effects of the hypothetical trucks on highway users and safety levels are estimated while holding lane-miles constant. In an alternative analysis, highway capacity is allowed to vary and the cost of additional capacity is quantified. The highway revenue generated from additional truck movements is estimated and compared to the potential impacts (to determine net costs).

[7] *SJR 5 Study*, prepared for the Virginia Department of Rail and Public Transportation by Wilbur Smith Associates with Denver Tolliver, Ph.D., Belstar, Inc., and Fitzgerald-Halliday, Inc., January 2001.
[8] Prepared for the Washington State DOT by HDR, Inc. and Denver Tolliver, Ph.D., February 2001.

In a second scenario, traffic originating or terminating on the state's light density rail lines (branch lines or short-line railroads) is shifted to trucks. The resulting shipments are routed over state highways that would be used in the absence of rail service. The change in pavement resurfacing cost is estimated and compared to revenues generated from truck fuel taxes and user fees.

The results of the analyses indicate:

- "Without rail service, more than 1 million trucks would be added to some interstate highway sections
- Without rail service, highway travelers would experience more than 3 million additional hours of delay
- Without rail service, highway travelers would incur an additional $329 million in vehicle-operating and travel-time costs
- Without rail service, transportation-related accident costs would increase by $67 million per year
- The additional highway capacity needed to mitigate these effects would cost $851 million
- Loss of branchline and short-line railroad service would increase annual highway resurfacing costs by $21 million."

South Florida – An interim submittal from an ongoing assessment of transportation needs[9] in the three–county metropolitan area of Southeast Florida indicates that growing traffic congestion will result in severe regional transportation problems. It is estimated that by 2015, when the region's population grows to six million, that the cost of traffic congestion, as measured in lost time and fuel consumption, will total $2.1 billion annually in Broward and Dade Counties alone. From a freight perspective, trucking costs in this scenario would increase by $45 per hour.

[9] CH2MHill and J. D. Sanchez Consulting in collaboration with the FDOT, the Ports of Miami, Everglades and Palm Beach, the Florida Seaport Transportation and Economic Development Council, and others.

Kansas – Among other factors, the Kansas study[10] examined the potential damage to its highway system which would result from loss of the state's short line rail system. This situation could be brought about by changes in grain transportation where local elevators on short lines are bypassed to reach large unit-train facilities on mainlines with better rates, or by conversion to truck markets. The investigation focused on the potential damage to pavements which would result from the heavy loadings of typical grain trucks[11]. This case would be similar to the one presented by nonmetallic mineral shipments in Florida.

The road damage analysis considered the additional truck traffic that would be introduced, the routes it would take, the pavement characteristics of those routes, and the expected loss in pavement serviceability. The results indicated that continued use of the short line system would result in the avoidance of $49.5 million in annual pavement damage costs. The annual costs equated to an average incremental cost of 17 cents per truck mile. The study also concluded that in cases of lower pavement design standards and poorer pavement condition, the incremental costs can be double those where better conditions exist.

Virginia – The 2000 Session of the Virginia General Assembly, through Senate Joint Resolution No. 55, requested …… *the Secretary of Transportation to expand the scope of her study on the desirability and feasibility of establishing additional intermodal transfer facilities (House Joint Resolution No. 704 (1999) to include the potential for shifting Virginia's highway traffic to railroads.*

The purpose of the *SJR 55 Study*[12] was to determine if there was sufficient potential to divert enough highway traffic from I-81 (some segments with as much as 40 percent trucks) to rail transport to make a significant impact on the need for planned highway improvements, and if the impacts would justify public expenditures for rail improvements.

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[10] *Impact of Kansas Grain Transportation on Kansas Highway Damage Costs*, Report No. K-Tran: KSU-01-5, Babcock and Bunch, March 2002.
[11] In a rural environment, capacity is not typically an issue.
[12] See footnote 7.

A variety of data on truck flows, I-81 characteristics and improvement plans, and suggested railroad improvements were gathered and assessed. The analyses conducted examined the reasonableness of both highway and railroad plans and cost estimates, potential diversions of highway traffic to rail, and what those diversions might mean for I-81. Capital expenditures, long-range maintenance costs, and environmental impacts were considered.

Highway impacts were estimated using the Highway Economic Requirements System. Using the HERS model, it was determined that the planned improvements to I-81 would still be necessary but that the removal of trucks (diverted to rail) would impact the amount and timing of those improvements. An analysis of the present value of the benefits that would be attributable to the diversion of trucks over the 22-year study period revealed that at a probable 10 percent diversion level, almost $400 million worth of benefits would be generated.

Chapter 4
INTERMODAL POTENTIAL

Volume movements provide the greatest opportunities to attract traffic to rail and take advantage of the benefits of rail transportation. The examination of Florida's freight transportation demand and its potential for intermodal transport are based on this premise.

TRUCK TRAFFIC

Several different approaches were used to investigate the potential to convert truck shipments to rail intermodal. They all began with truck traffic data. Florida truck movement data were examined for rule-of-thumb intermodal attributes such as commodity type and travel distance between origin and destination. The data were also examined to determine if carload traffic potentials might exist as well.

Truck Traffic Data

Truck freight movements were compiled from a 1998 data set acquired by FDOT's Systems Planning Office from Reebie Associates. The data attributes include tonnage by origin and destination at the 2-digit level of the Standard Transportation Commodity Code (STCC). The data are further divided into domestic and international traffic.

Truck Volumes

A summary of total truck movements (see Exhibit 4-1) reveals that approximately 490 million tons of freight originated/terminated in Florida in 1998, the vast majority (97 percent) of it falling into the domestic category. Intrastate movements (those with both origins and destinations within the state) dominate the statistics accounting for 75 percent of total tonnage. About two-thirds of the remaining truck traffic is shipped into the state from out-of-state points.

Exhibit 4-1
FLORIDA TRUCK FREIGHT VOLUMES
1998

	Million Tons		
Movement Type	**Domestic**	**International**	**Total**
Originating[1]	38.9	4.1	43.0
Terminating[2]	74.7	4.9	79.6
Intrastate	363.4	3.7	367.1
TOTALS	477.0	12.7	489.7

Source: Reebie Associates, compiled by Wilbur Smith Associates.
(1) Originating in Florida, terminating out of state.
(2) Terminating in Florida, originating out of state.

Based on data contained in the USDOT's Freight Analysis Framework, total freight demand (all modes), in tons, is forecast to increase by 45 percent in the Year 2010 and by 81 percent in 2020 as compared to 1998. For the truck mode, growth of 48 percent and 87 percent, respectively, is forecast. Rail movements, on the other hand, are projected at lower growth rates, 35 and 64 percent, respectively.

Truck Commodities

The same data described above are detailed by commodity in Exhibit 4-2. Traffic moving by highway between Florida and out-of-state points is dominated by a few select commodities – namely food; chemicals, and petroleum or coal products. A second tier is comprised of lumber or wood; pulp and paper; clay, concrete, glass or stone products; and transportation equipment. Intrastate highway traffic is dominated by nonmetallic minerals (as is intrastate rail traffic) followed by clay, concrete, glass or stone products. Food or kindred products and chemicals or allied products comprise the next most significant intrastate commodity groups.

The Freight Analysis Framework data mentioned earlier also contain individual forecasts for some of the largest commodities. While chemical; petroleum or coal; and clay, concrete, glass, and stone products shipments are forecast with between 60 and

Exhibit 4-2
FLORIDA TRUCK FREIGHT COMMODITIES
1998

		TONS								
COMMODITY		DOMESTIC TRUCK				INTERNATIONAL TRUCK				TRUCK
STCC	DESCRIPTION	ORIGIN	TERM	INTRA	TOTAL	ORIGIN	TERM	INTRA	TOTAL	TOTAL
1	Farm Products	4,833,394	1,588,639	345,764	6,767,797	1,510,276	194,940	31,220	1,736,436	8,504,234
8	Forest Products	1,211	3,812	1,368	6,391	7,917	8,364	2,265	18,546	24,936
9	Fresh Fish Or Marine Products	31,662	1,399	3,149	36,209	8,850	9,007	2,379	20,236	56,445
10	Metallic Ores	22,780	17	8	22,806	27,364	612	2,422	30,398	53,204
11	Coal	-	936,411	-	936,411	9	3,011	26	3,047	939,458
13	Crude Petroleum Or Natural Gas	-	-	-	-	-	0	-	0	0
14	Nonmetallic Minerals	63,597	588,179	164,341,146	164,992,918	111,674	103,934	68,833	284,441	165,277,359
19	Ordnance Or Accessories	14	209	82	304	89	920	161	1,170	1,474
20	Food Or Kindred Products	6,478,676	10,034,925	15,493,107	32,006,707	423,845	943,453	985,492	2,352,790	34,359,498
21	Tobacco Products	25,726	37,201	12,744	75,671	13,523	12,177	6,838	32,538	108,209
22	Textile Mill Products	150,632	382,381	67,611	600,623	61,154	117,434	72,829	251,417	852,040
23	Apparel Or Related Products	730,777	366,977	816,335	1,914,089	269,889	165,222	218,202	653,313	2,567,402
24	Lumber Or Wood Products	3,592,001	6,149,288	8,384,424	18,125,712	59,019	431,685	180,524	671,228	18,796,940
25	Furniture Or Fixtures	213,582	707,806	242,731	1,164,118	29,241	133,971	38,808	202,020	1,366,138
26	Pulp, Paper Or Allied Products	3,127,463	3,321,263	2,732,347	9,181,073	314,729	269,831	293,305	877,865	10,058,938
27	Printed Matter	182,238	866,690	2,559,621	3,608,549	17,501	23,700	19,357	60,558	3,669,107
28	Chemicals Or Allied Products	7,254,876	8,806,492	21,283,049	37,344,418	352,776	446,440	316,616	1,115,832	38,460,250
29	Petroleum Or Coal Products	877,542	19,941,363	6,902,078	27,720,983	6,136	546	-	6,682	27,727,664
30	Rubber Or Misc Plastics	423,990	1,842,502	444,372	2,710,864	55,406	213,209	45,336	313,951	3,024,816
31	Leather Or Leather Products	57,802	69,219	65,731	192,751	18,810	31,038	17,235	67,084	259,835
32	Clay, Concrete, Glass Or Stone	1,588,852	3,452,361	58,671,566	63,712,780	181,541	198,859	683,805	1,064,205	64,776,985
33	Primary Metal Products	984,533	2,521,959	1,412,313	4,918,804	138,687	190,088	60,255	389,030	5,307,834
34	Fabricated Metal Products	798,374	1,783,756	1,717,804	4,299,934	69,358	177,719	344,740	591,816	4,891,751
35	Machinery	400,712	753,033	220,789	1,374,534	99,642	365,460	60,582	525,685	1,900,218
36	Electrical Equipment	451,158	959,369	188,404	1,598,931	43,861	341,389	64,898	450,147	2,049,078
37	Transportation Equipment	1,566,786	2,573,955	789,107	4,929,847	172,245	347,222	66,638	586,105	5,515,952
38	Instrum, Photo Equip, Optical Eq	120,947	110,920	33,264	265,130	13,546	38,872	16,231	68,649	333,780
39	Misc Manufacturing Products	160,281	372,553	132,839	665,673	17,444	74,201	26,502	118,148	783,821
40	Waste Or Scrap Materials	835	6,598	562	7,994	40,351	10,492	13,680	64,523	72,517
41	Misc Freight Shipments	-	-	-	-	1,177	1,312	459	2,948	2,948
42	Shipping Containers	-	-	-	-	-	-	-	-	-
43	Mail Or Contract Traffic	-	-	-	-	-	-	-	-	-
44	Freight Forwarder Traffic	-	-	-	-	-	-	-	-	-
45	Shipper Association Traffic	-	-	-	-	-	-	-	-	-
46	Misc Mixed Shipments	-	-	-	-	-	-	-	-	-
47	Small Packaged Freight Shipments	-	-	-	-	-	-	-	-	-
49	Hazardous Materials	1,251	68,674	392,371	462,295	14	-	-	14	462,309
50	Secondary Traffic	4,727,674	6,461,093	76,159,243	87,348,010	-	-	-	-	87,348,010
59	Unclassified	-	-	-	-	-	-	-	-	-
60	Unclassified	-	-	-	-	-	-	-	-	-
	TOTALS:	38,869,362	74,709,040	363,413,927	476,992,329	4,066,074	4,855,108	3,639,642	12,560,823	489,553,152

Source: *Reebie Associates, compiled by Wilbur Smith Associates*

Notes: Origin - Originates in Florida, Terminates out of state.
Term - Terminates in Florida, Originates out of state
Intra - Intrastate, both Originates and Terminates within Florida.

140 percent growth by 2020, non-metallic mineral transportation is expected to increase only 22 percent

Truck Origins and Destinations

As shown earlier, most truck freight moves within Florida, although significant volumes do cross the state line. Shipments crossing the state line move to and from a variety of states, but originating locations and destinations are concentrated in a limited number of states, principally in the Southeast as evident in Exhibit 4-3.

Exhibit 4-4 reveals truck activity by Florida county. With few exceptions, originating and terminating truck traffic is centered in the most populated counties such as Dade, Duval, Hillsboro, and Orange, although there are other counties with concentrated mineral or other industrial activity, e.g., Polk and Escambia. Dade County accounts for the largest volume of truck transport, 122 million tons in and out[1] (14 percent of the total), and the top tier of counties, six in all, account for 445 million tons or just over one half of the total.

