March 2012

Jacksonville Harbor (Mile Point) Navigation Study
Duval County, Florida

FINAL
INTEGRATED FEASIBILITY REPORT AND ENVIRONMENTAL ASSESSMENT

APPENDICES

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APPENDIX B – SOCIO-ECONOMICS
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Final Report

JACKSONVILLE HARBOR
MILE POINT NAVIGATION STUDY,
ECONOMICS EVALUATION AND ECONOMIC APPENDIX

Submitted to

U.S. Army Corps of Engineers
Jacksonville District
Jacksonville, Florida

Submitted by

Baton Rouge, Louisiana

October 6, 2011
(Revised from June 8, 2011)

Final Report

JACKSONVILLE HARBOR MILE POINT NAVIGATION STUDY, ECONOMICS EVALUATION AND ECONOMIC APPENDIX

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U.S. ARMY CORPS OF ENGINEERS **Oct. 6, 2011**
JACKSONVILLE DISTRICT
JACKSONVILLE, FLORIDA

EXECUTIVE SUMMARY

Jacksonville Harbor Mile Point is located near the confluence of the Atlantic Intracoastal Waterway (AICW) and the St. Johns River. The confluence of north-south and east-west waterways is characterized by strong cross currents that make safe navigation of larger vessels a concern. The St. Johns Bar Pilot Association (Pilots) navigation rules restrict the passage of inbound vessels with sailing drafts exceeding 33 feet (with certain exceptions) and outbound vessels exceeding 36 feet to flood tide time frames. In addition, two-way navigation is restricted in this section of the channel.

The Jacksonville District provided a tide delay spreadsheet to compile the vessel delay hours attributable to Mile Point restrictions. The vessel delay hours are computed in the same manner as tide restricted vessels. Tide restricted vessels at Jacksonville Harbor would normally be for sailing drafts exceeding 38 feet for the existing minus 40 foot authorized project depth, assuming a two foot underkeel clearance. However, flood tide delayed vessels for Mile Point would exist for sailing drafts more than 33 feet inbound and more than 36 feet outbound.

A vessel call list of self-propelled vessels with sailing drafts 33 feet or more was compiled from vessel transits supplied by the Pilots for the period 2005 to 2009. The vessel call list was developed for bulk, tanker, container, and general cargo vessels, which constitute the majority of all vessels with sailing drafts 33 feet or more inbound calling Jacksonville Harbor. Vessel size specified in deadweight tonnes (DWT) and sailing draft distributions in one foot increments from 33 feet were compiled for each vessel category. The vessel call list was populated with the size and draft distributions. Vessel size (dwt) is used to specify hourly delay costs based on Corps FY 2008 guidance.

The vessel fleets were projected based on expected growth in commodities and trades. Jacksonville Harbor is expecting significant growth in the number and sizes of container vessels expected to call as a result of the completion of the TraPac container terminal and the subsequent development of the planned Hanjin container terminal. TraPac is currently served by major east-west global container services using Panamax and Post-Panamax container ships that are also calling other East Coast U.S. ports, including Savannah Harbor. After expansion of the Panama Canal, Far East services are expected to always be Mile Point sailing draft restricted for inbound and outbound movements. The shifts in the container fleet at Jacksonville Harbor have a major impact on delays associated with Mile Point. Container vessels are also the most expensive to operate on a time basis compared to bulk, tanker, and general cargo vessels.

The Jacksonville District provided one alternative to address the Mile Point flood tide vessel restrictions consisting of reconfiguration of the existing training wall. The reconfiguration alternative would remove all flood tide sailing restrictions for all categories of vessels.

The reconfiguration alternative present value of benefits using the FY 2011 water resources discount rate (4.125%) and Average Annual Equivalent (AAEQ) benefits are $91.153 and $4.334 million, respectively, for the full development of Dames Point container terminals to include Hanjin (Case 1). Excluding Hanjin, the present value and AAEQ benefits are $51.252 million and $2.437 million, respectively (Case 5). Truncation of growth at 2015 and 2020 would result in present values of $75.468 and $80.166 million, respectively, and AAEQ benefits of $3.589 and $3.812 million, respectively (cases 3 and 4). Case 5 was used for plan formulation.

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JACKSONVILLE HARBOR MILE POINT NAVIGATION FEASIBILITY STUDY

1.0 INTRODUCTION

1.1 DESCRIPTION

Mile Point in Jacksonville Harbor is located west of the intersection of the St. Johns River and the Atlantic Intracoastal Waterway (AIWW). A training wall, known locally as "Little Jetties," marks the confluence of the St. Johns River and the AIWW. Because of curvature of the river and strong prevailing crosscurrents from the AIWW, the St. Johns Bar Pilot Association (Pilots) restricts some vessels to ebb tide movements inbound and outbound to and from the upstream river terminals.

The Pilots' St. Johns River Navigational Guidelines (2010) stipulate ebb tide restrictions for inbound and outbound vessel movements that are attributable to the without-project Mile Point conditions as follows:[1]

> **Inbound Vessels**
>
> General: Vessels with draft over 33 feet (fresh water) but no more than 36 feet (fresh water) shall start in no sooner than 15 minutes before start of flood current on the bar. Vessels with greater than 36 feet of draft (fresh water) shall start in no sooner than 30 minutes after start of flood current on the bar. Stop taking in vessels with draft over 33 feet (fresh water) one hour before start of ebb current.[2]
>
> Specific: **Vessels that have called at the port and have proven to have exceptional handling characteristics**, transiting to TraPac or Blount Island Terminals, with a fresh water draft of 34 feet or less, may start in at anytime and any stage of the tide (emphasis supplied). The same vessels with a fresh water draft of 35 feet or less shall start in no sooner than 30 minutes before flood on the bar. Stop taking in these vessels with a draft of 35 feet or less 30 minutes before start of ebb on the bar. Modifications or factors affecting any of these vessels' characteristics shall cause the vessel to notify the Pilot Office at least 24 hours prior to arrival for reconsideration of start-in time.[3]
>
> **Outbound Vessels**
>
> Down River of Buoy "59": Vessels sailing from berths down river of buoy "59" that are over 36 feet of draft (at their berth) shall sail no sooner that the start of flood current on the bar. Cut off time for these vessels is the beginning of ebb current on the bar. Therefore, vessels with a draft of **36 feet or less** sailing from anywhere downriver of buoy "59" may sail at any time of the tide/current (emphasis supplied).[4]

---

[1] St. Johns Bar Pilot Association, pages 8 and 9 (2010).
[2] St. Johns Bar Pilot Association, pages 8 and 9 (2008) and pages 8 and 9 (2010).
[3] This paragraph was added to the 2010 navigation guidelines, effectively relaxing the inbound Mile Point tidal restriction on vessels transiting to Blount Island and TraPac terminals by raising the threshold sailing draft tidal restriction from 33 feet to 34 feet for certain vessels, notably those applicable to the NWA that would call at TraPac Dames Point terminal.
[4] Down river of buoy "59" would include both Dames Point and Blount Island terminals. Other outbound sailing draft restrictions are assumed to be raised to Blount Island standards (36 feet) effective with the completion of the 40-foot channel and related improvements as authorized beyond Dames Point to Talleyrand Terminal.

Effectively, vessels entering the St. Johns River are restricted whenever their sailing drafts exceed 33 or 34 feet as noted (fresh water), and vessels departing the St. Johns River are restricted whenever their sailing drafts exceed 36 feet (fresh water). The Mile Point ebb tide restrictions effectively function as a tidal delay for vessels with sailing drafts within the authorized channel depth less normal underkeel clearance.[5]

1.2 ALTERNATIVES

The Mile Point ebb tide restriction can be removed by relocating the existing training wall (reconfiguration). The reconfiguration alternative would remove the ebb tide restriction for all vessels with sufficient underkeel clearance for the authorized channel depth without consideration of tidal cycles.

1.2.1 Objectives

The Jacksonville Harbor Mile Point Feasibility Study Draft Report was reviewed by higher authority and resulted in comments that require additional investigation and analyses. Based on Headquarters' review and comments on the Mile Point draft economic feasibility appendix (report date: February 12, 2009), there is concern on the increase in Mile Point constrained vessels transiting from the existing fleet to the base fleet envisioned for the Port as a result of new private marine container terminals (MOL and Hanjin), and the future fleet (at the authorized 40 ft depth). Consequently, Headquarters has requested that the growth of container vessels be demonstrated within the framework of the nine steps described in EC 1105-2-100, Appendix E.

The nine step process is to be explicitly followed in the report to a much greater level of supported detail, particularly with regard to specification of the economic study area. This typically requires a separate multiport analysis when it is determined that the justification of a project is contingent upon containerized cargo calling a specific port that shares overlapping hinterlands with nearby ports. Specifically, analyses need to demonstrate that the hinterland served is within a competitive advantage to the Port of study and is within the National Economic Development interest based on least cost of delivery of the cargo.

It is noted that the focus of the Mile Point Study training wall reconfiguration study is to alleviate or remove ebb tide restrictions that typically impact inbound vessels of 33 ft or greater and outbound vessel of 36 ft or greater. The focus of this scope is to establish a baseline without-project condition that includes the newly built terminal of TraPac/MOL and the soon to be built container terminal for Hanjin/Hanjin Alliance.

The Mile Point Feasibility report/economic analysis requires additional documentation in the determination of the economic study area (step 1) as supported by the least cost trucking of containerized cargo (Phase I) and total least cost delivery for containerized cargo (Phase II) with

[5] The authorized project depth for the channel at Mile Point is minus 40 feet. With a two-foot underkeel clearance allowance, vessels should be able to enter and exit the St. Johns River up to 38 foot drafts without any tidal delay. Effectively, Mile Point inbound restriction of 33 feet adds five feet of tidal delay (38-33 = 5) for inbound vessels and two feet of tidal delay for outbound vessels (38 – 36 = 2).

the inclusion of the recently built MOL terminal and as an added increment the Hanjin terminal to be constructed and operational by the end of 2013.

This report reflects the directive that the Mile Point economic appendix report dated February 12, 2009, should be revised to include the explicit documentation of the nine step planning process and satisfy documentation of Phase I analysis and benefits and Phase II analysis and benefits as applicable for the training wall reconfiguration alternative.[6]

1.2.2 Outline

This report will follow the nine study steps with respect to: (1) Determine Economic Study Area; (2) Identify Commodity Types, Volumes and Flows; (3) Project Waterborne Commerce; (4) Determine Vessel Fleet Composition and Cost; (5) Determine Current Commodity Movement Cost; (6) Determine Alternative Movement Cost; (7) Determine Future Commodity Movement Cost; (8) Determine Harbor Use With- and Without-Project; and (9) Compute NED Benefits.

Materials presented will be largely derived from the previous Mile Point Report (February 12, 2009) as updated, expanded, and/or amended by subsequent more detailed examination of the Port container hinterland as per Phase 1 and Phase 2 of the Jacksonville Harbor Container Hinterland Analyses conducted under the scope of work.[7]

2.0 DETERMINE ECONOMIC STUDY AREA

2.1 TRADITIONAL REGIONAL TRADE HINTERLAND

Jacksonville Harbor has long served as a regional port for Puerto Rico, other Caribbean trades, and South America for containers and general cargo and for a local distribution of imported bulk cargo. Table 1 displays the tonnage statistics for Jacksonville Port Authority (Jax Port) for the time period FY93/94 through FY08/09. Container tonnage has been dominated by Puerto Rico. Jacksonville is the principal domestic port for this trade, dominating with several services characterized by both self-propelled vessels and barges.[8] Container trades to other world areas other than Puerto Rico, the Caribbean, and South America have been relatively undeveloped until recently (Asia). The Port also handles refined petroleum imports for the local region (north Florida and south Georgia) as well as dry bulk (coal, cement, and aggregates). Finally, the Port is a regional distribution point for automobile imports into the southeast U.S.[9]

Table 2 shows the total TEUs of the top commodities for container imports and exports through Jacksonville and Savannah/Charleston for major world regions for the period October 2007

[6] Jacksonville Harbor Container Hinterland: Phase 1 Draft Report (July 7, 2010) and Jacksonville Harbor Container Hinterland Phase 2 Draft Report (September 8, 2010).
[7] Jacksonville Harbor Container Hinterland Documentation, Multiport Analysis and Vessel Call Update for Additional One Year.
[8] Jacksonville is the domestic hub niche port for Puerto Rican marine services similar to what the Port of Palm Beach was for the Cuban trade before the embargo extinguished this trade.
[9] Comparatively little attention will be given to the automobile trade. Although a major cargo volume, revenue provider, and user of port space, the pure car vessels are not Mile Point affected with respect to sailing draft.

Table 1. Jacksonville Port Authority, 10-Year Historical Data

Tonnage - Trading Partners / Top Markets																
Containers	**FY 93/94**	**FY 94/95**	**FY 95/96**	**FY 96/97**	**FY 97/98**	**FY 98/99**	**FY 99/00**	**FY 00/01**	**FY 01/02**	**FY 02/03**	**FY 03/04**	**FY 04/05**	**FY 05/06**	**FY 06/07**	**FY 07/08**	**FY 08/09**
Puerto Rico	1,545,862	1,596,670	2,085,360	2,308,367	2,545,941	2,847,663	2,733,797	2,746,647	2,673,056	2,527,085	2,587,943	2,658,448	2,477,327	2,363,772	2,346,463	2,298,012
South America	956,597	1,227,315	997,844	953,845	1,171,539	746,726	529,066	499,681	692,130	761,780	831,688	849,387	887,826	913,960	927,351	945,622
Europe	258,435	317,063	290,640	307,183	315,674	269,007	198,320	0	0	0	0	0	0	0	0	17,831
Australia/NZ	138,917	134,004	112,211	31,764	0	0	0	0	0	0	0	0	0	0	330	0
Asia						0	0	0	0	0	0	0	0	0	0	379,604
Mexico	0	33,018	115,229	119,352	84,709	121,393	124,581	81,129	64,848	54,060	47,442	25,985	10,960	0	0	0
Caribbean	48,485	52,354	47,649	32,487	107,509	139,707	197,541	203,000	182,372	167,776	196,356	351,693	393,094	166,723	152,685	169,831
Other	22,164	3,567	506	1,248	453	39,333	13,620	14,150	105,097	240,550	264,008	281,868	306,700	194,260	173,887	83,695
Container	**2,970,460**	**3,363,991**	**3,649,439**	**3,754,246**	**4,225,825**	**4,163,829**	**3,796,925**	**3,544,607**	**3,717,503**	**3,751,251**	**3,927,437**	**4,167,382**	**4,075,907**	**3,638,715**	**3,600,716**	**3,894,595**
Break Bulk																
Poultry	0	0	42,341	127,968	185,149	74,118	70,280	133,310	202,447	196,203	140,985	170,946	218,351	142,525	134,034	79,086
Steel	121,412	97,038	110,428	115,858	154,016	189,103	213,888	177,542	201,772	149,830	281,077	224,153	357,337	138,691	47,284	86,706
Paper	10,576	1,037	0	31,255	206,503	220,513	218,823	241,621	194,426	318,504	349,739	336,949	584,600	789,503	668,791	530,089
Aluminum	0	0	0	0	0	0	45,861	12,286	17,117	0	6,857	29,779	8,585	18,392	3,791	0
Lumber	59,943	52,199	43,546	10,683	6,455	11,610	18,874	48,198	47,729	24,553	13,500	1,999	6,150	8,718	1,108	5,310
HHG, Other	79,093	33,121	22,252	18,787	19,483	26,957	42,175	59,208	35,077	14,713	38,558	43,128	37,893	63,946	97,545	73,574
Breakbulk	**271,024**	**183,395**	**218,567**	**304,551**	**571,606**	**522,301**	**609,901**	**672,165**	**698,568**	**703,803**	**830,716**	**806,951**	**1,212,916**	**1,161,775**	**952,553**	**774,765**
Bulk																
Petroleum	766,739	590,322	386,724	319,318	287,524	289,161	17,364	0	0	0	0	0	0	0	0	0
Liquid	308,237	350,657	323,672	373,514	400,587	425,609	435,880	406,632	310,745	331,025	334,187	335,999	305,562	293,569	341,802	350,191
Dry	232,984	451,589	415,041	621,616	1,042,674	1,224,888	1,352,601	1,262,138	1,355,413	1,368,559	1,528,517	2,052,706	1,897,687	1,959,331	2,134,066	1,346,889
Bulk	**1,307,960**	**1,392,568**	**1,125,437**	**1,314,448**	**1,730,785**	**1,939,658**	**1,805,845**	**1,668,770**	**1,666,158**	**1,699,584**	**1,862,704**	**2,388,706**	**2,203,249**	**2,252,900**	**2,475,868**	**1,697,080**
Autos																
Autos	**648,470**	**751,486**	**713,411**	**720,863**	**849,214**	**898,483**	**901,412**	**971,357**	**1,036,892**	**1,146,378**	**1,067,411**	**1,085,616**	**1,204,471**	**1,255,811**	**1,366,373**	**915,523**
Total	**5,197,914**	**5,691,440**	**5,706,854**	**6,094,108**	**7,377,430**	**7,524,271**	**7,114,083**	**6,856,899**	**7,119,121**	**7,301,016**	**7,688,268**	**8,448,654**	**8,696,543**	**8,309,201**	**8,395,510**	**7,281,963**

Source: Jacksonville Port Authority.

Table 2. Jacksonville Port Authority Total TEUs of Top Commodities for Container Imports/Exports Through Jacksonville and Savannah/Charleston: October 2007-September 2008

Trade Route	Import/ Export	Jacksonville	Savannah/ Charleston	Total	Jacksonville Share	Savannah/ Charleston Share
Caribbean	Imports	82,841	1,365	84,206	98.4%	1.6%
Caribbean	Exports	388,770	3,821	392,591	99.0%	1.0%
Caribbean	Subtotal	471,611	5,186	476,797	98.9%	1.1%
ECSA	Imports	7,138	17,642	24,780	28.8%	71.2%
ECSA	Exports	49,302	17,916	67,218	73.3%	26.7%
ECSA	Subtotal	56,440	35,558	91,998	61.3%	38.7%
WCSA	Imports	3,327	3,362	6,689	49.7%	50.3%
WCSA	Exports	2,727	8,178	10,905	25.0%	75.0%
WCSA	Subtotal	6,054	11,540	17,594	34.4%	65.6%
Europe	Imports	1,451	36,373	37,824	3.8%	96.2%
Europe	Exports	432	60,690	61,122	0.7%	99.3%
Europe	Subtotal	1,883	97,063	98,946	1.9%	98.1%
Mediterranean	Imports	789	10,265	11,054	7.1%	92.9%
Mediterranean	Exports	666	18,961	19,627	3.4%	96.6%
Mediterranean	Subtotal	1,455	29,226	30,681	4.7%	95.3%
Central America	Imports	673	537	1,210	55.6%	44.4%
Central America	Exports	693	6,646	7,339	9.4%	90.6%
Central America	Subtotal	1,366	7,183	8,549	16.0%	84.0%
Africa	Imports	124	2,148	2,272	5.5%	94.5%
Africa	Exports	986	3,140	4,126	23.9%	76.1%
Africa	Subtotal	1,110	5,288	6,398	17.3%	82.7%
Asia	Imports	0	184,342	184,342	0.0%	100.0%
Asia	Exports	0	125,381	125,381	0.0%	100.0%
Asia	Subtotal	0	309,723	309,723	0.0%	100.0%
Subtotal	Imports	96,343	256,034	352,377	27.3%	72.7%
Subtotal	Exports	443,576	244,733	688,309	64.4%	35.6%
Subtotal	Subtotal	539,919	500,767	1,040,686	51.9%	48.1%

Notes: Caribbean includes Puerto Rico.
ECSA = East Coast South America.
WCSA = West Coast South America.

Source: Jacksonville Port Authority.

through September 2008.[10] Jacksonville clearly dominates the Caribbean (Puerto Rico) trade, with about a 95 percent share (top commodities) compared to Savannah and Charleston. Otherwise, Jacksonville has a much smaller market share in other major regional markets that it also serves such as East Coast South America (ECSA) about 34 percent (imports and exports)

[10] The "top commodities" should not be confused with all commodities. Thus, Table 2 is a subset of a larger more inclusive volume of all commodities. However, Table 2 is a representation that the total volumes (TEUs) of "top commodities" are effectively clustered in limited regional trading lanes for Jacksonville compared to Savannah/Charleston ports.

and West Coast South America (WCSA) about 14 percent (imports and exports). Outside of the regional markets, Jacksonville has a very small share of the global markets. Recently, Jacksonville has entered the Asia market and (re-entered) the European market with direct services, both arising from relatively new container services that initiated services to the Port at the TraPac Dames Point terminal in 2009.[11]

2.2 EMERGING GLOBAL TRADE HINTERLAND

As noted in Table 1, the Port has very recently (FY08/09) handled containers for world areas outside of the Americas hemisphere region that it has not handled (Asia) or served during the current decade (Europe). This is part of an emerging global container hinterland distinct from the traditional regional trade hinterland. The global hinterland is characterized by larger container vessels, Panamax (constrained by the existing Panama Canal dimensions) and Post-Panamax container vessels not otherwise constrained by the existing Panama Canal dimensions. Unlike the traditional regional container services that have predominantly not been affected by Mile Point sailing draft tidal constraints, the global services with the larger Panamax and Post-Panamax vessels are adversely affected by the Mile Point tidal constraints. The global hinterland is also characterized by new private investment in state-of-the-art semi-automated marine container terminals constructed at Dames Point (TraPac) or planned for development at Dames Point (Hanjin). These terminals are or would be served by the global alliances of New World Alliance (NWA) at TraPac and CKYH alliance at the planned Hanjin facility, respectively. Both of these alliances also have a major presence (services) at Savannah Harbor. Both alliances have indicated that as an outgrowth of Dames Point marine container terminals, they would call Jacksonville with the same or similar services as calling Savannah and shift containers to Jacksonville in addition to soliciting Florida business that is now moved to Savannah on account of the general absence of global east-west container services.

The emerging global container hinterland for domestic origins and destinations was defined from the perspective of a local hinterland in terms of least highway distances as commonly related to least total trucking transportation cost and an expanded regional hinterland that overlapped with other major global services at East Coast U.S. (ECUS) ports. The primary focus is on the shift of containers from Savannah to Jacksonville because of the container services that call Savannah are projected to call at new private marine container terminals either completed and operating (TraPac) or planned (Hanjin) at Dames Point, respectively. Florida has been an important market for Savannah Harbor extending down to the Interstate Highway 4 corridor in competition with the regional ports in south Florida (Miami and Port Everglades) for global container services such as Asia and Europe that traditionally have not called Jacksonville. New global services calling Jacksonville can save shippers substantial land trucking transportation costs because of the shorter distances to and from Jacksonville compared to Savannah, which provides a strong incentive to route their cargo through Jacksonville (other things being equal) such as comparable or overlapping marine services with other ECUS ports.[12] Consequently, the

[11] Historically, Jacksonville had a small European market share, but liner rationalization of services shifted this service (former Sea-Land) into a Savannah based Maersk Sea-Land conglomeration.

[12] Nearly all major container lines calling Savannah maintain off-port depots in Jacksonville through third parties, typically local trucking companies who perform container drayage for the purpose of tendering Florida containers to

domestic hinterland analyses will be examined from the perspectives of local trucking transportation cost savings and regional overlaps among competing ECUS ports with similar albeit longer trucking distances that provide more opportunity for competitive overlap of ports, services, lines, and shipper preferences beyond the context of "least total trucking cost" for shorter local distances.[13]

2.2.1 Least Total Trucking Cost Domestic Container Hinterland

The least total (trucking) cost container hinterland for the Savannah Harbor traffic projected to shift to Dames Point is commonly regarded to be all of Florida. The Florida hinterland should include small portions in south Georgia and south Alabama for which Jacksonville Harbor has a highway distance and truck cost advantage compared to Savannah Harbor at Garden City. Figure 1 shows the Florida least total cost trucking hinterland as augmented by zip codes in south Georgia and south Alabama. The south Georgia hinterland is particularly important because it encompasses some heavy loading pulp and paper mill containerized traffic related to production facilities near Brunswick, Georgia.

Table 3 shows the revised multi-state (Florida, south Georgia, and south Alabama) least total cost trucking hinterland. The hinterland consists of the three-digit zip codes whenever Jacksonville Harbor (Dames Point) has a highway map distance advantage compared to Savannah Harbor (Garden City). [14] The highway distance advantages for Jacksonville compared to Savannah for zip codes in south Georgia and south Alabama range from relatively small, 1.9 miles (zip code 315), to 132 miles (zip code 366). The south Georgia and south Alabama zip codes are generally west and contiguous to Savannah and Jacksonville, so the relative differences in highway distances are not as great.

Florida has substantial and sustained highway distance differences between Jacksonville and Savannah since the latter is always north of Jacksonville. Most of the Florida distance advantages for Jacksonville compared to Savannah are quite substantial, in the range of 132 to 145 miles for one-way movements.[15] Total Florida highway map one-way distances for all zip codes is 4,269 miles compared to 7,238 miles for Savannah (refer to Table 1, Florida subtotal). [16] The Florida highway map distance savings for all zip codes are 2,969 miles (7,238 miles - 4,269 miles = 2,969 miles). The inclusion of south Georgia and south Alabama zip codes does not materially change the picture. Jacksonville has an absolute advantage of 46 total miles for the zip codes in south Georgia compared to Savannah and an absolute advantage of 267 total miles for four zip codes in south Alabama compared to Savannah (refer to Table 1).

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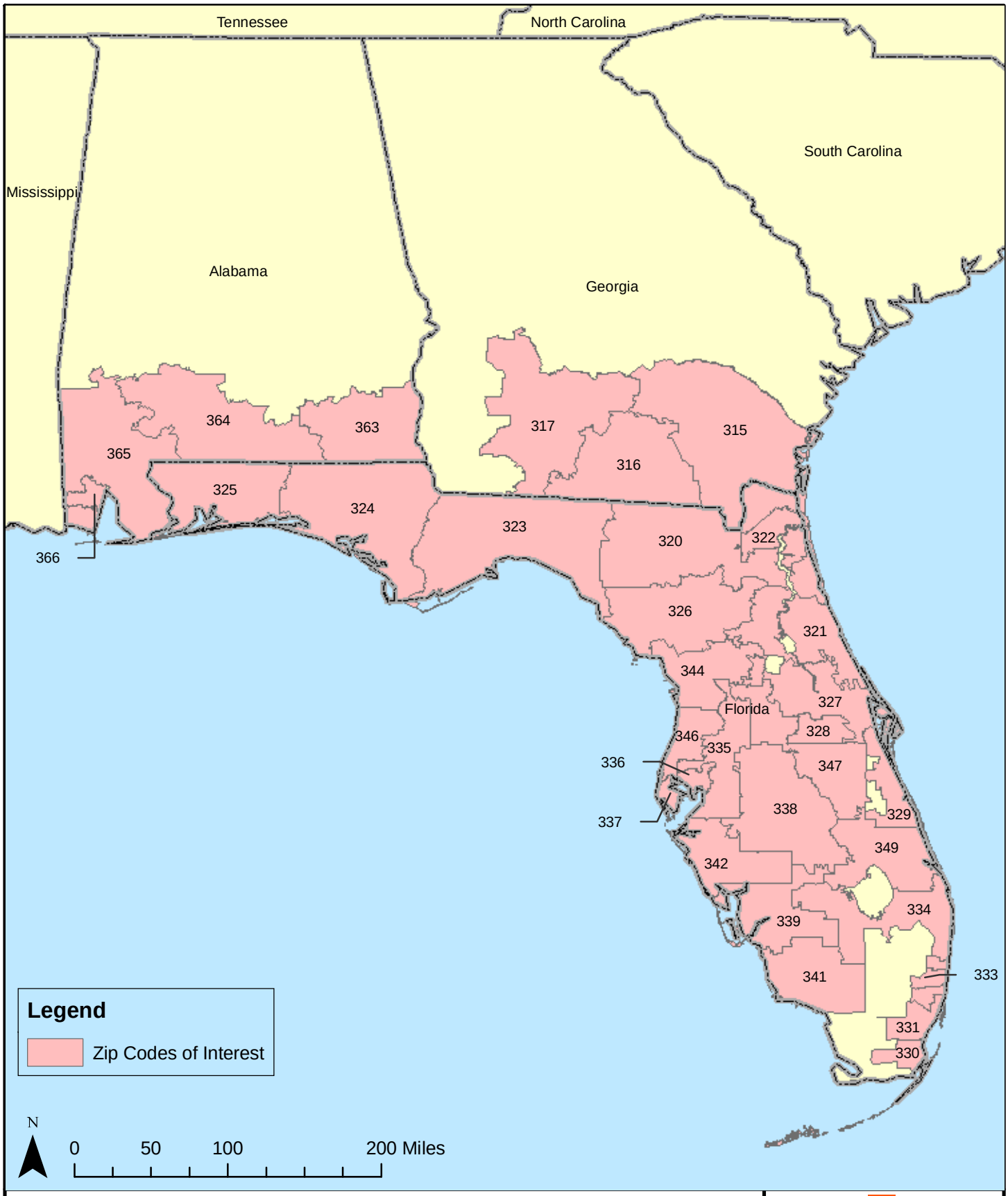
and from Savannah. This is evidence of the existence of a considerable volume of container freight trade in north and central Florida that is served by Savannah.