CONVERSION TO RAIL

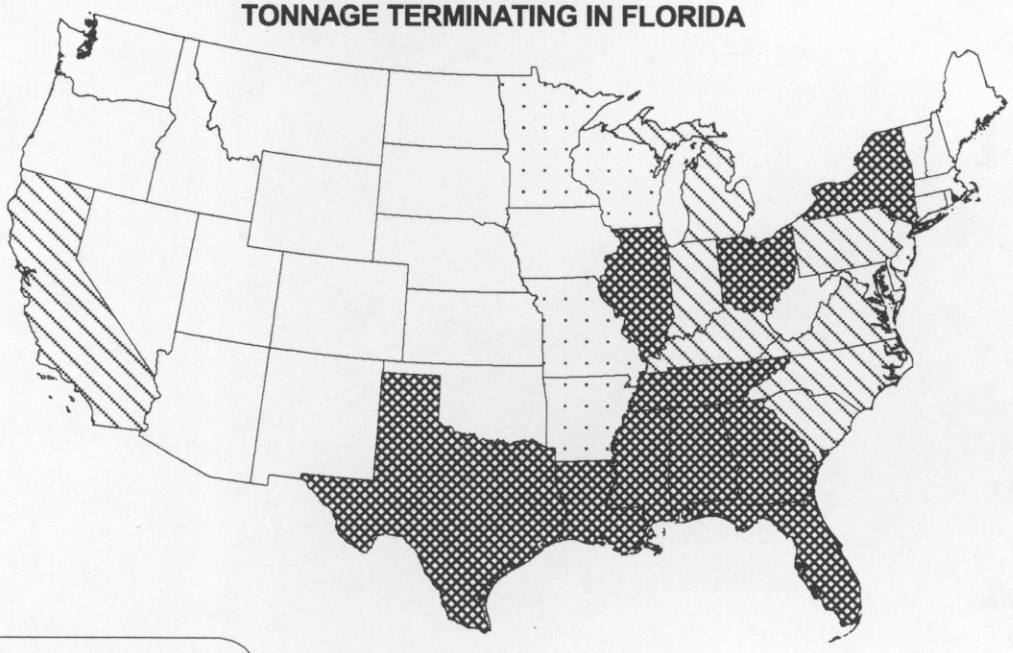
Consideration of diversion of truck traffic to rail transport normally begins with conventional intermodal traffic, that of trailers or containers being transported on rail equipment (TOFC/COFC). Other truck movements, principally commodities in bulk form, are more adaptable to being transported in rail cars than by TOFC or COFC. These shipments can be transloaded at bulk transfer facilities.

One traffic movement type, that relating to short-haul transportation, is generally not considered in this light as the common perception of rail transportation is long haul. Rail short-haul moves, however, are more common than thought and work well when a volume demand exists between origin and destination, such as a mine and a production facility or a seaport, for example. Florida's intrastate traffic provides many examples of this type of transportation demand.

[1] Double counts intrastate traffic, once at county of origin and again at destination county.

TRUCK TRAFFIC FLOWS

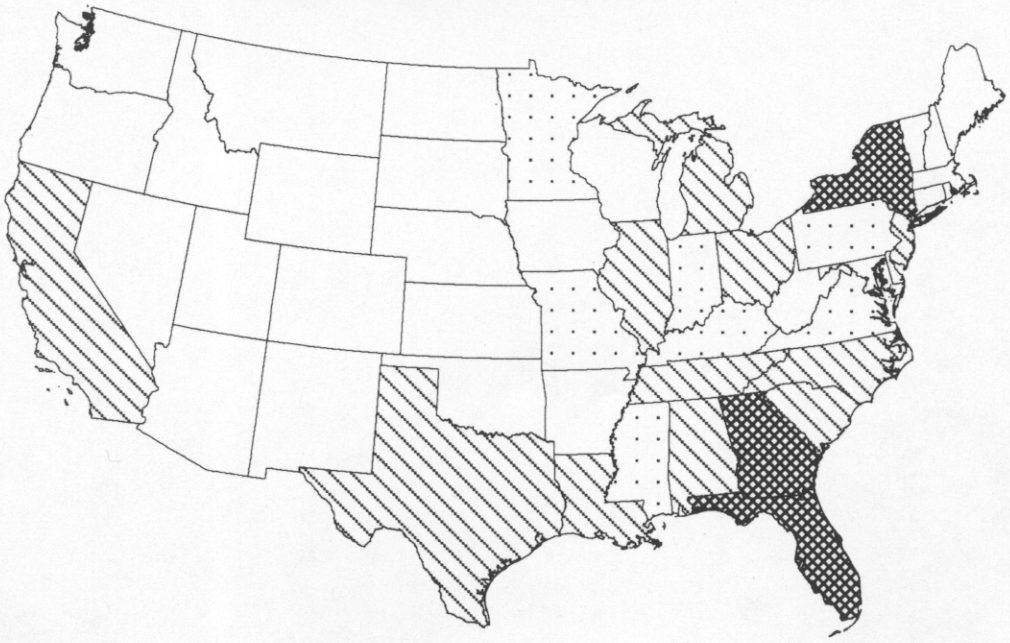
ORIGIN OF DOMESTIC AND INTERNATIONAL TRUCK FREIGHT TONNAGE TERMINATING IN FLORIDA



LEGEND

- <500,000 Tons
- 500,000 - 1,000,000 Tons
- 1,000,001 - 2,500,000 Tons
- >2,500,000 Tons

DESTINATION OF DOMESTIC AND INTERNATIONAL TRUCK FREIGHT TONNAGE ORIGINATING IN FLORIDA



Source: 1998 Reebie Data

Exhibit 4-3

Total Domestic and International Truck Tonnage by County

LEGEND

Tons:

- 0 - 5,000,000
- 5,000,001 - 20,000,000
- 20,000,001 - 40,000,000
- more than 40,000,000

Source: Reebie Associates data compiled by Wilbur Smith Associates

Exhibit 4-4

The potential for conversion of the state's truck traffic to rail is considered by each of the three general categories mentioned above. The discussion also includes suggestions for additional investigation.

TOFC/COFC

Determination of the potential for Florida truck traffic to move as rail-highway intermodal is based on a screening process. The process uses criteria which represent characteristics of intermodal shipments.

Distance - This form of intermodal movement, as stated previously, is predominately long-haul transportation. The minimum distance is subject to debate and arguments can be made for virtually any distance from 500 to 1,000 miles. The distance criterion is based on generating enough operating savings on the rail haul to cover the added costs of having to lift and ground the trailer/container. For purposes of this analysis, a distance of 750 miles was established as the minimum.

A search of FDOT's Reebie database revealed a total of 62.7 million tons, or 51 percent of the 123 million tons of out-of-state truck traffic, were found to meet this criterion. Not all of the 62.7 million commodity tons, however, are likely candidates for conversion to truck-rail intermodal movement. The commodities that are likely candidates are those that are packaged for shipping such that they can be readily loaded into either a truck semitrailer (typically a dry van) or a container. Unlikely candidates are generally commodities shipped in bulk form. Because of sub classifications within each commodity group, this determination is best performed at a 3- or 4-digit STCC level, but only the 2-digit STCC was available in the FDOT dataset.

Volumes – As stated earlier, intermodal transportation is driven by volume. The minimum level, again subject to debate, equates to basically a trainload five times a week. Since the analyses are based on use of existing facilities, this minimum volume does not apply, but does provide insights for new service considerations.

Commodities - For the 2-digit level, the target shipments, for the most part, are commodities with a STCC of 20 and higher (see Appendix D) with the exception of hazardous waste and materials and local secondary shipments.. The truck movements meeting the distance criterion were then sorted by commodity code. It was discovered that the resulting traffic was concentrated in 15 states[2] which accounted for 67 percent of the over 750-mile shipments. The continuing effort was directed at these states.

Rail Network Fit – Data for the 15 states were then compared with TOFC/COFC movements obtained from the Surface Transportation Board's (STB) 2001 Waybill Sample. Good matches by state were found with a few exceptions. Significant volumes of TOFC/COFC traffic were found moving between Florida and two states under the 750-mile criterion, Georgia[3] and South Carolina. Weak matches were found to exist with Indiana, Kentucky, New York and Texas. Texas lies off of the rail system of the two major interstate carriers serving Florida, CSXT and NS. Some limited Texas locations, however, are reached by the extended intermodal system of CSXI which contracts with other rail carriers, and by NS which has an intermodal agreement with Kansas City Southern (KCS) for Texas service via a connection at Meridian, Mississippi (see Exhibit 2-4) as well as other interline agreements.

A slightly different situation exists in New York in that terminals serving the largest truck market, the New York City metro area, lie in nearby New Jersey. Other concentrations in New York State lie in areas which suggest they well may be cross-border Canadian traffic. Similarly, in Indiana, some areas are most likely served from Chicago ramps. Kentucky's truck traffic is more widespread with only about one-third of concentrations readily accessible to rail intermodal facilities.

Out-of-Route Mileage - Another competitive rule of thumb in rail-highway intermodal transportation is that traffic should not incur out-of-route mileage (circuity) of more than 10 percent. Using the 750-mile minimum land distance, this rule-of-thumb would indicate that the shipments should originate and terminate no more than 75 miles

[2] California, Illinois, Indiana, Kentucky, Louisiana, Maryland, Michigan, Missouri, New Jersey, New York, Ohio, Pennsylvania, Tennessee, Texas, and Wisconsin.
[3] FEC markets its second morning "Hurricane" service to Atlanta in partnership with NS, and is looking to provide a similar product in the I-95 corridor with CSX (*Traffic World*, April 7, 2003).

from an intermodal facility. Assuming that one-half of that mileage would occur at each end of the move and allowing some latitude equates to 35-50 miles at each end. Exhibit 4-5 depicts county-level origin-destination volumes for out-of-state truck traffic and a circle with a 50-mile radius from existing rail intermodal facilities. Note that the major truck-trip generating counties fall within these areas. Geographic gaps exist, however, principally along the Southwest coast and through the Panhandle although the western extremes of the Panhandle are close to Canadian National and CSXI terminals in Mobile, Alabama.

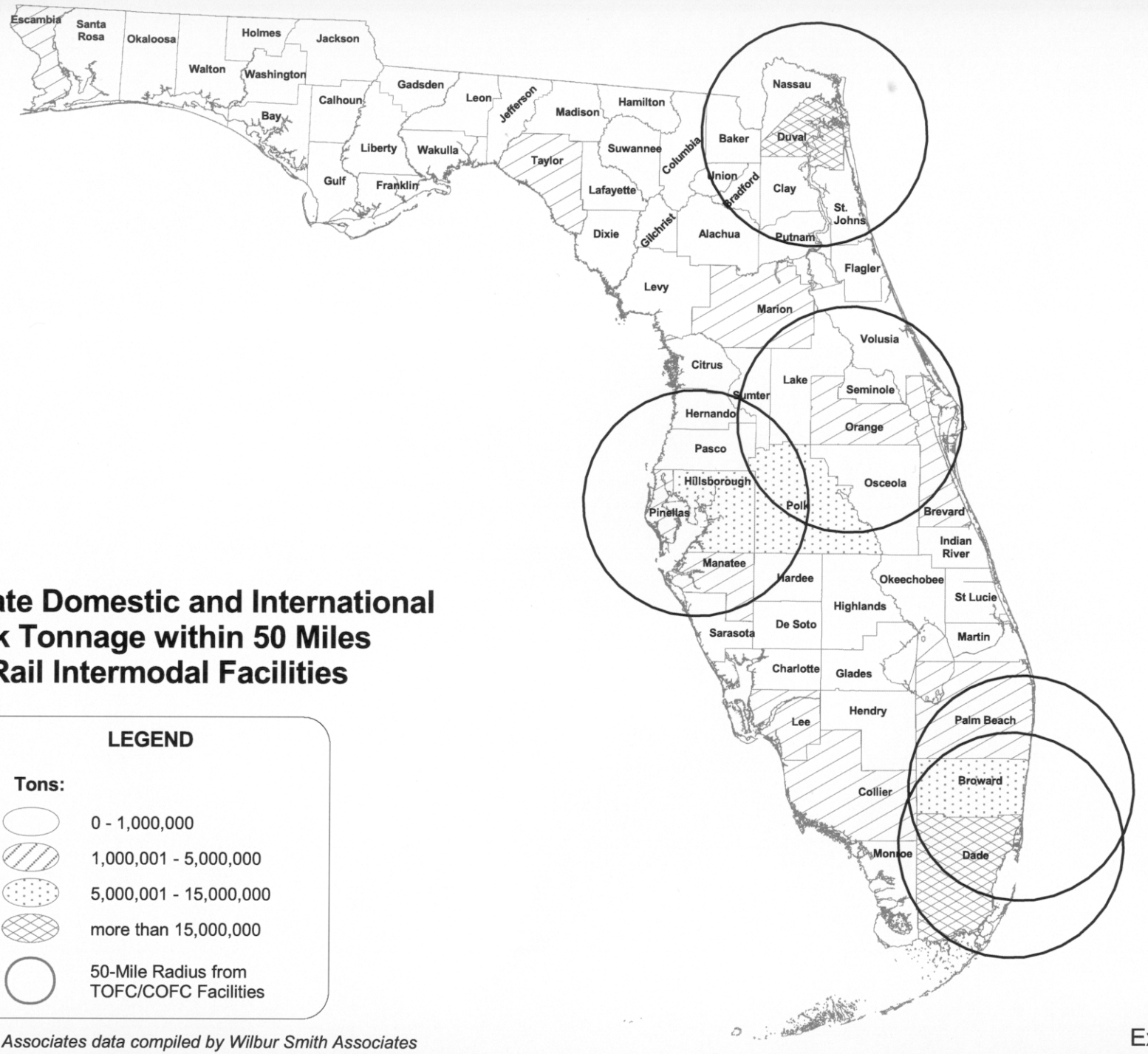
County-level data were used in the analysis out of state as a proxy for the local dray criterion. Further analysis of truck traffic meeting both the mileage and commodity criteria revealed that two-thirds of the traffic meeting the first two criteria moved between Florida and out-of-state points with rail-served intermodal service.

Balance – A balanced flow of traffic is important for both equipment utilization and financial viability. As evident from the discussion of Florida's truck traffic, inbound shipments are almost double (a ratio of 1.85) outbound. Examination of current TOFC/COFC traffic (2001 STB Waybill Sample) depicts very much the same relationship with a ratio of 1.82.