[13] Shorter highway and truck distances also are more cost sensitive to miles traveled due to the existence of fixed costs (time) associated with container pickup and delivery. Regional overlaps between ECUS ports with longer highway distances are less sensitive to changes in distance and truck related variable costs accordingly.

[14] All highway distances between zip codes are developed from PCMiler.

[15] All three-digit highway map distances are for one direction only. However, drayage costs will be for load/empty round trip movements, effectively doubling the highway distance advantages and disadvantages.

[16] Highway distances and related truck costs will be presented in the context of one way for clarification. However, container movements are round trip. Consequently, any one-way distance differentials would be doubled for round trip container movements.



Relevant Hinterland

States of Alabama, Florida, and Georgia

Figure: 1
Date: August 2010
Scale:1:5,500,000
Source: GEC/ESRI
Map ID:

Table 3. Jacksonville Harbor Container Hinterland Least Cost Trucking Based on Zip Code Distances with Savannah Harbor for NWA Boxes

State	ZIP	Box Dis	NWA Boxes	3 Digit Zip	JH Miles	SH Miles	JH SH Miles	JH Box Miles	SH Box Miles	JH SH Box Miles	% AD/DIS
GA	315	0.0%	34	315	91.9	93.8	-1.9	3,165	3,231	-65	-2.0%
GA	316	2.4%	1,847	316	135.9	162.7	-26.8	250,996	300,494	-49,497	-16.5%
GA	317	0.1%	43	317	193.2	210.4	-17.2	8,318	9,058	-740	-8.2%
Subtotal		**2.5%**	**1,924**	**948**	**421**	**467**	**-46**	**262,479**	**312,783**	**-50,303**	
Total			**77,242**								
AL	363	0.9%	33	363	278.9	318.2	-39.3	9,157	10,447	-1,290	-12.4%
AL	364	3.9%	141	364	374.2	413.3	-39.1	52,829	58,349	-5,520	-9.5%
AL	365	1.3%	46	365	419.3	475.6	-56.3	19,273	21,861	-2,588	-11.8%
AL	366	2.0%	74	366	410.3	542.4	-132.1	30,310	40,068	-9,759	-24.4%
Subtotal		**8.1%**	**294**	**1,458**	**1,483**	**1,750**	**-267**	**111,568**	**130,725**	**-19,157**	
Total			**3,617**								
FL	320	0.1%	5	320	33.7	165.7	-132	162	798	-636	-79.7%
FL	321	0.1%	5	321	83	228.4	-145.4	400	1,100	-700	-63.7%
FL	322	35.9%	2,938	322	0	143.1	-143.1	0	420,454	-420,454	-100.0%
FL	323	0.1%	10	323	178.4	310.5	-132.1	1,719	2,991	-1,273	-42.5%
FL	324	0.1%	6	324	271.4	403.4	-132	1,743	2,591	-848	-32.7%
FL	325	0.9%	77	325	341.3	473.3	-132	26,303	36,476	-10,173	-27.9%
FL	326	15.3%	1,249	326	86.2	218.2	-132	107,653	272,504	-164,851	-60.5%
FL	327	0.4%	32	327	119.5	265	-145.5	3,837	8,509	-4,672	-54.9%
FL	328	8.3%	676	328	140.7	286.1	-145.4	95,105	193,387	-98,282	-50.8%
FL	330	0.1%	8	330	371.4	516.8	-145.4	2,982	4,149	-1,167	-28.1%
FL	331	5.0%	409	331	347.9	493.4	-145.5	142,381	201,928	-59,547	-29.5%
FL	333	0.2%	14	333	323.3	468.7	-145.4	4,672	6,773	-2,101	-31.0%
FL	334	0.2%	13	334	277.3	422.8	-145.5	3,562	5,431	-1,869	-34.4%
FL	335	1.4%	117	335	220.1	365.5	-145.4	25,797	42,839	-17,042	-39.8%
FL	336	10.1%	830	336	218.4	363.8	-145.4	181,257	301,929	-120,672	-40.0%
FL	337	2.0%	165	337	239.5	385	-145.5	39,607	63,669	-24,062	-37.8%
FL	338	2.7%	220	338	191.2	336.7	-145.5	42,057	74,061	-32,005	-43.2%
FL	339	0.1%	6	339	283.7	429.1	-145.4	1,822	2,756	-934	-33.9%
FL	342	0.1%	8	342	264.1	409.5	-145.4	2,120	3,287	-1,167	-35.5%
FL	344	8.1%	660	344	124.7	253.9	-129.2	82,288	167,545	-85,257	-50.9%
FL	347	9.0%	734	347	153.2	298.7	-145.5	112,409	219,169	-106,760	-48.7%
Subtotal		**100.0%**	**8,183**	**6,962**	**4,269**	**7,238**	**-2,969**	**877,875**	**2,032,347**	**-1,154,471**	**-56.8%**
Total		**110.6%**	**10,401**	**9,368**	**6,173**	**9,454**	**-3,281**	**1,251,923**	**2,475,854**	**-1,223,931**	

Notes: ZIP = Three-digit zip code.
Box Dis = Percentage distribution of import and export boxes by zip code through Savannah Harbor by NWA for Georgia, Florida, and Alabama.
NWA boxes = New World Alliance boxes handled through Savannah Harbor in 2009 for the three-state region.
JH Miles = Highway mileage distances between Jacksonville Harbor (Dames Point) and zip codes.
SH Miles = Highway mileage distances between Savannah Harbor (Garden City Terminal) and zip codes.
JH-SH Miles = Difference between JH Miles and SH Miles between the same zip code.
JH Box Miles = NWA Boxes * JH Miles.
SH Box Miles = NWA Boxes * SH Miles.
JH - SH Box Miles = JH Box Miles - SH Box Miles.
% AD/DIS = Percentage of total three-digit zip miles advantage (saved) or disadvantage by JH Box Miles compared to SH Box Miles.

Source: G.E.C., Inc.

Total highway distance map miles for Jacksonville changes from 4,269 to 6,173 with the inclusion of the shorter distances for south Georgia and south Alabama. For Savannah, it changes from 7,238 (Florida only) to 9,454 (Florida and south Georgia and south Alabama). The overall map distance advantage for Jacksonville increases from 2,969 miles (Florida only) to 3,281 miles with the inclusion of the three zip codes in south Georgia and four zip codes in south Alabama.

Table 3 has been populated for the zip codes for the NWA 2009 boxes reported to have been handled through Savannah Harbor in 2009 as imports or exports for the states of Florida,

Georgia, and Alabama. The boxes when multiplied by the distances equal the one-way highway miles for the zip codes in which Jacksonville has a comparative map distance advantage compared to Savannah. For Florida boxes, Jacksonville total one-way map highway miles are 877,875 compared to 2,032,347 for Savannah. The distance savings of one-way map miles is 1,154,471 for Jacksonville compared to Savannah (2,032,347 – 877,875 = 1,154,471). For all three states that have favorable map distances for zip codes (including south Georgia and south Alabama), the map distance one-way box miles are 1,251,923 for Jacksonville and 2,475,854 for Savannah. The distance savings one-way map miles is 1,223,931 for Jacksonville compared to Savannah (2,475,854 – 1,251,923 = 1,223,931).

Table 4 has been populated for the zip codes for the CKYH 2009 boxes reported to have been handled through Savannah Harbor in 2009 as imports or exports for the states of Florida, Georgia, and Alabama. The boxes when multiplied by the distances equal the one-way highway miles for the zip codes in which Jacksonville has a map distance advantage compared to Savannah. For Florida boxes, Jacksonville total map highway miles are 1,843,613 compared to 4,268,102 for Savannah. The distance savings of one-way map miles is 2,424,488 for Jacksonville compared to Savannah (4,268,102 – 1,843,613 = 2,424,488). For all three states that have favorable map distances for zip codes (including south Georgia and south Alabama), the map distance one-way box miles are 2,629,091 for Jacksonville and 5,199,442 for Savannah. The distance savings in one-way map miles is 2,570,351 for Jacksonville compared to Savannah (5,199,442 – 2,629,091 = 2,570,351).

2.2.2 Broader Competitive ECUS Domestic Container Hinterland

The broader regional competitive hinterland wherein ECUS container ports overlap as substitutes for each other in competition between lines, services, ports, and shipper preferences are regarded to be outside of the least total trucking cost hinterland embraced by Florida and limited portions of south Georgia and south Alabama. Table 5 contains the incremental highway distances between the major South East marine container ports located at Jacksonville, Savannah, and Charleston and also Norfolk for major interior point urban areas east of the Mississippi River.[17] The shortest highway one-way map distances are expressed relative to the ports. Jacksonville has the shortest highway distances to New Orleans and Mobile. Savannah is second to Jacksonville for these places with 137 and 100 more miles to New Orleans and Mobile, respectively, compared to Jacksonville highway distances.

Savannah has the least highway distances to Memphis, St. Louis, Jackson, Birmingham, Atlanta, and Nashville. Charleston is relatively close to Savannah for most of these locations, with incremental distances of 44 miles for St. Louis, 66 miles for Jackson, 67 miles for Birmingham, 66 miles for Atlanta, and 44 miles for Nashville. Charleston has the least highway distances to Charlotte, Knoxville, Louisville, Cincinnati, and Indianapolis. Savannah is relatively close to Charleston for these locations with incremental distances of 52 miles for Charlotte, 51 miles for Knoxville, 52 miles for Louisville, 51 miles for Cincinnati, and 52 miles for Indianapolis.

[17] Other South Atlantic ports that handle containers such as Wilmington have been omitted due to the low volume of throughput and limited local hinterland.

Table 4. Jacksonville Harbor Container Hinterland Least Cost Trucking Based on Zip Code Distances with Savannah Harbor for CKYH Boxes

State	ZIP	Box Dis	CKYH Boxes	3 Digit Zip	JH Miles	SH Miles	JH SH Miles	JH Box Miles	SH Box Miles	JH SH Box Miles	% AD/DIS
GA	315	0.0%	72	315	91.9	93.8	-1.9	6,647	6,784	-137	-2.0%
GA	316	2.4%	3,879	316	135.9	162.7	-26.8	527,092	631,036	-103,945	-16.5%
GA	317	0.1%	90	317	193.2	210.4	-17.2	17,467	19,022	-1,555	-8.2%
Subtotal		**2.5%**	**4,041**	**948**	**421**	**467**	**-46**	**551,206**	**656,842**	**-105,637**	
Total			**162,208**								
AL	363	0.9%	69	363	278.9	318.2	-39.3	19,228	21,937	-2,709	-12.4%
AL	364	3.9%	296	364	374.2	413.3	-39.1	110,930	122,521	-11,591	-9.5%
AL	365	1.3%	97	365	419.3	475.6	-56.3	40,470	45,904	-5,434	-11.8%
AL	366	2.0%	155	366	410.3	542.4	-132.1	63,645	84,136	-20,491	-24.4%
Subtotal		**8.1%**	**617**	**1,458**	**1,483**	**1,750**	**-267**	**234,272**	**274,498**	**-40,225**	
Total			**7,595**								
FL	320	0.1%	10	320	33.7	165.7	-132	341	1,676	-1,335	-79.7%
FL	321	0.1%	10	321	83	228.4	-145.4	840	2,310	-1,471	-63.7%
FL	322	35.9%	6,170	322	0	143.1	-143.1	0	882,989	-882,989	-100.0%
FL	323	0.1%	20	323	178.4	310.5	-132.1	3,609	6,282	-2,673	-42.5%
FL	324	0.1%	13	324	271.4	403.4	-132	3,660	5,441	-1,780	-32.7%
FL	325	0.9%	162	325	341.3	473.3	-132	55,239	76,602	-21,364	-27.9%
FL	326	15.3%	2,623	326	86.2	218.2	-132	226,080	572,282	-346,201	-60.5%
FL	327	0.4%	67	327	119.5	265	-145.5	8,059	17,871	-9,812	-54.9%
FL	328	8.3%	1,420	328	140.7	286.1	-145.4	199,729	406,130	-206,401	-50.8%
FL	330	0.1%	17	330	371.4	516.8	-145.4	6,261	8,713	-2,451	-28.1%
FL	331	5.0%	859	331	347.9	493.4	-145.5	299,012	424,066	-125,054	-29.5%
FL	333	0.2%	30	333	323.3	468.7	-145.4	9,811	14,223	-4,412	-31.0%
FL	334	0.2%	27	334	277.3	422.8	-145.5	7,480	11,405	-3,925	-34.4%
FL	335	1.4%	246	335	220.1	365.5	-145.4	54,176	89,965	-35,789	-39.8%
FL	336	10.1%	1,743	336	218.4	363.8	-145.4	380,656	634,078	-253,422	-40.0%
FL	337	2.0%	347	337	239.5	385	-145.5	83,178	133,710	-50,532	-37.8%
FL	338	2.7%	462	338	191.2	336.7	-145.5	88,323	155,535	-67,212	-43.2%
FL	339	0.1%	13	339	283.7	429.1	-145.4	3,826	5,787	-1,961	-33.9%
FL	342	0.1%	17	342	264.1	409.5	-145.4	4,452	6,904	-2,451	-35.5%
FL	344	8.1%	1,386	344	124.7	253.9	-129.2	172,812	351,859	-179,048	-50.9%
FL	347	9.0%	1,541	347	153.2	298.7	-145.5	236,069	460,274	-224,204	-48.7%
Subtotal		**100.0%**	**17,185**	**6,962**	**4,269**	**7,238**	**-2,969**	**1,843,613**	**4,268,102**	**-2,424,488**	**-56.8%**
Total		**110.6%**	**21,843**	**9,368**	**6,173**	**9,454**	**-3,281**	**2,629,091**	**5,199,442**	**-2,570,351**	

Notes: ZIP = Three-digit zip code.
Box Dis = Percentage distribution of import and export boxes by zip code through Savannah Harbor by CHYK for Georgia, Florida, and Alabama.
CKYH boxes = CKYH boxes handled through Savannah Harbor in 2009 for the three-state region.
JH Miles = Highway mileage distances between Jacksonville Harbor (Dames Point) and zip codes.
SH Miles = Highway mileage distances between Savannah Harbor (Garden City Terminal) and zip codes.
JH-SH Miles = Difference between JH Miles and SH Miles between the same zip code.
JH Box Miles = CKYH Boxes * JH Miles.
SH Box Miles = CKYH Boxes * SH Miles.
JH - SH Box Miles = JH Box Miles - SH Box Miles.
% AD/DIS = Percentage of total three-digit zip miles advantage (saved) or disadvantage by JH Box Miles compared to SH Box Miles.

Source: G.E.C., Inc.

Table 5. Expanded Hinterland Incremental Highway Distances Between ECUS Container Ports: Least Total Highway Distances

City/Port	Jacksonville	Savannah	Charleston	Norfolk
New Orleans	0	137	232	488
Mobile	0	100	234	490
Memphis	96	0	141	279
St. Louis	97	0	44	110
Jackson	98	0	66	318
Birmingham	99	0	67	319
Atlanta	96	0	66	317
Charlotte	184	52	0	127
Nashville	97	0	44	208
Knoxville	184	51	0	155
Louisville	161	52	0	47
Cincinnati	183	51	0	86
Columbus	263	131	79	0
Indianapolis	161	52	0	47
Chicago	215	68	16	0
Detroit	348	216	166	0
Cleveland	339	206	155	0

Notes: "0" values indicate least total incremental highway distances between ports and hinterland.
Values other than "0" indicate incrementally higher distances between ports and hinterland.

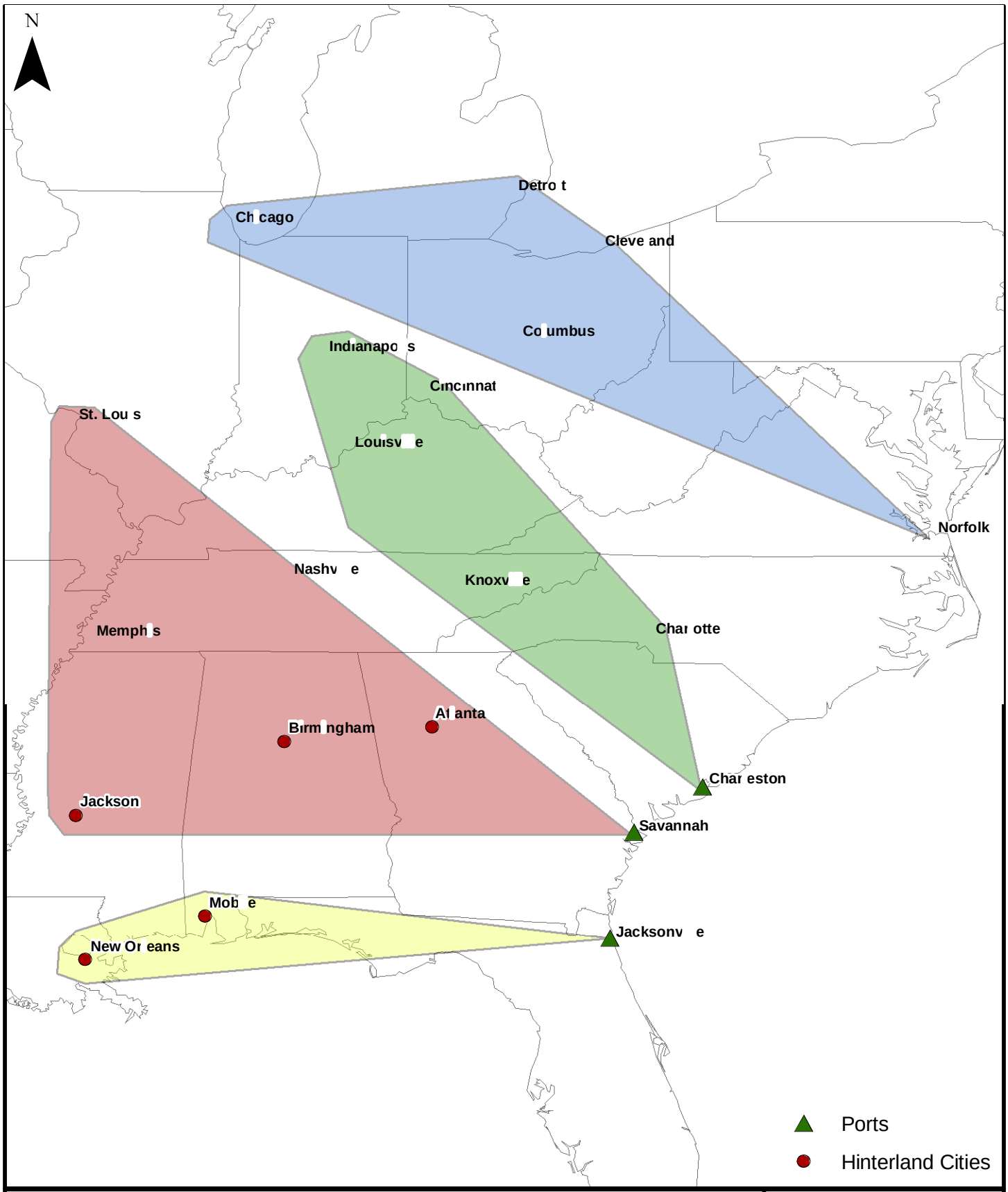
Source: G.E.C., Inc.

Norfolk is shown as the southern boundary for the North Atlantic port range. Norfolk has the least highway distances compared to the other South Atlantic ports for Columbus, Chicago, Detroit, and Cleveland. Both Charleston and Savannah are reasonably close to Chicago in terms of incremental highway distances compared to Norfolk. Savannah is 68 miles greater than Norfolk to Chicago and Charleston is 16 miles greater to Chicago than Norfolk.

Figure 2 shows the least total highway map distance hinterland for each port.

Table 6 contains the incremental highway distances between the ports and hinterland cities in Table 5 with regard to an extended hinterland for each port based on incremental highway distances less than 100 miles greater than other ports. The expanded hinterland for Jacksonville would include Memphis, St. Louis, Jackson, Birmingham, Atlanta, and Nashville. The expanded hinterland for Savannah would include Charlotte, Knoxville, Cincinnati, Indianapolis, and Chicago. The expanded hinterland for Charleston would include St. Louis, Jackson, Birmingham, Atlanta, Nashville, Columbus, and Chicago. The expanded hinterland for Norfolk would include Louisville, Cincinnati, and Indianapolis.

Figure 3 shows the expanded hinterland for each port based on incremental highway distances less than 100 miles. There would be some hinterland overlaps with the least total cost



Least Total Highway Map Distance for Port Hinterlands

GEC

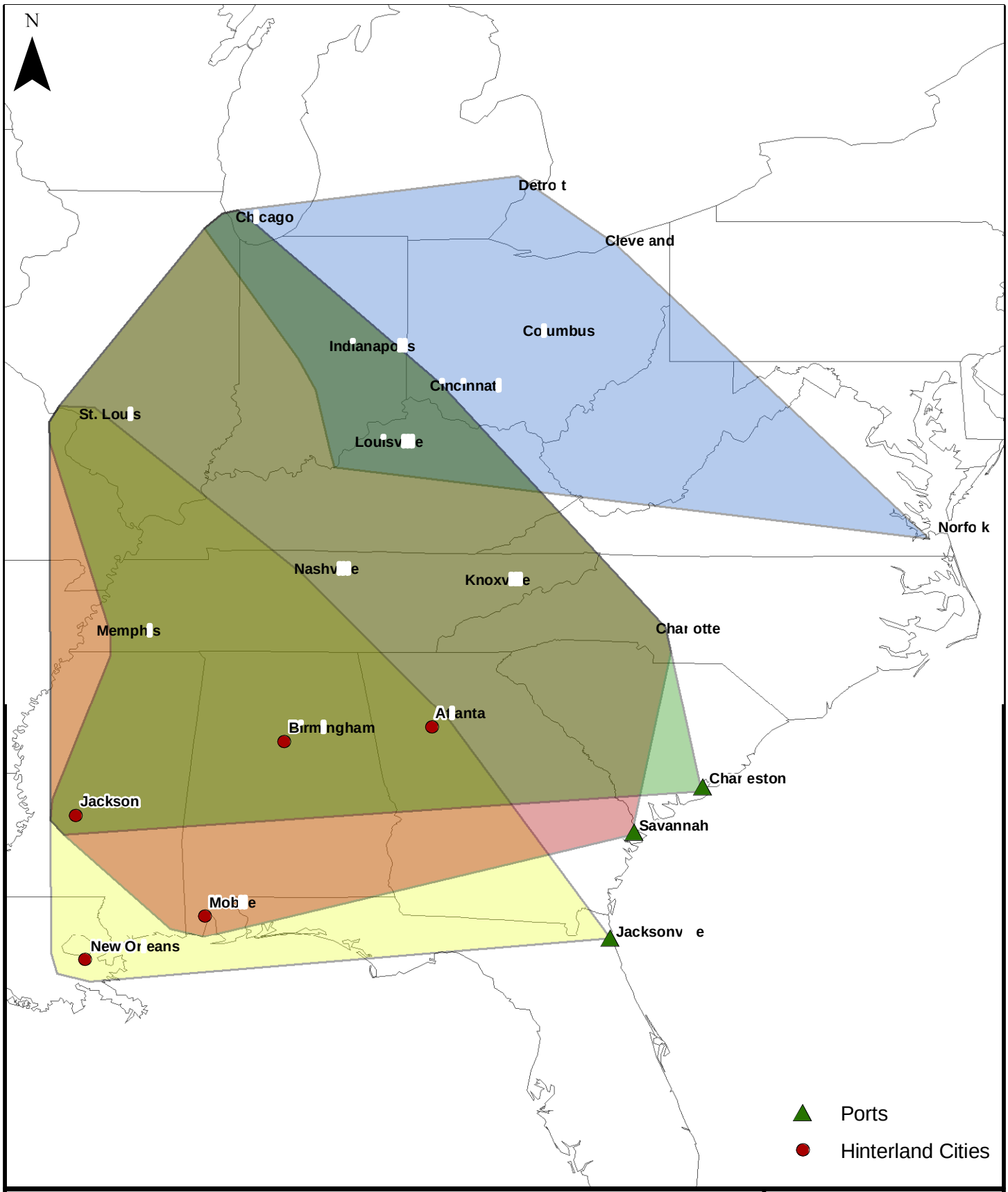
Figure: 2
Date: September 2010
Scale: 1 in = 150 miles
Source: GEC
Map ID: 223070713-2330

Table 6. Expanded Hinterland Incremental Highway Distances Between ECUS Container Ports: Competitive Overlapping Highway Distances

City/Port	Jacksonville	Savannah	Charleston	Norfolk
New Orleans	0	137	232	488
Mobile	0	100	234	490
Memphis	96	0	141	279
St. Louis	97	0	44	110
Jackson	98	0	66	318
Birmingham	99	0	67	319
Atlanta	96	0	66	317
Charlotte	184	52	0	127
Nashville	97	0	44	208
Knoxville	184	51	0	155
Louisville	161	52	0	47
Cincinnati	183	51	0	86
Columbus	263	131	79	0
Indianapolis	161	52	0	47
Chicago	215	68	16	0
Detroit	348	216	166	0
Cleveland	339	206	155	0

Notes: "0" values indicate least total incremental highway distances between ports and hinterland.
Values other than "0" indicate incrementally higher distances between ports and hinterland.
Values >0, <100 indicate competitive overlapping incremental highway distances between ports and hinterland.

Source: G.E.C., Inc.



Expanded Least Total Highway Map Distance for Port Hinterlands

GEC

Figure: 3

Date: September 2010

Scale: 1 in = 150 miles

Source: GEC

Map ID: 223070713-2331

port based on shortest highway map miles as follows (overlapping port(s) in parenthesis): New Orleans – Jacksonville; Mobile – Jacksonville (Savannah); Memphis – Savannah (Jacksonville); St. Louis – Savannah (Charleston and Jacksonville); Jackson – Savannah (Charleston and Jacksonville); Birmingham – Savannah (Charleston and Jacksonville); Atlanta – Savannah (Charleston and Jacksonville); Nashville – Savannah (Charleston and Jacksonville); Charlotte – Charleston (Savannah); Knoxville – Charleston (Savannah); Louisville – Charleston (Norfolk and Savannah); Cincinnati – Charleston (Savannah and Norfolk); Indianapolis – Charleston (Norfolk and Savannah); Chicago – Norfolk (Charleston and Savannah); Detroit – Norfolk; and Cleveland – Norfolk.[18]

Figure 3 suggests that most of the South Atlantic ports have overlapping container hinterlands stretching from the Midwest (Chicago) throughout the region. The largest geographic area of highway map mileage overlap based on 100 miles is between Charleston and Savannah. Norfolk to the north has more overlap with other North Atlantic ports (not shown) and interior points between these ports and Chicago. Jacksonville to the south has overlaps with Charleston for the Savannah southern gateways such as Memphis, St. Louis, Jackson, Birmingham, Atlanta, and Nashville.

2.2.3 Broader Competitive WCUS Domestic Container Hinterland

Little empirical data currently exists that would explicitly define an optimal least total cost paradigm shift in the all water Far East ECUS market relative to the existing WCUS market.[19] It appears that the forthcoming expansion of the Panama Canal to accommodate Post-Panamax container vessels would not likely lead to a loss of all water services between the FE ECUS. However, it is conjectural at this time whether and to what extent lines will shift FE WCUS cargo to an all water ECUS routing in response to an expanded Panama Canal with Post-Panamax container vessel capabilities (as opposed to allowing future increased FE WCUS cargoes to shift to the ECUS via an all-water routing). Several factors suggest that some shift will inevitably occur, including a plethora of container vessels (over capacity), less shipper sensitivity to shortest transit time compared to longer transit time as compared to less or similar variability of transit time regardless of length, and existence of ECUS port facilities such as TraPac at Dames Point with sunk capital and excess capacity compared to WCUS ports.[20] Other unknowns are the vessel tolling rate structure of the expanded Panama Canal with regard to sunk cost and debt associated with expansion and the goal of attracting more larger vessels through the expanded facilities to compete with U.S. intermodal rail services linking the west coast and Midwest, and the interplay between vessel operating costs (fuel) and steaming practices,

[18] New York and Baltimore would be suitable overlapping ports to the North Atlantic range covering Detroit, Cleveland, etc.

[19] The context of the FE US market is that about 75 percent of the total volume is FE WCUS and about 25 percent of the total volume is FE ECUS all water direct. While the ECUS all water service volumes are much smaller than the FE WCUS volumes, the ECUS volumes have grown appreciably notwithstanding existing Panama Canal constraints that limit the all water services to light loaded Panamax container vessels not exceeding 38 feet draft (fresh water). Consequently, when the Canal is enlarged it is envisioned that vessel costs for ECUS services will decline, which might lead to a shift of cargo (and vessels, particularly Post-Panamax vessels) to the ECUS.