Based on the analysis of truck traffic, however, the flows are not unbalanced to all markets, e.g., California and the New York – New Jersey market, Pennsylvania, Michigan and Missouri are exceptions. In addition, the unbalance provides an opportunity for intermodal as an alternative for truckers to serve the Florida market without tying up drivers and tractors according to the FEC[4].

Conclusion – Half of the truck traffic which crossed Florida's borders in 1998 traveled distances in excess of those generally accepted as necessary to make TOFC/COFC a viable option. Many of these flows also involve commodities which are intermodal-friendly, and are shipped to or from locations with existing intermodal

[4] Traffic World, April 7, 2003.



Out-of-State Domestic and International Truck Tonnage within 50 Miles of Rail Intermodal Facilities

LEGEND

Tons:

- 0 - 1,000,000
- 1,000,001 - 5,000,000
- 5,000,001 - 15,000,000
- more than 15,000,000
- 50-Mile Radius from TOFC/COFC Facilities

Source: Reebie Associates data compiled by Wilbur Smith Associates

Exhibit 4-5

service.[5] A total of 28 million tons equating to 22 percent of all out-of-state truck meet all of the criteria. Based on average intermodal unit weights, these flows represent 1.75 million trucks on an annual basis.

Analysis of existing rail intermodal flows revealed several out-of-state points with significant flows which travel shorter distances than the 750 miles used in the screening process. These markets combined with potential new developments in short-haul intermodal such as the Canadian Pacific Railway's Expressway[6] increase TOFC/COFC potential.

Bulk Transfer

Much less is known about the transportation characteristics of commodities transloaded at bulk transfer facilities. The commodity groups moving through bulk transfer facilities, based on data received through a survey conducted by FDOT as part of this study, are comprised of some of the same ones as TOFC/COFC such as food-grade products; chemicals and allied products; plastics; clay, concrete, glass, or stone products; and waste or scrap materials. The products are, however, shipped in bulk rather than packaged form. Other commodities, more typically shipped in bulk, not included in those for TOFC/COFC also move through these facilities such as nonmetallic minerals and mineral products.

There is not a good way to trace carloadings handled at these facilities through the STB's Waybill Sample as they are not unique shipments such as containers and trailers. Many other industries use the same products, and with the majority of the facilities located in large urban areas, facility-specific traffic cannot be separated from that attributable to the remainder of the region. For purposes of this study, the truck traffic which might be diverted to these facilities is considered to fall into the same

[5] Florida's intermodal activity is somewhat limited in the I-95 corridor north of Washington, DC due to a number of tunnel and bridge clearance restrictions which prohibit the use of double-stack shipments (although there are indications that the market is for trailers not containers). These restrictions, along with other "choke points," are being addressed by the I-95 Corridor Coalition. For details, see the *Mid-Atlantic Rail Operations Study*, April 2002.

[6] A refinement of CSX's former Iron Highway, Expressway uses flat cars designed for the service with drive-on, drive-off ramps which produce lower terminal costs and therefore reduce the haul distance needed to overcome the "lift" costs. It is currently being used in a 560-mile corridor (Toronto to Detroit) with three intermediate stations.

general category as those assigned to the more conventional rail-highway TOFC/COFC facilities.

Seaports

Seaports generate large volumes of traffic and are hubs for intermodal activity. They offer the potential for increased rail use in both short- and long-haul categories. As Florida's seaports now function, the short-haul commodities are bulk commodities, principally phosphate and phosphate products. Long-haul transportation demand consists of marine containers moving to and from out-of-state locations. General cargo falls somewhere in between. As discussed earlier, most of Florida's rail-served seaports fall into the category of either container or bulk ports although there is a mixture at a few, and others are trying to diversify.

Based on an assessment performed by the FSTED Council in 1995, about 20 percent of Florida port inland transportation demand is met by rail. Projected growth of waterborne shipments, especially as they relate to Caribbean and Latin American trade will grow both rail traffic volumes and capture rate. The later is due to Florida's geographic location with its ports being the closest to expected future demand and related longer distance inland transportation needs.

Intrastate Potential

Short-haul volume movements are characteristic of Florida's traffic. Intrastate movement of bulk commodities, namely various nonmetallic minerals, principally phosphate rock and lime rock, is a very large part of Florida's freight traffic. In fact, this broad commodity group accounts for 76 percent of all rail intrastate traffic in Florida as measured in tons, and 45 percent of all intrastate truck traffic.

Mineral Production Volumes – Florida is the country's largest phosphate rock mining state, ranks third in the production of crushed stone, fifth in fullers earth, and seventh in Portland cement[7] (derived from high purity limestone). Large quantities of

[7] U.S. and Florida Geological Survey.

both industrial and construction sand and gravel are also produced. Production data for the Year 2000 are shown in Exhibit 4-6.

Exhibit 4-6
SELECTED NONMETALLIC MINERAL PRODUCTION
Florida 2000

Commodity	Million Tons
Phosphate Rock	32.0
Sand and Gravel	27.5
Crushed Stone	102.3
Cement	4.7

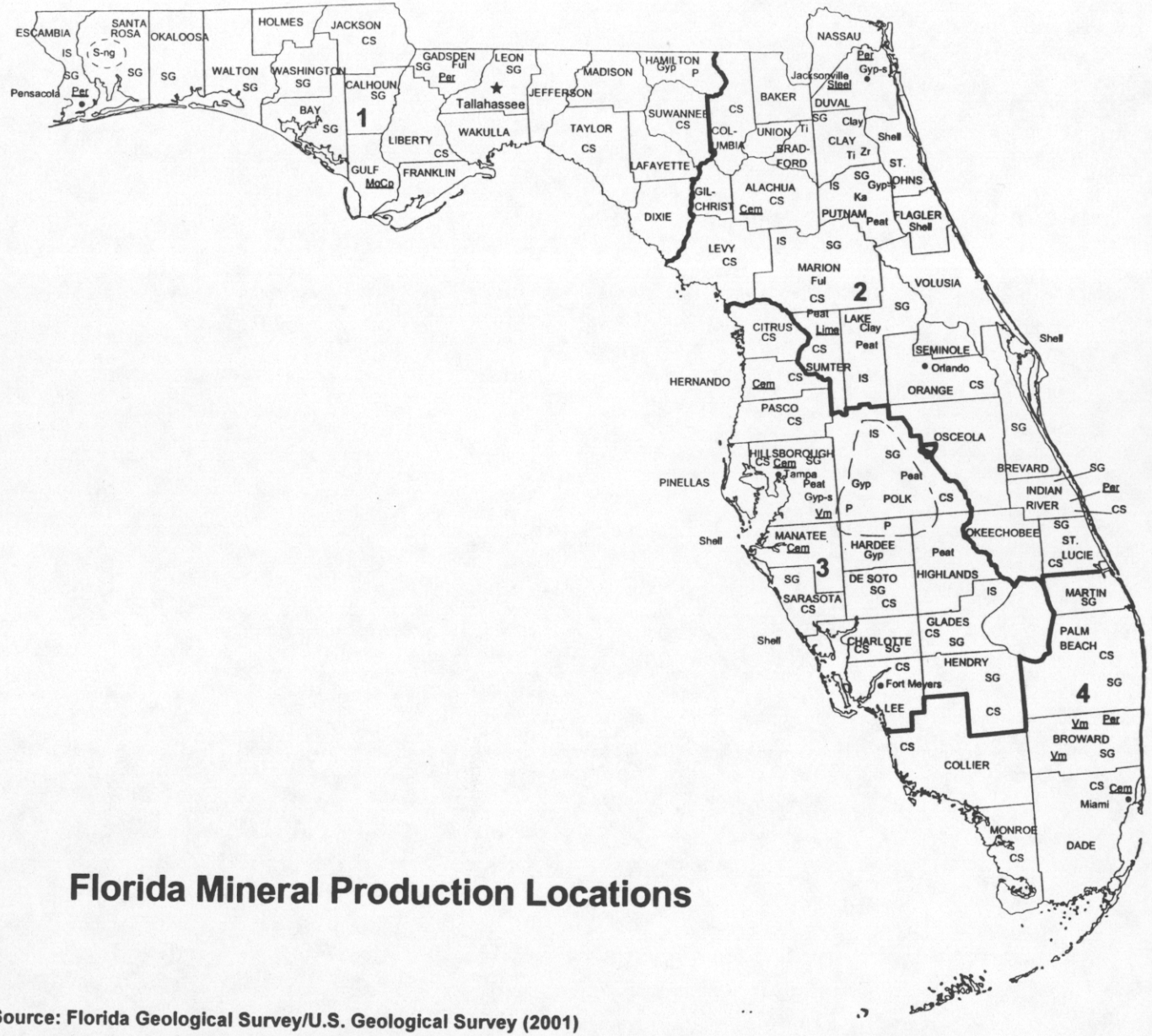
Source: U.S. Geological Survey

Florida phosphate rock accounts for one-fourth of international phosphate needs and three-fourths of domestic needs. Approximately 95 percent of the commodity is used in the manufacture of fertilizers. Crushed stone, primarily limestone, is used principally for concrete and asphalt aggregate, rip rap, and roadbase material.

Production Location – Exhibit 4-7 depicts mineral activity by type and county location. Although production is virtually statewide, as shown, there are concentrations in limited areas. Phosphate is mined primarily in Polk County with some overlap into Hardee County. Limestone production is centered in the Miami-Dade and Brooksville-Hernando County areas, and quality silica sand lies in a ridge in Central Florida (roughly from Putnam to Glades County) formed from historic ocean deposits.

Transportation Flows – Transportation of STCC 14, nonmetallic minerals, contributes large volumes to both rail and truck shipments as stated previously. In 2000, rail transport accounted for 39 million tons of Florida production and trucks handled 164 million tons in 1998. With little exception, the demand was for intrastate transport. Rail movements occur in volume within the Bone Valley Phosphate Region (mine to chemical plant[8]), and between the region and Tampa Bay port terminals. Limestone aggregates

[8] Process phosphate rock into finished phosphate products.



LEGEND

- County boundary
- ★ Capital
- • City
- 1 —— Crushed stone/sand and gravel districts

MINERAL SYMBOLS (Major producing areas)

Cem	Cement plant
Clay	Common clay
CS	Crushed stone
Ful	Fuller's earth
Gyp	Gypsum
Gyp-s	Synthetic gypsum
IS	Industrial sand
Ka	Kaolin
Lime	Lime plant
MgCp	Magnesium compound plant
P	Phosphate rock
Peat	Peat
Per	Perlite plant
S-ng	Sulfur (natural gas)
SG	Construction sand and gravel
Shell	Shell
Steel	Steel plant
Ti	Titanium minerals
Vm	Vermiculite plant
Zr	Zirconium
◌	Concentration of mineral operations

Florida Mineral Production Locations

Source: Florida Geological Survey/U.S. Geological Survey (2001)

Exhibit 4-7

are transported in large multi-car and train - load movements from quarries to distribution yards located throughout the state.

While both rail and truck moves were widespread, there were concentrations in a few counties. Polk and Dade County were the principal source of rail origins, while Escambia, Glades, Lake, Marion, Polk and Putnam Counties dominated truck origins. These counties accounted for 73 percent of the 203 million rail and truck tons mentioned earlier. Principal destinations were comprised of Duval, Escambia, Hardee, Hillsboro, Lee, Orange, and Polk Counties.

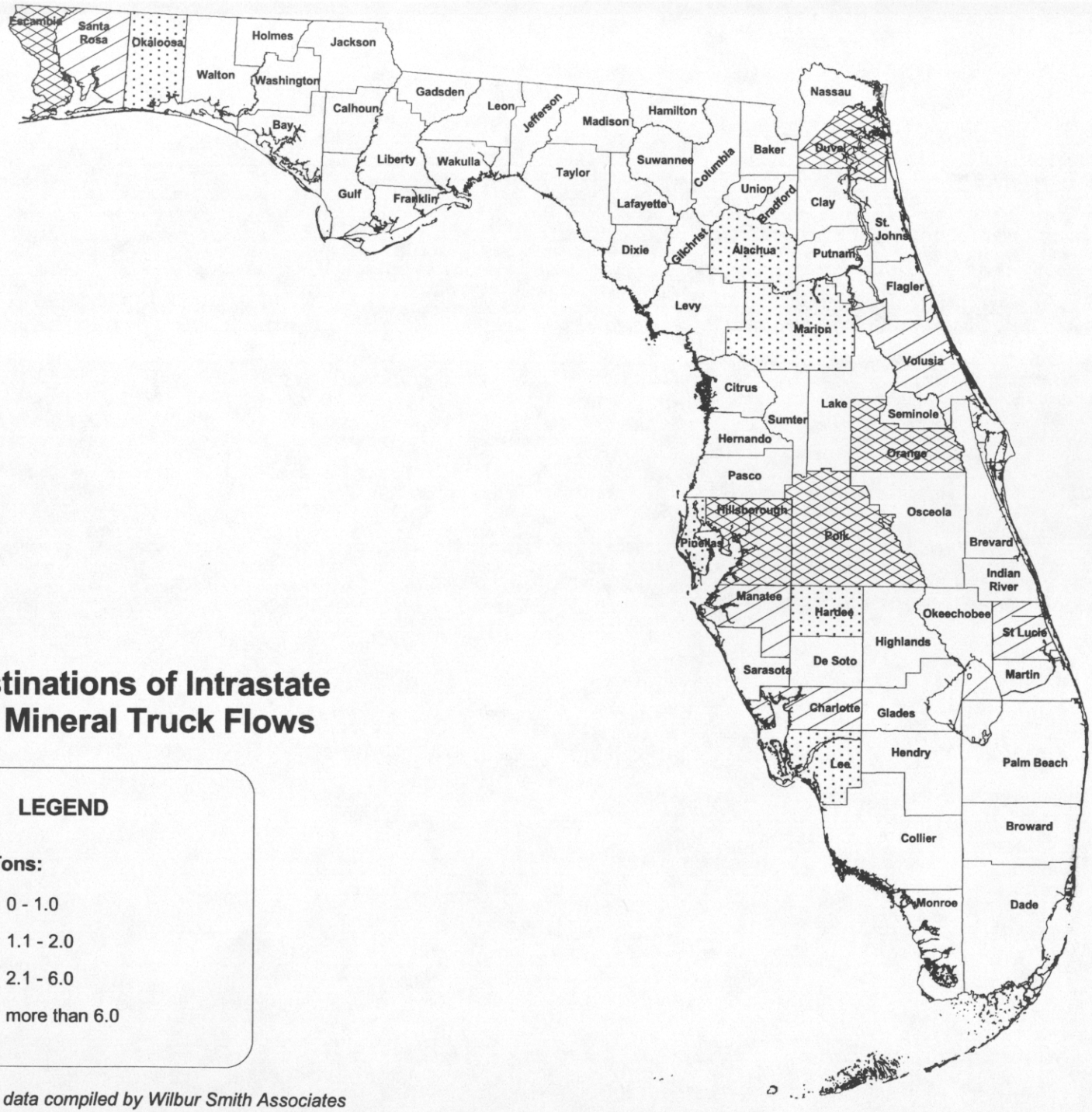
Exhibit 4-8 graphically depicts the destination county of major intrastate truck flows of nonmetallic minerals. The top tier of counties exhibited account for 60 percent of statewide totals for the commodity and movement type, and 24 percent of all intrastate truck transport, over six times as large as the next most significant intrastate truck commodity. Origins of the traffic are not shown because of disclosure concerns.

Conclusions - Examination of origins and destinations reveals several sizeable flows that move east and west and are not served by the existing rail system without very circuitous routings. The circuitous routings make rail transportation uncompetitive. There are several major flows, however, some 40 to 50 million tons (2.1 – 2.6 million trucks) per year which appear to fit the rail system and should be explored further.

SUMMARY

There are a number of opportunities within Florida for increased use of the rail system for freight transportation. They exist both in anticipated growth In freight demand and potentials for conversion of truck traffic to rail.

The analyses conducted and discussed in the preceding pages identified between 68 and 78 million tons of freight moving annually (1998) by truck which are candidates for rail movement. The candidate tonnage represents 3.9 to 4.4 million truckloads. Capture rates ranging between 5 and 20 percent (200,000 – 900,000



Principal Destinations of Intrastate Nonmetallic Mineral Truck Flows

LEGEND

Million Tons:

- 0 - 1.0
- 1.1 - 2.0
- 2.1 - 6.0
- more than 6.0

Source: Reebie Associates data compiled by Wilbur Smith Associates

Exhibit 4-8

truckloads) have been indicated in other studies. Overall truck traffic in 2020 has been forecast to increase by 81 percent, almost doubling anticipated truckloads.

Truck traffic is concentrated in Florida's major urban areas, the same locations experiencing highway mobility problems. Therefore, while the truck volumes indicated may not appear to represent large impacts statewide, they present a different picture at the local level.

Chapter 5
RAIL ACCESS NEEDS

As stated earlier, Florida's intermodal system is currently being examined in an on-going statewide effort by the Florida Department of Transportation to define, and determine means to fund and manage a Strategic Intermodal System (SIS). There are also several corridor and regional mobility studies on-going in the state. This study is intended to compliment the others by examining in more detail one individual mode, rail, and *to identify the "gaps" or connectivity issues in rail service to Florida's rail intermodal facilities and define solutions*. Rail access issues relating to the three general categories of rail or rail-served intermodal facilities were found to lie largely with the seaports.

TOFC/COFC

All of the TOFC/COFC facilities are either located on railroad mainlines or have direct access to them. Problems with these facilities are related more to location and highway access than rail access. Several of the facilities were built on or adjacent to railroad yard properties, not greenfield sites selected for that purpose. Therefore, roadway access is not always the best, and several of them lack room to expand. These later issues are currently being examined and addressed in other ongoing FDOT study efforts.

Bulk Transfer

The railway bulk transfer facilities were located and constructed much the same as the TOFC/COFC facilities on or adjacent to railroad yard property, while the independent facilities are located in a variety of locations. Several of these facilities in Jacksonville are located on industrial leads in the industrial/port corridor (along Talleyrand Avenue) as is the independent terminal in Tampa. The NS Miami facility is located on industrial trackage in the Hialeah area. No known specific rail access issues exist at the bulk facilities although there are expansion problems.

Seaports

Unlike the first two facility categories, rail access issues involving the state's seaports do exist. Many of the issues are long-standing and have been documented in other study efforts as well as being included in on-going assessments such as the *Florida Seaport Competitive Issues Study*[1] and the assessment of Southeast Florida's regional transportation connectivity requirements cited in Chapter 3[2]. The latter effort is to develop "a coherent strategy for funding priority intermodal connectivity projects." Issues on a port-to-port basis are discussed below.

Port Everglades – The FEC intermodal facility at Ft. Lauderdale, located adjacent to the railroad's main track, is small and lacks room for expansion. Broward County and the Port have acquired 271 acres of property adjacent to the Southport terminal for container handling capacity expansion, including a rail-served Intermodal Container Transfer Facility (ICTF). An overpass for Eller Drive, the port's entrance roadway, is a key component for not only vehicular access but efficient rail access to the ICTF.

Port of Fernandina – No rail issues were identified for this port.

JAXPORT – The Port of Jacksonville has rail access projects involving two terminals, Talleyrand and Dames Point. The Talleyrand terminal has four on-dock intermodal tracks. A holding yard and a second lead track to the facility (parallel to the existing track) are needed to support on-dock operations and increase access flexibility. The estimated cost of the Talleyrand improvements is $4.85 million.

The Dames Point project is to provide access for new terminal development. The estimated cost is $2.5 million, but could be more depending on actual development over time.

[1] Being prepared for the FSTED Council by Wilbur Smith Associates and J. D. Sanchez Consulting.
[2] Being performed by CH2MHILL and J. D. Sanchez Consulting in collaboration with the FDOT, the FSTED Council, and the three Southeast Florida ports.

Port Manatee – Traditionally a bulk-oriented port, Port Manatee is served by CSXT, with on-port switching preformed by its own terminal company. The Port is diversifying its operations by adding an intermodal container yard, facilities for refrigerated containers, and cold storage. Additional property has been acquired for cargo operations. The port is pursuing two transportation initiatives, one relating to a truck highway connection with Tampa and the other a rail marketing effort. In addition, a third party is examining the feasibility of establishing an intermodal operation across US 41 from the Port.

Miami – While the Port of Miami has direct rail service, it is only occasionally used. The majority of the port's rail traffic is drayed to and from the FEC's Hialeah intermodal facility. The dray does not provide ready access due to traffic congestion along the route.

Several proposals have been discussed to address the problem. One relates to construction of a tunnel under Biscayne Bay to connect the island port to the mainland, replacing the existing bridge, and extending far enough inland to avoid the traffic impacts now generated on the roadway system in the immediate mainland area. Plans have been discussed for both rail and truck in the tunnel, although it would most likely be limited to highway vehicles. Various termini have been discussed for the mainland end of the tunnel, one of them at the Opa-Locka Airport which would be converted to a rail-highway intermodal facility. Another potential site for an off-dock intermodal facility, the FEC's former Buena Vista Yard property, was recently sold for other commercial development. Another approach, a short-term solution, would create a truck route from the port to SR 836 (Dolphin Expressway) over local streets.

Port of Palm Beach – This port also has direct rail service with on-site switching provided by its own terminal railroad. The most immediate rail access problem relates to an at-grade crossing with SR 710 which is blocked during certain switching operations at the Port. Additional track capacity at the terminal, estimated to cost $1.8 million, is needed to address the problem. The crossing is also subjected to multiple mainline train movements and a grade separation has been suggested as the ultimate solution.

Port Panama City – There are immediate rail needs related to this port as well as longer term needs that are yet as well defined. On-terminal, a track extension that would create a loop has long been in the plans. The plans remain and have been enlarged with addition of trackage and facilities (pit and scale) for a bulk terminal. The loop would facilitate on-site switching and reduce rail movements across US 98. Completion of the loop track is estimated to cost $603,000 with the rest of the bulk facility needs increasing the total cost to $1,330,000. A longer term plan calls for a grade separation of the railroad and US 98.

Access to the port is via the Bay Line. The railroad has improvement needs on its main line between Panama City and its Class 1 connections in Dothan Alabama and Cottondale Florida to meet the increase in gross carload weights to 286,000 lbs., the new railroad industry standard. The improvements relate to the replacement of 21 miles of rail which is too light and worn for the long-term impact of the heavier carloadings. The project, including associated timbering and surfacing, is estimated to cost $7.7 million.

Port of Pensacola – One of the options the Port is exploring to develop new business is a bulk handling facility. A key component for development of the facility is a rail loop track to be extended from existing on-terminal trackage. The estimated cost of the trackage is $600,000. The cost for all of the required components for the facility is in excess of $14 million.

Tampa - High priority improvements identified by the Port consist of a variety of roadway projects that range from turn lane construction to a new expressway connector[3]. Two specific off-port rail access projects are included in the project list. Both involve grade separations.

The first is an overpass to carry US 41 over CSXT port lead tracks that now cross at-grade. Delays to both port and non-port vehicular traffic are the reason cited for the improvement. The estimated cost is $11 million. The second is a grade separation for Causeway Boulevard and CSXT's north-south line which runs from Tampa to

[3] Tampa Port Authority Intermodal Transportation Plan.

Bradenton, and from which spring lead tracks to both port and private terminals. Causeway Boulevard is a major connector to I-75 for port traffic. This grade separation is estimated to cost $15 million.

Needs Summary

As evident from the foregoing discussion, many of the seaport rail access issues have been on-going for some time and final solutions have yet to be formulated. Some have been addressed and conceptual approaches adopted, but engineering has not been performed nor other than gross cost estimates developed. Those that have been subjected to more examination are listed in Exhibit 5-1 below. The total estimated cost of the projects is expected to total $70.55 million as shown in the exhibit.

Exhibit 5-1
INTERMODAL RAIL ACCESS FUNDING NEEDS

Port	Project	Estimated Cost (million dollars)
Everglades	ICTF	$13.5
	Eller Dr. Overpass	13.0
Jacksonville	Dames Point Trackage	2.5
	Talleyrand Terminal Trackage	4.85
Palm Beach	Lead Track Capacity	1.8
Panama City	Loop Track	0.6
	Bay Line Rail Replacement	7.7
Pensacola	Track Extension	0.6
Tampa	US 41 Overpass	11.0
	Causeway Boulevard Overpass	15.0
	TOTAL ESTIMATED COST	**$70.6**

APPENDIX A

TOFC/COFC Facilities

Ft. Lauderdale – FEC Intermodal Terminal

☞**TOFC** ☞**COFC** ☞**Stack Car**

Operator:
Florida East Coast Railway
3125 S. Andrews Ave.
Fort Lauderdale, FL 33316

General Tel: 954-524-6031
General Fax: 954-523-3659

Contact: D.T. McDermott

Hours of Operation:
Mon-Fri, 24 hours,
Sat, 12:01 a.m. to 2 p.m.
Sun, 5:30 a.m. to 2:00 p.m. and 8:00 p.m. to 11:59 p.m.

Rail Carrier: FEC

Size: 13 acres

Bottom & Top Lifts
?? 1 Side Lifts:
?? 2 Overhead Cranes
?? 3 Top Lifts:

Source: IANA's 1997 Intermodal Terminal Directory-1998 Supplement

Jacksonville – CSX Intermodal Terminal

☞**TOFC** ☞**COFC** ☞**Stack Car**

Operator:
CSX Intermodal
5902 Sportsman Club Road
Jacksonville, FL 32219-3395

General Tel: 904-695-7000
General Fax: 904-781-2477

Contact: Neal Stechman, CSXI

Tel: 904-695-7002

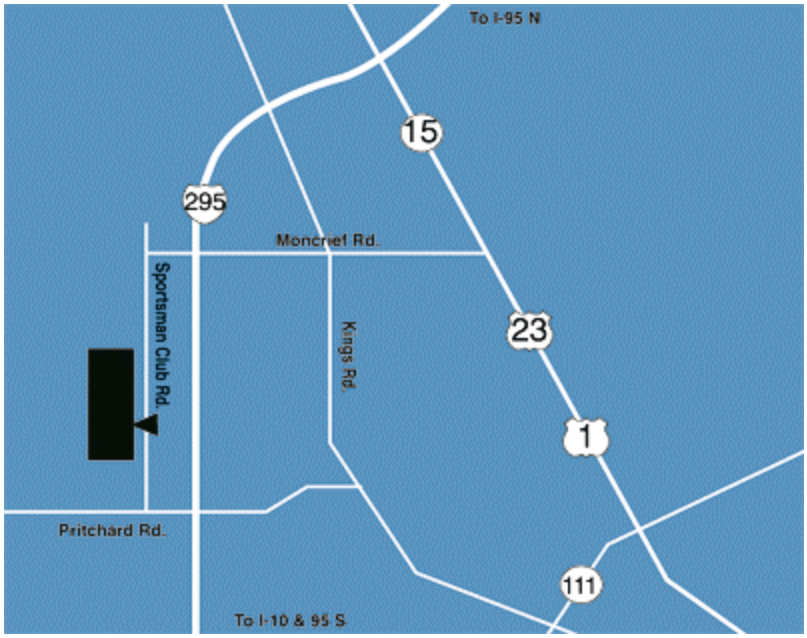
E-mail: neal_stechman@csx.com

Hours of Operation:
Seven days per week, 24 hours

Rail Carrier: CSXT

Size: 224 acres

Bottom & Top Lifts
- 5 Side Lifts
- 0 Overhead Cranes
- 0 Top Lifts



Directions:
I-10 to I-295 North. Take Pritchard Road exit West. Turn right onto Sportsman Club Road.

Sources: IANA's 1997 Intermodal Directory and CSXI web site.