[20] Arguably, MOL and its alliance partners, currently APL and Hyundai, will have an incentive to move containers through TraPac Dames Point given its development and excess capacity.

particularly slow steaming, which tends to mitigate fuel cost savings arguments for west coast ports compared to all water services to east coast ports.

It is likely to expect that lines with excess capacity for vessels and terminals such as TraPac will shift containers to the ECUS from the WCUS once Canal capacity and capability are enlarged (and priced to encourage shifts of Post-Panamax vessels from FE WCUS deployments to ECUS deployments). However, the timing and extent of such a shift is conjectural until the expanded Canal is in play with Post-Panamax services, tolling structures, etc.

2.2.4 Broader Competitive Regional Container Hinterland

Similar to the WCUS shift of containers to ECUS in conjunction with the expansion of the Panama Canal, it is envisioned that lines with marine container terminals such as TraPac will induce Caribbean transshipment cargo to shift to Jacksonville to fit into the existing well-developed niche that the Port has developed in this region centered on Puerto Rico. However, the timing and extent of such a shift of containerized transshipment cargo to Jacksonville remains conjectural at this time.[21]

3.0 IDENTIFY COMMODITY TYPES, VOLUMES AND FLOWS

3.1 WATERBORNE COMMERCE STATISTICS

Table 7 summarizes the total annual foreign trade commodity cargo tons for major categories for Jacksonville Harbor for the most recent 10-year period for which Waterborne Commerce Statistics are available, 1997-2008. The commodity tonnages encompass all facilities on the St. Johns River in the domain of Jacksonville Harbor that would be greater than Jacksonville Port Authority facilities and primarily oriented to bulk cargos.

Table 7. Jacksonville Harbor Waterborne Foreign Commerce Annual Commodity Tons (000), 1997-2008

	Total											
Commodity	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Total All Commodities	8,890	10,246	9,191	9,520	8,943	9,677	10,831	11,429	12,509	13,975	13,606	13,665
Total Coal	1,332	1,645	1,361	1,467	1,773	1,293	1,959	2,257	1,535	1,907	3,153	4,426
Total Petroleum and Petroleum Products	2,785	3,313	3,365	2,645	1,652	2,982	3,174	2,789	3,601	4,650	4,036	3,023
Total Chemicals and Related Products	648	503	304	210	223	256	291	371	308	264	254	265
Total Crude Materials, Inedible, Except Fuels	1,596	1,965	1,913	2,897	2,861	2,935	3,054	3,213	3,698	3,891	3,277	3,043
Total Primary Manufactured Goods	941	1,039	912	958	926	573	785	1,024	1,116	1,296	929	739
Total Food and Farm Products	679	671	409	375	391	565	456	441	618	438	394	400
Total All Manufactured Equipment, Machinery and Products	900	1,099	914	907	1,035	948	902	1,044	1,395	1,454	1,492	1,698
Total Unknown or Not Elsewhere Classified	11	10	13	62	80	125	210	291	237	77	71	72

Source: Waterborne Commerce Statistics.

3.2 JACKSONVILLE PORT AUTHORITY STATISTICS

[21] Interviews with Puerto Rican vessel operators suggested that they were poised to take advantage of the close proximity of their existing terminals at Talleyrand and Blount Island to TraPac to facilitate the transfer of Caribbean (including Puerto Rico) containers for transshipment via Jacksonville.

Table 8 contains a time series of Jacksonville Port Authority (Jax Port) cargo statistics handled by its facilities between FR 93/94 and FY 08/09. The Jax Port has had a relatively stable traffic

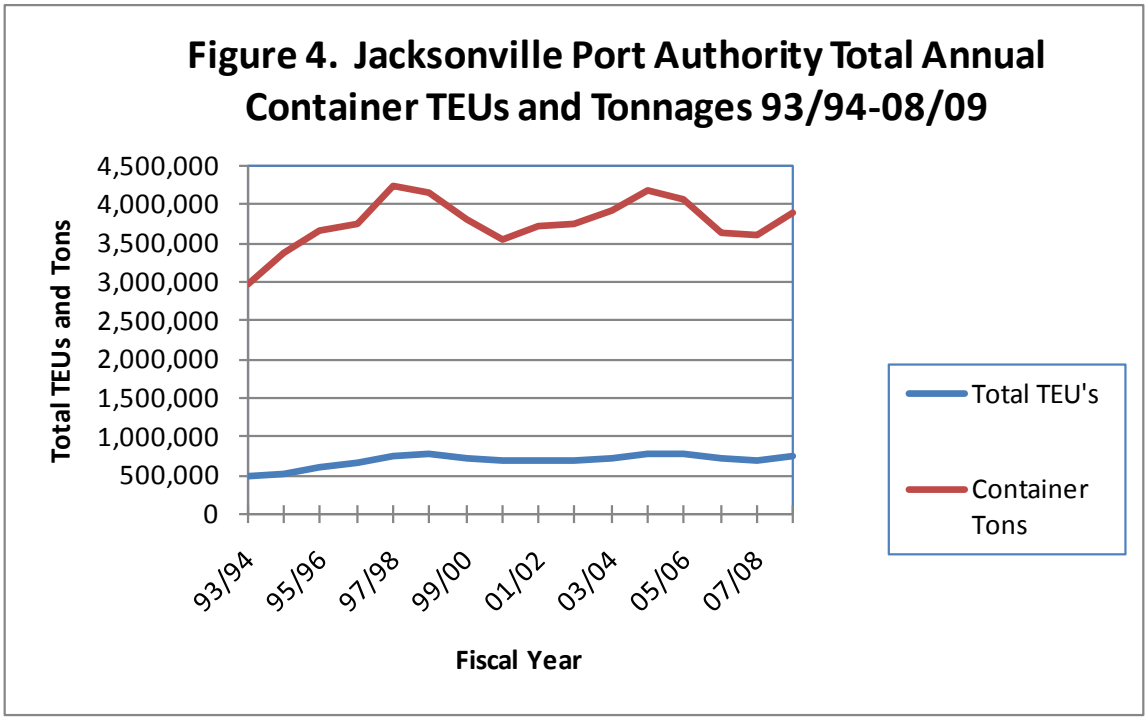
Table 8. Jacksonville Port Authority Tonnage - Trading Partners/Top Markets, 93/94-08/09

	FY 93/94	FY 94/95	FY 95/96	FY 96/97	FY 97/98	FY 98/99	FY 99/00	FY 00/01	FY 01/02	FY 02/03	FY 03/04	FY 04/05	FY 05/06	FY 06/07	FY 07/08	FY 08/09
									Vessels							
Auto	413	393	400	396	392	430	428	444	477	478	426	421	485	611	648	564
Container	740	759	780	767	1,002	991	888	875	865	828	850	840	824	765	786	833
Cruise	0	0	0	0	0	0	0	0	0	0	50	86	79	80	50	80
Liquid	71	83	78	86	102	113	107	100	92	73	83	92	90	89	102	73
Dry	6	16	13	20	30	35	39	28	32	35	31	51	42	44	51	33
Petroleum	74	63	42	36	23	26	2	0	0	0	0	0	0	0	0	0
Breakbulk	72	44	51	72	109	84	120	124	135	120	127	126	238	187	171	168
Idle	46	33	17	25	14	4	8	16	10	5	15	19	41	24	19	14
Vessel Total	**1,422**	**1,391**	**1,381**	**1,402**	**1,672**	**1,683**	**1,592**	**1,587**	**1,611**	**1,539**	**1,582**	**1,635**	**1,799**	**1,800**	**1,827**	**1,765**
Container Information																
Full Units	187,481	213,597	234,704	244,557	270,017	263,773	236,045	227,013	231,085	235,283	252,482	261,788	270,662	231,070	237,126	250,534
Empty Units	77,289	84,915	96,971	106,672	120,287	124,821	113,717	117,093	107,637	108,285	110,366	125,860	111,472	120,470	106,939	124,996
Land Transit	32	0	0	0	0	0	0	0	0	0	655	1,207	2,395	2,106	907	705
Total Units	**264,802**	**298,512**	**331,675**	**351,229**	**390,304**	**388,594**	**349,762**	**344,106**	**338,722**	**343,568**	**363,503**	**388,855**	**384,529**	**353,646**	**344,972**	**376,235**
TEU Information																
Import	215,527	222,689	257,972	303,838	320,477	324,598	330,707	332,849	364,758	317,720	337,402	367,920	345,708	325,819	317,279	394,129
Export	263,520	306,857	355,476	371,358	433,346	447,284	377,321	366,054	319,078	374,702	390,258	409,398	422,531	384,254	380,215	360,223
Total TEU's	**479,047**	**529,546**	**613,448**	**675,196**	**753,823**	**771,882**	**708,028**	**698,903**	**683,836**	**692,422**	**727,660**	**777,318**	**768,239**	**710,073**	**697,494**	**754,352**
Cruise Vessels							**0**	**0**	**0**	**0**	**51**	**87**	**77**	**78**	**46**	**78**
Cruise Passengers																
Embark							**0**	**0**	**0**	**0**	**85,382**	**136,834**	**128,602**	**129,978**	**75,937**	**185,434**
Embark + Debark							**0**	**0**	**0**	**0**	**170,927**	**275,375**	**257,065**	**259,816**	**152,411**	**370,621**
Auto Units																
Total Auto Units	**429,571**	**458,373**	**420,536**	**415,112**	**482,785**	**511,552**	**538,408**	**579,924**	**615,030**	**544,062**	**533,227**	**544,336**	**609,967**	**614,647**	**656,805**	**419,691**
									Tonnage							
Container																
Import	771,156	868,782	928,236	960,454	1,003,758	1,045,376	860,861	740,785	865,676	899,771	945,171	1,014,483	1,187,849	971,813	913,441	1,070,687
Export	2,199,304	2,495,209	2,721,203	2,793,792	3,222,067	3,118,453	2,936,063	2,803,822	2,851,827	2,851,480	2,982,266	3,152,898	2,888,058	2,666,902	2,687,275	2,823,908
Container	**2,970,460**	**3,363,991**	**3,649,439**	**3,754,246**	**4,225,825**	**4,163,829**	**3,796,924**	**3,544,607**	**3,717,503**	**3,751,251**	**3,927,437**	**4,167,382**	**4,075,907**	**3,638,715**	**3,600,716**	**3,894,595**
Break Bulk																
Import	173,273	156,291	149,898	147,391	364,128	428,836	512,837	528,451	534,025	513,482	654,253	611,918	957,127	974,849	768,698	655,180
Export	97,751	27,104	68,669	157,160	207,478	93,465	97,064	143,714	164,543	190,321	176,464	195,034	255,790	186,926	183,855	119,585
Breakbulk	**271,024**	**183,395**	**218,567**	**304,551**	**571,606**	**522,301**	**609,901**	**672,165**	**698,568**	**703,803**	**830,717**	**806,951**	**1,212,917**	**1,161,775**	**952,553**	**774,765**
Bulk																
Import	1,245,342	1,276,236	995,538	1,180,530	1,558,140	1,753,592	1,594,236	1,472,622	1,544,828	1,580,044	1,747,255	2,268,448	2,086,724	2,108,183	2,265,261	1,595,842
Export	62,618	116,332	129,899	133,918	172,645	186,066	211,609	196,148	121,330	119,540	115,448	120,258	116,525	144,717	210,607	101,238
Bulk	**1,307,960**	**1,392,568**	**1,125,437**	**1,314,448**	**1,730,785**	**1,939,658**	**1,805,845**	**1,668,770**	**1,666,158**	**1,699,584**	**1,862,703**	**2,388,706**	**2,203,249**	**2,252,900**	**2,475,868**	**1,697,080**
Auto																
Import	548,502	624,525	574,959	570,832	717,105	745,401	779,427	832,078	868,501	759,956	783,765	712,905	898,943	861,144	776,499	376,604
Export	99,968	126,961	138,452	150,031	132,109	153,082	121,986	139,279	168,391	386,422	283,646	372,710	305,527	394,667	589,874	538,919
Auto	**648,470**	**751,486**	**713,411**	**720,863**	**849,214**	**898,483**	**901,413**	**971,357**	**1,036,892**	**1,146,378**	**1,067,411**	**1,085,616**	**1,204,470**	**1,255,811**	**1,366,373**	**915,523**
									Total							
Import	2,738,273	2,925,834	2,648,631	2,859,207	3,643,131	3,973,205	3,747,361	3,573,936	3,813,030	3,753,253	4,130,444	4,607,754	5,130,643	4,915,989	4,723,899	3,698,313
Export	2,459,641	2,765,606	3,058,223	3,234,901	3,734,299	3,551,066	3,366,722	3,282,963	3,306,091	3,547,763	3,557,824	3,840,900	3,565,900	3,393,212	3,671,611	3,583,650
Total	**5,197,914**	**5,691,440**	**5,706,854**	**6,094,108**	**7,377,430**	**7,524,271**	**7,114,083**	**6,856,899**	**7,119,121**	**7,301,016**	**7,688,268**	**8,448,654**	**8,696,543**	**8,309,201**	**8,395,510**	**7,281,963**

Source: Jacksonville Port Authority.

base in terms of tonnage, which is an abstract of the larger overall tonnages reflected in Waterborne Commerce Statistics for foreign trade through Jacksonville Harbor (refer to Table 7). Jax Port cargo statistics are dominated by containers and then to a progressively less degree by bulk cargo imports and break bulk imports. Automobile units also play an important role in the Port's overall total cargo base.

The container trade that is handled by Jax Port facilities represents all of the container trade handled at Jacksonville Harbor. This regional foreign and domestic foreign trade has been previously described as oriented to the Caribbean, particularly Puerto Rico, which is considered domestic in terms of Jones Act (US flag) vessels. Most of the Puerto Rican trade is exports; consequently, there is a predominance of total container export tonnage compared to total container import tonnage because of the pivotal niche of Puerto Rican trade among the overall traditional Jacksonville container trades. Container TEUs and tons have displayed stability during the last decade. Figure 4 contains the annual total TEUs and container tonnages for the period 93/94 through 08/09.



4.0 PROJECT WATERBORNE COMMERCE

4.1 HISTORICAL GROWTH TRENDS

Table 9 expresses the changes in total annual foreign trade commodity tons for Jacksonville Harbor between 1997 and 2008 in terms of average annual compound growth rates (AACGR). There has been substantial growth in total annual tonnage for all commodities for Jacksonville Harbor since 1997. The AACGR for total annual tons ranges from relatively low values of 2.92 and 2.99 percent for the periods 1998-2008 and 2005-2008 to high values of 5.92 percent and

6.24 percent for the periods 2002-2008 and 2001-2008, respectively. Since 2001, the AACGR for total annual tons of cargo has been nearly five percent for all years and with the exception of the last three years nearly nine percent for the period 2004-2006.

Table 9. Jacksonville Harbor Waterborne Foreign Commerce Commodity Tons Average Annual Compound Growth Rates, 1997-2008

Commodity	Total										
	1997 2008	1998 2008	1999 2008	2000 2008	2001 2008	2002 2008	2003 2008	2004 2008	2005 2008	2006 2008	2007 2008
Total All Commodities	3.99%	2.92%	4.51%	4.62%	6.24%	5.92%	4.76%	4.57%	2.99%	-1.12%	0.43%
Total Coal	11.53%	10.40%	14.00%	14.80%	13.96%	22.76%	17.71%	18.34%	42.33%	52.35%	40.37%
Total Petroleum and Petroleum Products	0.75%	-0.91%	-1.18%	1.68%	9.02%	0.23%	-0.97%	2.03%	-5.67%	-19.37%	-25.10%
Total Chemicals and Related Products	-7.81%	-6.21%	-1.51%	2.95%	2.50%	0.58%	-1.85%	-8.07%	-4.89%	0.19%	4.33%
Total Crude Materials, Inedible Except Fuels	6.04%	4.47%	5.29%	0.62%	0.88%	0.60%	-0.07%	-1.35%	-6.29%	-11.57%	-7.14%
Total Primary Manufactured Goods	-2.17%	-3.35%	-2.31%	-3.19%	-3.17%	4.33%	-1.20%	-7.83%	-12.84%	-24.49%	-20.45%
Total Food and Farm Products	-4.70%	-5.04%	-0.25%	0.81%	0.33%	-5.59%	-2.59%	-2.41%	-13.50%	-4.44%	1.52%
Total All Manufactured Equipment, Machinery and Products	5.94%	4.45%	7.12%	8.15%	7.33%	10.20%	13.49%	12.93%	6.77%	8.07%	13.81%
Total Unknown or Not Elsewhere Classified	18.63%	21.82%	20.95%	1.89%	-1.49%	-8.78%	-19.27%	-29.47%	-32.78%	-3.30%	1.41%

Source: G.E.C., Inc.

The major foreign trade commodity groups by tonnage for Jacksonville Harbor are petroleum and related products, crude materials, coal, manufactured equipment, machinery and products, and primary manufactured goods. Total petroleum, coal, and crude materials in 2008, 10.492 million tons, was nearly 75 percent of total tonnage. The total for these four major groups (petroleum, crude materials, manufactured equipment, and primary manufactured goods) in 2006, 12.190 million tons, was nearly 90 percent of total foreign tonnage.

Petroleum and related products moving through Jacksonville Harbor have increased from 2.685 million tons in 1997 to 4.650 million tons in 2006, thereafter decreasing to 4.036 million tons in 2007 and 3.023 million tons in 2008 The AACGR was 0.75 percent for the 11-year period between 1997 and 2008. Petroleum grew modestly between 1997 and 2004 and then substantially for 2005 and 2006. However, the recent declines in 2007 and 2008 erase much of the overall growth in the time series. Moreover, interviews with the existing and prospective petroleum tank farms suggest that growth will likely be very low in the future, with the possibility of some declines of some products in response to shifts in domestic gasoline consumption that will likely be offset by increases in other petroleum products such as asphalt.

Crude materials tonnages, similar to petroleum tonnages, have increased substantially from 1.596 million tons in 1997 to 3.891 million tons in 2006 thereafter declining to 3.277 million tons in 2007 and 3.043 million tons in 2008. Crude materials tonnages have displayed a more even sustained growth rate than petroleum for the time series, 1997-2008. Crude materials tonnages had an AACGR of over 10 percent for the period 1997-2008, except for the last three years. Growth rates ranged from 6.04 percent in the period 1997-2008 to 0.60 percent and 0.62 percent for the periods 2002-2008 and 2000-2008, respectively. Crude material tonnages declined after 2003, primarily in the last two years, 2006-2008 and 2007-2008. Crude materials tonnages dominated by limestone and gypsum products associated with construction are expected to grow modestly in line with population projections for the local hinterland.

Coal tonnage is a mixed picture, ranging from 1.293 million tons in 2002 to 2.257 million tons in 2004, declining in 2005 to 1.535 million tons and thereafter rising to 4.426 million tons by 2008. The AACGR was 11.53 percent between 1997-2008 and ranged from 10.40 percent for the period 1998-2008 to 52.35 percent for the period 2006-2008. Coal is not expected to grow substantially more than the present plateau of nearly four million tons. Interviews with the Jacksonville Electric Authority (JEA) indicated a plateau of about four million tons annually for their receipts as the largest single existing coal commodity importer at Jacksonville.[22]

Manufactured products (both equipment, machinery and products and primary manufactured goods), the bulk of which is probably containerized, have grown substantially in recent years. For primary manufactured products, the AACGR has ranged from 4.45 percent for the period 1998-2008 to 13.49 percent and 13.81 percent for the periods 2003-2008 and 2007-2008, respectively. For manufactured equipment and machinery, the recent growth rates have ranged from 6.77 percent for the period 2005-2008 to 13.81 percent for the period 2007-2008. Containerized cargo is projected to grow substantially, with new services resulting from major global service providers securing private terminals at Jacksonville Harbor.

4.2 POPULATION PROJECTIONS USED FOR FORECASTING

Table 10 contains the population projections for the north Florida hinterland counties that are dominated by Duval County, contiguous with Jacksonville prepared by the University of Florida.[23] Total population in 2006 is 1.843 million. There are population projections for low, medium, and high growth for the periods 2010, 2015, 2020, 2025, and 2030. Figure 5 shows the population projections for low, medium, and high for the region for the period 2006 through 2030.

Table 11 contains the average annual compound growth rates (AACGR) for the north Florida hinterland counties in Table 10(4). For the region, the AACGR is 2.41 percent for the period 2010 to 2015. For Duval County (Jacksonville), the AACGR is 1.88 percent for the period 2010 to 2015. Some of the smaller populated counties outside but adjacent to Duval County (such as Nassau, St. Johns, and Clay counties) are projected to have much higher growth than Duval County. Overall, the region's medium population average annual growth rates are 1.61 percent for 2015 to 2020, 1.34 percent for 2020 to 2025, and 1.18 percent for 2025 to 2030. Figure 6 shows the population growth rates for the low, medium, and high for the region for the period 2010 to 2030.

4.2.1 Existing Cargo

Population growth rates were used as the basis for increasing the cargo volumes handled through Jacksonville Harbor except for liquid bulk cargo for which no growth was assumed because of the preponderance of automotive fuel imports which are not expected to grow.

[22] The historical commodity statistics for coal do not reflect that a major new coal terminal facility is planned for development at Jacksonville Harbor.
[23] The political boundaries of the City of Jacksonville are generally contiguous with Duval County with some exceptions related to beach communities that elected not to participate in a consolidated City-County government.

Table 10. North Florida Population Projections, 2010-2030

County	Estimate April 1, 2006	Projections, April 1				
		2010	2015	2020	2025	2030
DUVAL	879,235					
Low		906,000	938,000	960,100	973,300	980,300
Medium		944,500	1,017,700	1,084,400	1,143,900	1,199,900
High		981,500	1,101,100	1,221,900	1,344,100	1,470,400
NASSAU	68,188					
Low		71,900	76,300	79,400	81,400	82,500
Medium		75,800	84,500	92,700	100,000	106,900
High		79,500	93,200	107,500	122,100	137,500
ST. JOHNS	165,291					
Low		181,500	199,700	213,100	221,500	225,700
Medium		193,400	226,100	256,800	284,500	310,500
High		204,700	254,100	306,600	361,400	419,100
CLAY	176,901					
Low		190,800	207,000	219,500	227,900	233,100
Medium		201,100	229,400	255,600	279,100	300,900
High		210,900	253,100	296,900	341,900	388,600
BRADFORD	28,551					
Low		28,900	29,300	29,700	29,900	29,900
Medium		29,800	31,200	32,500	33,700	34,700
High		30,700	33,100	35,600	38,000	40,500
BAKER	25,004					
Low		25,800	26,700	27,400	27,700	27,900
Medium		26,900	29,000	30,900	32,600	34,100
High		28,000	31,400	34,800	38,300	41,800
COLUMBIA	63,538					
Low		66,000	68,400	70,100	71,100	71,500
Medium		68,800	74,200	79,200	83,500	87,600
High		71,500	80,300	89,200	98,200	107,300
UNION	15,028					
Low		15,200	15,000	14,700	14,200	13,600
Medium		16,200	17,000	17,800	18,500	19,100
High		17,200	19,100	21,100	23,100	25,300
FLAGLER	89,075					
Low		106,100	124,900	139,900	150,700	157,800
Medium		113,100	141,300	168,000	192,200	215,100
High		119,700	159,000	201,300	245,800	293,100
PUTNAM	74,416					
Low		74,600	75,200	75,500	75,500	75,300
Medium		77,000	79,900	82,700	85,200	87,500
High		79,300	84,800	90,500	96,100	101,900
ALACHUA	243,779					
Low		249,300	255,500	258,000	258,700	257,800
Medium		259,800	277,300	291,800	304,700	316,800
High		270,100	299,900	328,400	357,200	386,700
HAMILTON	14,517					
Low		14,400	14,200	14,100	13,800	13,600
Medium		15,000	15,500	16,000	16,400	16,800
High		15,600	16,700	17,900	19,100	20,300
Subtotal	1,843,523					
Low		1,930,500	2,030,200	2,101,500	2,145,700	2,169,000
Medium		2,021,400	2,223,100	2,408,400	2,574,300	2,729,900
High		2,108,700	2,425,800	2,751,700	3,085,300	3,432,500

Source: G.E.C., Inc.

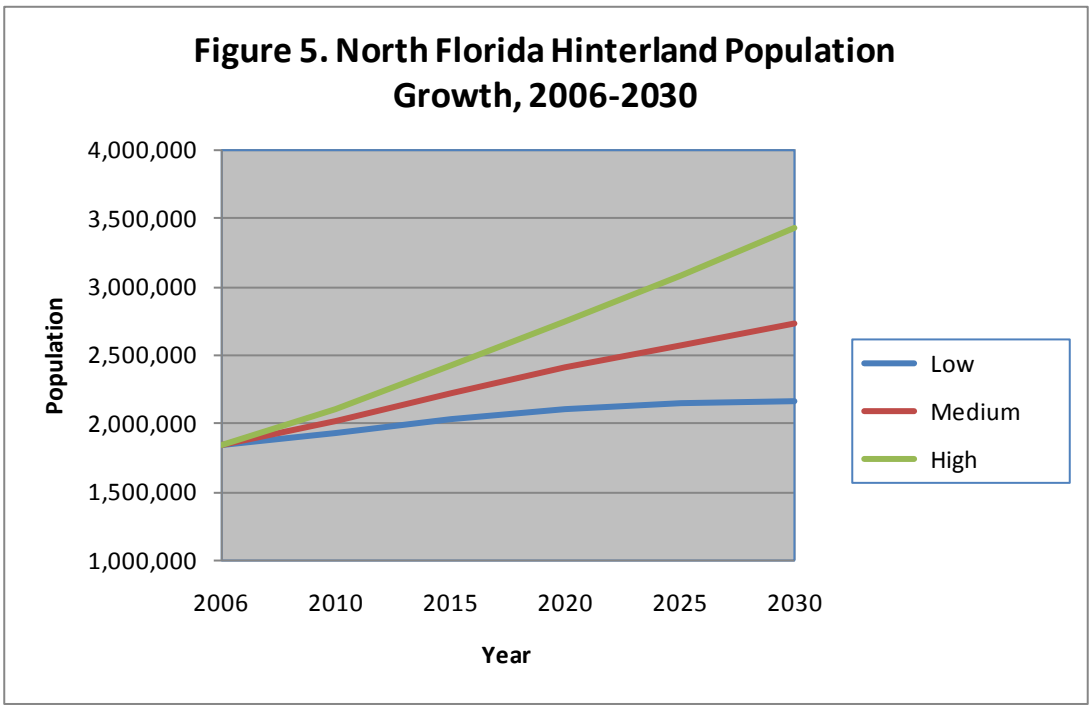
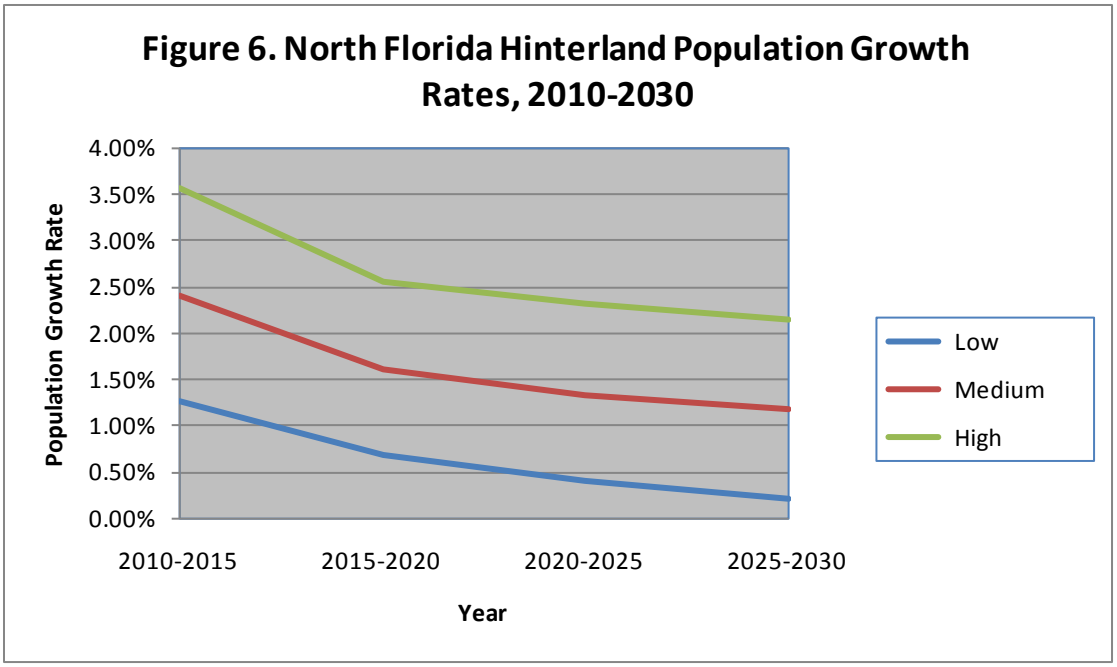


Figure 5. North Florida Hinterland Population Growth, 2006-2030
4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
Population
2006
2010
2015
2020
2025
2030
Year
Low
Medium
High

Table 11. North Florida Population Projections Average Annual Compound Growth Rates, 2010-2030

County	2010 2015	2015 2020	2020 2025	2025 2030
DUVAL				
Low	0.87%	0.47%	0.27%	0.14%
Medium	1.88%	1.28%	1.07%	0.96%
High	2.92%	2.10%	1.92%	1.81%
NASSAU				
Low	1.50%	0.80%	0.50%	0.27%
Medium	2.75%	1.87%	1.53%	1.34%
High	4.05%	2.90%	2.58%	2.40%
ST. JOHNS				
Low	2.42%	1.31%	0.78%	0.38%
Medium	3.98%	2.58%	2.07%	1.76%
High	5.55%	3.83%	3.34%	3.01%
CLAY				
Low	2.06%	1.18%	0.75%	0.45%
Medium	3.35%	2.19%	1.77%	1.52%
High	4.67%	3.24%	2.86%	2.59%
BRADFORD				
Low	0.34%	0.27%	0.13%	0.00%
Medium	1.15%	0.82%	0.73%	0.59%
High	1.90%	1.47%	1.31%	1.28%
BAKER				
Low	0.86%	0.52%	0.22%	0.14%
Medium	1.90%	1.28%	1.08%	0.90%
High	2.91%	2.08%	1.94%	1.76%
COLUMBIA				
Low	0.90%	0.49%	0.28%	0.11%
Medium	1.91%	1.31%	1.06%	0.96%
High	2.94%	2.12%	1.94%	1.79%
UNION				
Low	-0.33%	-0.40%	-0.69%	-0.86%
Medium	1.21%	0.92%	0.77%	0.64%
High	2.65%	2.01%	1.83%	1.84%
FLAGLER				
Low	4.16%	2.29%	1.50%	0.92%
Medium	5.72%	3.52%	2.73%	2.28%
High	7.36%	4.83%	4.08%	3.58%
PUTNAM				
Low	0.20%	0.08%	0.00%	-0.05%
Medium	0.93%	0.69%	0.60%	0.53%
High	1.69%	1.31%	1.21%	1.18%
ALACHUA				
Low	0.62%	0.19%	0.05%	-0.07%
Medium	1.64%	1.02%	0.87%	0.78%
High	2.65%	1.83%	1.70%	1.60%
HAMILTON				
Low	-0.35%	-0.14%	-0.43%	-0.29%
Medium	0.82%	0.64%	0.50%	0.48%
High	1.72%	1.40%	1.31%	1.23%
Subtotal				
Low	1.27%	0.69%	0.42%	0.22%
Medium	2.41%	1.61%	1.34%	1.18%
High	3.56%	2.55%	2.31%	2.16%

Source: G.E.C., Inc.