Jacksonville (Bowden) – FEC Intermodal Terminal

☞**TOFC** ☞**COFC** ☞**Stack Car**

Operator:
Florida East Coast Railway
6140 Phillips Highway
Jacksonville, FL 32216

General Tel: 904-279-3154
General Fax: 904-279-3179

Contact: Darrell Mattox

Tel: 904-279-3152

Hours of Operation:
Seven days per week, 24 hours

Rail Carrier: FEC

Size: 42 acres

Bottom & Top Lifts
?? 0 Side Lifts:
?? 4 Overhead Cranes
?? 4 Top Lifts:

Source: IANA's 1997 Intermodal Terminal Directory-1998 Supplement, Official Railway Guide

Jacksonville - NS Intermodal Terminal

☞**TOFC** ☞**COFC** ☞**Stack Car**

Operator:
NS Intermodal
4267 1/2 North Edgewood Drive
Jacksonville, FL 32254

General Tel: (904) 366-1433
General Fax: (904) 366-1423

Contact: Kevin Hough

Hours of Operation:
Seven Days per week, 24 hours

Rail Carrier: NS

Size: 35 acres

Capacity & Parking:
(60) 89' Rail Cars
600 Wheeled Units
120 Stacked Containers

Bottom & Top Lifts
0 Side Lift
5 Overhead Cranes
0 Top Lift

Directions:
Take I-95. Go South on I-295. Go South on Route 1. Turn right on Edgewood Avenue. Turn right on Edgewood Drive.

Sources: IANA's 1997 Rail Intermodal Directory-1998 Supplement and NS web site.

Miami – FEC Intermodal Terminal

☞**TOFC** ☞**COFC** ☞**Stack Car**

Operator:
Florida East Coast Railway
73000 N.W. 69th Ave. Road
Miami, FL 3316

General Tel: 305-889-5683
General Fax: 305-889-5550

Contact: J.A. Mursuli

Tel: 305-889-5643

Hours of Operation:
Seven days per week, 24 hours

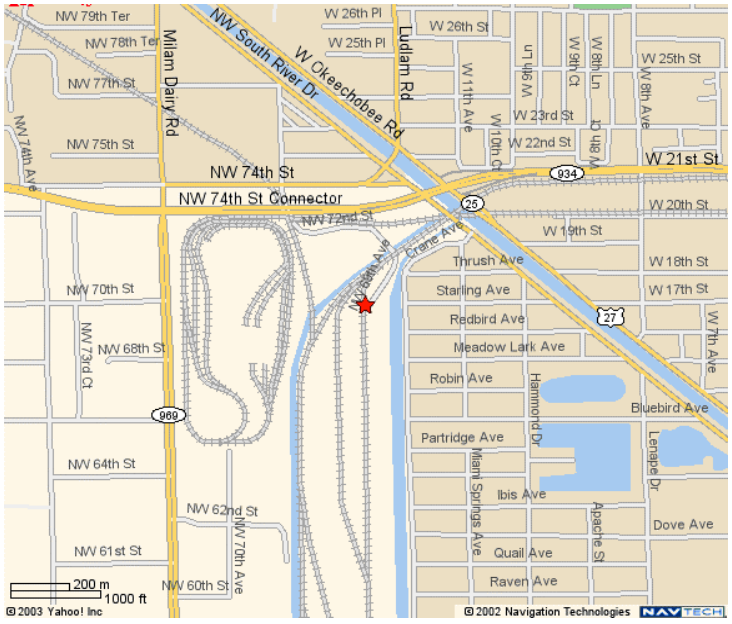
Rail Carrier: FEC

Size: 73 acres

Capacity & Parking:
?? (178) 89' Rail Cars
?? 1,250 Wheeled Units
?? 1,620 Stacked Containers

Bottom & Top Lifts
?? 3 Side Lifts:
?? 6 Overhead Cranes
?? 9 Top Lifts

Directions:
Take I-75 towards Miami. Take exit 1A for Florida Route 826 South/Palmetto Expressway towards Miami. Take exit for US-27/Okeechobee Road. Keep left at the fork in the ramp. Turn left onto Okeechobee Road. Turn right onto NW 67th Avenue. NW 67th Avenue becomes NW 74th Street. Turn left onto NW 69th Avenue. NW 69th Avenue becomes NW 72nd Street. NW 72nd Street becomes NW 69th Avenue.



Sources*:* IANA's 1997 Intermodal Directory-1998 Supplement, NS web site, and CSXI web site.

Orlando – CSX Intermodal Terminal

☞**TOFC** ☞**COFC** ☞**Stack Car**

Operator:
CSX Intermodal
8850 Atlantic Avenue
Orlando, FL 32824-7944

General Tel: 407-850-3550
General Fax: 407-850-3571

Contact: Kenny Langham, CSXI

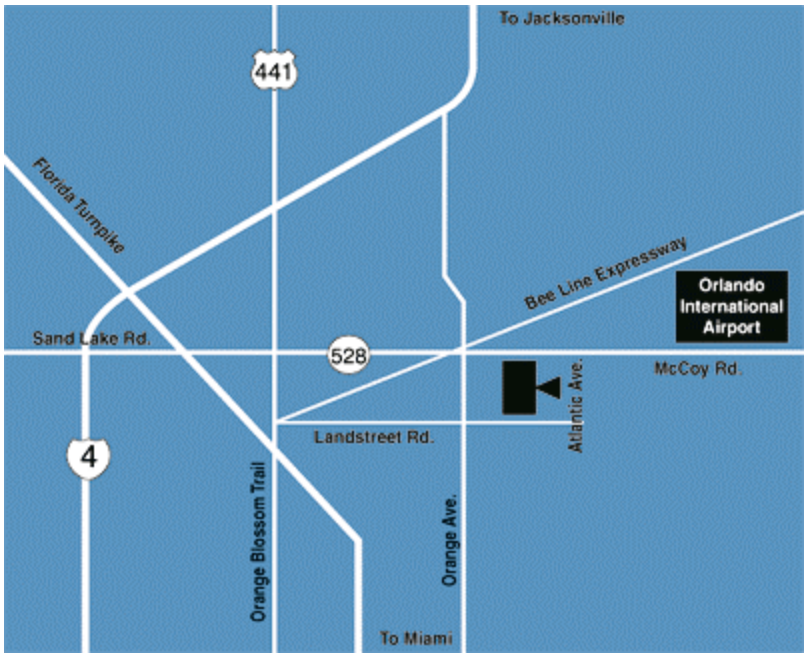
Tel: 407-850-3554
E-mail: kenny_langham@csx.com

Hours of Operation:
Mon-Sat 24 hours,
Sun closed 8 a.m. to 4 p.m.

Rail Carrier: CSXT

Size: 157 acres

Bottom & Top Lifts
?? 2 Side Lifts:
?? 0 Overhead Cranes
?? 0 Top Lifts:



Directions: South on Orange Avenue. Left onto Landstreet Road. Left onto Atlantic Avenue. Intermodal terminal is across from UPS terminal.

Sources: IANA's 1997 Intermodal Directory and CSXI web site.

Tampa – CSX Intermodal Terminal

☞**TOFC** ☞**COFC** ☞**Stack Car**

Operator:
CSX Intermodal
1901 North 62nd Street
Tampa, FL 33619-3131

General Tel: 813-626-5301
General Fax: 813-623-3408

Contact: Kenny Langham, CSXI

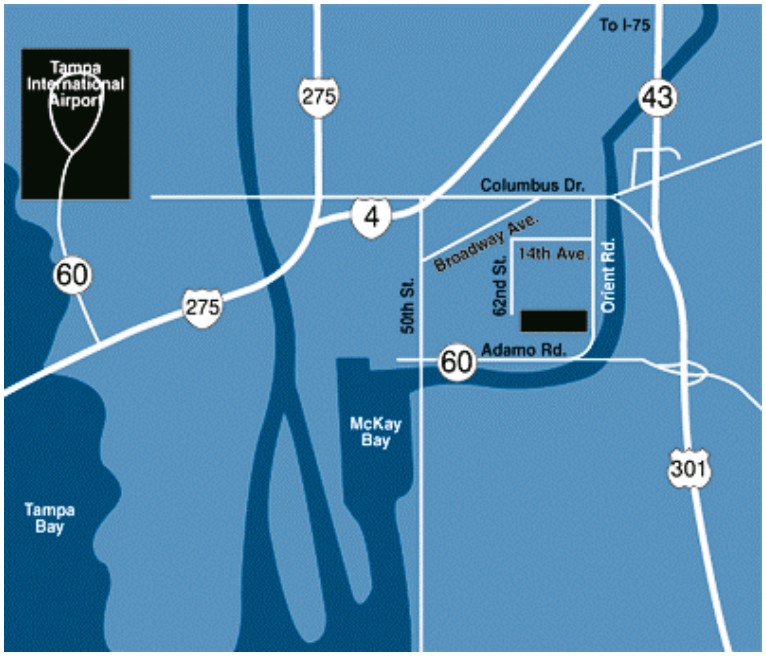
Tel: 407-850-3554
E-mail: kenny_langham@csx.com

Hours of Operation:
Mon-Thurs closed from 7 p.m. until 11 p.m.; Fri close @ 7 p.m.; Sat open @ 8 a.m. until 7 p.m.; Sun open @ 8 a.m.

Rail Carrier: CSXT

Size: 47 acres

Bottom & Top Lifts
?? 2 Side Lifts:
?? 0 Overhead Cranes
?? 0 Top Lifts:



Directions:
I-4 West -- Take exit #3. Turn left (or south) on 50th Street (US 41). Go to first red light. Take left (or east) on Broadway. Go approximately 12 blocks to 52nd Street and turn right (or south). Travel 62nd to dead end and the ramp entrance is on the left.
I-4 East -- Take exit #3. This will put you on Broadway. Go straight on Broadway to 62nd Street. The rest of the directions are the same as above.

Sources: IANA's 1997 Intermodal Directory-1998 Supplement and CSXI web site.

APPENDIX B

Bulk Transfer Facilities

Ft. Lauderdale - TRANSFLO

☞**Dry Bulk** ☞**Liquid Bulk**

Operator:
TRANSFLO
890 S.W. 21st Ave.
Ft. Lauderdale, FL 33312

Contact:
Samson Mathis, Terminal Manager

Tel: 954-584-3111
Fax: 954-5847-2622

Hours of Operation:
6 AM – 6 PM

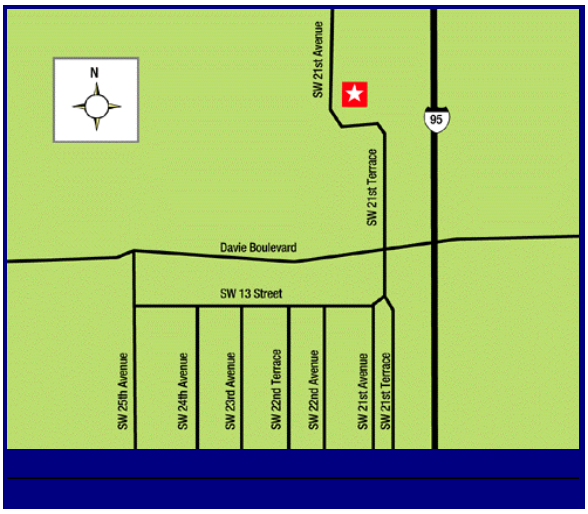
Commodities Handled:
1. Gases
2. Ocean containers
3. ISO tanks
4. Chemicals
5. Food products
6. Clay, concrete, glass or stone products
7. Waste products

Serving Rail Carrier: CSXT

Capacity: 55 railcars

Handling Equipment: air compressor, augers, belt conveyors, blowers, steam car heating, hot water heating, liquid pumps, blending meters, scrubbers, vacuum transfer (equipment subject to change)

Storage: available upon request



Source: The Official Railway Guide 2002 and CSXT TRANSFLO web site.

Jacksonville - Bulkmatic Transport. (NS Thoroughbred Bulk Transfer Terminal)

Type: ☞**Dry Bulk** ☞**Liquid Bulk**

Operator:
Bulkmatic Transport
3440 West 20th St.
Jacksonville, FL 32209

Contact:
Tammy Peterson, Terminal Leader

Tel: 904-783-3500
Fax: 904-786-2990
E-mail: tpeterson@bulkmatic.com
Web Site: www.bulkmatic.com

Commodities Handled:
1. Liquid & dry edibles
2. Dry chemicals
3. Minerals
4. Other bulk
5. Packaged
6. Plastics
7. Soda ash

Capacity: 56 railcars

Equipment: air compressor, blowers, steam car heating, heating hot water, heating steam, bulk transloaders, liquid pumps, truck scales, safety shower, vacuum transfer, inventory control

Storage: warehouse, covered storage, fenced, lighting, paved, security, spill containment, (Class II Steel Facility)

Serving Rail Carrier: NS

Source: The Official Railway Guide 2002, NS Website

Jacksonville – C&C Bulk Liquid Transfer Inc.

Type: ☞**Dry Bulk** ☞**Liquid Bulk**

Operator:
C& C Bulk Liquid Transfer Inc.
11005 Blasius Rd
Jacksonville, FL 32226

Contact:

Tel: 904-356-5320
Fax: 904-356-5328

Hours of Operation:
7AM to 5PM

Commodities Handled:
1. Acids
2. Caustics
3. Liquid chemicals
4. Liquid edibles
5. Petroleum products

Capacity: 45 railcars

Equipment: air compressor, augers, belt conveyors, blowers, steam car heating, hot water heating, liquid pumps, blending meters, scrubbers, vacuum transfer,

Serving Rail Carrier: CSXT

Directional Map:

Source: The Official Railway Guide 2002 and CSXT TRANSFLO web site.

Jacksonville – ITAPCO (NS Independent Transfer Terminal)

Type: ☞**Dry Bulk** ☞**Liquid Bulk**

Operator:
ITAPCO
3721 Talleyrand Ave.
Jacksonville, FL 32206

Contact:
Attn: Mac McNutt, Terminal Manager

Tel: 904-791-8822
Fax: 904-791-9155

Hours of Operation:

Commodities Handled:
1. Chemicals, liquid
2. Other bulk

Capacity: 20 railcars

Equipment: air compressor, bulk transloaders, liquid pumps, truck scales

Storage: covered storage, fenced, lighting, safety shower, security, spill containment, storage tanks

Serving Rail Carrier: NS

Source: The Official Railway Guide 2002, NS web site

Jacksonville – Petroleum Fuel & Terminal Co.