4.2.2 Emerging Cargo

Discussions with TraPac indicated that during 2009 with two global container services calling weekly the terminal made a total of 38,000 moves.[24] Each move represents a container (box) transfer between shore and vessel. TraPac estimates that the inbound moves (imports) are all loaded and that 65 percent of the outbound moves (exports) are loaded. It would appear that the TraPac terminal in the 2009 calendar year handled a total of 31,350 loaded boxes (38,000/2 = 19,000 inbound [import] and 19,000 outbound [export] moves; 19,000 total loaded in + 0.65 * 19,000 total out = 31,350 loaded box moves). This volume, 31,350 loaded boxes, far exceeds the 10,401 boxes used from Phase 1 for the NWA Savannah Harbor boxes to and from the three-state hinterland where Jacksonville has a competitive truck hinterland cost advantage.

Discussions with TraPac in 2010 indicated that during June 2010 a third service began weekly calls augmenting the 2009 volumes from two services calling weekly. The terminal projects that the 2010 volume will increase to a total between 55,000 to 60,000 moves.[25] Each move represents a container (box) transfer between shore and vessel. TraPac estimates that the inbound moves (imports) are all loaded and that 65 percent of the outbound moves (exports) are loaded. It would appear that the TraPac terminal in the 2009 calendar year handled a total of 31,350 loaded boxes, and this will increase to 47,437 loaded boxes in 2010 (57,500/2 = 28,750 inbound [import] and 28,750 outbound [export] moves; 28,750 total loaded in + 0.65 * 28,750 total out = 47,437 loaded box moves). This volume, 47,437 loaded boxes, far exceeds the 10,401 boxes used from Phase 1 for the NWA Savannah Harbor boxes to and from the three-

[24] Terminal operations are conventionally depicted based on "moves," which is a ship to shore transfer of a loaded or empty container of any size or a shore to ship transfer of a loaded or empty container of any size.
[25] The new service is a Southeast Asia service with Post-Panamax vessels. Typically, there are about 500 moves per call for this service compared to about 350 moves per call for the two Asian Panama Canal services.

state hinterland where Jacksonville has a competitive truck hinterland cost advantage and is also substantially greater than the 2009 actual box volume (31,350 loaded boxes).

Table 12 indicates a compilation of the vessel calls at TraPac (Dames Point) from the inception of service at the new facility commencing in January 2009 to September 2010.[26] For most of 2009 there was one weekly service calling TraPac although originally it was conceived that two weekly services would call there. One FE ECUS service was eliminated that also called Savannah Harbor in response to the general decline in marine container trades during the recent recession. Subsequently, in the latter part of 2009 a second weekly service was initiated at TraPac.[27] An average of two Panamax container calls weekly persisted throughout 2010 until June when a third service, a weekly Post-Panamax South Asia Suez ECUS pendulum, was initiated.[28] Between June 16 and September 2 the TraPac facility averaged 2.55 calls per week by Panamax and Post-Panamax vessels. The number of vessel calls at the TraPac facility should be three weekly for 2011 based on two weekly calls for half of 2010 and three weekly calls on average for the second half of 2010.[29]

Table 12. Vessel Calls at TraPac (Dames Point) January 12, 2009 - September 2, 2010

Year	From	To	Weeks	Calls	Calls/Week
2009	1/12/2009	9/16/2009	35	25	0.71
2009	9/19/2009	12/26/2009	15	28	1.87
2010	1/1/2010	6/15/2010	24	48	2.00
2010	6/16/2010	9/2/2010	11	28	2.55

Source: G.E.C., Inc., from data furnished by Jacksonville Port Authority, September 2010.

4.3 COMMODITY PROJECTIONS

4.3.1. Introduction

Commodity projections were developed for the major groups with respect to the self-propelled deep draft vessel categories of dry bulk, liquid bulk, general cargo, and container (load on-load off). The commodity groups are aligned with the vessel categories to facilitate fleet projections in terms of numbers and sizes of vessel calls. The future without-project commodity projections will constitute the basis for the future with-project commodity and vessel fleet projections as these pertain to the Mile Point tidal constraint. Consequently, there will not be separate and distinct future with-project commodity projections that are different from the future without-

[26] MOL initiated direct service with a weekly call (subject to cancellations) at Blount Island in July 2008 as a precursor to calling its own facility when completed in January 2009.
[27] In December 2009, CMA-CGM container line obtained slots on this service and began service to TraPac.
[28] The new service marks the expansion of an existing K-Line service to include more ECUS ports (including Halifax) and MOL (owner of TraPac) and provides for K-Line (part of the CKYH alliance) to make direct vessel calls at Jacksonville Harbor, which it had not previously done.
[29] Cancellations of TraPac Dames Point calls occur due the schedule conflicts between the Mile Point tidal restraints and vessel operations. The lines will sometimes bypass Jacksonville and call Savannah and then call Jacksonville or skip Jacksonville based on the interaction between vessel schedule and Mile Point tidal time frames vis-à-vis existing delays.

project commodity projections. The same circumstances will pertain to the future vessel fleet projections wherein the future without-project fleet will be the same as the future with-project fleet owing to the same future commodity projections for without-project and with-project conditions. Commodity projections will be presented for the major groups in the following sections.

4.3.2 Dry Bulk

Dry bulk commodities, consisting of coal and crude materials (inedible except fuels), are shown in Table 13 for WCSC reported foreign commerce for the period 1997 through 2008 in short tons. The accompanying average annual compound growth rates are contained in Table 14. Overall, there has been substantial growth in dry bulk commodity tons, primarily consisting of imports, in the range of eight to 10 percent on an average annual basis between 1997 to 2008 and 2004 to 2008. After 2004, the total tonnage average annual growth rates accelerated, driven primarily by coal as growth within the crude materials sectors remained flat largely due to a decrease in tonnages in 2007 and 2008 accompanying a general decline in construction (cement and aggregates).

Table 15 contains a projection of dry bulk commodity tons and vessels for without-project conditions for the period 2008 through 2064. The dry bulk commodity tons are primarily consumed in the local area. Annual tons of dry bulk commodities increase based on the north Florida population hinterland projections (refer to Table 11).

The 2008 dry bulk metric tonnes, 6.776 million, are increased by the medium population projection growth rates for the periods 2009-2015, 2016-2020, 2021-2025, and 2026-2064. Dry bulk metric tonnes increase from 6.776 million tonnes (2008) to 14.644 million tonnes (2064).

Table 15 contains a history of dry bulk tonnes and vessel calls for without-project conditions for the years 2005-2006, 2006-2007, 2007-2008, and 2008-2009. The total annual dry bulk vessel calls (self-propelled vessels) are 188, 195, 156, and 154, respectfully. The associated dry bulk tonnages (from Table 13) are shown as 5.223 million short tons, 5.798 million short tons, 6.430 million short tons, and 7.469 million short tons, respectfully. The total dry bulk short tons are converted to metric tons as follows: 4.738 tonnes for 2005-2006, 5.260 tonnes for 2006-2007, 5.833 tonnes for 2007-2008, and 6.776 tonnes for 2008-2009.

The dry bulk fleet calling Jacksonville Harbor for these periods is shown stratified by deadweight tonnes (dwt) in the categories of >50,000, >40,000 <50,000, >30,000 <40,000, >20,000 <30,000, and <20,000. The number of calls for each vessel size category is calibrated to the dwt capacity of the dry bulk fleet calling Jacksonville Harbor during the period 2005-2009. The calibration factors used produced good fits between total vessel capacity (dwt) and total dry bulk commodity tonnes for the period 2007 (5.967 million tonnes dwt total capacity versus 5.833 million tonnes of total dry bulk cargo received) and 2008 (6.768 million tons dwt total vessel capacity versus 6.776 million tonnes of total dry bulk cargo received). The 2008 time frame was used as the basis for cargo and associated vessel projections.

Table 13. Jacksonville Harbor Waterborne Foreign Commerce Annual Dry Bulk Cargo Tons (000), 1997-2008

Commodity	Total											
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Total Dry Bulk	2,928	3,610	3,274	4,364	4,634	4,228	5,013	5,470	5,233	5,798	6,430	7,469
Total Coal	1,332	1,645	1,361	1,467	1,773	1,293	1,959	2,257	1,535	1,907	3,153	4,426
Total Crude Materials, Inedible, Except Fuels	1,596	1,965	1,913	2,897	2,861	2,935	3,054	3,213	3,698	3,891	3,277	3,043

Source: Waterborne Commerce Statistics.

Table 14. Jacksonville Harbor Waterborne Foreign Commerce Commodity Tons Average Annual Dry Bulk Cargo Compound Growth Rates, 1997-2008

Commodity	Total										
	1997 2008	1998 2008	1999 2008	2000 2008	2001 2008	2002 2008	2003 2008	2004 2008	2005 2008	2006 2008	2007 2008
Total Dry Bulk	8.89%	7.54%	9.60%	6.95%	7.06%	9.95%	8.30%	8.10%	12.59%	13.50%	16.16%
Total Coal	11.53%	10.40%	14.00%	14.80%	13.96%	22.76%	17.71%	18.34%	42.33%	52.35%	40.37%
Total Crude Materials, Inedible Except Fuels	6.04%	4.47%	5.29%	0.62%	0.88%	0.60%	-0.07%	-1.35%	-6.29%	-11.57%	-7.14%

Source: G.E.C., Inc.

Table 15. Jacksonville Harbor Dry Bulk Commodity Projections: Future Without-Project and Future With-Project

Total Annual Dry Bulk Vessel Calls and WCSC Commodity Tons				
Year	Calls	STons (000)	Average	Mtons (000)
2005-2006	188	5,223	27,782	4,738
2006-2007	195	5,798	29,733	5,260
2007-2008	156	6,430	41,218	5,833
2008-2009	154	7,469	48,500	6,776

Total Annual Dry Bulk Vessel Calls by Vessel Size (DWT)				
DWT	2005	2006	2007	2008
>50,000	55	69	75	89
>40,000	60	54	45	45
>30,000	46	42	24	14
>20,000	23	21	6	2
<20,000	4	9	6	4
Subtotal	188	195	156	154

Total Annual Dry Bulk Vessel Capacity (DWT) Calls by Vessel Size				
DWT	2005	2006	2007	2008
>50,000	2,475,000	3,105,000	3,375,000	4,405,500
>40,000	2,160,000	1,944,000	1,620,000	1,822,500
>30,000	1,242,000	1,134,000	756,000	441,000
>20,000	517,500	472,500	135,000	45,000
<20,000	54,000	121,500	81,000	54,000
Subtotal	6,448,500	6,777,000	5,967,000	6,768,000

					DWT	>50,000	>40,000	>30,000	>20,000	<20,000
					DWT Share	65.09%	26.93%	6.52%	0.66%	0.80%
	Dry Bulk	Growth Rates			Shipment Size	49500	40500	31500	22500	13500
Year	Mtons (000)	Low	Medium	High	Total Calls					
2008	6,776	1.27	2.41	3.56	154	89	45	14	2	4
2009	6,939	1.27	2.41	3.56	158	91	46	14	2	4
2010	7,107	1.27	2.41	3.56	162	93	47	15	2	4
2011	7,278	1.27	2.41	3.56	166	96	48	15	2	4
2012	7,453	1.27	2.41	3.56	170	98	50	15	2	4
2013	7,633	1.27	2.41	3.56	174	100	51	16	2	5
2014	7,817	1.27	2.41	3.56	178	103	52	16	2	5
2015	8,005	1.27	2.41	3.56	182	105	53	17	2	5
2016	8,134	0.69	1.61	2.55	185	107	54	17	2	5
2017	8,265	0.69	1.61	2.55	188	109	55	17	2	5
2018	8,398	0.69	1.61	2.55	191	110	56	17	2	5
2019	8,533	0.69	1.61	2.55	194	112	57	18	3	5
2020	8,671	0.69	1.61	2.55	197	114	58	18	3	5
2021	8,787	0.42	1.34	2.31	200	116	58	18	3	5
2022	8,905	0.42	1.34	2.31	203	117	59	18	3	5
2023	9,024	0.42	1.34	2.31	205	119	60	19	3	5
2024	9,145	0.42	1.34	2.31	208	120	61	19	3	5
2025	9,267	0.42	1.34	2.31	211	122	62	19	3	5
2026	9,377	0.22	1.18	2.16	213	123	62	19	3	6
2027	9,487	0.22	1.18	2.16	216	125	63	20	3	6
2028	9,599	0.22	1.18	2.16	218	126	64	20	3	6
2029	9,713	0.22	1.18	2.16	221	128	65	20	3	6
2030	9,827	0.22	1.18	2.16	224	129	65	20	3	6
2031	9,943	0.22	1.18	2.16	226	131	66	21	3	6
2032	10,060	0.22	1.18	2.16	229	132	67	21	3	6
2033	10,179	0.22	1.18	2.16	232	134	68	21	3	6
2034	10,299	0.22	1.18	2.16	234	135	68	21	3	6
2035	10,421	0.22	1.18	2.16	237	137	69	22	3	6
2036	10,544	0.22	1.18	2.16	240	139	70	22	3	6
2037	10,668	0.22	1.18	2.16	243	140	71	22	3	6
2038	10,794	0.22	1.18	2.16	246	142	72	22	3	6
2038	10,921	0.22	1.18	2.16	249	144	73	23	3	6
2040	11,050	0.22	1.18	2.16	251	145	73	23	3	7
2041	11,181	0.22	1.18	2.16	254	147	74	23	3	7
2042	11,313	0.22	1.18	2.16	257	149	75	23	3	7
2043	11,446	0.22	1.18	2.16	260	151	76	24	3	7
2044	11,581	0.22	1.18	2.16	264	152	77	24	3	7
2045	11,718	0.22	1.18	2.16	267	154	78	24	3	7
2046	11,856	0.22	1.18	2.16	270	156	79	25	4	7
2047	11,996	0.22	1.18	2.16	273	158	80	25	4	7
2048	12,138	0.22	1.18	2.16	276	160	81	25	4	7
2049	12,281	0.22	1.18	2.16	279	161	82	25	4	7
2050	12,426	0.22	1.18	2.16	283	163	83	26	4	7
2051	12,572	0.22	1.18	2.16	286	165	84	26	4	7
2052	12,721	0.22	1.18	2.16	289	167	85	26	4	8
2053	12,871	0.22	1.18	2.16	293	169	86	27	4	8
2054	13,023	0.22	1.18	2.16	296	171	87	27	4	8
2055	13,176	0.22	1.18	2.16	300	173	88	27	4	8
2056	13,332	0.22	1.18	2.16	303	175	89	28	4	8
2057	13,489	0.22	1.18	2.16	307	177	90	28	4	8
2058	13,648	0.22	1.18	2.16	311	179	91	28	4	8
2059	13,809	0.22	1.18	2.16	314	182	92	29	4	8
2060	13,972	0.22	1.18	2.16	318	184	93	29	4	8
2061	14,137	0.22	1.18	2.16	322	186	94	29	4	8
2062	14,304	0.22	1.18	2.16	325	188	95	30	4	8
2063	14,473	0.22	1.18	2.16	329	190	96	30	4	9
2064	14,644	0.22	1.18	2.16	333	193	97	30	4	9

Notes: Calls = total annual number of dry bulk vessel calls at Jacksonville Harbor.
STons = total calendar year WCSC foreign dry bulk short tons.
Average = average dry bulk short tons per vessel call.
Mtons = total calendar year WCSC foreign dry bulk metric tons.
DWT = deadweight cargo capacity of vessels.
Capacity = Total DWT applied to each vessel category and annual calls.
Growth Rates = Hinterland population projections.
DWT Share = Share of total annual commodity tons carried on each vessel size category.
Shipment Size = Estimated average shipment size for each vessel size category.

Source: G.E.C., Inc.

The cargo vessel projections for without-project conditions are based on allocating a share of total dry bulk cargo tonnes to each vessel dwt category based on the relationship between capacity (dwt) and total tonnes of cargo. For the vessel categories the following capacity (dwt) shares of total cargo tonnes were computed: >50,000 - 65.09 percent; >40,000 - 26.93 percent; >30,000 - 6.52 percent; >20,000 - 0.66 percent; and <20,000 - 0.80 percent.

The average shipment size for each vessel size category is computed by dividing the total annual capacity (dwt) by the total annual number of calls. For example, the >50,000 size category capacity (dwt) was 4.405 million tonnes in 2008 that represented 89 calls for dry bulk vessels >50,000 dwt. The average shipment size would be 49,500 tonnes (4,405,400 capacity tonnes/89 calls = 49,500 tonnes).[30] The average shipment sizes for the other capacity (dwt) categories correspond to the typical range, such as 40,500 tonnes for the category >40,000 <50,000, 31,500 tonnes for the category >30,000 <40,000, 22,500 tonnes for the category >20,000 <30,000, and 13,500 tonnes for the category <20,000.

The base year dry bulk fleet that called Jacksonville Harbor (2008-2009) shown for 2008 is 89 calls >50,000 dwt, 45 calls >40,000 dwt, 14 calls >30,000 dwt, two calls >20,000 dwt, and four calls <20,000 dwt. These calls are projected based on the medium growth in population for the dry bulk tonnes for the period 2009 through 2064 for without-project conditions.

4.3.3 Liquid Bulk

Liquid bulk cargoes at Jacksonville Harbor are primarily related to refined petroleum products from foreign and domestic sources augmented by chemicals. Table 16 shows the WCSC liquid bulk ton receipts reported for the period 1997 through 2008 for foreign and domestic sources. The petroleum cargoes primarily represent refined products related to domestic transportation sector fuels such as gasoline and diesel fuel. These products are primarily consumed locally. Petroleum products imports increased until 2006 and then declined in 2007 and 2008. Domestic receipts of petroleum products have shown more fluctuation, likely in response to the availability of imports. Total liquid bulk tons reached 9.037 million in 2006 and then declined to 7.532 million tons in 2007 and 7.476 million tons in 2008.

Table 17 contains the average annual compound growth rates for the liquid bulk tons handled at Jacksonville Harbor between 1997 and 2008. Overall, for the entire time frame 1997-2008, there has been modest growth in foreign petroleum imports (0.75 percent) and modest decline in domestic petroleum receipts (-0.96 percent). Since the total volume (tons) of domestic petroleum receipts is nearly two times the total volume (tons) of foreign imports (refer to Table 16), overall petroleum receipts declined during the entire period 1997-2008. Similarly, chemicals, albeit of much smaller total volume (tons) than petroleum products, also declined during the time frame 1997-2008. Total liquid bulk receipts (tons) declined on an average annual basis of -0.86 percent for the period 1997-2008. The declines measured on an average annual basis (refer to Table 17) have been more evident in recent periods such as 2003-2008

[30] Typically, dry bulk vessel cargo capacities as a subset of total carrying capacity (dwt) will be about 90 percent for a fully loaded vessel. The >50,000 dwt dry bulk capacity category includes a number of larger vessels in the range of 70,000 to 80,000 dwt. Consequently, the 49,500 average shipment size is reflective of a larger fleet of vessels that are >50,000 dwt rather than at or near 50,000 dwt.

Table 16. Jacksonville Harbor Waterborne Liquid Bulk Receipts, Foreign and Domestic, Annual Commodity Tons (000), 1997-2008

Commodity	Total											
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Total Liquid Bulk Receipts	8,204	9,592	8,418	8,092	6,363	7,365	9,427	8,550	8,719	9,037	7,532	7,476
Total Foreign Petroleum and Petroleum Products	2,785	3,313	3,365	2,645	1,652	2,982	3,174	2,789	3,601	4,650	4,036	3,023
Total Foreign Chemicals and Related Products	648	503	304	210	223	256	291	371	308	264	254	265
Total Domestic Coastwise Petroleum and Petroleum Products	4,504	5,492	4,419	4,935	4,239	3,962	5,780	5,254	4,719	4,001	3,148	4,051
Total Domestic Coastwise Chemicals and Related Products	267	284	330	302	249	165	182	136	91	122	94	137

Source: Waterborne Commerce Statistics.

Table 17. Jacksonville Harbor Waterborne Liquid Bulk Receipts, Foreign and Domestic, Average Annual Compound Growth Rates, 1997-2008

Commodity	Total										
	1997 2008	1998 2008	1999 2008	2000 2008	2001 2008	2002 2008	2003 2008	2004 2008	2005 2008	2006 2008	2007 2008
Total Liquid Bulk Receipts	-0.84%	-2.46%	-1.31%	-0.98%	2.33%	0.25%	-4.53%	-3.30%	-5.00%	-9.05%	-0.74%
Total Foreign Petroleum and Petroleum Products	0.75%	-0.91%	-1.18%	1.68%	9.02%	0.23%	-0.97%	2.03%	-5.67%	-19.37%	-25.10%
Total Foreign Chemicals and Related Products	-7.81%	-6.21%	-1.51%	2.95%	2.50%	0.58%	-1.85%	-8.07%	-4.89%	0.19%	4.33%
Total Domestic Coastwise Petroleum and Petroleum Products	-0.96%	-2.73%	-0.79%	-1.78%	-0.41%	0.20%	-3.18%	-2.34%	-1.38%	0.11%	2.32%
Total Domestic Coastwise Chemicals and Related Products	-5.89%	-6.41%	-7.68%	-6.93%	-5.29%	-1.68%	-2.55%	0.07%	3.79%	1.06%	3.48%

Source: G.E.C., Inc.

(-4.53 percent), 2004-2008 (-3.30 percent), 2005-2008 (-5.00 percent), and 2006-2008 (-9.05 percent). The most recent decline between 2007-2008 for liquid bulk was -0.74 percent. It reflects that foreign imports have declined substantially in recent years, -19.37 percent from 2006-2008 and -25.10 percent from 2007-2008, while domestic receipts have increased only slightly, at 0.11 percent from 2006-2008 and 2.32 percent from 2007-2008. The phenomenon of declining foreign imports versus stable or rising domestic petroleum product receipts observed here is similar to other U.S. ports such as Port Everglades where the historic dependency on U.S. refined petroleum products is returning as consumption declines relative to past receipts and is reflected in reduced foreign imports.

Table 18 contains a projection of liquid bulk commodity tons and vessels for without-project conditions for the period 2008 through 2064. Annual tons of liquid bulk commodities are not projected to increase in deference to the increase of the north Florida population hinterland projections (refer to Table 11).

The 2008 liquid bulk metric tonnes (6.782 million) are maintained with zero growth rate for the periods corresponding to population growth rates during 2009-2015, 2016-2020, 2021-2025, and 2026-2064. Liquid metric tonnes remain at 6.782 million from 2008 to 2064.

Table 18 contains a history of liquid bulk tonnes and vessel calls for without-project conditions for the years 2005-2006, 2006-2007, 2007-2008, and 2008-2009. The total annual liquid bulk vessel calls (self-propelled vessels) are 300, 309, 293, and 280, respectfully. The associated liquid bulk tonnages (from Table 16) are shown as 8.719 million short tons, 9.037 million short tons, 7.532 million short tons, and 7.476 million short tons, respectfully. The total liquid bulk short tons are converted to metric tons as follows: 7.910 tonnes for 2005-2006, 8.198 tonnes for 2006-2007, 6.833 tonnes for 2007-2008, and 6.782 tonnes for 2008-2009.

The liquid bulk fleet calling Jacksonville Harbor for these periods is shown stratified by deadweight tonnes (dwt) in the categories of >60,000, >50,000 <60,000, >40,000 <50,000, >30,000 <40,000, >20,000 <30,000, >10,000 <20,000, and <10,000. The number of calls for each vessel size category is calibrated to the capacity of the dwt fleet capacity. The calibration factors used produced good fits between total vessel capacity and total liquid bulk tonnes for the periods 2005-2006 (7.805 million tonnes dwt total capacity versus 7.910 million tonnes of total liquid bulk cargo received), 2006-2007 (7.924 million tonnes dwt total capacity versus 8.98 million tonnes of total liquid bulk cargo received), 2007-2008 (6.876 million tonnes dwt total capacity versus 6.833 million tons of total liquid bulk cargo received), and 2008-2009 (6.798 million tons dwt total capacity versus 6.782 million tonnes of total liquid bulk cargo received).