Type: ☞**Dry Bulk** ☞**Liquid Bulk**

Operator:
1961 East Adams St.
Jacksonville, FL 32202

Contact:

Tel: 904-358-2316

Hours of Operation:
7 AM - 5 PM Monday-Friday

Commodities Handled:
1. Gasoline
2. Distillates

Capacity: 4 railcars

Equipment: pumps

Serving Rail Carrier: CSXT

Water Service: tank barges & ships

Source: The Official Railway Guide 2002

Jacksonville - TRANSFLO

☞**Dry Bulk** ☞**Liquid Bulk**

Operator:
TRANSFLO Inc.
115 Druid St.
Jacksonville, FL 32254

Contact:
Tel: 904-332-3745 (Facility)

John Orr, Commercial Manager

Tel: 904-279-6284
Fax: 904-245-2141
E-mail: jorr@transflo.net

Hours of Operation:
6 AM to 6 PM (7 days)

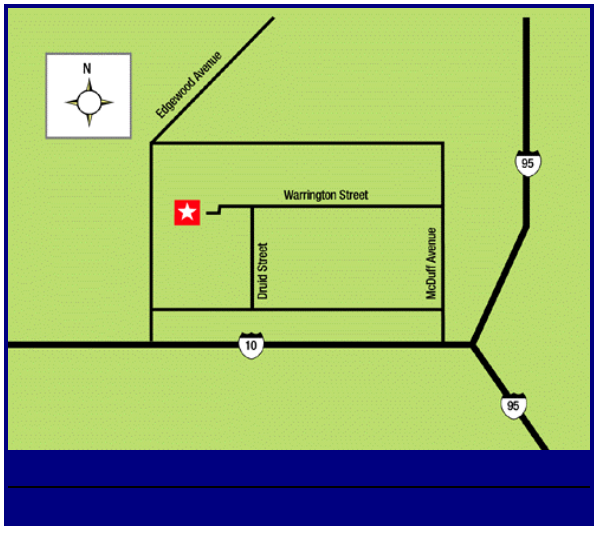
Commodities Handled:
1. Gases
2. Ocean containers
3. ISO tanks
4. Chemicals
5. Food products
6. Waste products
7. Clay, concrete, glass or stone products

Capacity: 49 railcars

Handling Equipment: air compressor, augers, belt conveyors, blowers, steam car heating, hot water heating, liquid pumps, blending meters, scrubbers, vacuum transfer (equipment subject to change)

Storage: Available upon request

Serving Rail Carrier: CSXT



Source: The Official Railway Guide 2002 and CSXT TRANSFLO web site.

Jacksonville – Westway Terminal Co., Inc. (NS Connecting Line Bulk Transfer Terminal)

Type: ☞**Dry Bulk** ☞**Liquid Bulk**

Operator:
Westway Terminal co., Inc.
2701-1 Talleyrand Ave.
Jacksonville, FL 32206

Contact:
Attn: Philip Watts, Terminal Manager

Tel: 904-356-3311
Fax: 904-353-7613
E-mail: peggyw@westwayterminal.com

Hours of Operation:
8AM - 5PM Mon-Fri, Other hours on request

Commodities Handled:
1. Acids
2. Liquid chemicals
3. Liquid edibles
4. Other bulk

Capacity: 45 railcars

Equipment: diked storage, liquid pumps & meters, truck scales, truck wash, inventory control, bulk transloaders, air compressor, heating stem, spill containment

Storage: covered storage, storage tanks, fenced, lighting, paved, security, safety shower

Serving Rail Carrier: TTR

Source: The Official Railway Guide 2002, NS website

Lakeland - Carry Companies of Illinois

Type: ☞**Dry Bulk** ☞**Liquid Bulk**

Operator:
Carry Transit
3020 Kathleen Road
Lakeland, FL 33810

Contact:

Tel: 863-859-6400
Fax: 863-859-3819

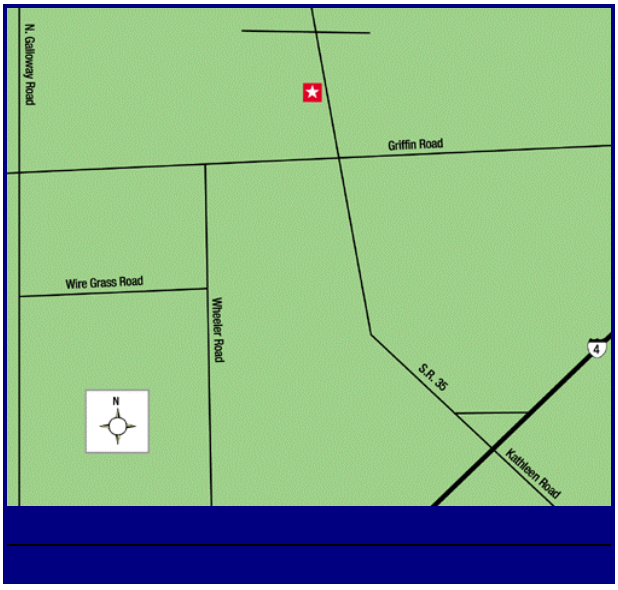
Hours of Operation:
Seven days per week, 24 hours

Commodities Handled:
1. Dry edibles
2. Liquid edibles

Capacity: 30 railcars

Equipment: air compressor, augers, belt conveyors, blowers, steam car heating, hot water heating, liquid pumps, blending meters, scrubbers, vacuum transfer,

Serving Rail Carrier: CSXT



Source: The Official Railway Guide 2002 and CSXT TRANSFLO web site.

Miami - Florida Bulk Transfer (NS Thoroughbred Bulk Transfer Terminal)

Type: ☞**Dry Bulk** ☞**Liquid Bulk**

Operator:
Sun Light Foods Inc.
3601 NW 62nd Street
Miami, FL 33147

Contact:
Dave Bartley, Station Manager

Tel: 305-835-6907
Fax: 305-835-6992

Commodities Handled:
1. Liquid & dry chemicals
2. Liquid & dry edibles
3. Packaged
4. Plastics
5. Other bulk

Capacity: 106 railcars

Equipment: air compressor, liquid pumps, truck scales, vacuum transfer

Storage: fenced, lighting, paved, spill containment

Serving Rail Carrier: FEC

Source: The Official Railway Guide 2002, NS web site

Sanford - TRANSFLO

☞**Dry Bulk** ☞**Liquid Bulk**

Operator:
TRANSFLO Inc.
2591 West 5th Street
Sanford, FL 32771

Contact:
Willie Leonard, Terminal Manager

Tel: 407-330-1761
Fax: 407-330-1943

Hours of Operation:
6 AM to 6 PM

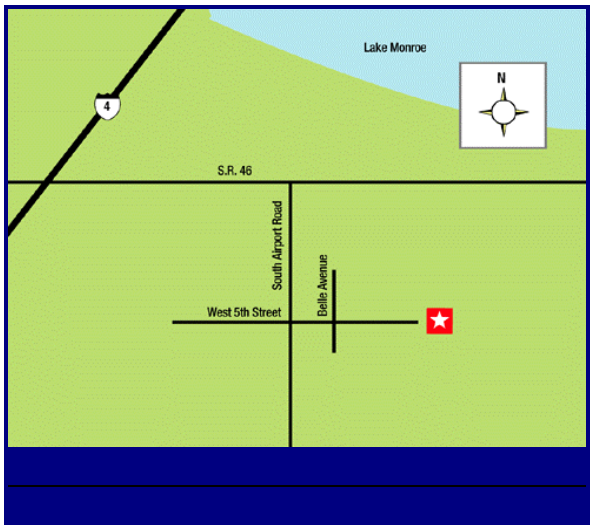
Commodities Handled:
1. Gases
2. Petroleum products
3. Waste products
4. Food products
5. Chemicals
6. Clay, concrete, glass or stone products

Capacity: 33 railcars

Handling Equipment: air compressor, augers, belt conveyors, blowers, steam car heating, hot water heating, liquid pumps, blending meters, scrubbers, vacuum transfer (equipment subject to change)

Storage: Available upon request

Serving Rail Carrier: CSXT



Source: The Official Railway Guide 2002 and CSXT TRANSFLO web site.

Tampa – Central Florida Pipeline (Kinder Morgan)

Type: ☞**Dry Bulk** ☞**Liquid Bulk**

Operator:
Central Florida Pipeline
2101 GATX Drive
Tampa, FL 33605-6860

Contact:
Ralph Baker, Terminal Manager

Tel: 813-248-2148

Hours of Operation:
Seven days per week, 24 hours

Commodities Handled:
1. Petroleum
2. Petro-chemicals
3. Chemicals

Equipment: vessel/barge loading/unloading, pipeline shipment, tank truck loading/unloading, tank car loading/unloading, tank truck weighing

Storage: fenced, lighting, paved, spill containment

Serving Rail Carrier: CSXT

Water Service: Two ship docks - 700 ft. berth, 40 ft. draft (deeper draft under construction)

Source: The Official Railway Guide 2002

Tampa - TRANSFLO

☞**Dry Bulk** ☞**Liquid Bulk**

Operator:
TRANSFLO
504 North 34th Street
Tampa, FL 33605

Contact:
Joe Carson

Tel: 813-247-7675
Fax: 813-248-6581

Hours of Operation:
6 AM – 6 PM

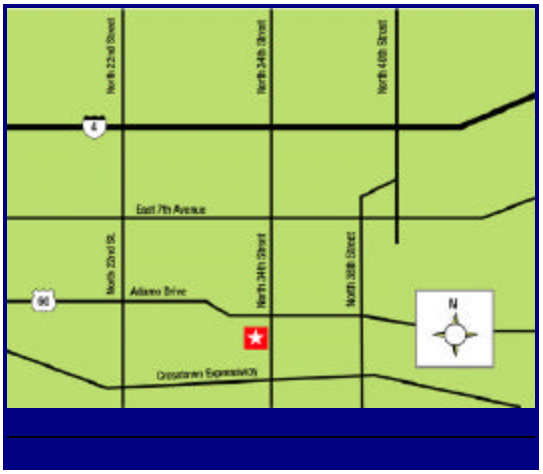
Commodities Handled:
1. Gases
2. Ocean containers
3. ISO tanks
4. Non-metallic minerals
5. Food products
6. Clay, glass, stone and concrete products
7. Chemicals
8. Waste products

Capacity: 109 railcars

Handling Equipment: air compressor, augers, belt conveyors, blowers, steam car heating, hot water heating, liquid pumps, blending meters, scrubbers, vacuum transfer (equipment subject to change)

Storage: available upon request

Serving Rail Carrier: CSXT



Source: The Official Railway Guide 2002 and CSXT TRANSFLO web site.

APPENDIX C
Seaports

Port Everglades

☞**Cargo** ☞**Cruise**

Location: Southeast Florida, Atlantic Coast, Broward County

Administrative
Kenneth Krauter, Port Director
Port Everglades
1850 Eller Drive
Ft. Lauderdale, FL 33316

Tel: 954-523-3404
Fax: 954-525-1910

E-mail: cargoporteverglades@broward.org
Web Site: www.co.broward.fl.us/port.htm

Cruise Activity* FY 00/01

Total	**3,072,343**
One-Day Cruise	1,106,189
Multi-Day Cruise	1,966,154

*Embarkations and disembarkations.

Cargo Throughput* FY 00/01

Total	**23,743,820**
Domestic	12,200,000
Foreign	11,543,820
Imports	*5,343,820*
Exports	*6,200,000*

**Throughput* is measured in short tons.

Container Movements FY 00/01
621,421 TEUs (*Twenty-foot Equivalent Units*.)

Primary Cargoes

Inbound: Gasoline & aviation fuel, cement & clinkers, diesel & fuel oil, apparels, fruits, residues, steel bars, asphalt & calcined alumina, gypsum, beer & ale, coal & coke, and coffee.

Outbound: General cargo, grocery products, fabrics, building & construction material, paper, poultry, automobile parts, logs & lumber, automobiles, gasoline & aviation fuel, trucks, lifts & parts, non alcoholic beverages, fruits, and petroleum/crude.

U.S. Customs Port of Entry #5203

Foreign Trade Zone #25

Land Area: 1,742 acres

Waterways: Atlantic Ocean, Intracoastal Waterway

Main Channel Depth: 43 ft.

Ship Berths Owned by Port

Facility	No.	Combined Length (ft.)
Northport	13	9,197
Midport	14	11,525
Southport	4	4,500
Total	**32**	**25,222**

Rail Service

On Terminal:
Florida East Coast Railway

Off Terminal:
Florida East Coast Railway

Other Port Area Services
Bunkers & fuel; chandlery; cold storage waste services; marine equipment & supplies; oil spill response/recovery; towing & tug services; warehousing-bonded.

Sources: Broward County, Department of Port Everglades, Florida Ports Council, American Association of Port Authorities, and U.S. Corp of Engineers.

Port of Fernandina

☞**Cargo** ☞**Cruise**

Location: Northeast Florida, Atlantic Coast, Nausau County

Administrative

Val Schwec
Nassau Terminals, LLC
501 North 3rd Street / P.O. Box 1543
Fernandina Beach, FL 32035-1543

Tel: 904-261-0753
Fax: 904-261-4407

Web Site: www.Flaports.org

Cruise Activity* FY 00/01

Total	**300**
One-Day Cruise	300
Multi-Day Cruise	0

*Embarkations and disembarkations.

Cargo Throughput* FY 00/01

Total	**541,000**
Domestic	0
Foreign	541,000
Imports	*117,305*
Exports	*423,695*

**Throughput* is measured in short tons.

Container Movements FY 00/01
26,000 TEUs (*Twenty-foot equivalent units.*)

Primary Cargoes

Inbound: Containerized and conventional general cargo.

Outbound: Containerized and conventional general cargo; timber products, liner board, and wood pulp.

U.S. Customs Port of Entry #1805

Land Area: 26 acres

Waterways: Atlantic Ocean, Amelia River

Main Channel Depth: 36ft.

Berthing Space: 1,200 ft.

Rail Service

On Terminal:
CSX Transportation

Off Terminal:
CSX Transportation

Other Port Area Services
Stuffing and stripping services; warehousing; stevedoring; trucking and logistics; heavy lifts.

Sources: Port of Fernandina, Florida Ports Council, American Association of Port Authorities, and U.S. Corp of Engineers.

Jacksonville Port Authority (JAXPORT)

☞**Cargo** ☞**Cruise**

Location: Northeast Florida, Atlantic Coast, Duval County

Administrative

Frederick R. Ferrin
Executive Director
Jacksonville Port Authority
P.O. Box 3005
Jacksonville, FL 32206-005

Tel: 904-630-3080
Fax: 904-630-3066

E-mail: info@jaxport.com
Web Site: www.jaxport.com

Cargo Throughput* FY 01/02

Total	**19,890,000**
Domestic	11,180,000
Foreign	8,710,000
Imports	*7,666,000*
Exports	*1,044,000*

**Throughput* is measured in short tons.

Container Movements FY 01/02
683,836 TEUs (Twenty-foot Equivalent Units.)

Primary Cargoes

Inbound: Fuel, automobiles, limestone, granite, steel wire rods; and containerized, conventional & roll-on/roll-off general cargo.

Outbound: Bulk, paper/paperboard; automobiles, beer & ale; grocery products; honey & syrup; and containerized, conventional & roll-on/roll-off general cargo.

U.S. Customs Port of Entry #1803

Foreign Trade Zone #64

Sources: Jaxport, Florida Ports Council, American Association of Port Authorities, and U.S. Corp of Engineers.

Land Area by Terminal

Terminal	Acres
Blount Island	867
Talleyrand	173
Dames Point	585
Total	**1,625**

Waterways: Atlantic Ocean, St. Johns River

Main Channel Depth: 41ft.

Berthing Space Owned by Port

Terminal	Length (ft.)
Blount Island	7,100
Talleyrand	4,800
Dames Point	2,100
Total	**14,000**

Rail Service

On Terminal (Blount Island and Dames Point):
CSX Transportation

Off Terminal (Blount Island and Dames Point):
CSX Transportation

On Terminal (Talleyrand):
Talleyrand Terminal Railroad

Off Terminal (Talleyrand):
CSX Transportation
Norfolk Southern Railway
Florida East Coast Railway

Other Port Area Services
Bunkers & fuel; chandlery; cold storage; crane maintenance & repair, dry dock; environmental & waste services; marine equipment & supplies; oil spill response & recovery; towing & tug services; shipyard & ship repair; and bonded warehousing.

Port Manatee

☞**Cargo** ☞**Cruise**

Location: West Florida, Gulf Coast, Manatee County

Administrative

David L. McDonald,
Executive Director
Manatee County Port Authority
300 Regal Cruise Way, Suite 1
1 Palmetto FL 34221-6608

Tel: 904-279-3189
Fax: 904-279-3156

E-mail: portoffice@portmanatee.com
Web Site: www.portmanatee.com

Cruise Activity* FY 00/01

Total	**56,622**
One-Day Cruise	0
Multi-Day Cruise	56,622

*Embarkations and disembarkations.

Cargo Throughput* FY 00/01

Total	**5,240,350**
Domestic	2,082,193
Foreign	3,158,157
Imports	*4,199,222*
Exports	*1,041,128*

**Throughput* is measured in short tons.

Container Movements FY 00/01
6,952 TEUs (*Twenty-foot Equivalent Units.*)
Note: Previous high was 17,000 + EU's, in 1998.

Sources: Port Manatee, Florida Ports Council, American Association of Port Authorities, and U.S. Corp of Engineers.

Primary Cargoes

Inbound: Petroleum products; lumber; limestone, gypsum, sand & gravel; clay; cement & concrete; bananas & plantains; fruit & nuts; fruit juices; containerized, conventional & roll-on/roll-off general cargo.

Outbound: Fertilizer; iron & steel scrap; paper & paperboard; fruit juices; containerized, conventional & roll-on/roll-off general cargo.

U.S. Customs Port of Entry #1821

Foreign Trade Zone #169:

Land Area: 1.064 acres

Waterways: Gulf of Mexico, Port Manatee Ship Basin

Main Channel Depth: 40 ft.

Berthing Space: 4,872 ft.

Rail Service

On Terminal:
Port Manatee Terminal Railroad

Off Terminal:
CSX Transportation

Other Port Area Services
Bunkers & fuel; chandlery; cold storage; crane service & repair, dry dock; environmental & waste services; marine equipment & supplies; oil spill response & recovery; shipyard & ship repair; and towing & tug services.

Port of Miami

☞**Cargo** ☞**Cruise**

Location: Southeast Florida, Atlantic Coast, Dade County

Administrative

Charles Towsley, PPM
Port Director
Port of Miami
1015 North American way
Miami, FL 33132

Tel: 305-371-7678
Fax: 305-347-4843

E-mail: portofmiami@miamidade.gov
Web Site: www.miamidade.gov/portofmiami

Cruise Activity* FY 01/02

Total	**3,642,990**
Multi-Day Cruise	3,642,990

*Embarkations and disembarkations.

Cargo Throughput* FY 01/02

Total	**8,681,735**
Domestic	0
Foreign	8,681,735
Imports	*5,035,500*
Exports	*3,646,235*

**Throughput* is measured in short tons.

Container Movements FY 01/02
980,743 TEUs (*Twenty-foot Equivalent Units.*)

Sources: Port of Miami, Florida Ports Council, American Association of Port Authorities, and U.S. Corp of Engineers.

Primary Cargoes

Inbound: Stone, clay & cement tiles; fruits & vegetables; apparel; alcoholic beverages; lumber & wood; containerized, conventional & roll-on/roll-off general cargo.

Outbound: Textiles; paper; food products; spare parts; iron, steel & other metals; containerized, conventional & roll-on/roll-off general cargo.

U.S. Customs Port of Entry #5201

Foreign Trade Zone – None

Land Area: 650 acres

Waterway: Atlantic Ocean, Biscayne Bay

Main Channel Depth: 42 ft.

Berthing Space: 19,687 ft.

Rail Service

On Terminal:
Florida East Coast Railway

Off Terminal:
Florida East Coast Railway

Other Port Area Services
Bunkers & fuel; chandlery; cold storage; crane maintenance & repair, dry dock; environmental & waste services; marine equipment & supplies; oil spill response & recovery; towing & tug services; warehousing-bonded.

Port of Palm Beach

☞**Cargo** ☞**Cruise**

Location: Southeast Florida, Atlantic Coast, Palm Beach County

Administrative

Richard Wainio
Executive Director
Port of Palm Beach
PO Box 9935
Riviera Beach, FL 33419

Tel: 561-842-4201
Fax: 561-842-4240

E-mail: info@portofpalmbeach.com
Web Site: www.portofpalmbeach.com

Cruise Activity* FY 01/02

Total	**591,479**
One-Day Cruise	497,956
Multi-Day Cruise	504

*Embarkations and disembarkations.

Cargo Throughput* FY 01/02

Total	**4,365,356**
Domestic	1,372,031
Foreign	2,903,132
Imports	*1,413,478*
Exports	*1,489,654*

**Throughput* is measured in short tons.

Container Movements FY 01/02
221,132 TEUs (*Twenty-foot Equivalent Units*.)

Sources: Port of Palm Beach, Florida Ports Council, American Association of Port Authorities, and U.S. Corp of Engineers.

Primary Cargoes

Inbound: Residual fuel oil; cement, fabricated metal products; lumber and wallboard products; and containerized, conventional & roll-on/roll-off general cargo.

Outbound: Sugar & molasses, and containerized, conventional & roll-on/roll-off general cargo.

U.S. Customs Port of Entry #5204

Foreign Trade Zone #135

Land Area: 200 acres

Waterways: Atlantic Ocean, Lake Worth

Main Channel Depth: 33 ft.

Berthing Space: 6,100 ft.

Rail Service

On Terminal:
Port of Palm Beach District Railway

Off Terminal:
Florida East Coast Railway
CSX Transportation

Other Port Area Services
Bunkers & fuel; chandlery; cranes; environmental & waste service removal & disposal; marine equipment & supplies; oil spill response & recovery; and towing & tug services.

Panama City Port Authority

☞**Cargo** ☞**Cruise**

Location: Florida Panhandle, Gulf Coast, Bay County

Administrative

Wayne Stubbs
Executive Director
Panama City Port Authority
5321 W. Highway 98
Panama City, FL 32401

Tel: 850-767-3220
Fax: 850-767-3235

E-mail: wstubbs@portpanamacityusa.com
Web Site: www.portpanamacityusa.com

Cargo Throughput* FY 01/02

Total	**651,274**
Domestic	105,309
Foreign	545,965
Imports	*498,507*
Exports	*47,458*

**Throughput* is measured in short tons.

Container Movements FY 00/01
N.A.

Primary Cargoes

Inbound: Steel plate, steel coils, d'limonene, bulk limestone (domestic), molasses, bauxite, aggregate, copper cathodes and wire

Outbound: Forestry products (wood pulp, linerboard), steel pipe, clay.

U.S. Customs Port of Entry #1818

Foreign Trade Zone #65

Land Area: 138 acres Port Site
750 acres Industrial Site

Waterways: Gulf of Mexico
St. Andrews Bay

Main Channel Depth: 36 ft.

Berthing Space: 4,300 ft.

Rail Service

On Terminal:
Bay Line Railroad LLC

Off Terminal:
Bay Line Railroad LLC

Other Port Area Services
Bunkers & fuel; chandlery; environmental & waste service; marine equipment & supplies; oil spill response & recovery; towing & tug services; and heavy-lift crane.

Sources: Florida Ports Council, Panama City Port Authority, American Association of Port Authorities, and U.S. Corp of Engineers.

Port of Pensacola

☞**Cargo** ☞**Cruise**

Location: Florida Panhandle, Gulf Coast, Escambia County

Administrative

Charles "Chuck" Porter
Port Director
Port of Pensacola
700 South Barracks Street
Pensacola, FL 32501

Tel: 850-436-5070
Fax: 850-436-5076

E-mail: cporter@portofpensacola.com
Web Site: www.portofpensacola.com

Cargo Throughput* FY 01/02

Total	**585,055**
Domestic	327,558
Foreign	257,497
Imports	*255,184*
Exports	*329,871*

**Throughput* is measured in short tons.

Container Movements FY 01/02
176 TEUs (*Twenty-foot Equivalent Units.*)

Primary Cargoes

Inbound: Asphalt, iron casting, bauxite, generator frames, aggregate, sewer parts, and automobiles.

Outbound: Bagged agricultural products, steel products, frozen foods, industrial pipe, railcars, and sulphur.

U.S. Customs Port of Entry #1819

Foreign Trade Zone #249

Land Area: 50 acres

Waterways: Gulf of Mexico**,** Pensacola Bay, Gulf Intracoastal Waterway

Main Channel Depth: 33 ft.

Berthing Space: 3,500 ft.

Rail Service

On Terminal:
CSX Transportation
Alabama & Gulf Coast Railway

Off Terminal:
CSX Transportation
Alabama & Gulf Coast Railway
BNSF Railroad

Other Port Area Services
Bunkers & fuel; spill response & recovery; shipyard & ship repair; towing & tugs; stevedores; steamship agents; heavy-lift; cold storage; airport, and forwarding and brokerage services.

Sources: Florida Ports Council, American Association of Port Authorities, Port of Pensacola and U.S. Corp of Engineers.

Tampa Port Authority

☞**Cargo** ☞**Cruise**

Location: West Florida, Gulf Coast, Hillsborough County

Administrative
George T. Williamson, PPM
Port Director
1101 Channelside Drive
Tampa FL, 33601

Tel: 813-905-7678
Fax: 813-905-5109

E-mail: lrafter@tampaport.com
Web Site: www.tampaport.com

Cruise Activity* FY 01/02

Total	**587,470**
One-Day Cruise	0
Multi-Day Cruise	587,470

*Embarkations and disembarkations

Cargo Throughput* FY 01/02

Total	**49,712,926**
Domestic	32,620,625
Foreign	17,092,301
Imports	*8,188,413*
Exports	*8,903,888*

**Throughput* is measured in short tons.

Container Movements FY 01/02
6,141 TEUs (*Twenty-foot Equivalent Units – includes empties*)

Sources: Florida Ports Council, American Association of Port Authorities, Tampa Port Authority and U.S. Corp of Engineers.

Primary Cargoes

Inbound: Petroleum and petroleum products; ammonia; limestone, gypsum, sand & gravel; sulphur; cement and concrete; primary iron & steel products; processed grain & animal feed; and containerized, conventional & roll-on/roll-off general cargo and refrigerated cargo.

Outbound: Fertilizers; phosphate rock; and containerized, conventional & roll-on/roll-off general cargo.

U.S. Customs Port of Entry #1801

Foreign Trade Zone #79

Land Area: 2,500 acres

Waterways: Gulf of Mexico, Tampa Bay, East Bay, Hillsborough Bay, Sparkman Channel, and Ybor Channel.

Main Channel Depth: 43 ft.

Berthing Space: 21,025 ft.

Rail Service

On Terminal:
CSX Transportation

Off Terminal:
CSX Transportation

Other Port Area Services
Full-service port with shipyard & ship repair; towing and tug services; chandlery; bunkering; and most other port-related services.