The 2007-2008 time frame was used as the basis for cargo and associated vessel projections. The cargo vessel projections for without-project conditions are based on allocating a share of total liquid bulk cargo tonnes to each vessel dwt category based on the relationship between capacity (dwt) and total tonnes of cargo. For the vessel categories, the following capacity (dwt) shares of total cargo tonnes were computed: >60,000 - 24.1 percent; >50,000 - 9.71 percent;

Table 18. Jacksonville Harbor Liquid Bulk Commodity Projections: Future Without-Project and Future With-Project

Total Annual Liquid Bulk Vessel Calls and WCSC Commodity Tons				
Year	Calls	STons (000)	Average	Mtons (000)
2005-2006	300	8,719	29,063	7,910
2006-2007	309	9,037	29,246	8,198
2007-2008	293	7,532	25,706	6,833
2008-2009	280	7,476	26,700	6,782

Total Annual Liquid Bulk Vessel Calls by Vessel Size (DWT)				
DWT	2005	2006	2007	2008
>60000	27	39	30	39
>50,000	8	7	16	22
>40,000	179	183	184	151
>30,000	50	54	41	36
>20,000	11	12	5	6
>10,000	18	10	14	23
<10,000	7	4	3	3
Subtotal	300	309	293	280

Total Annual Liquid Bulk Vessel Capacity (DWT) Calls by Vessel Size				
DWT	2005	2006	2007	2008
>60000	1,134,000	1,521,000	1,080,000	1,638,000
>50,000	280,000	245,000	480,000	660,000
>40,000	5,012,000	4,758,000	4,416,000	3,624,000
>30,000	1,050,000	1,134,000	738,000	648,000
>20,000	154,000	168,000	60,000	72,000
>10,000	126,000	70,000	84,000	138,000
<10,000	49,000	28,000	18,000	18,000
Subtotal	7,805,000	7,924,000	6,876,000	6,798,000

					DWT	>60,000	>50,000	>40,000	>30,000	>20,000	>10,000	<10,000
					DWT Share	24.10%	9.71%	53.31%	9.53%	1.06%	2.03%	0.26%
	Liquid Bulk	Growth Rates			Shipment Size	42,000	30,000	24,000	18,000	12,000	6,000	6,000
Year	Mtons (000)	Low	Medium	High	Total Calls							
2008	6,782	0	0	0	279	39	22	151	36	6	23	3
2009	6,782	0	0	0	279	39	22	151	36	6	23	3
2010	6,782	0	0	0	279	39	22	151	36	6	23	3
2011	6,782	0	0	0	279	39	22	151	36	6	23	3
2012	6,782	0	0	0	279	39	22	151	36	6	23	3
2013	6,782	0	0	0	279	39	22	151	36	6	23	3
2014	6,782	0	0	0	279	39	22	151	36	6	23	3
2015	6,782	0	0	0	279	39	22	151	36	6	23	3
2016	6,782	0	0	0	279	39	22	151	36	6	23	3
2017	6,782	0	0	0	279	39	22	151	36	6	23	3
2018	6,782	0	0	0	279	39	22	151	36	6	23	3
2019	6,782	0	0	0	279	39	22	151	36	6	23	3
2020	6,782	0	0	0	279	39	22	151	36	6	23	3
2021	6,782	0	0	0	279	39	22	151	36	6	23	3
2022	6,782	0	0	0	279	39	22	151	36	6	23	3
2023	6,782	0	0	0	279	39	22	151	36	6	23	3
2024	6,782	0	0	0	279	39	22	151	36	6	23	3
2025	6,782	0	0	0	279	39	22	151	36	6	23	3
2026	6,782	0	0	0	279	39	22	151	36	6	23	3
2027	6,782	0	0	0	279	39	22	151	36	6	23	3
2028	6,782	0	0	0	279	39	22	151	36	6	23	3
2029	6,782	0	0	0	279	39	22	151	36	6	23	3
2030	6,782	0	0	0	279	39	22	151	36	6	23	3
2031	6,782	0	0	0	279	39	22	151	36	6	23	3
2032	6,782	0	0	0	279	39	22	151	36	6	23	3
2033	6,782	0	0	0	279	39	22	151	36	6	23	3
2034	6,782	0	0	0	279	39	22	151	36	6	23	3
2035	6,782	0	0	0	279	39	22	151	36	6	23	3
2036	6,782	0	0	0	279	39	22	151	36	6	23	3
2037	6,782	0	0	0	279	39	22	151	36	6	23	3
2038	6,782	0	0	0	279	39	22	151	36	6	23	3
2038	6,782	0	0	0	279	39	22	151	36	6	23	3
2040	6,782	0	0	0	279	39	22	151	36	6	23	3
2041	6,782	0	0	0	279	39	22	151	36	6	23	3
2042	6,782	0	0	0	279	39	22	151	36	6	23	3
2043	6,782	0	0	0	279	39	22	151	36	6	23	3
2044	6,782	0	0	0	279	39	22	151	36	6	23	3
2045	6,782	0	0	0	279	39	22	151	36	6	23	3
2046	6,782	0	0	0	279	39	22	151	36	6	23	3
2047	6,782	0	0	0	279	39	22	151	36	6	23	3
2048	6,782	0	0	0	279	39	22	151	36	6	23	3
2049	6,782	0	0	0	279	39	22	151	36	6	23	3
2050	6,782	0	0	0	279	39	22	151	36	6	23	3
2051	6,782	0	0	0	279	39	22	151	36	6	23	3
2052	6,782	0	0	0	279	39	22	151	36	6	23	3
2053	6,782	0	0	0	279	39	22	151	36	6	23	3
2054	6,782	0	0	0	279	39	22	151	36	6	23	3
2055	6,782	0	0	0	279	39	22	151	36	6	23	3
2056	6,782	0	0	0	279	39	22	151	36	6	23	3
2057	6,782	0	0	0	279	39	22	151	36	6	23	3
2058	6,782	0	0	0	279	39	22	151	36	6	23	3
2059	6,782	0	0	0	279	39	22	151	36	6	23	3
2060	6,782	0	0	0	279	39	22	151	36	6	23	3
2061	6,782	0	0	0	279	39	22	151	36	6	23	3
2062	6,782	0	0	0	279	39	22	151	36	6	23	3
2063	6,782	0	0	0	279	39	22	151	36	6	23	3
2064	6,782	0	0	0	279	39	22	151	36	6	23	3

Notes: Calls = total annual number of liquid bulk vessel calls at Jacksonville Harbor.
STons = total calendar year WCSC foreign and domestic liquid bulk short tons.
Average = average liquid bulk short tons per vessel call.
Mtons = total calendar year WCSC foreign and domestic liquid bulk metric tons.
DWT = deadweight cargo capacity of vessels.
Capacity = Total DWT applied to each vessel category and annual calls.
Growth Rates = Hinterland population projections.
DWT Share = Share of total annual commodity tons carried on each vessel size category.
Shipment Size = Estimated average shipment size for each vessel size category.

Source: G.E.C., Inc.

>40,000 - 53.31 percent; >30,000 - 9.53 percent; >20,000 - 1.06 percent; >10,000 - 2.03 percent; and <10,000 - 0.26 percent.[31]

The average shipment size for each vessel size category is computed by dividing the total annual capacity (dwt) by the total annual number of calls. For example, the >60,000 capacity (dwt) was 1.080 million tonnes in 2007 that represented 30 calls for liquid bulk vessels >60,000 dwt. The average shipment size would be 42,000 tonnes (1,080,000 capacity tonnes/30 calls = 42,000 tonnes).[32] The average shipment sizes for the other capacity (dwt) categories correspond to the typical range for (multiple) products carriers calling multiple ports on a designated product supply rotation. The average shipment size was 30,000 tonnes for the category >50,000 <60,000, 24,000 tonnes for the category >40,000 <50,000, 18,000 tonnes for the category >30,000 <40,000, 12,000 tonnes for the category >20,000 <30,000, 6,000 tonnes for the category >10,000 <20,000, and 6,000 tonnes for the category <10,000 tonnes dwt.

The base year liquid bulk fleet that called Jacksonville Harbor (2007-2008) shown for 2008 is 39 calls >60,000 dwt, 22 calls >50,000 dwt, 151 calls >40,000 dwt, 36 calls >30,000 dwt, six calls >20,000 dwt, 23 calls >10,000 dwt, and three calls <10,000 dwt. These calls are projected to remain unchanged with no growth in response to changes in population for liquid bulk tonnes for the period 2009 through 2064 for without-project conditions.

4.3.4 General Cargo

General cargo tons were based on Jax Port tonnages reported for the category "break bulk" (refer to Table 1 and Table 8).[33] Jax Port break bulk tonnages peaked in FY 2005-2006 at 1.212 million tons and then declined to 1.161 million tons (2006-2007), 0.952 million tons (2007-2008), and 0.774 million tons (2008-2009). Among the heavier break bulk tonnages affected by the business cycle have been poultry (exports), paper and related forest products, and iron and steel products (refer to Table 1).

Table 19 contains a projection of general cargo commodity tons and vessels for without-project conditions for the period 2008 through 2064. Annual tons of general cargo commodities increase based on the north Florida population hinterland projections (refer to Table 11). The 2008 general cargo metric tonnes (0.865 million) are increased by the medium population projection growth rates for the periods 2009-2015, 2016-2020, 2021-2025, and 2026-2064. General cargo metric tonnes increase from 0.865 million (2008) to 1.896 million (2064).

Table 19 contains a history of general cargo tonnes and vessel calls for without-project conditions for the years 2005-2006, 2006-2007, 2007-2008, and 2008-2009. The total annual general cargo vessel calls (self-propelled vessels) are 229, 230, 205, and 190, respectfully. The

[31] The relatively large percentage of total liquid bulk capacity calling Jacksonville Harbor for Handysize vessels >40,000 <50,000 reflects U.S. flag vessels engaged in domestic coastal trade.
[32] Typically, liquid bulk vessel cargo capacities as a subset of total carrying capacity (dwt) will be about 90 percent for a fully loaded vessel. The >60,000 dwt dry bulk capacity category represents primarily products carriers that often make multiple port calls for multiple products rather than discharge entirely one product at one port.
[33] The Jax Port break bulk cargo statistics used reflect that there are no competing public marine terminals other than Jax Port facilities in Jacksonville Harbor and no private commercial terminals capable of handling general cargo other than with special circumstances.

Table 19. Jacksonville Harbor General Cargo Commodity Projections: Future Without-Project and Future With-Project

Total Annual General Cargo Vessel Calls and Jax Port Break Bulk Commodity Tons				
Year	Calls	STons (000)	Average	Mtons (000)
2005-2006	229	1,213	5,297	1,100
2006-2007	230	1,162	5,052	1,054
2007-2008	205	953	4,649	865
2008-2009	190	775	4,079	703

Total Annual General Cargo Vessel Calls by Vessel Size (DWT)				
DWT	2005	2006	2007	2008
>40,000	5	17	21	0
>30,000	15	9	8	7
>20,000	46	55	51	40
>10,000	3	8	5	11
<10,000	160	141	120	132
Subtotal	229	230	205	190

Total Annual General Cargo Vessel Capacity (DWT) by Vessel Size				
DWT	2005	2006	2007	2008
>40,000	60,000	204,000	252,000	0
>30,000	135,000	81,000	60,000	63,000
>20,000	276,000	330,000	255,000	240,000
>10,000	9,000	24,000	12,500	33,000
<10,000	480,000	423,000	300,000	396,000
Subtotal	960,000	1,062,000	879,500	732,000

					DWT	>40,000	>30,000	>20,000	>10,000	<10,000
					DWT Share	28.65%	6.82%	28.99%	1.42%	34.11%
	Break Bulk	Growth Rates			Shipment Size	12,000	7,500	5,000	2,500	2,500
Year	Mtons (000)	Low	Medium	High	Total Calls					
2008	865	1.27	2.41	3.56	202	21	8	50	5	118
2009	886	1.27	2.41	3.56	206	21	8	51	5	121
2010	907	1.27	2.41	3.56	211	22	8	53	5	124
2011	929	1.27	2.41	3.56	217	22	8	54	5	127
2012	951	1.27	2.41	3.56	222	23	9	55	5	130
2013	974	1.27	2.41	3.56	227	23	9	57	6	133
2014	998	1.27	2.41	3.56	233	24	9	58	6	136
2015	1,022	1.27	2.41	3.56	238	24	9	59	6	139
2016	1,038	0.69	1.61	2.55	242	25	9	60	6	142
2017	1,055	0.69	1.61	2.55	246	25	10	61	6	144
2018	1,072	0.69	1.61	2.55	250	26	10	62	6	146
2019	1,089	0.69	1.61	2.55	254	26	10	63	6	149
2020	1,107	0.69	1.61	2.55	258	26	10	64	6	151
2021	1,122	0.42	1.34	2.31	261	27	10	65	6	153
2022	1,137	0.42	1.34	2.31	265	27	10	66	6	155
2023	1,152	0.42	1.34	2.31	269	28	10	67	7	157
2024	1,167	0.42	1.34	2.31	272	28	11	68	7	159
2025	1,183	0.42	1.34	2.31	276	28	11	69	7	161
2026	1,197	0.22	1.18	2.16	279	29	11	69	7	163
2027	1,211	0.22	1.18	2.16	282	29	11	70	7	165
2028	1,225	0.22	1.18	2.16	286	29	11	71	7	167
2029	1,240	0.22	1.18	2.16	289	30	11	72	7	169
2030	1,255	0.22	1.18	2.16	292	30	11	73	7	171
2031	1,269	0.22	1.18	2.16	296	30	12	74	7	173
2032	1,284	0.22	1.18	2.16	299	31	12	74	7	175
2033	1,299	0.22	1.18	2.16	303	31	12	75	7	177
2034	1,315	0.22	1.18	2.16	306	31	12	76	7	179
2035	1,330	0.22	1.18	2.16	310	32	12	77	8	182
2036	1,346	0.22	1.18	2.16	314	32	12	78	8	184
2037	1,362	0.22	1.18	2.16	317	33	12	79	8	186
2038	1,378	0.22	1.18	2.16	321	33	13	80	8	188
2038	1,394	0.22	1.18	2.16	325	33	13	81	8	190
2040	1,411	0.22	1.18	2.16	329	34	13	82	8	192
2041	1,427	0.22	1.18	2.16	333	34	13	83	8	195
2042	1,444	0.22	1.18	2.16	337	34	13	84	8	197
2043	1,461	0.22	1.18	2.16	341	35	13	85	8	199
2044	1,478	0.22	1.18	2.16	345	35	13	86	8	202
2045	1,496	0.22	1.18	2.16	349	36	14	87	9	204
2046	1,514	0.22	1.18	2.16	353	36	14	88	9	207
2047	1,531	0.22	1.18	2.16	357	37	14	89	9	209
2048	1,549	0.22	1.18	2.16	361	37	14	90	9	211
2049	1,568	0.22	1.18	2.16	365	37	14	91	9	214
2050	1,586	0.22	1.18	2.16	370	38	14	92	9	216
2051	1,605	0.22	1.18	2.16	374	38	15	93	9	219
2052	1,624	0.22	1.18	2.16	379	39	15	94	9	222
2053	1,643	0.22	1.18	2.16	383	39	15	95	9	224
2054	1,662	0.22	1.18	2.16	387	40	15	96	9	227
2055	1,682	0.22	1.18	2.16	392	40	15	98	10	230
2056	1,702	0.22	1.18	2.16	397	41	15	99	10	232
2057	1,722	0.22	1.18	2.16	401	41	16	100	10	235
2058	1,742	0.22	1.18	2.16	406	42	16	101	10	238
2059	1,763	0.22	1.18	2.16	411	42	16	102	10	241
2060	1,784	0.22	1.18	2.16	416	43	16	103	10	243
2061	1,805	0.22	1.18	2.16	421	43	16	105	10	246
2062	1,826	0.22	1.18	2.16	426	44	17	106	10	249
2063	1,848	0.22	1.18	2.16	431	44	17	107	11	252
2064	1,869	0.22	1.18	2.16	436	45	17	108	11	255

Notes: Calls = total annual number of general cargo vessel calls at Jacksonville Harbor .
STons = total calendar year Jax Port break bulk short tons.
Average = average break bulk short tons per vessel call.
Mtons = total calendar year Jax Port break bulk metric tons.
DWT = deadweight cargo capacity of vessels.
Capacity = Total DWT applied to each vessel category and annual calls.
Growth Rates = Hinterland population projections.
DWT Share = Share of total annual commodity tons carried on each vessel size category.
Shipment Size = Estimated average shipment size for each vessel size category.

Source: G.E.C., Inc.

associated general cargo tonnages (from Table 8) are shown as 1.213 million short tons, 1.162 million short tons, 0.953 million short tons, and 0.775 million short tons, respectfully. The total general cargo short tons are converted to metric tons as follows: 1.100 million tonnes for 2005-2006, 1.054 million tonnes for 2006-2007, 0.865 million tonnes for 2007-2008, and 0.703 million tonnes for 2008-2009.

The general cargo fleet calling Jacksonville Harbor for these periods is shown stratified by deadweight tonnes (dwt) in the categories of >40,000, >30,000 <40,000, >20,000 <30,000, >10,000 <20,000, and <10,000. The number of calls for each vessel size category is calibrated to the capacity of the dwt fleet capacity. The calibration factors used produced good fits between total vessel capacity and total general cargo tonnes for the periods 2006-2007 (1.062 million tonnes dwt total capacity versus 1.054 million tonnes of total general cargo) and 2007-2008 (0.732 million tons dwt total capacity versus 0.703 million tonnes of total general cargo). The 2007 time frame was used as the basis for cargo and associated vessel projections

The cargo vessel projections for without-project conditions are based on allocating a share of total general cargo tonnes to each vessel dwt category based on the relationship between capacity (dwt) and total tonnes of cargo. For the vessel categories, the following capacity (dwt) shares of total cargo tonnes were computed: >40,000 - 28.65 percent; >30,000 - 6.82 percent; >20,000 - 28.99 percent; >10,000 - 1.42 percent; and <10,000 - 34.11 percent.

The average shipment size for each vessel size category is computed by dividing the total annual capacity (dwt) by the total annual number of calls. For example, the >40,000 capacity (dwt) was 0.252 million tonnes in 2007 that represented 21 calls for general cargo vessels >40,000 dwt. The average shipment size would be 12,000 tons (252,000 capacity tonnes/21 calls = 12,000 tonnes).[34] The average shipment sizes for the other capacity (dwt) categories correspond to the typical range such as 7,500 tonnes for the category >30,000 <40,000, 5,000 tonnes for the category >20,000 <30,000, 2,500 tonnes for the category >10,000 <20,000, and 2,500 tonnes for the category <10,000.

The base year general cargo fleet that called Jacksonville Harbor (2007-2008) shown for 2008 is 21 calls >40,000 dwt, eight calls >30,000 dwt, 50 calls >20,000 dwt, five calls >10,000 dwt, and 118 calls <10,000 dwt. These calls are projected based on the medium growth in population for the general cargo tonnes for the period 2009 through 2064 for without-project conditions.

4.3.5 Containerized Cargo Excluding Dames Point

Jax Port has historically been a major containerized cargo port for the Caribbean region, primarily exports to Puerto Rico, and to a lesser degree trade with South America. Jax Port cargo statistics in Table 1 for the period FY 1993/1994 through FY 2008/2009 indicate that the major Jacksonville container markets have been Puerto Rico followed by South America. The Puerto Rico market represented 52 percent of total TEUs for FY 1993/1994

[34] Typically, general cargo vessel cargo capacities as a subset of total carrying capacity (dwt) will be about 65 percent for a fully loaded vessel. Moreover, general cargo vessels customarily make multiple port calls both on liner and induced schedules that are usually reflected in a relatively small portion of total vessel cargo capacity transferred at any one port.

(1,545,862/2,970,460 = 0.52) and 65 percent of total TEUs for FY 2007/2008 (2,346,463/3,600,716 = 0.65). The South American market represented 32 percent of total TEUs for FY 93/94 (956,597/2,970,460 = 0.32) and 26 percent of total TEUs for FY 2007/2008 (927,351/3,600,716 = 0.26). Together, the combined Puerto Rico and South American markets represented 84 percent of total TEUs for FY 1993/1994 and 91 percent of total TEUs for FY 2007/2008.[35]

Table 20 contains a listing of the major exports and imports for 12 months (October 2007 - September 2008) measured in TEU units for the PIERS commodity groups for the top commodities for the Caribbean market, which is primarily Puerto Rico. The total volumes for the top commodities indicate that exports, 388,770 TEUs, far outweigh imports, 82,832 TEUs (the Puerto Rican trade is characterized as heavily imbalanced). The top commodity exports for the PIERS commodity groups are Foodstuffs (30.2 percent), Miscellaneous (24.3 percent), Chemicals (10.8 percent), and Forest Products (9.2 percent), which collectively comprise nearly 75 percent of total top commodity export TEUs. The top commodity imports for the PIERS commodity groups are Chemicals (23.1 percent), Foodstuffs (17.3 percent), Miscellaneous (9.2 percent), and Forest Products (9.1 percent), which collectively comprise nearly 60 percent of total top commodity import TEUs.

Table 20. Jacksonville Harbor Top Caribbean Commodities Exported and Imported October 2007 - September 2008

Commodity	Exported TEUs	Exported TEUs %	Imported TEUs	Imported TEUs %
Foodstuffs	117,391	30.2%	14,331	17.3%
Miscellaneous	94,565	24.3%	7,625	9.2%
Chemicals	41,891	10.8%	19,101	23.1%
Forest Products	35,578	9.2%	7,552	9.1%
Machinery & Parts	14,356	3.7%	1,842	2.2%
Hardware	12,205	3.1%	4,387	5.3%
Electric Goods	12,174	3.1%	5,264	6.4%
Vehicles/Boats/Aircraft	10,595	2.7%	1,301	1.6%
Furniture/Toys/Sporting	8,671	2.2%	305	0.4%
Tires/Rubber	8,468	2.2%	4,999	6.0%
Instruments/Photo Goods	7,383	1.9%	6,629	8.0%
Minerals	6,727	1.7%	736	0.9%
Metals	6,458	1.7%	1,612	1.9%
Textiles	6,246	1.6%	2,226	2.7%
Footware/Gloves/Bags	3,098	0.8%	1,040	1.3%
Plastic Film/Sheets/Foam	1,893	0.5%	903	1.1%
Misc. Jewelry/Arts/Crafts	912	0.2%	164	0.2%
Ores	159	0.0%	2,815	3.4%
	388,770	100.0%	82,832	100.0%

Source: G.E.C., Inc., from PIERS data supplied by JaxPort.

[35] The period FY 2007/2008 was used rather than FY 2008/2009 because it did not include any of the new Asian services related to the NWA marine container facility development at Dames Point.

Table 21 contains the containerized cargo tonnages handled through Jax Port during the periods 2005-2006, 2006-2007, 2007-2008, and 2008-2009.[36] The period 2008-2009 will include some Asian cargo (refer to Table 1), reflecting container operations related to Dames Point development (TraPac). For preceding years before 2008-2009, the container cargo will exclude Dames Point developments and reflect the traditional Jax Port regional markets dominated by Caribbean (primarily Puerto Rico) and South America.[37]

Table 21 shows the total container calls at Jacksonville Harbor (refer to Table 8) for all services, including roll-on-roll-off (RoRo) and lift-on-lift-off (LoLo) for self-propelled vessels and barges.[38] The total containerized calls by all vessels were 824 for 2005-2006, 765 for 2006-2007, 786 for 2007-2008, and 833 for 2008-2009. The containerized cargo tons from Jax Port (refer to Table 8) were 4.075 million for 2005-2006, 3.638 million for 2006-2007, 3.600 million for 2007-2008, and 3.894 million for 2008-2009. These are converted to metric tonnes in Table 21 corresponding to 3.697 tonnes, 3.330 tonnes, 3.266, tones, and 3.533 tonnes, respectfully.

The container fleet calling Jacksonville Harbor for these periods is shown stratified by deadweight tonnes (dwt) in the categories of >50,000, >40,000 <50,000, >30,000 <40,000, >20,000 <30,000, and <20,000 for self-propelled vessels corresponding to a total of 358 calls in 2005, 330 total calls in 2006, 321 total calls in 2007, and 354 total calls in 2008. The total container tonnage for all vessels was apportioned between non-self-propelled and self-propelled in relation to the total number of annual calls by each. The resulting container tonnage for self-propelled vessels was calibrated to the dwt capacity of the container fleet. The calibration factors used produced good fits between vessel capacity and self-propelled container cargo apportioned from the total container cargo for the periods 2007 (1.318 million tonnes dwt total capacity versus 1.334 million tonnes of self-propelled container cargo tonnes) and 2008 (1.538 million tonnes dwt total capacity versus 1.501 million tonnes of self-propelled container cargo tonnes). The 2007 time frame was used as the basis for cargo and associated vessel projections other than Dames Point because it had no influence of Dames Point-related cargo developments after 2008.

The cargo vessel projections for without-project conditions are based on allocating a share of total self-propelled vessel container cargo to each vessel dwt category based on the relationship between capacity (dwt) and total tonnes of cargo. For the vessel categories, the following capacity (dwt) shares of total cargo tonnes were computed: >50,000 - 28.03 percent; >40,000 - 1.59 percent; >30,000 - 17.09 percent; >20,000 - 24.42 percent; and <20,000 - 28.97 percent.

The average shipment size for each vessel size category is computed by dividing the total annual capacity (dwt) by the total annual number of calls. For example, the >50,000 capacity (dwt) was 369,600 tonnes in 2007 that represented 44 calls for self-propelled container vessels

[36] Jax Port containerized cargo statistics used reflect that there are no competing public marine terminals other than Jax Port facilities in Jacksonville Harbor prior to 2009. Jax Port container cargo statistics after 2008 include the private terminal development at Dames Point (TraPac). There are no other private commercial marine terminals in Jacksonville Harbor capable of handling containerized cargo other than with special circumstances.
[37] MOL, the steamship line owner of TraPac, initiated weekly container service at Jax Port calling Blount Island in July 2008 as a precursor to calling the TraPac facility in January 2009.
[38] Domestic barge services characterize a large portion of the Puerto Rico traffic.

Table 21. Jacksonville Harbor Containerized Cargo Commodity Projections Excluding Dames Point: Future Without-Project and Future With-Project

Total Annual Containerized Calls by All Vessels and Jax Port Containerized Commodity Tons				
Year	Total Calls	STons (000)	Average	Mtons (000)
2005-2006	824	4,075	4,945	3,697
2006-2007	765	3,638	4,756	3,300
2007-2008	786	3,600	4,580	3,266
2008-2009	833	3,894	4,675	3,533

Total Annual Container Cargo Vessel Calls by Vessel Size (DWT)				
DWT	2005	2006	2007	2008
>50,000	42	42	44	72
>40,000	8	6	3	7
>30,000	20	26	46	83
>20,000	141	110	92	59
<20,000	147	146	136	133
Subtotal	358	330	321	354

Total Annual Container Cargo Self Propelled Vessel Calls and Jax Port Containerized Commodity Tons				
Year	Total Calls	STons (000)	Average	Mtons (000)
2005-2006	358	1,770	4,945	1,606
2006-2007	330	1,569	4,756	1,424
2007-2008	321	1,470	4,580	1,334
2008-2009	354	1,655	4,675	1,501

Total Annual Container Cargo Vessel Capacity (DWT) Calls by Vessel Size				
DWT	2005	2006	2007	2008
>50,000	352,800	352,800	369,600	504,000
>40,000	56,000	42,000	21,000	49,000
>30,000	98,000	127,400	225,400	406,700
>20,000	493,500	385,000	322,000	206,500
<20,000	411,600	408,800	380,800	372,400
Subtotal	1,411,900	1,316,000	1,318,800	1,538,600

					DWT	>50,000	>40,000	>30,000	>20,000	<20,000
	Container Cargo	Growth Rates			DWT Share	28.03%	1.59%	17.09%	24.42%	28.87%
					Shipment Size	8,400	7,000	4,900	3,500	2,800
Year	Mtons (000)	Low	Medium	High	Total Calls					
2008	1,318	1.27	2.41	3.56	321	44	3	46	92	136
2009	1,350	1.27	2.41	3.56	329	45	3	47	94	139
2010	1,382	1.27	2.41	3.56	336	46	3	48	96	143
2011	1,416	1.27	2.41	3.56	345	47	3	49	99	146
2012	1,450	1.27	2.41	3.56	353	48	3	51	101	150
2013	1,485	1.27	2.41	3.56	361	50	3	52	104	153
2014	1,520	1.27	2.41	3.56	370	51	3	53	106	157
2015	1,557	1.27	2.41	3.56	379	52	4	54	109	161
2016	1,582	0.69	1.61	2.55	385	53	4	55	110	163
2017	1,608	0.69	1.61	2.55	391	54	4	56	112	166
2018	1,634	0.69	1.61	2.55	398	54	4	57	114	168
2019	1,660	0.69	1.61	2.55	404	55	4	58	116	171
2020	1,687	0.69	1.61	2.55	411	56	4	59	118	174
2021	1,709	0.42	1.34	2.31	416	57	4	60	119	176
2022	1,732	0.42	1.34	2.31	422	58	4	60	121	179
2023	1,755	0.42	1.34	2.31	427	59	4	61	122	181
2024	1,779	0.42	1.34	2.31	433	59	4	62	124	183
2025	1,803	0.42	1.34	2.31	439	60	4	63	126	186
2026	1,824	0.22	1.18	2.16	444	61	4	64	127	188
2027	1,845	0.22	1.18	2.16	449	62	4	64	129	190
2028	1,867	0.22	1.18	2.16	454	62	4	65	130	193
2029	1,889	0.22	1.18	2.16	460	63	4	66	132	195
2030	1,911	0.22	1.18	2.16	465	64	4	67	133	197
2031	1,934	0.22	1.18	2.16	471	65	4	67	135	199
2032	1,957	0.22	1.18	2.16	476	65	4	68	137	202
2033	1,980	0.22	1.18	2.16	482	66	5	69	138	204
2034	2,003	0.22	1.18	2.16	488	67	5	70	140	207
2035	2,027	0.22	1.18	2.16	493	68	5	71	141	209
2036	2,051	0.22	1.18	2.16	499	68	5	72	143	211
2037	2,075	0.22	1.18	2.16	505	69	5	72	145	214
2038	2,100	0.22	1.18	2.16	511	70	5	73	146	217
2038	2,124	0.22	1.18	2.16	517	71	5	74	148	219
2040	2,149	0.22	1.18	2.16	523	72	5	75	150	222
2041	2,175	0.22	1.18	2.16	529	73	5	76	152	224
2042	2,200	0.22	1.18	2.16	536	73	5	77	154	227
2043	2,226	0.22	1.18	2.16	542	74	5	78	155	230
2044	2,253	0.22	1.18	2.16	548	75	5	79	157	232
2045	2,279	0.22	1.18	2.16	555	76	5	80	159	235
2046	2,306	0.22	1.18	2.16	561	77	5	80	161	238
2047	2,333	0.22	1.18	2.16	568	78	5	81	163	241
2048	2,361	0.22	1.18	2.16	575	79	5	82	165	243
2049	2,389	0.22	1.18	2.16	581	80	5	83	167	246
2050	2,417	0.22	1.18	2.16	588	81	5	84	169	249
2051	2,445	0.22	1.18	2.16	595	82	6	85	171	252
2052	2,474	0.22	1.18	2.16	602	83	6	86	173	255
2053	2,504	0.22	1.18	2.16	609	84	6	87	175	258
2054	2,533	0.22	1.18	2.16	617	85	6	88	177	261
2055	2,563	0.22	1.18	2.16	624	86	6	89	179	264
2056	2,593	0.22	1.18	2.16	631	87	6	90	181	267
2057	2,624	0.22	1.18	2.16	639	88	6	92	183	271
2058	2,655	0.22	1.18	2.16	646	89	6	93	185	274
2059	2,686	0.22	1.18	2.16	654	90	6	94	187	277
2060	2,718	0.22	1.18	2.16	662	91	6	95	190	280
2061	2,750	0.22	1.18	2.16	669	92	6	96	192	284
2062	2,782	0.22	1.18	2.16	677	93	6	97	194	287
2063	2,815	0.22	1.18	2.16	685	94	6	98	196	290
2064	2,848	0.22	1.18	2.16	693	95	6	99	199	294

Notes: Calls = total annual number of vessels for containerized cargo at Jacksonville Harbor.
STons = total calendar year Jax Port containerized cargo short tons.
Average = average containerized cargo short tons per vessel call.
Mtons = total calendar year Jax Port containerized cargo metric tons.
DWT = deadweight cargo capacity of vessels.
Capacity = Total DWT applied to each vessel category and annual calls.
Growth Rates = Hinterland population projections.
DWT Share = Share of total annual commodity tons carried on each vessel size category.
Shipment Size = Estimated average shipment size for each vessel size category.