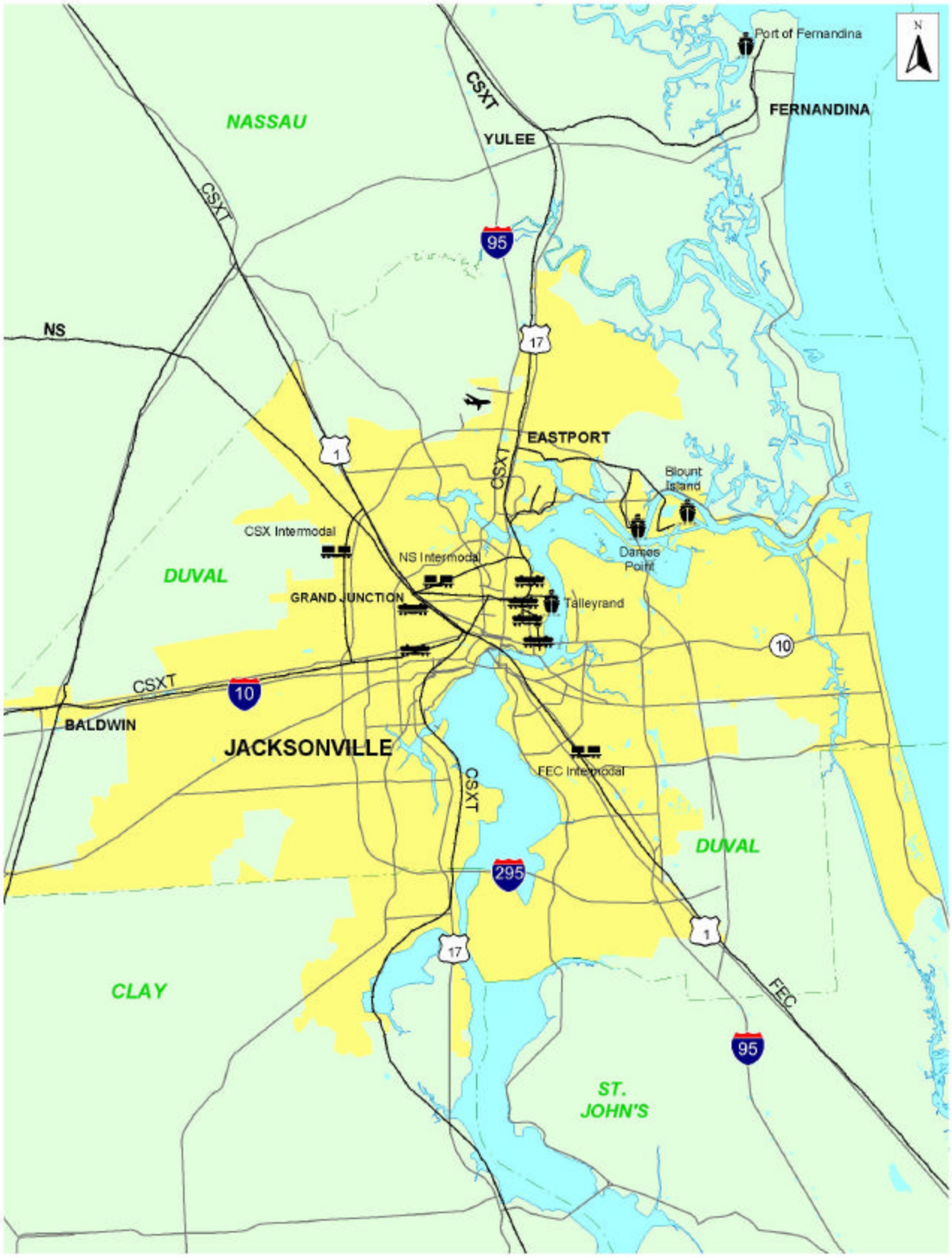
APPENDIX D
STCC

Appendix D
STANDARD TRANSPORTATION COMMODITY CODE

Commodities by 2-Digit STCC	
01	Farm Products
08	Forest Products
09	Fish or Other Marine Products
10	Metallic Ores
11	Coal
13	Crude Petroleum, Natural Gas or Gasoline
14	Nonmetallic Minerals
19	Ordinance or Accessories
20	Food or Kindred Products
21	Tobacco Products
22	Textile Mill Products
23	Apparel or Other Finished Textile Products
24	Lumber or Wood Products
25	Furniture or Fixtures
26	Pulp, Paper or Allied Products
27	Printed Matter
28	Chemicals
29	Petroleum or Coal Products
30	Rubber or Misc. Plastics Products
31	Leather or Leather Products
32	Clay, Concrete, Glass or Stone Products
33	Primary Metal Products
33	Fabricated Metal Products
35	Machinery - Other Than Electrical
36	Electrical Machinery, Equipment or Supplies
37	Transportation Equipment
38	Instruments, Photographic or Optical Equipment
39	Misc. Manufacturing Products
40	Waste or Scrap Materials
41	Misc. Freight Shipments
42	Empty Shipping Containers
43	Mail and Express Traffic
44	Freight Forwarder Traffic
45	Shipper Association or Similar Traffic
46	Misc. Mixed Shipments (Intermodal)
47	Small Packaged Freight Shipments
48	Hazardous Waste
49	Hazardous Materials
50	Secondary Shipments

APPENDIX E

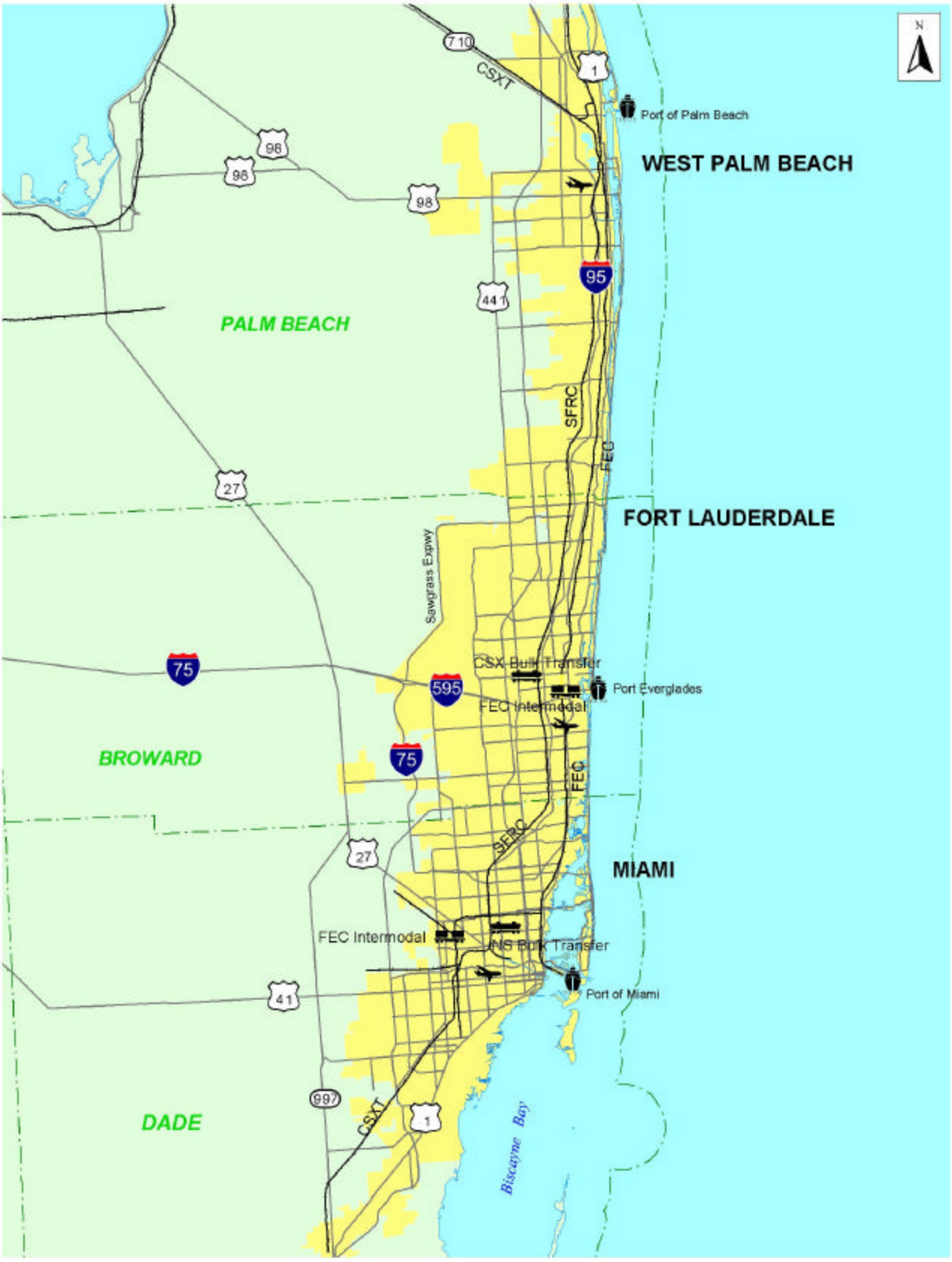
Regional Maps



0 1 2 3 4 Miles

JACKSONVILLE AREA

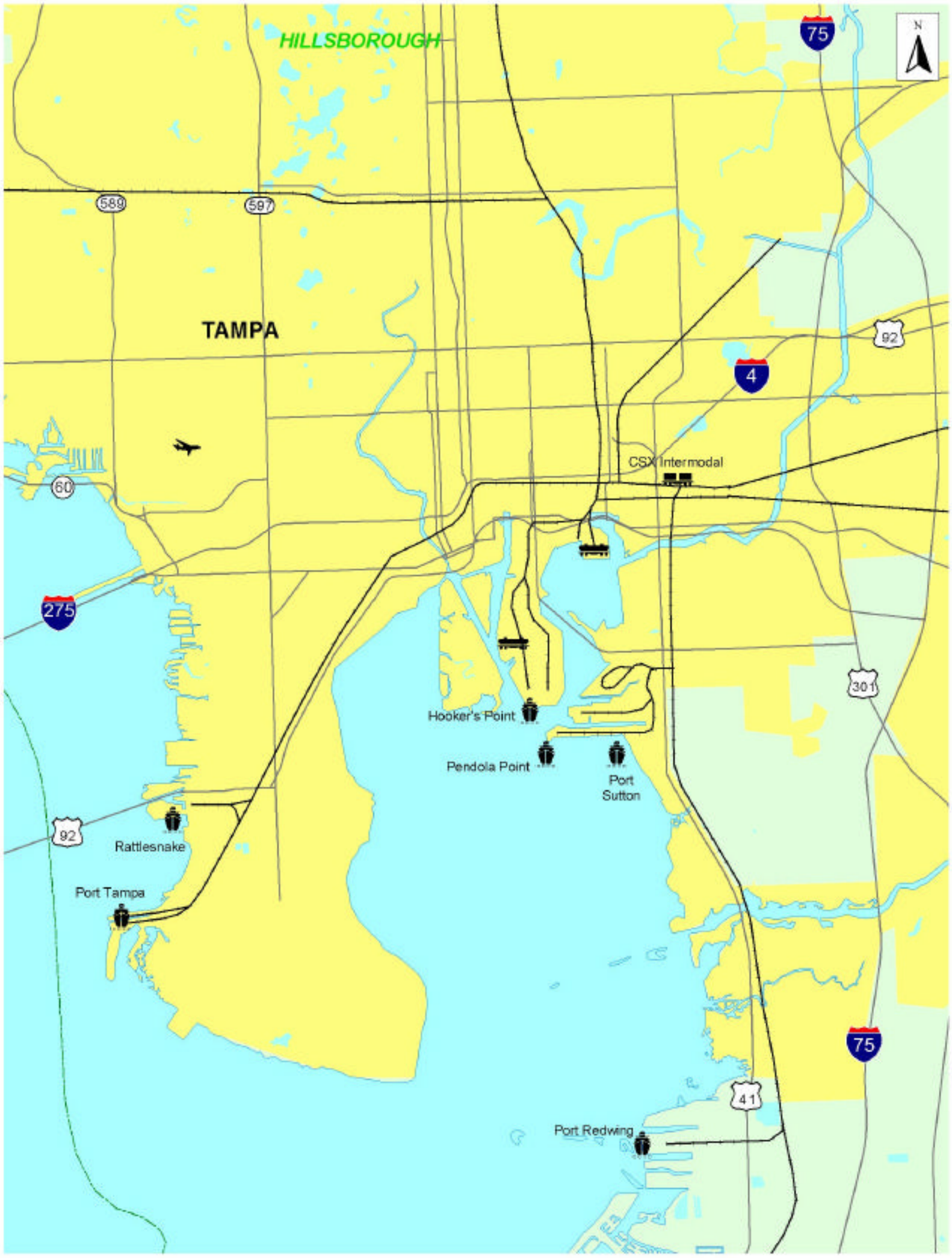
Exhibit E-1



0 2 4 6 8 Miles

SOUTHEAST FLORIDA

Exhibit E-2



0 1 2 3 Miles

TAMPA AREA

Exhibit E-3

APPENDIX F

Acronyms/Abbreviations

ACRONYMS/ABBREVIATIONS

AAR	Association of American Railroads
Btu	British Thermal Unit
CO	Carbon Monoxide
COFC	Container on Flat Car
CSXI	CSX Intermodal
CSXT	CSX Transportation
EPA	Environmental Protection Agency (US)
FDOT	Florida Department of Transportation
FEC	Florida East Coast Railway
FSTED	Florida Seaport Transportation and Economic Development (Program/ Council)
FY	Fiscal Year
HC	Hydrocarbons
HERS	Highway Economic Requirements System
HPMS	Highway Performance Monitoring System
ICTF	Intermodal Container Transfer Facility
ISTEA	Intermodal Surface Transportation Efficiency Act
KCS	Kansas City Southern Railway
NO_x	Nitrous Oxides
NS	Norfolk Southern Railway
PM	Particulate Matter
RTMG	Revenue Ton-Miles per Gallon
SIS	Strategic Intermodal System (Florida)
STB	Surface Transportation Board
STCC	Standard Transportation Commodity Code
TEA-21	Transportation Equity Act for the 21st Century
TEU	Twenty-Foot Equivalent Unit
TOFC	Trailer on Flat Car
USDOT	United States Department of Transportation
VOC	Volatile Organic Compounds