Source: G.E.C., Inc.

>50,000 dwt. The average shipment size would be 8,400 tonnes (369,600 capacity tonnes/44 calls = 8,400 tonnes).[39] The average shipment sizes for the other capacity (dwt) categories correspond to the typical range such as 7,000 tonnes for the category >40,000 <50,000, 4,900 tonnes for the category >30,000 <40,000, 3,500 tonnes for the category >20,000 <30,000, and 2,800 tonnes for the category <20,000.

The base year container fleet that called Jacksonville Harbor exclusive of Dames Point (2008-2009) shown for 2008 is 89 calls >50,000 dwt, 45 calls >40,000 dwt, 14 calls >30,000 dwt, two calls >20,000 dwt, and four calls <20,000 dwt. These calls are projected based on the medium growth in population for the container cargo tonnes for the period 2009 through 2064 for without-project conditions.

4.3.6 Dames Point Containerized Cargo

Dames Point containerized cargo is similar to the cargo base handled at Savannah Harbor as reported by the lines calling there who are now calling Dames Point (MOL/NWA) or expect to develop facilities at Dames Point and call there (Hanjin/CKYH). Table 22 identifies the share of the major commodity groups (PIERS) of the current (MOL/NWA) and prospective (Hanjin/CKYH) Dames Point carriers handled at Savannah Harbor that would be likely candidates for shifting to Jacksonville Harbor. The consumer goods orientation is noted for the dominance of the "Miscellaneous" category for imports, comprising 55 percent of total loaded import boxes. Together, the categories of Miscellaneous and Furnishings account for 75 percent of total import boxes. Exports are likewise centered on the two categories of Miscellaneous and Forest Products that together comprise two-thirds (66 percent) of total loaded export boxes.

Table 22. Dames Point Container Lines Hinterland Box Volume at Savannah Harbor by Commodity and Direction

Commodity Group (PIERS)	Total Loaded Import	Total Loaded Export
Foodstuffs	1%	5%
Forest Products	2%	18%
Textiles	8%	6%
Chemicals & Plastics	3%	10%
Non-Metallic Minerals	0%	1%
Ores & Metals	2%	3%
Metal Products & Machinery	6%	9%
Electronic & Instruments	3%	1%
Furnishings	20%	0%
Miscellaneous & Other	55%	48%
Total	100%	100%

Notes: Total Loaded Import = Total Loaded Import Boxes.
Total Loaded Export = Total Loaded Export Boxes.

Source: G.E.C., Inc.

[39] Typically, container vessels that are self-propelled make multiple port calls, particularly for the larger vessels transferring a portion of vessel capacity at each port.

Table 23 compiles the container volumes (loaded boxes) processed at the TraPac terminal in 2010 based on 47,437 loaded box moves. Loaded TEUs handled at TraPac for 2010 are estimated to be 85,387 by converting box moves to TEUs. TEUs are converted to containerized cargo tons using an average of 7.71 short cargo (net) tons per TEU at Jacksonville Harbor for FY 2008/2009. Jax Port reported that it handled a total of 376,235 containers in FY 2008/2009 of which 250,534 were loaded (refer to Table 8). The loaded proportion of total containers is two-thirds or 67 percent (250,534/376,235 = 0.67). During FY 2008/2009, Jax Port reported a total of 754,352 TEUs (refer to Table 8). Two-thirds (67 percent) of the total TEUs is 505,416 (754,352 * 0.67 = 505,416) TEUs. The average total cargo weight is estimated to be 7.71 short tons per loaded TEU (3,894,595 container cargo tons/505,416 loaded TEUs = 7.71 short tons per TEU). Loaded moves are expressed as total moves to include empty boxes that are assumed for only exports. For MOL/NWA, the TraPac facility in 2010 is projected to handle a total of 57,500 moves of both loaded and empty boxes.

Dames Point container cargo tons for 2010 are estimated to be 658,331 based on 85,387 loaded TEUs multiplied by an average of 7.71 short tons per TEU. The Dames Point containerized cargo tons for 2011 and ensuing years are increased by the projected growth in the north Florida hinterland population (refer to Table 11). Containerized cargo tons increase from 658,331 in 2010 to 1,340,727 in 2064.

Table 23 presents estimates of the containerized cargo tons for prospective Dames Point container terminal development by Hanjin and the associated CKYH alliance carriers. The CKYH estimated baseline volume is nearly double that of MOL/NWA, 99,617 loaded moves for the local hinterland that are not currently handled at Jacksonville Harbor. The base line 2010 loaded box moves are converted to TEUs and short tons similar to the MOL/NWA counterparts. The CKYH base line 2010 container TEUs and cargo tons are shown to be 179,311 and 1,382,488, respectively. Applying local area population growth rates increases the container tons to 2,815,514 by 2064. The CKYH terminal is presumed to be operational by year 2015, which would have 201,985 loaded TEUs and 1,557,303 containerized cargo tons.

Jacksonville Harbor has experienced continued commodity growth, which can be attributed in part to the expansion of distribution centers in Northeast Florida. Currently, there is approximately 69.4 million square feet of existing distribution space in Northeast Florida with an additional 15 million square feet of space planned for development. These distribution centers are being built because of the proximity to road, rail, and waterborne transportation infrastructure. These distribution centers are located throughout Northeast Florida but do extend as far south as Tampa and Orlando. The areas of greater Orlando (population >2.0 million) and greater Tampa Bay (population >4.0 million) are sufficiently large that distributors have local warehouses in close proximity to these areas. Jacksonville can serve these markets directly through the local distribution centers. The distribution centers at Jacksonville are being built primarily by large retailers to accommodate cargo being handled by new direct container ship service between Jacksonville and ports throughout Asia.

More than 150 companies currently have distribution centers in the Jacksonville area, and with the expected growth more than 24 million square feet of industrial space has recently opened or is planned to open in the short term. It is expected that the large retailers that do not currently

Table 23. Dames Point Global Marine Container Terminal Projected Container Cargo Throughput: Future Without-Project and Future With-Project

Year	TraPac/NWA Loaded Moves	TraPac/NWA Loaded TEU	TraPac/NWA Loaded Tons	TraPac/NWA Total Moves	Hanjin/CKYH Loaded Moves	Hanjin/CKYH Loaded TEU	Hanjin/CKYH Loaded Tons	Hanjin/CKYH Total Moves
2010	47,437	85,387	658,331	57,500	99,617	179,311	1,382,488	120,749
2011	48,580	87,444	674,196	58,886	102,018	183,632	1,415,806	123,660
2012	49,751	89,552	690,445	60,305	104,477	188,058	1,449,927	126,640
2013	50,950	91,710	707,084	61,758	106,995	192,590	1,484,870	129,692
2014	52,178	93,920	724,125	63,247	109,573	197,232	1,520,656	132,817
2015	53,435	96,184	741,576	64,771	112,214	201,985	1,557,303	136,018
2016	54,296	97,732	753,516	66,332	114,020	205,237	1,582,376	139,296
2017	55,170	99,306	765,647	67,930	115,856	208,541	1,607,852	142,653
2018	56,058	100,905	777,974	69,568	117,721	211,899	1,633,739	146,091
2019	56,961	102,529	790,500	71,244	119,617	215,310	1,660,042	149,612
2020	57,878	104,180	803,227	72,961	121,543	218,777	1,686,769	153,218
2021	58,653	105,576	813,990	74,719	123,171	221,708	1,709,371	156,910
2022	59,439	106,991	824,897	76,520	124,822	224,679	1,732,277	160,692
2023	60,236	108,424	835,951	78,364	126,494	227,690	1,755,489	164,564
2024	61,043	109,877	847,153	80,253	128,189	230,741	1,779,013	168,530
2025	61,861	111,350	858,505	82,187	129,907	233,833	1,802,852	172,592
2026	62,591	112,663	868,635	84,168	131,440	236,592	1,824,125	176,751
2027	63,329	113,993	878,885	86,196	132,991	239,384	1,845,650	181,011
2028	64,077	115,338	889,256	88,274	134,560	242,209	1,867,429	185,374
2029	64,833	116,699	899,749	90,401	136,148	245,067	1,889,464	189,841
2030	65,598	118,076	910,366	92,580	137,755	247,958	1,911,760	194,416
2031	66,372	119,469	921,108	94,811	139,380	250,884	1,934,319	199,102
2032	67,155	120,879	931,977	97,096	141,025	253,845	1,957,144	203,900
2034	67,947	122,305	942,975	99,436	142,689	256,840	1,980,238	208,814
2035	68,749	123,749	954,102	101,832	144,373	259,871	2,003,605	213,846
2036	69,560	125,209	965,360	104,286	146,076	262,937	2,027,247	219,000
2037	70,381	126,686	976,752	106,800	147,800	266,040	2,051,169	224,278
2038	71,212	128,181	988,277	109,373	149,544	269,179	2,075,373	229,683
2039	72,052	129,694	999,939	112,009	151,309	272,356	2,099,862	235,218
2040	72,902	131,224	1,011,738	114,709	153,094	275,569	2,124,640	240,887
2041	73,763	132,773	1,023,677	117,473	154,901	278,821	2,149,711	246,693
2042	74,633	134,339	1,035,756	120,304	156,728	282,111	2,175,078	252,638
2043	75,514	135,925	1,047,978	123,204	158,578	285,440	2,200,744	258,726
2044	76,405	137,528	1,060,344	126,173	160,449	288,808	2,226,712	264,962
2045	77,306	139,151	1,072,856	129,214	162,342	292,216	2,252,988	271,347
2046	78,218	140,793	1,085,516	132,328	164,258	295,664	2,279,573	277,887
2047	79,141	142,455	1,098,325	135,517	166,196	299,153	2,306,472	284,584
2048	80,075	144,136	1,111,285	138,783	168,157	302,683	2,333,688	291,442
2049	81,020	145,836	1,124,398	142,127	170,142	306,255	2,361,226	298,466
2050	81,976	147,557	1,137,666	145,553	172,149	309,869	2,389,088	305,659
2051	82,944	149,298	1,151,091	149,060	174,181	313,525	2,417,280	313,026
2052	83,922	151,060	1,164,674	152,653	176,236	317,225	2,445,803	320,569
2053	84,913	152,843	1,178,417	156,332	178,316	320,968	2,474,664	328,295
2054	85,915	154,646	1,192,322	160,099	180,420	324,756	2,503,865	336,207
2055	86,928	156,471	1,206,391	163,958	182,549	328,588	2,533,411	344,310
2056	87,954	158,317	1,220,627	167,909	184,703	332,465	2,563,305	352,608
2057	88,992	160,186	1,235,030	171,956	186,882	336,388	2,593,552	361,105
2058	90,042	162,076	1,249,604	176,100	189,087	340,357	2,624,156	369,808
2059	91,105	163,988	1,264,349	180,344	191,319	344,374	2,655,121	378,720
2060	92,180	165,923	1,279,268	184,690	193,576	348,437	2,686,451	387,848
2061	93,267	167,881	1,294,364	189,141	195,860	352,549	2,718,151	397,195
2062	94,368	169,862	1,309,637	193,700	198,172	356,709	2,750,225	406,767
2063	95,481	171,867	1,325,091	198,368	200,510	360,918	2,782,678	416,570
2064	96,608	173,895	1,340,727	203,148	202,876	365,177	2,815,514	426,610

Notes: Assumes average average annual projected population growth 2010-2030.
NWA = New World Alliance carriers.
CKYH = CKYH alliance carriers.
TraPac = Dames Point marine container terminal annual loaded boxes operated by TraPac for NWA.
Hanjin = Dames Point planned marine container terminal annual boxes operated by Hanjin for CKYH.
Loaded Moves = loaded box moves based on full imports and 2/3 full exports.
Loaded TEU = 80% of Loaded Moves * 2 + 20% of Loaded Moves * 1 to reflect preponderance of 40-ft. boxes.
Loaded Tons = 7.71 tons per TEU.
Total Moves = imports plus loaded and empty exports.
Dames Point Hanjin Marine Container Terminal assumed operational by 2015.

Source: G.E.C., Inc.

have distribution centers in Jacksonville will choose to in the future given the addition of Far East services calling Jacksonville Harbor.

5.0 DETERMINE VESSEL FLEET COMPOSITION AND COST

5.1 VESSEL ANALYSIS DATA

The basic input for the Jacksonville Harbor vessel fleet analysis pertinent to Mile Point is the vessel call information compiled by the Pilots and provided by Jax Port. The vessel call data identify the name and vessel identification number (VIN) for all vessels handled by the Pilots. The vessel call data exclude any vessels not handled by Pilots, such as U.S. flag tug barges that regularly call the Port and the Captain serves as pilot. Three years of information on Pilots vessels were received from the St. Johns Bar Pilot Association for the period March 2005 through April 2008, which was subsequently updated to include one additional year, April 2008 through March 2009, as part of the revision of the February 12, 2009, draft report analyses. The data were segmented into four 12-month periods from March 2005 to March 2006, March 2006 to March 2007, March 2007 to March 2008 and subsequently updated with data for the period March 2008 to March 2009.

The vessel names and/or VIN were used to match the Pilots data on vessel arrivals and departures with Lloyds Fairplay vessel characteristics (dwt, dimensions, etc.). A very small number of vessels could not be identified because of missing or incorrect VIN and vessel names that did not match with Lloyds. All vessel physical data other than operational characteristics relative to particular calls such as sailing draft are taken from Lloyds, such as Length Overall (Loa) and maximum draft (draught), as well as measures of capacity such as dwt.[40]

5.2 METHODOLOGY

The Pilots data were sorted for four 12-month periods beginning and ending in March for the years 2005-2006, 2006-2007, 2007-2008, and 2008-2009 (which was done because the Pilots data was originally received in April 2008 for the most recent month). The Mile Point draft impacted fleet was compiled by ship type. The ship types were aggregated into general vessel categories. Detailed analyses were made of the sailing drafts and dwt distributions of the general vessel categories for the four years to arrive at a base year vessel fleet affected by Mile Point tidal restrictions. The affected vessel fleet categories in terms of sizes (dwt) and sailing drafts were used to update the existing (2005) vessel call list in the Mile Point spreadsheet received from the District.

[40] All vessel dimensional units will be in feet other than deadweight tonnes (metric).

5.3 VESSELS

5.3.1 Vessel Calls and Mile Point Impacts

Table 24 lists the number of vessel calls (arrivals and departures) by ship type for the three years of Pilots data for Jacksonville Harbor.[41] Each vessel call generally represents an arrival and a departure, effectively counting the same vessel two times due to pilotage movements inbound and outbound. The same vessel is not counted twice within a particular time period when its arrival and departure occur in different periods. However, a reasonably complete record of vessel movements inbound and outbound should be relatively equal between the total numbers of arriving and departing vessels. The largest numbers of vessel calls by ship type in Table 24 are for bulk cargo (including self-unloading), tankers, container vessels, general cargo, passenger cruise, Ro-Ro vessels, and vehicle carriers.

During the three 12-month periods, the total numbers of piloted vessel movements remained relatively constant, at 4,125 in 2005-2006, 4,295 in 2006-2007, 4,188 in 2007-2008, and 4,370 in 2008-2009. There were generally small changes in the numbers of particular ship type movements with some modest growth such as container vessels since the 2008-2009 data will reflect the initiation of service by MOL at Blount Island in July 2008 and services calling TraPac commencing in January 2009 through March 2009.

Table 25 shows the inbound arrivals by vessel type for the three 12-month periods, as well as the number of calls that were Mile Point tidal constrained (sailing drafts >33 feet). During the four years, total inbound vessel arrivals reported by the Pilots logs ranged from 1,911 (2007-2008) to 1,986 (2008-2009). The Mile Point tidal delayed arrivals (>33 feet sailing draft) were 341 in 2005-2006, 358 in 2006-2007, 378 in 2007-2008, and 360 in 2008-2009. The Mile Point arrival tidal delays were concentrated in liquid and dry bulk vessels. During the period 2007-2008, for example, 68 bulk carriers, 65 chemical products tankers, 56 self-discharging bulk carriers, 48 products tankers, 42 general cargo, 25 container vessels, 22 crude oil/products tankers, and 20 open hatch cargo ships accounted for a total of 346 for the 378 Mile Point tidal delayed vessel calls.

Table 26 shows the outbound departures by vessel type for the three 12-month periods, as well as the number of calls that were Mile Point tidal constrained (sailing drafts >36 feet). During the four years, total outbound vessel departures reported by the Pilots logs ranged from 1,883 (2007-2008) to 1,975 (2006-2007). The Mile Point tidal delayed departures (>36 feet sailing draft) were 13 in 2005-2006, 22 in 2006-2007, 16 in 2007-2008, and 14 in 2008-2009. The Mile Point departure tidal delays were concentrated in container vessels (11), open hatch (general) cargo ships (three), and general cargo vessels (two) for 2007-2008 and in container vessels (five), for 2008-2009.

[41] Table 13 data are taken from all of the pilots' directed movements of vessels at Jacksonville Harbor, including internal harbor shifts. The all-inclusive data of pilot directed movements reflect inbound, outbound, and internal harbor shifts of vessels.

Table 24. Jacksonville Harbor Total Annual Vessel Calls by Vessel Type

Ship Type	Year			
	2005 2006	2006 2007	2007 2008	2008 2009
Anchor Handling Tug Supply	21	16	31	17
Asphalt/Bitumen Tanker	12	20	3	0
Bulk Cargo Carrier, self discharging	176	172	151	198
Bulk Carrier	204	245	176	129
Bulk/Oil Carrier (OBO)	0	6	2	0
Bulk Carrier (with Vehicle Decks)	2	0	0	0
Buoy & Lighthouse Tender	2	0	0	3
Cement Carrier	20	4	0	0
Chemical Tanker	26	25	11	18
Chemical/Products Tanker	314	307	302	323
Container Ship (Fully Cellular with Ro-Ro Facility	20	8	2	0
Container Ship (Fully Cellular)	707	668	648	723
Crude Oil Tanker	49	19	35	21
Crude Oil/Products Tanker	64	78	79	65
Deck Cargo Pontoon, semi submersible	35	32	24	7
Fish Carrier	47	23	10	4
Fishing Vessel	0	2	0	0
General Cargo Barge, non propelled	76	82	75	110
General Cargo Ship	441	429	382	392
General Cargo Ship (with Ro-Ro Facility)	20	9	0	2
Heavy Load Carrier	15	2	0	17
Hopper, Motor	25	44	68	0
Hopper/Suction Dredger	11	6	3	0
Landing Craft	0	2	16	3
LPG Tanker	0	0	0	11
Logistics Vessel (Naval Ro-Ro Cargo)	58	29	19	43
Offshore Tug/Supply Ship	4	4	0	2
Open Hatch Cargo Ship	10	43	54	37
Palletised Cargo Ship				4
Passenger Ship	4	8	3	0
Passenger Ship, Inland Waterways	1	0	0	0
Passenger/Cruise	160	160	164	96
Passenger/Ro-Ro Ship (Vehicles)	0	12	7	11
Pipe Layer Crane Vessel	0	0	2	8
Platform Supply Ship	22	37	14	41
Pollution Control Vessel	2	0	0	0
Products Tank Barge, non propelled	12	30	49	71
Products Tanker	183	205	225	161
Pusher Tug	89	50	59	108
Refrigerated Cargo Ship	14	23	29	35
Replenishment Tanker	18	27	27	27
Research Survey Vessel	3	3	2	2
Ro-Ro Cargo Ship	219	289	282	285
Sail Training Ship	0	2	0	0
Salvage Ship	0	4	0	0
Search & Rescue Vessel	0	0	2	0
Standby Safety Vessel	3	0	0	0
Tanker (unspecified)	3	6	6	4
Towing/Pushing, Inland Waterways	3	0	0	0
Tug	142	133	183	218
Vehicle Carrier	842	987	1,000	1,123
Yacht	46	44	43	51
Subtotal	4,125	4,295	4,188	4,370

Note: Total annual vessel calls include inbound, outbound, and internal movements within the harbor as reported by the Pilots' logs.

Source: G.E.C., Inc., from data supplied by St. Johns Bar Pilot Association, April 2008 and November 2009.

Table 25. Jacksonville Harbor Total Annual Vessel Calls by Vessel Type Inbound

Ship Type	March 2005 2006	March 2005 2006 Over 33 ft	March 2006 2007	March 2006 2007 Over 33 ft	March 2007 2008	March 2007 2008 Over 33 ft	March 2008 2009	March 2008 2009 Over 33 ft
Anchor Handling Tug Supply	9	1	8	1	14	6	8	3
Asphalt/Bitumen Tanker	5	2	10	3	1	0	0	0
Bulk Cargo Carrier, self discharging	87	71	83	64	73	56	93	81
Bulk Carrier	100	57	112	64	80	68	61	51
Bulk/Oil Carrier (OBO)	0	0	3	3	1	1	0	0
Bulk Carrier (with Vehicle Decks)	1	1	0	0	0	0	0	0
Buoy & Lighthouse Tender	1	0	0	0	0	0	1	0
Cement Carrier	10	0	2	0	0	0	0	0
Chemical Tanker	13	1	12	5	6	1	9	6
Chemical/Products Tanker	136	63	133	62	125	65	141	64
Container Ship (Fully Cellular with Ro-Ro Facility)	10	1	4	0	0	0	0	0
Container Ship (Fully Cellular)	350	18	326	15	321	25	354	43
Crude Oil Tanker	22	13	9	4	17	11	10	5
Crude Oil/Products Tanker	29	10	38	23	35	22	28	18
Deck Cargo Pontoon, semi submersible	0	0	0	0	0	0	0	0
Fish Carrier	23	0	11	0	5	0	2	0
Fishing Vessel	0	0	1	0	0	0	0	0
General Cargo Barge, non propelled	0	0	0	0	0	0	1	0
General Cargo Ship	217	35	205	37	182	42	190	25
General Cargo Ship (with Ro-Ro Facility)	9	0	4	0	0	0	1	0
Heavy Load Carrier	7	4	1	1	0	0	4	0
Hopper, Motor	12	0	22	0	31	0	0	0
Hopper/Suction Dredger	5	0	2	0	3	0	0	0
Landing Craft	0	0	1	0	3	0	2	0
Logistics Vessel (Naval Ro-Ro Cargo)	28	3	14	1	9	3	17	3
LPG Tanker	0	0	0	0	0	0	5	1
Offshore Tug/Supply Ship	1	0	0	0	0	0	1	0
Open Hatch Cargo Ship	5	0	20	17	26	20	17	15
Palletised Cargo Ship	0	0	0	0	0	0	1	0
Passenger Ship	2	0	2	0	1	0	0	0
Passenger Ship, Inland Waterways	0	0	0	0	0	0	0	0
Passenger/Cruise	80	0	80	0	80	0	48	0
Passenger/Ro-Ro Ship (Vehicles)	0	0	5	1	3	0	4	0
Pipe Layer Crane Vessel	0	0	0	0	0	0	0	0
Platform Supply Ship	11	0	14	0	7	0	15	0
Pollution Control Vessel	1	0	0	0	0	0	0	0
Products Tank Barge, non propelled	0	0	0	0	0	0	1	0
Products Tanker	83	48	88	39	92	48	72	33
Pusher Tug	42	4	23	2	30	2	52	1
Refrigerated Cargo Ship	7	1	12	1	14	0	17	0
Replenishment Tanker	9	7	13	9	13	7	13	7
Research Survey Vessel	2	0	0	0	1	0	1	0
Ro-Ro Cargo Ship	109	0	141	1	136	0	136	2
Sail Training Ship	0	0	1	0	0	0	0	0
Salvage Ship	1	0	2	0	0	0	0	0
Search & Rescue Vessel	0	0	0	0	1	0	0	0
Standby Safety Vessel	0	0	0	0	0	0	0	0
Tanker (unspecified)	1	1	3	2	3	0	2	1
Towing/Pushing, Inland Waterways	1	0	0	0	0	0	0	0
Tug	69	0	58	2	88	0	114	0
Vehicle Carrier	416	0	484	1	492	1	549	1
Yacht	18	0	16	0	18	0	16	0
Total	1,932	341	1,963	358	1,911	378	1,986	360

Note: The inbound movements exclude all outbound and internal movements as reported by the Pilots' Logs.

Source: G.E.C., Inc., from data supplied by St. Johns Bar Pilot Association, April 2008 and November 2009.

Table 26. Jacksonville Harbor Total Annual Vessel Calls by Vessel Type Outbound

Ship Type	March 2005 2006	March 2005 2006 Over 36 ft	March 2006 2007	March 2006 2007 Over 36 ft	March 2007 2008	March 2007 2008 Over 36 ft	March 2008 2009	March 2008 2009 Over 36 ft
Anchor Handling Tug Supply	9	0	8	1	13	0	9	0
Asphalt/Bitumen Tanker	6	1	10	1	1	0	0	0
Bulk Cargo Carrier, self discharging	85	0	85	0	72	0	93	0
Bulk Carrier	100	0	111	0	82	0	62	2
Bulk/Oil Carrier (OBO)	0	0	3	0	1	0	0	0
Bulk Carrier (with Vehicle Decks)	1	0	0	0	0	0	0	0
Buoy & Lighthouse Tender	1	0	0	0	0	0	1	0
Cement Carrier	10	0	2	0	0	0	0	0
Chemical Tanker	13	0	12	0	5	0	9	0
Chemical/Products Tanker	135	0	131	0	127	0	140	1
Container Ship (Fully Cellular with Ro-Ro Facility)	10	0	4	0	1	0	0	0
Container Ship (Fully Cellular)	348	9	328	13	322	11	353	5
Crude Oil Tanker	22	0	9	0	17	0	10	0
Crude Oil/Products Tanker	29	0	38	1	35	0	27	3
Deck Cargo Pontoon, semi submersible	0	0	0	0	0	0	0	0
Fish Carrier	22	0	12	0	5	0	2	0
Fishing Vessel	0	0	0	0	0	0	0	0
General Cargo Barge, non propelled	0	0	0	0	0	0	0	0
General Cargo Ship	216	3	207	4	179	2	191	2
General Cargo Ship (with Ro-Ro Facility)	9	0	4	0	0	0	1	0
Heavy Load Carrier	7	0	1	0	0	0	4	0
Hopper, Motor	12	0	22	0	31	0	0	0
Hopper/Suction Dredger	3	0	3	0	0	0	0	0
Landing Craft	0	0	1	0	6	0	1	0
Logistics Vessel (Naval Ro-Ro Cargo)	28	0	15	0	9	0	18	0
LPG Tanker	0	0	0	0	0	0	5	0
Offshore Tug/Supply Ship	1	0	0	0	0	0	1	0
Open Hatch Cargo Ship	5	0	20	1	25	3	18	1
Palletised Cargo Ship	0	0	0	0	0	0	1	0
Passenger Ship	0	0	2	0	1	0	0	0
Passenger Ship, Inland Waterways	0	0	0	0	0	0	0	0
Passenger/Cruise	0	0	80	0	80	0	47	0
Passenger/Ro-Ro Ship (Vehicles)	0	0	5	0	4	0	5	0
Pipe Layer Crane Vessel	0	0	0	0	0	0	0	0
Platform Supply Ship	0	0	16	0	6	0	18	0
Pollution Control Vessel	0	0	0	0	0	0	0	0
Products Tank Barge, non propelled	0	0	0	0	0	0	1	0
Products Tanker	0	0	90	1	92	0	71	0
Pusher Tug	0	0	24	0	28	0	52	0
Refrigerated Cargo Ship	0	0	11	0	15	0	17	0
Replenishment Tanker	0	0	13	0	13	0	13	0
Research Survey Vessel	0	0	0	0	1	0	1	0
Ro-Ro Cargo Ship	0	0	142	0	135	0	139	0
Sail Training Ship	0	0	1	0	0	0	0	0
Salvage Ship	0	0	2	0	0	0	0	0
Search & Rescue Vessel	0	0	0	0	1	0	0	0
Standby Safety Vessel	0	0	0	0	0	0	0	0
Tanker (unspecified)	0	0	3	0	3	0	2	0
Towing/Pushing, Inland Waterways	0	0	0	0	0	0	0	0
Tug	0	0	58	0	64	0	80	0
Vehicle Carrier	0	0	485	0	489	0	551	0
Yacht	0	0	17	0	20	0	19	0
Total	1,911	13	1,975	22	1,883	16	1,962	14

Note: The outbound movements exclude all inbound and internal movements as reported by the Pilots' Logs.

Source: G.E.C., Inc., from data supplied by St. Johns Bar Pilot Association, April 2008 and November 2009.

Table 27 compares the number of arrivals (inbound) and departures (outbound) for the vessel types for the four 12-month periods. In general, vessel arrivals and departures for any given time period should be similar. For 2005-2006, recorded total arrivals are 1,932 and recorded total departures are 1,911, with a difference of 21 movements. For 2006-2007, recorded total arrivals are 1,963 and recorded total departures are 1,975, with a difference of 12 movements. For 2007-2008, recorded total arrivals are 1,911 and recorded total departures are 1,883, with a difference of 28 movements. For 2008-2009, recorded total arrivals are 1,986 and recorded total departures

are 1,962, with a difference of 24 movements. Nearly all of the higher arrivals for 2007-2008 and 2008-2009 are recorded for tugs, which are not always reported for pilotage purposes. The comparative data for total arrivals and departures by vessel type suggest that the Pilots data are reasonably robust with respect to coverage of inbound and outbound vessel movements under their jurisdiction.

Table 27. Jacksonville Harbor Difference Between Annual Total Vessel Calls by Vessel Type Inbound and Outbound

Ship Type	Inbound March 2005 2006	Outbound March 2005 2006	Difference	Inbound March 2006 2007	Outbound March 2006 2007	Difference	Inbound March 2007 2008	Outbound March 2007 2008	Difference	Inbound March 2008 2009	Outbound March 2008 2009	Difference
Anchor Handling Tug Supply	9	9	0	8	8	0	14	13	1	8	9	-1
Asphalt/Bitumen Tanker	5	6	-1	10	10	0	1	1	0	0	0	0
Bulk Cargo Carrier, self discharging	87	85	2	83	85	-2	73	72	1	93	93	0
Bulk Carrier	100	100	0	112	111	1	80	82	-2	61	62	-1
Bulk/Oil Carrier (OBO)	0	0	0	3	3	0	1	1	0	0	0	0
Bulk Carrier (with Vehicle Decks)	1	1	0	0	0	0	0	0	0	0	0	0
Buoy & Lighthouse Tender	1	1	0	0	0	0	0	0	0	1	1	0
Cement Carrier	10	10	0	2	2	0	0	0	0	0	0	0
Chemical Tanker	13	13	0	12	12	0	6	5	1	9	9	0
Chemical/Products Tanker	136	135	1	133	131	2	125	127	-2	141	140	1
Container Ship (Fully Cellular with Ro-Ro	10	10	0	4	4	0	0	1	-1	0	0	0
Container Ship (Fully Cellular)	350	348	2	326	328	-2	321	322	-1	354	353	1
Crude Oil Tanker	22	22	0	9	9	0	17	17	0	10	10	0
Crude Oil/Products Tanker	29	29	0	38	38	0	35	35	0	28	27	1
Deck Cargo Pontoon, semi submersible	0	0	0	0	0	0	0	0	0	0	0	0
Fish Carrier	23	22	1	11	12	-1	5	5	0	2	2	0
Fishing Vessel	0	0	0	1	0	1	0	0	0	0	0	0
General Cargo Barge, non propelled	0	0	0	0	0	0	0	0	0	1	0	1
General Cargo Ship	217	216	1	205	207	-2	182	179	3	190	191	-1
General Cargo Ship (with Ro-Ro Facility)	9	9	0	4	4	0	0	0	0	1	1	0
Heavy Load Carrier	7	7	0	1	1	0	0	0	0	4	4	0
Hopper, Motor	12	12	0	22	22	0	31	31	0	0	0	0
Hopper/Suction Dredger	5	3	2	2	3	-1	3	0	3	0	0	0
Landing Craft	0	0	0	1	1	0	3	6	-3	2	1	1
Logistics Vessel (Naval Ro-Ro Cargo)	28	28	0	14	15	-1	9	9	0	17	18	-1
LPG Tanker			0	0	0	0	0	0	0	5	5	0
Offshore Tug/Supply Ship	1	1	0	0	0	0	0	0	0	1	1	0
Open Hatch Cargo Ship	5	5	0	20	20	0	26	25	1	17	18	-1
Palletised Cargo Ship			0	0	0	0	0	0	0	1	1	0
Passenger Ship	2	2	0	2	2	0	1	1	0	0	0	0
Passenger Ship, Inland Waterways	0	1	-1	0	0	0	0	0	0	0	0	0
Passenger/Cruise	80	80	0	80	80	0	80	80	0	48	47	1
Passenger/Ro-Ro Ship (Vehicles)	0	0	0	5	5	0	3	4	-1	4	5	-1
Pipe Layer Crane Vessel	0	0	0	0	0	0	0	0	0	0	0	0
Platform Supply Ship	11	11	0	14	16	-2	7	6	1	15	18	-3
Pollution Control Vessel	1	1	0	0	0	0	0	0	0	0	0	0
Products Tank Barge, non propelled	0	0	0	0	0	0	0	0	0	1	1	0
Products Tanker	83	81	2	88	90	-2	92	92	0	72	71	1
Pusher Tug	42	42	0	23	24	-1	30	28	2	52	52	0
Refrigerated Cargo Ship	7	7	0	12	11	1	14	15	-1	17	17	0
Replenishment Tanker	9	9	0	13	13	0	13	13	0	13	13	0
Research Survey Vessel	2	0	2	0	0	0	1	1	0	1	1	0
Ro-Ro Cargo Ship	109	108	1	141	142	-1	136	135	1	136	139	-3
Sail Training Ship	0	0	0	1	1	0	0	0	0	0	0	0
Salvage Ship	1	0	1	2	2	0	0	0	0	0	0	0
Search & Rescue Vessel	0	0	0	0	0	0	1	1	0	0	0	0
Standby Safety Vessel	0	1	-1	0	0	0	0	0	0	0	0	0
Tanker (unspecified)	1	1	0	3	3	0	3	3	0	2	2	0
Towing/Pushing, Inland Waterways	1	1	0	0	0	0	0	0	0	0	0	0
Tug	69	62	7	58	58	0	88	64	24	114	80	34
Vehicle Carrier	416	415	1	484	485	-1	492	489	3	549	551	-2
Yacht	18	17	1	16	17	-1	18	20	-2	16	19	-3
Total	1,932	1,911	21	1,963	1,975	-12	1,911	1,883	28	1,986	1,962	24

Source: G.E.C., Inc., from data supplied by St. Johns Bar Pilot Association, April 2008 and November 2009.

Tables 28, 29, 30 and 31 show the reported inbound sailing drafts for foreign and U.S. flag (domestic) vessels for the largest number of calls by vessel type (refer to Table 24 for bulk cargo self-unloading, bulk cargo, container ship, general cargo, passenger/cruise, Ro-Ro, tankers, and

Table 28. Jacksonville Harbor Total Annual Vessel Calls by Sailing Draft Inbound for Major Vessel Types, 2005-2006

FOREIGN/INBOUND									
Draft (ft.)	Bulk Cargo Self Unloading	Bulk Cargo	Container Ship	General Cargo	Passenger/ Cruise	Ro Ro Cargo	Tanker	Vehicle Carrier	Total
40	5	11	0	0	0	0	0	0	16
39	1	3	0	0	0	0	0	0	4
38	15	6	1	0	0	0	35	0	57
37	10	15	0	0	0	0	30	0	55
36	14	17	0	6	0	0	19	0	56
35	7	0	0	6	0	0	13	0	26
34	1	2	3	10	0	0	17	0	33
33	17	3	15	13	0	0	9	0	57
32	6	3	12	6	0	1	21	3	52
31	6	5	11	4	0	0	15	14	55
30	1	4	6	4	0	4	16	31	66
29	1	4	2	2	0	14	15	69	107
28	1	2	4	0	0	52	14	91	164
27	0	8	5	4	5	31	11	72	136
26	1	3	16	2	71	2	13	50	158
25	0	6	30	1	2	0	9	31	79
24	0	7	32	1	1	1	9	12	63
23	0	6	33	6	0	0	4	8	57
22	0	1	24	2	0	0	0	3	30
21	0	1	19	3	0	0	5	1	29
20	0	1	4	6	0	1	0	0	12
19	0	1	4	6	0	0	0	0	11
<18	0	1	8	143	1	3	2	0	158
Subtotal	86	110	229	225	80	109	257	385	
Grand Total	1,481								
>33	70	57	19	35	0	0	123	0	304
DOMESTIC/INBOUND									
Draft (ft.)	Bulk Cargo Self Unloading	Bulk Cargo	Container Ship	General Cargo	Passenger/ Cruise	Ro Ro Cargo	Tanker	Vehicle Carrier	Total
40	0	0	0	0	0	0	0	0	0
39	0	0	0	0	0	0	0	0	0
38	0	0	0	0	0	0	1	0	1
37	0	0	0	0	0	0	1	0	1
36	0	0	0	0	0	0	0	0	0
35	0	0	0	0	0	0	2	0	2
34	1	0	0	0	0	0	5	0	6
33	0	0	0	0	0	0	3	0	3
32	0	0	2	0	0	0	4	0	6
31	0	0	1	0	0	0	2	2	5
30	0	0	15	0	0	0	2	3	20
29	0	0	41	0	0	0	4	5	50
28	0	0	31	0	0	0	0	6	37
27	0	0	10	0	0	0	1	9	20
26	0	0	7	0	0	0	1	5	13
25	0	0	5	0	0	0	0	0	5
24	0	0	8	0	0	0	0	1	9
23	0	0	6	0	0	0	0	0	6
22	0	0	2	0	0	0	0	0	2
21	0	0	1	0	0	0	0	0	1
20	0	0	1	0	0	0	0	0	1
19	0	0	0	0	0	0	0	0	0
<18	0	0	1	1	0	0	0	0	2
Subtotal	1	0	131	1	0	0	26	31	
Grand Total	190								
Total Foreign and Domestic	87	110	360	226	80	109	283	416	
Foreign >36	1	0	0	0	0	0	12	0	13
Foreign and Domestic >36 total	71	57	19	35	0	0	135	0	317

Source: G.E.C., Inc., from data supplied by St. Johns Bar Pilot Association, April 2008.

Table 29. Jacksonville Harbor Total Annual Vessel Calls by Sailing Draft Inbound for Major Vessel Types, 2006-2007

FOREIGN/INBOUND									
Draft (ft.)	Bulk Cargo Self Unloading	Bulk Cargo	Container Ship	General Cargo	Passenger/ Cruise	Ro Ro Cargo	Tanker	Vehicle Carrier	Total
40	8	19	0	0	0	0	0	0	27
39	0	14	0	0	0	0	0	0	14
38	17	10	0	0	0	0	34	0	61
37	9	2	0	2	0	0	31	1	45
36	12	15	0	1	0	0	20	0	48
35	10	1	0	7	0	0	14	0	32
34	0	1	4	15	0	0	11	0	31
33	8	4	10	12	0	0	19	0	53
32	4	8	18	4	0	0	12	3	49
31	7	3	18	4	0	2	14	18	66
30	2	9	13	5	0	4	23	33	89
29	3	0	7	1	0	22	19	76	128
28	0	2	6	5	1	41	14	99	168
27	1	3	8	1	1	28	22	104	168
26	0	5	7	4	67	23	17	48	171
25	1	5	20	3	9	1	4	33	76
24	0	4	41	3	0	1	4	15	68
23	1	3	47	6	0	0	2	11	70
22	0	4	13	2	0	5	1	5	30
21	0	2	4	3	0	4	0	0	13
20	0	1	5	4	1	4	2	0	17
19	0	0	4	4	1	2	0	1	12
<18	0	1	1	122	0	1	3	1	129
Subtotal	83	116	226	208	80	138	266	448	
Grand Total	1,565								
>33	64	66	14	37	0	0	129	1	311
DOMESTIC/INBOUND									
Draft (ft.)	Bulk Cargo Self Unloading	Bulk Cargo	Container Ship	General Cargo	Passenger/ Cruise	Ro Ro Cargo	Tanker	Vehicle Carrier	Total
40	0	0	0	0	0	0	0	0	0
39	0	0	0	0	0	0	0	0	0
38	0	0	0	0	0	0	0	0	0
37	0	0	0	0	0	0	1	0	1
36	0	1	0	0	0	0	0	0	1
35	0	0	0	0	0	0	0	0	0
34	0	0	0	0	0	0	1	0	1
33	0	0	1	0	0	1	2	0	4
32	0	0	2	0	0	0	3	0	5
31	0	0	5	0	0	0	1	4	10
30	0	0	13	0	0	1	2	2	18
29	0	0	30	0	0	1	0	5	36
28	0	0	25	1	0	0	0	7	33
27	0	0	20	0	0	0	2	6	28
26	0	0	8	0	0	0	1	8	17
25	0	0	0	0	0	0	1	2	3
24	0	0	0	0	0	0	0	1	1
23	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0
<18	0	0	0	0	0	0	0	1	1
Subtotal	0	1	104	1	0	3	14	36	
Grand Total	159								
Total Foreign and Domestic	83	117	330	209	80	141	280	484	
Foreign >36	0	1	1	0	0	1	4	0	7
Foreign and Domestic >36 total	64	67	15	37	0	1	133	1	318

Source: G.E.C., Inc., from data supplied by St. Johns Bar Pilot Association, April 2008.

Table 30. Jacksonville Harbor Total Annual Vessel Calls by Sailing Draft Inbound for Major Vessel Types, 2007-2008

FOREIGN/INBOUND									
Draft (ft.)	Bulk Cargo Self Unloading	Bulk Cargo	Container Ship	General Cargo	Passenger/ Cruise	Ro Ro Cargo	Tanker	Vehicle Carrier	Total
40	10	23	0	0	0	0	0	0	33
39	9	14	0	0	0	0	0	0	23
38	19	10	0	0	0	0	34	1	64
37	4	2	0	2	0	0	37	0	45
36	4	8	1	2	0	0	20	0	35
35	9	10	3	9	0	0	17	0	48
34	0	1	4	20	0	0	6	0	31
33	0	1	17	9	0	0	19	0	46
32	12	1	25	3	0	0	10	2	53
31	4	0	9	2	0	0	14	22	51
30	1	2	6	1	0	1	25	47	83
29	0	0	5	1	0	6	20	99	131
28	0	0	9	0	0	27	14	93	143
27	0	0	5	4	1	27	17	72	126
26	0	0	7	1	48	45	3	51	155
25	0	3	23	4	29	4	9	30	102
24	0	1	31	1	1	0	6	22	62
23	0	2	44	0	1	3	1	7	58
22	0	0	12	3	0	2	0	7	24
21	0	1	10	5	0	7	1	1	25
20	0	0	5	5	0	2	1	1	14
19	0	1	0	11	0	3	0	1	16
<18	0	1	2	95	0	3	1	0	102
Subtotal	72	81	218	178	80	130	255	456	
Grand Total	1,470								
>33	55	69	25	42	0	0	133	1	325
DOMESTIC/INBOUND									
Draft (ft.)	Bulk Cargo Self Unloading	Bulk Cargo	Container Ship	General Cargo	Passenger/ Cruise	Ro Ro Cargo	Tanker	Vehicle Carrier	Total
40	0	0	0	0	0	0	0	0	0
39	0	0	0	0	0	0	0	0	0
38	0	0	0	0	0	0	1	0	1
37	0	0	0	0	0	0	4	0	4
36	0	0	0	0	0	0	4	0	4
35	1	0	0	0	0	0	3	0	4
34	0	0	0	0	0	0	0	0	0
33	0	0	0	0	0	0	2	0	2
32	0	0	0	0	0	0	2	0	2
31	0	0	4	0	0	0	0	1	5
30	0	0	14	0	0	0	2	8	24
29	0	0	17	0	0	2	2	8	29
28	0	0	32	0	0	0	0	9	41
27	0	0	20	0	0	1	0	7	28
26	0	0	8	1	0	0	0	2	11
25	0	0	6	0	0	1	0	0	7
24	0	0	1	1	0	2	0	1	5
23	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0
19	0	0	0	1	0	0	0	0	1
<18	0	0	1	1	0	0	0	0	2
Subtotal	1	0	103	4	0	6	20	36	
Grand Total	170								
Total Foreign and Domestic	73	81	321	182	80	136	275	492	
Foreign >36	1	0	0	0	0	0	14	0	15
Foreign and Domestic >36 total	56	69	25	42	0	0	147	1	340

Source: G.E.C., Inc., from data supplied by St. Johns Bar Pilot Association, April 2008.

Table 31. Jacksonville Harbor Total Annual Vessel Calls by Sailing Draft Inbound for Major Vessel Types, 2008-2009

FOREIGN/INBOUND									
Draft (ft.)	Bulk Cargo Self Unloading	Bulk Cargo	Container Ship	General Cargo	Passenger/ Cruise	Ro Ro Cargo	Tanker	Vehicle Carrier	Total
40	20	12	0	0	0	0	0	0	32
39	23	10	1	0	0	0	1	0	35
38	25	15	1	0	0	0	21	0	62
37	4	2	3	0	0	0	30	0	39
36	2	9	6	1	0	0	20	0	38
35	2	2	7	3	0	0	9	0	23
34	1	1	10	10	0	0	7	0	29
33	4	0	15	11	0	2	11	1	44
32	6	1	18	3	0	0	12	5	45
31	3	1	13	3	0	0	20	15	55
30	1	0	16	2	0	2	14	47	82
29	1	0	9	3	0	0	19	84	116
28	0	0	7	4	0	0	17	90	118
27	1	0	2	1	2	0	11	83	100
26	0	3	6	3	42	0	12	68	134
25	0	0	9	3	3	1	10	44	70
24	0	1	25	1	0	2	3	29	61
23	0	0	38	2	0	0	3	16	59
22	0	0	26	1	0	1	1	12	41
21	0	2	20	6	0	4	0	4	36
20	0	0	12	2	1	2	0	2	19
19	0	2	1	7	0	3	0	1	14
<18	0	0	2	123	0	10	4	0	139
Subtotal	93	61	247	189	48	27	225	501	1391
Grand Total	1,391								
>33	81	51	43	25	0	2	99	1	302
DOMESTIC/INBOUND									
Draft (ft.)	Bulk Cargo Self Unloading	Bulk Cargo	Container Ship	General Cargo	Passenger/Cr uise	Ro Ro Cargo	Tanker	Vehicle Carrier	Total
40	0	0	0	0	0	0	0	0	0
39	0	0	0	0	0	0	0	0	0
38	0	0	0	0	0	0	8	0	8
37	0	0	0	0	0	0	2	0	2
36	0	0	0	0	0	0	11	0	11
35	0	0	0	0	0	0	6	0	6
34	0	0	0	0	0	0	5	0	5
33	0	0	0	0	0	0	4	0	4
32	0	0	0	0	0	0	4	2	6
31	0	0	0	0	0	0	2	0	2
30	0	0	4	0	0	1	4	6	15
29	0	0	10	1	0	6	3	8	28
28	0	0	37	0	0	18	0	8	63
27	0	0	34	0	0	32	1	13	80
26	0	0	12	0	0	48	1	6	67
25	0	0	5	0	0	3	3	1	12
24	0	0	4	0	0	0	0	1	5
23	0	0	0	0	0	1	0	2	3
22	0	0	0	0	0	0	0	1	1
21	0	0	0	0	0	0	0	0	0
20	0	0	1	0	0	0	1	0	2
19	0	0	0	0	0	0	0	0	0
<18	0	0	0	0	0	0	0	0	0
Subtotal	0	0	107	1	0	109	55	48	320
Grand Total									
Total Foreign and Domestic									
Foreign >36	0	0	0	0	0	0	36	0	36
Foreign and Domestic >36 total	81	51	43	25	0	2	135	1	338

Source: G.E.C., Inc., from data supplied by St. Johns Bar Pilot Association, November 2009.

vehicle carriers. For 2005-2006 inbound calls, 304 foreign and 13 U.S. flag vessels were Mile Point tidal delayed for arrivals (>33 feet sailing drafts). [42]For 2006-2007 inbound calls, 311 foreign and seven U.S. flag vessels were Mile Point tidal delayed for arrivals (>33 feet sailing drafts). For 2007-2008 inbound calls, 325 foreign and 15 U.S. flag were Mile Point tidal delayed for arrivals (>33 feet sailing drafts). For 2008-2009 inbound calls, 315 foreign and 36 U.S. flag vessels were Mile Point tidal delayed for arrivals (>33 feet sailing drafts). The data indicate that passenger/cruise ships, Ro-Ro, and vehicle carriers are generally not Mile Point tidal delayed because sailing drafts are nearly always less than 33 feet. Moreover, for the traditional fleet of container vessels calling Jacksonville Harbor prior to 2008, Mile Point is generally not a serious issue with respect to tidal delays. However, the more recent data for the period 2008-2009 indicates that there is a larger number of Mile Point sailing draft impacted inbound vessels compared to prior years. There were 360 total inbound container calls in 2005-2006, of which 19 were Mile Point delayed (Table 5); 330 total inbound container calls in 2006-2007, of which 15 were Mile Point delayed (Table 6); 321 total inbound container calls in 2007-2008, of which 25 were Mile Point delayed; and 354 total inbound container calls in 2008-2009, of which 43 were Mile Point delayed.[43]

Tables 32, 33, 34 and 35 show the reported outbound sailing drafts for foreign and U.S. flag vessels for the largest number of calls by vessel type (refer to Table 1) for bulk cargo self-unloading, bulk cargo, container ship, general cargo, passenger/cruise, Ro-Ro, tankers and vehicle carriers. For 2005-2006 outbound calls, three foreign and nine U.S. flag vessels were Mile Point delayed for departures (>36 feet sailing drafts). For 2006-2007 outbound calls, eight foreign and 11 U.S. flag vessels were Mile Point delayed for departures (>36 feet sailing drafts). For 2007-2008 outbound calls, three foreign and 10 U.S. flag vessels were Mile Point delayed for departures (>36 feet sailing drafts). The data indicate that for the existing fleet calling Jacksonville Harbor, outbound sailing drafts greater than 36 feet and affected by Mile Point tidal delays are relatively infrequent. Most of the bulk vessels calling Jacksonville Harbor are for discharges of dry bulk and petroleum related products. Mile Point outbound tidal delays (>36 feet sailing draft) primarily affect a very small number of container vessels (nine in 2005-2006, 13 in 2006-2007, and 11 in 2007-2008) and a very small number of general cargo vessels (three in 2005-2006, four in 2006-2007, and two in 2007-2008).

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[42] Data provided for the number of dry bulk, liquid bulk, and general cargo do not match data provided in Table 7 for 2007-2008 vessels with 33 feet or more sailing draft. Table 7 is data for certain vessel categories as received from the Port. The data in Table 7 do not reflect all of the Mile Point draft impacted vessels; for example, open hatch vessels shown in Table 11 are not shown in Table 7. For the foreign flag vessels in the bulk categories in Table 7, there are totals of 55 self unloading and 69 bulk cargo with drafts 33 feet or more, and similarly for general cargo and tanker there are totals of 42 and 133, respectively Total bulk vessels in Table 7 with drafts >33 feet is 124 (55 + 69 = 124). In Table 19, the general cargo vessel category includes open hatch cargo ships (refer to Table 11), which are not separately delineated in Table 7. In 2007-2008, there was a total of 39 general cargo and 20 open hatch vessels with drafts >33 feet (Table 11). In Table 7, there is a total of 42 general cargo vessels with sailing drafts >33 feet, not including open hatch ships. The discrepancies between Table 7 for sailing drafts >33 feet having three less bulk vessels than tables 11 and 19 and three more general cargo vessels lies in the fact that there were three "general cargo" vessels misclassified in the Port data (Table 7), and they were subsequently moved to the "bulk" category. The total number of general cargo vessels in tables 11 and 19 declined by three and the total number of bulk vessels increased by three. The number of tanker vessels in Table 7 with sailings drafts >33 feet, 147 vessels (133 foreign flag and 14 U.S. flag), does not include all "tanker" vessels that are shown in Table 11 to be 155 calls with sailing drafts >33 feet, which is consistent with Table 19.

[43] As noted the 2008-2009 data would only reflect three months of the TraPac terminal operations.

For all practical purposes, for the existing fleet Mile Point has traditionally been an inbound tidal delay constraint for vessels greater than 33 feet sailing draft such a bulkers (dry and liquid) and regional container vessels. Traditionally, Jacksonville Harbor does not have a preponderance of deep sailing draft outbound vessels. Tables 32, 33, 34, and 35 indicate very few outbound vessels are sailing greater than 36 feet. However, with the advent of TraPac and deeper loading Panamax and Post-Panamax vessel calls there will be Mile Point tidal delays for outbound vessels with sailing drafts >36 feet (refer to section 5.3.4 Dames Point Container Vessel Sailing Draft Distributions).

Table 36 summarizes the annual number of inbound calls and Mile Point impacted calls (>33 feet sailing draft) for the major vessel types calling Jacksonville Harbor. The data are presented by vessel type (bulk, tanker, general cargo, and container) and then other categories that are nearly always not Mile Point tide delay impacted (for example, Ro-Ro and vehicle carriers). Bulk vessel calls ranged from 195 in 2006-2007 to 153 and 154 in 2007-2008 and 2008-2009, respectively. Bulk vessel inbound calls that are Mile Point impacted ranged from 127 (2007-2008) to 132 (2008-2009). Nearly two-thirds of arriving bulk vessel calls were Mile Point tide delay impacted in 2005-2006 and 2006-2007. With fewer total bulk vessel calls in 2007-2007 (153) and 2008-2009 (154), the percentage of Mile Point tide delay impacted calls was higher at 83 and 86, respectively.

Total annual inbound calls by tanker vessels ranged from 280 (2008-2009) to 309 (2006-2007). Mile Point tide delayed calls for tankers ranged from 135 (2008-2009) to 155 (2007-2008). Nearly 50 percent of all inbound tanker calls are Mile Point tidal delayed (>33 feet sailing draft).

General cargo vessels are predominantly not impacted by Mile Point inbound tide delays (>33 feet sailing draft). Total general cargo inbound vessel calls ranged from 207 and 208 (2008-2009 and 2007-2008) to 229 and 230 (2006-2007 and 2005-2006). Mile Point impacted tide delays ranged from 39 and 40 (2005-2006 and 2008-2009) to 55 and 59 (2006-2007 and 2007-2008). General cargo vessel Mile Point tidal delays have increased absolutely and relatively as a result of open hatch vessel calls. These tend to be larger general cargo vessels oriented to particular products with normally heavy loading (such as wood pulp). In 2005-2006, there were five open hatch general cargo calls, and none were Mile Point tide impacted with respect to sailing drafts >33 feet. However, there were 20, 26, and 17 open hatch general cargo vessel inbound calls in 2006-2007, 2007-2008, and 2008-2009, respectively, and 17, 20, and 15 of these calls were Mile Point tide delay impacted (>33 feet sailing drafts).

Only a small part of the existing container vessel fleet calling Jacksonville Harbor is Mile Point tide delay impacted with respect to inbound sailing drafts greater than 33 feet. Total inbound container vessel calls ranged from 321 (2007-2008) to 354 and 358 (2008-2009 and 2005-2006). Mile Point tide delayed inbound container vessel calls ranged from 15 (2006-2007) to 25 (2007-2008) and then increased to 43 (2008-2009). Mile Point tide delayed inbound container vessel calls ranged from five percent in 2005-2006 and 2006-2007 to eight percent in 2007-2008 and then 12 percent in 2008-2009.

Table 32. Jacksonville Harbor Total Annual Vessel Calls by Sailing Draft Outbound for Major Vessel Types, 2005-2006

FOREIGN/INBOUND									
Draft (ft.)	Bulk Cargo Self Unloading	Bulk Cargo	Container Ship	General Cargo	Passenger/ Cruise	Ro Ro Cargo	Tanker	Vehicle Carrier	Total
40	0	0	0	0	0	0	0	0	0
39	0	0	0	0	0	0	0	0	0
38	0	0	0	0	0	0	0	0	0
37	0	0	0	0	0	0	0	0	0
36	0	0	0	3	0	0	0	0	3
35	0	0	0	4	0	0	0	0	4
34	0	1	13	3	0	0	3	0	20
33	0	3	15	2	0	11	4	0	35
32	0	2	10	2	0	23	8	1	46
31	1	0	6	3	0	38	14	4	66
30	0	3	1	7	1	27	18	21	78
29	1	1	3	3	0	3	14	43	68
28	3	3	3	3	0	1	31	70	114
27	5	3	5	2	11	0	42	105	173
26	15	10	28	4	61	0	39	81	238
25	10	8	35	3	5	1	30	35	127
24	9	14	44	6	0	0	19	17	109
23	18	5	34	7	0	0	6	5	75
22	4	13	15	8	0	1	6	0	47
21	5	24	7	8	0	0	5	1	50
20	8	13	7	10	0	0	7	0	45
19	4	4	3	15	0	2	1	0	29
<18	1	3	1	131	2	1	7	1	147
Subtotal	84	110	230	224	80	108	254	384	
Grand Total	1,474								
>36	0	0	0	3	0	0	0	0	3
DOMESTIC/OUTBOUND									
Draft (ft.)	Bulk Cargo Self Unloading	Bulk Cargo	Container Ship	General Cargo	Passenger/ Cruise	Ro Ro Cargo	Tanker	Vehicle Carrier	Total
40	0	0	0	0	0	0	0	0	0
39	0	0	0	0	0	0	0	0	0
38	0	0	0	0	0	0	0	0	0
37	0	0	1	0	0	0	0	0	1
36	0	0	8	0	0	0	0	0	8
35	0	0	6	0	0	0	1	0	7
34	0	0	7	0	0	0	0	0	7
33	0	0	20	0	0	0	0	0	20
32	0	0	31	0	0	0	0	0	31
31	0	0	26	0	0	0	0	2	28
30	0	0	12	0	0	0	0	3	15
29	0	0	7	0	0	0	1	10	18
28	0	0	6	0	0	0	1	6	13
27	0	0	1	0	0	0	9	7	17
26	0	0	2	0	0	0	9	1	12
25	0	0	0	0	0	0	1	2	3
24	0	0	0	0	0	0	1	0	1
23	1	0	1	0	0	0	0	0	2
22	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0
<18	0	0	0	1	0	0	3	0	4
Subtotal	1	0	128	1	0	0	26	31	
Grand Total	187								
Total Foreign and Domestic	85	110	358	225	80	108	280	415	
Foreign >36	0	0	9	0	0	0	0	0	9
Foreign and Domestic >36 total	0	0	9	3	0	0	0	0	12

Source: G.E.C., Inc., from data supplied by St. Johns Bar Pilot Association, April 2008.

Table 33. Jacksonville Harbor Total Annual Vessel Calls by Sailing Draft Outbound for Major Vessel Types, 2006-2007

FOREIGN/INBOUND									
Draft (ft.)	Bulk Cargo Self Unloading	Bulk Cargo	Container Ship	General Cargo	Passenger/ Cruise	Ro Ro Cargo	Tanker	Vehicle Carrier	Total
40	0	0	0	0	0	0	0	0	0
39	0	0	0	0	0	0	0	0	0
38	0	0	0	1	0	0	0	0	1
37	0	0	0	2	0	0	1	0	3
36	0	0	2	1	0	0	1	0	4
35	0	1	3	4	0	0	2	0	10
34	0	2	11	1	0	11	1	0	26
33	0	5	13	0	0	21	7	0	46
32	0	2	10	3	0	21	7	0	43
31	0	4	6	2	0	25	12	7	56
30	0	5	10	4	0	19	15	18	71
29	3	2	7	2	0	8	19	56	97
28	9	4	14	4	0	8	26	77	142
27	7	12	9	3	3	6	33	106	179
26	3	6	18	3	63	2	54	95	244
25	13	5	29	4	12	1	33	51	148
24	10	8	37	5	0	0	23	23	106
23	18	6	25	12	0	2	13	10	86
22	6	14	22	17	0	4	6	2	71
21	2	24	5	5	0	3	4	1	44
20	4	10	1	7	1	3	3	0	29
19	9	2	2	32	0	3	0	0	48
<18	1	3	3	98	1	2	6	3	117
Subtotal	85	115	227	210	80	139	266	449	
Grand Total	1,571								
>36	0	0	2	4	0	0	2	0	8
DOMESTIC/INBOUND									
Draft (ft.)	Bulk Cargo Self Unloading	Bulk Cargo	Container Ship	General Cargo	Passenger/ Cruise	Ro Ro Cargo	Tanker	Vehicle Carrier	Total
40	0	0	0	0	0	0	0	0	0
39	0	0	0	0	0	0	0	0	0
38	0	0	0	0	0	0	0	0	0
37	0	0	0	0	0	0	0	0	0
36	0	0	11	0	0	0	0	0	11
35	0	0	9	0	0	0	0	0	9
34	0	0	8	0	0	0	0	0	8
33	0	0	11	0	0	0	0	0	11
32	0	0	15	0	0	0	0	0	15
31	0	0	23	0	0	1	0	3	27
30	0	0	17	0	0	1	3	0	21
29	0	0	3	0	0	1	1	5	10
28	0	0	7	0	0	0	3	13	23
27	0	0	1	0	0	0	2	11	14
26	0	0	0	0	0	0	2	1	3
25	0	0	0	1	0	0	2	2	5
24	0	0	0	0	0	0	1	1	2
23	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0
21	0	1	0	0	0	0	0	0	1
20	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0
<18	0	0	0	0	0	0	0	0	0
Subtotal	0	1	105	1	0	3	14	36	
Grand Total	160								
Total Foreign and Domestic	85	116	332	211	80	142	280	485	
Foreign >36	0	0	11	0	0	0	0	0	11
Foreign and Domestic >36 total	0	0	13	4	0	0	2	0	19

Source: G.E.C., Inc., from data supplied by St. Johns Bar Pilot Association, April 2008.

Table 34. Jacksonville Harbor Total Annual Vessel Calls by Sailing Draft Outbound for Major Vessel Types, 2007-2008

FOREIGN/OUTBOUND									
Draft (ft.)	Bulk Cargo Self Unloading	Bulk Cargo	Container Ship	General Cargo	Passenger/ Cruise	Ro Ro Cargo	Tanker	Vehicle Carrier	Total
40	0	0	0	0	0	0	0	0	0
39	0	0	0	0	0	0	0	0	0
38	0	0	0	0	0	0	0	0	0
37	0	0	0	1	0	0	0	0	1
36	0	0	1	1	0	0	0	0	2
35	1	1	4	2	0	0	0	0	8
34	0	2	15	3	0	1	5	0	26
33	0	0	20	2	0	9	8	0	39
32	0	1	12	0	0	26	8	3	50
31	0	0	8	0	0	31	9	12	60
30	3	0	8	2	0	23	26	38	100
29	4	2	4	1	0	14	18	67	110
28	3	2	4	1	0	0	39	105	154
27	10	2	5	8	2	2	31	78	138
26	14	4	19	0	28	1	45	75	186
25	2	9	23	3	48	1	29	46	161
24	4	6	36	5	1	2	26	19	99
23	14	3	34	14	0	0	6	7	78
22	9	13	16	13	0	4	1	1	57
21	3	21	5	10	0	4	1	0	44
20	3	14	2	17	1	4	1	1	43
19	1	1	1	27	0	2	1	0	33
<18	0	1	3	65	0	5	2	1	77
Subtotal	71	82	220	175	80	129	256	453	
Grand Total	1,466								
>36	0	0	1	2	0	0	0	0	3
DOMESTIC/OUTBOUND									
Draft (ft.)	Bulk Cargo Self Unloading	Bulk Cargo	Container Ship	General Cargo	Passenger/ Cruise	Ro Ro Cargo	Tanker	Vehicle Carrier	Total
40	0	0	0	0	0	0	0	0	0
39	0	0	0	0	0	0	0	0	0
38	0	0	0	0	0	0	0	0	0
37	0	0	1	0	0	0	0	0	1
36	0	0	9	0	0	0	0	0	9
35	0	0	8	0	0	0	0	0	8
34	0	0	7	0	0	0	0	0	7
33	0	0	8	0	0	0	0	0	8
32	0	0	9	0	0	0	1	1	11
31	0	0	10	0	0	0	1	2	13
30	0	0	17	0	0	0	3	7	27
29	0	0	22	0	0	1	1	15	39
28	0	0	9	1	0	1	4	5	20
27	0	0	2	0	0	1	5	2	10
26	0	0	0	0	0	3	4	3	10
25	1	0	0	1	0	0	0	1	3
24	0	0	0	0	0	0	1	0	1
23	0	0	1	0	0	0	0	0	1
22	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0
20	0	0	0	1	0	0	0	0	1
19	0	0	0	0	0	0	0	0	0
<18	0	0	0	1	0	0	0	0	1
Subtotal	1	0	103	4	0	6	20	36	
Grand Total	170								
Total Foreign and Domestic	72	82	323	179	80	135	276	489	
Foreign >36	0	0	10	0	0	0	0	0	10
Foreign and Domestic >36 total	0	0	11	2	0	0	0	0	13

Source: G.E.C., Inc., from data supplied by St. Johns Bar Pilot Association, April 2008.

Table 35. Jacksonville Harbor Total Annual Vessel Calls by Sailing Draft Outbound for Major Vessel Types, 2008-2009

FOREIGN/OUTBOUND									
Draft (ft.)	Bulk Cargo Self Unloading	Bulk Cargo	Container Ship	General Cargo	Passenger/ Cruise	Ro Ro Cargo	Tanker	Vehicle Carrier	Total
40	0	0	0	0	0	0	0	0	0
39	0	0	0	0	0	0	1	0	1
38	0	0	0	0	0	0	1	0	1
37	0	0	1	0	0	0	0	0	1
36	0	0	4	2	0	0	2	0	8
35	0	0	9	4	0	0	1	0	14
34	0	1	18	0	0	1	1	2	23
33	1	1	17	1	0	1	7	0	28
32	0	1	19	0	0	0	8	3	31
31	0	0	14	0	0	1	10	24	49
30	6	0	9	1	0	0	21	48	85
29	8	0	8	4	0	0	19	74	113
28	12	3	7	3	0	0	34	110	169
27	13	1	4	4	23	0	27	90	162
26	10	1	13	0	20	0	37	70	151
25	10	6	14	6	3	0	19	37	95
24	5	3	41	5	0	2	13	30	99
23	16	2	31	12	0	2	7	9	79
22	8	15	12	10	0	1	6	4	56
21	2	11	10	8	0	5	2	1	39
20	2	15	13	21	1	1	1	0	54
19	0	0	1	30	0	5	0	1	37
<18	0	2	2	79	0	9	6	0	98
Subtotal	93	62	247	190	47	28	223	503	
Grand Total	1,393								
>36	0	0	5	2	0	0	4	0	11
DOMESTIC/OUTBOUND									
Draft (ft.)	Bulk Cargo Self Unloading	Bulk Cargo	Container Ship	General Cargo	Passenger/ Cruise	Ro Ro Cargo	Tanker	Vehicle Carrier	Total
40	0	0	0	0	0	0	0	0	0
39	0	0	0	0	0	0	0	0	0
38	0	0	0	0	0	0	0	0	0
37	0	0	0	0	0	0	0	0	0
36	0	0	0	0	0	0	0	0	0
35	0	0	0	0	0	0	0	0	0
34	0	0	6	0	0	1	1	0	8
33	0	0	17	0	0	5	1	0	23
32	0	0	14	0	0	19	3	1	37
31	0	0	14	0	0	48	6	5	73
30	0	0	15	0	0	21	4	4	44
29	0	0	19	0	0	9	14	9	51
28	0	0	16	1	0	2	7	10	36
27	0	0	5	0	0	1	4	10	20
26	0	0	0	0	0	1	8	4	13
25	0	0	0	0	0	1	3	3	7
24	0	0	0	0	0	0	0	1	1
23	0	0	0	0	0	1	0	0	1
22	0	0	0	0	0	1	0	1	2
21	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	1	0	0	1
19	0	0	0	0	0	0	1	0	1
<18	0	0	0	0	0	0	2	0	2
Subtotal	0	0	106	1	0	111	54	48	
Grand Total	320								
Total Foreign and Domestic	93	62	353	191	47	139	277	551	
Foreign >36	0	0	0	0	0	0	0	0	0
Foreign and Domestic >36 total	0	0	5	2	0	0	4	0	11

Source: G.E.C., Inc., from data supplied by St. Johns Bar Pilot Association, November 2009.

Table 36. Jacksonville Harbor Inbound Vessel Calls and Sailing Drafts Reports to be 33 Feet or More, 2005-2009

Vessel Category	2005 2006			2006 2007			2007 2008			2008 2009		
	All Calls	>33 ft	% >33 ft	All Calls	>33 ft	% >33 ft	All Calls	>33 ft	% >33 ft	All Calls	>33 ft	% >33 ft
Bulk Self-Unloading	87	71	82%	83	64	77%	73	56	77%	93	81	87%
Bulk	100	57	57%	112	64	57%	80	71	89%	61	51	84%
Bulk Vehicle Deck	1	1	100%	0	0	0%	0	0	0%	0	0	0%
Subtotal Bulk	188	129	69%	195	128	66%	153	127	83%	154	132	86%
Chemical Product	136	63	46%	133	62	47%	125	65	52%	141	64	45%
Products	83	48	58%	88	39	44%	92	48	52%	72	33	46%
Crude Oil	22	13	59%	9	4	44%	17	11	65%	10	5	50%
Crude Oil/Products	29	10	34%	38	23	61%	35	22	63%	28	18	64%
Replenishment Tanker	9	7	78%	13	9	69%	13	7	54%	13	7	54%
Bulk Oil	0	0	0%	3	3	0%	1	1	100%	0	0	0%
Chemical Tank	13	1	8%	12	5	42%	6	1	17%	9	6	67%
Tanker Unclassified	3	2	67%	3	2	67%	3	0	0%	2	1	50%
Asphalt/Bitumen Tanker	5	2	40%	10	3	30%	1	0	0%	0	0	0%
LPG Tanker	0	0	0%	0	0	0%	0	0	0%	5	1	0%
Subtotal Tank	300	146	49%	309	150	49%	293	155	53%	280	135	48%
General Cargo	217	35	16%	209	37	18%	182	39	21%	190	25	13%
Heavy Load	7	4	57%	1	1	100%	0	0	0%	0	0	0%
Open Hatch	5	0	0%	20	17	85%	26	20	77%	17	15	88%
Subtotal General Cargo	229	39	17%	230	55	24%	208	59	28%	207	40	19%
Container Fully Cellular	348	17	5%	326	15	5%	321	25	8%	354	43	12%
Container/Ro-Ro	10	1	10%	4	0	0%	0	0	0%	0	0	0%
Subtotal Container	358	18	5%	330	15	5%	321	25	8%	354	43	12%
Ro-Ro	109	0	0%	141	1	1%	136	0	0%	139	2	1%
Pusher Tug	42	4	10%	23	2	9%	30	2	7%	52	1	2%
Naval Ro-Ro	28	3	11%	14	1	7%	9	3	33%	18	3	17%
Anchor Handling	9	1	11%	8	1	13%	14	6	43%	9	3	33%
Refrigerated	7	1	14%	12	1	8%	14	0	0%	17	0	0%
Tug	69	0	0%	58	2	3%	88	0	0%	80	0	0%
Pass/Ro-Ro Vehicles	0	0	0%	5	1	20%	3	0	0%	0	0	0%
Vehicle Carrier	416	0	0%	484	1	0%	492	1	0%	551	1	0%
Subtotal Other	680	9	1%	745	10	1%	786	12	2%	866	10	1%
All Other Vessels	177	0	0%	154	0	0%	150	0	0%	125	0	0%
Grand Total All Vessel Calls	1,932	341	18%	1963	358	18%	1911	378	20%	1986	360	18%

Notes: All Other Vessels are categories that do not have any reported inbound sailings with drafts 33 feet or more, including: Buoy & Lighthouse Tender; Cement Carrier; Deck Cargo Pontoon, Semisubmersible, Fish Carrier, Fishing Vessel, General Cargo Barge (non-propelled), General Cargo Ship (with Ro-Ro Facility), Hopper Motor, Hopper Suction Dredge, Landing Craft, Offshore Tug/Supply Vessel, Passenger Ship, Passenger Ship (Inland Waterways), Passenger/Cruise, Pipe Layer Crane Vessel, Platform Supply Ship, Pollution Control Vessel, Products Tank Barge (non-propelled), Research Survey Vessel, Sail Training Ship, Salvage Ship, Search & Rescue Vessel, Standby Safety Vessel, Towing/Pushing Inland Waterways, and Yacht.
Grand Total Vessel Calls represents all vessels identified from the St. Johns Bar Pilot Association.

Source: G.E.C., Inc., from data provided by St. Johns Bar Pilot Association, April 2008 and November 2009.

For the entire Jacksonville Harbor, Mile Point tide delayed inbound calls are nearly 20 percent of all calls. Table 36 indicates that the occurrence of Mile Point tide delays other than bulk, tanker, general cargo, and container vessels is quite low. The subtotal for other vessels identified in Table 36 indicates that about one percent experience Mile Point inbound tidal delays (>33 feet sailing draft). Mile Point inbound tidal delays are primarily for bulk vessels calling Jacksonville Harbor and, to a lesser extent, a small subcategory of the existing general cargo and container fleets.

5.3.2 Sailing Draft and DWT Distributions for Mile Point Impacted Vessels

Sailing draft distributions for Mile Point impacted inbound vessel calls (>33 feet) were compiled for bulk, tanker, general cargo, and container vessels for four time frames, including a 2005 vessel call list contained in the Mile Point spreadsheet from the Jacksonville District and then using the Pilots data for the periods 2005-2006, 2006-2007, 2007-2008, and 2008-2009. The sailing draft distributions are for one-foot intervals from 33 feet to 40 feet and stratified by deadweight tonnes (dwt).

Table 37 shows the bulk cargo vessel sailing draft and dwt distributions for 2005 and 2008-2009. A total of 132 bulk vessels impacted by Mile Point (>33 feet sailing draft) called in 2008-2009. These vessels were primarily concentrated in the upper range of the maximum sailing drafts (38 to 40 feet). Most of the bulk vessels were in the Handymax range (>40,000 dwt) or Panamax range (>50,000 dwt). The number of Mile Point draft impacted bulk calls in 2008-2009 was less than the 2005 vessel call list, which had 150 draft impacted calls.

Table 38 shows the tanker vessel sailing draft and dwt distributions for 2005 and 2008-2009. A total of 123 inbound tanker vessels that were impacted by Mile Point (>33 feet sailing draft) called in 2008-2009, of which 90 were foreign flag and 33 were U.S. flag. The tanker fleets calling Jacksonville Harbor are of the Handymax size (40,000 to 50,000 dwt), customarily calling in the 37 and 38 foot sailing draft range. A small number of tankers (foreign flag) are of Panamax size. The number of Mile Point draft impacted tanker calls in 2008-2009 was less than the 2005 vessel call list, which had 186 draft impacted calls.

Table 39 shows the general cargo vessel sailing draft and dwt distributions for 2005 and 2008-2009. A total of 25 inbound general cargo vessels that were impacted by Mile Point (>33 feet sailing draft) called in 2008-2009. The distribution of dwt size categories between the smallest and largest for general cargo suggests that the general cargo fleet is primarily smaller vessels less than 30,000 dwt, with the exception of open hatch vessels that are more likely to be the largest and deepest loading (>40,000 dwt).

Table 40 shows the container vessel sailing draft and dwt distributions for 2005 and 2008-2009. A total of 25 and 43 inbound container vessels that were impacted by Mile Point (>33 feet sailing draft) called in 2007-2008 and 2008-2009, respectively, of which all were foreign flag. These vessels were impacted at the very lowest range of the Mile Point sailing draft threshold restriction (>33 feet sailing draft). [44] The container fleet calling Jacksonville Harbor is largely not Mile Point tide impacted because of its relatively small size with respect to dwt and draft.

Table 41 summarizes the impact of Mile Point tide delays for outbound vessels (>36 feet sailing draft) for 2005-2006, 2006-2007, 2007-2008, and 2008-2009. The data indicate that for the vessels identified, only two to three percent are Mile Point impacted with respect to outbound

[44] The Mile Point tidal constraint for certain inbound container vessels with "exceptional handling characteristics" related to TraPac and Blount Island was subsequently raised to 34-ft. sailing draft by the Jacksonville Bar Pilots. It was not known if this increase for particular vessels primarily MOL and related alliance calls at TraPac was in effect during the most recent period of port call data, March 2008 to March 2009

sailing drafts. As noted previously, these outbound impacted vessels are concentrated in the container and general cargo categories.

Table 37. Jacksonville Harbor DWT and Sailing Draft Distributions in Feet for Inbound Dry Bulk Vessels, 2008-2009 and 2005

Bulk 2008 2009	33 ft	34 ft	35 ft	36 ft	37 ft	38 ft	39 ft	40 ft	Total
>50,000	0	0	5	6	1	8	19	33	72
>40,000, <50,000	0	0	6	5	6	21	4	0	42
>30,000, <40,000	0	0	8	1	0	0	0	0	9
>20,000, <30,000	1	1	2	0	0	0	0	0	4
Total	1	1	21	12	7	29	23	33	127
Bulk 2005	**33 ft**	**34 ft**	**35 ft**	**36 ft**	**37 ft**	**38 ft**	**39 ft**	**40 ft**	**Total**
>50,000	0	0	2	15	12	16	1	15	61
>40,000, <50,000	2	8	6	19	8	4	3	1	51
>30,000, <40,000	21	3	1	5	0	0	0	0	30
>20,000, <30,000	3	1	0	1	1	0	0	2	8
Total	26	12	9	40	21	20	4	18	150
Bulk 2008 2009	**33 ft**	**34 ft**	**35 ft**	**36 ft**	**37 ft**	**38 ft**	**39 ft**	**40 ft**	**Total**
>50,000	0%	0%	4%	5%	1%	6%	15%	26%	57%
>40,000, <50,000	0%	0%	5%	4%	5%	17%	3%	0%	33%
>30,000, <40,000	0%	0%	6%	1%	0%	0%	0%	0%	7%
>20,000, <30,000	1%	1%	2%	0%	0%	0%	0%	0%	3%
Total	1%	1%	17%	9%	6%	23%	18%	26%	100%
Bulk 2005	**33 ft**	**34 ft**	**35 ft**	**36 ft**	**37 ft**	**38 ft**	**39 ft**	**40 ft**	**Total**
>50,000	0%	0%	1%	10%	8%	11%	1%	10%	41%
>40,000, <50,000	1%	5%	4%	13%	5%	3%	2%	1%	34%
>30,000, <40,000	14%	2%	1%	3%	0%	0%	0%	0%	20%
>20,000, <30,000	2%	1%	0%	1%	1%	0%	0%	1%	5%
Total	17%	8%	6%	27%	14%	13%	3%	12%	100%

Notes: Deadweight Tonnes (DWT).

Source: G.E.C., Inc., from data supplied by St. Johns Bar Pilot Association, April 2008 and November 2009.

Table 38. Jacksonville Harbor DWT and Sailing Draft Distribution in Feet for Inbound Liquid Bulk Vessels, Foreign and Domestic Flags, 2008-2009 and 2005

Tank 2008 2009	33 ft Foreign	33 ft US	34 ft Foreign	34 ft US	35 ft Foreign	35 ft US	36 ft Foreign	36 ft US	37 ft Foreign	37 ft US	38 ft Foreign	38 ft US	Total Foreign	Total US	Total All
>60,000	0	0	2	0	1	0	0	0	5	0	7	0	15	0	15
>50,000, <60,000	0	0	1	0	1	0	1	0	2	0	2	0	7	0	7
>40,000, <50,000	1	1	3	4	5	2	19	5	22	1	12	8	62	21	83
>30,000, <40,000	0	0	0	1	2	4	0	5	1	1	1	0	4	11	15
>20,000, <30,000	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1
<20,000	1	0	1	0	0	0	0	0	0	0	0	0	2	0	2
Total	2	1	7	5	9	6	20	11	30	2	22	8	90	33	123
Tank 2005	**33 ft Foreign**	**33 ft US**	**34 ft Foreign**	**34 ft US**	**35 ft Foreign**	**35 ft US**	**36 ft Foreign**	**36 ft US**	**37 ft Foreign**	**37 ft US**	**38 ft Foreign**	**38 ft US**	**Total Foreign**	**Total US**	**Total All**
>60,000	0	0	1	0	0	0	5	0	3	0	18	0	27	0	27
>50,000, <60,000	0	0	2	0	0	0	0	0	1	0	0	0	3	0	3
>40,000, <50,000	11	4	12	5	12	0	12	0	20	4	36	8	103	21	124
>30,000, <40,000	4	1	3	2	3	1	0	6	3	2	0	0	13	12	25
>20,000, <30,000	1	0	1	0	0	1	0	2	0	1	0	0	2	4	6
<20,000	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1
Total	16	6	19	7	15	2	17	8	27	7	54	8	148	38	186
Tank 2008 2009	**33 ft Foreign**	**33 ft US**	**34 ft Foreign**	**34 ft US**	**35 ft Foreign**	**35 ft US**	**36 ft Foreign**	**36 ft US**	**37 ft Foreign**	**37 ft US**	**38 ft Foreign**	**38 ft US**	**Total Foreign**	**Total US**	**Total All**
>60,000	0%	0%	2%	0%	1%	0%	0%	0%	4%	0%	6%	0%	12%	0%	12%
>50,000, <60,000	0%	0%	1%	0%	1%	0%	1%	0%	2%	0%	2%	0%	6%	0%	6%
>40,000, <50,000	1%	1%	2%	3%	4%	2%	15%	4%	18%	1%	10%	7%	50%	17%	67%
>30,000, <40,000	0%	0%	0%	1%	2%	3%	0%	4%	1%	1%	1%	0%	3%	9%	12%
>20,000, <30,000	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	1%	1%
<20,000	1%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%	2%
Total	2%	1%	6%	4%	7%	5%	16%	9%	24%	2%	18%	7%	73%	27%	100%
Tank 2005	**33 ft Foreign**	**33 ft US**	**34 ft Foreign**	**34 ft US**	**35 ft Foreign**	**35 ft US**	**36 ft Foreign**	**36 ft US**	**37 ft Foreign**	**37 ft US**	**38 ft Foreign**	**38 ft US**	**Total Foreign**	**Total US**	**Total All**
>60,000	0%	0%	1%	0%	0%	0%	3%	0%	2%	0%	10%	0%	15%	0%	15%
>50,000, <60,000	0%	0%	1%	0%	0%	0%	0%	0%	1%	0%	0%	0%	2%	0%	2%
>40,000, <50,000	6%	2%	6%	3%	6%	0%	6%	0%	11%	2%	19%	4%	55%	11%	67%
>30,000, <40,000	2%	1%	2%	1%	2%	1%	0%	3%	2%	1%	0%	0%	7%	6%	13%
>20,000, <30,000	1%	0%	1%	0%	0%	1%	0%	1%	0%	1%	0%	0%	1%	2%	3%
<20,000	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%
Total	9%	3%	10%	4%	8%	1%	9%	4%	15%	4%	29%	4%	80%	20%	100%

Notes: Deadweight Tonnes (DWT)

Source: G.E.C., Inc., from data supplied by St. Johns Bar Pilot Association, November 2009.

Table 39. Jacksonville Harbor DWT and Sailing Draft Distributions in Feet for Inbound General Cargo Vessels, 2008-2009 and 2005

General Cargo 2008 2009	33 ft	34 ft	35 ft	36 ft	37 ft	38 ft	39 ft	40 ft	Total
>40,000	0	0	0	0	0	0	0	0	0
>30,000, <40,000	2	1	0	1	0	0	0	0	4
>20,000, <30,000	9	9	3	0	0	0	0	0	21
Total	11	10	3	1	0	0	0	0	25
General Cargo 2005	**33 ft**	**34 ft**	**35 ft**	**36 ft**	**37 ft**	**38 ft**	**39 ft**	**40 ft**	**Total**
>40,000	1	1	3	1	0	1	0	0	7
>30,000, <40,000	6	4	10	14	0	0	0	0	34
>20,000, <30,000	7	13	7	0	0	0	0	0	27
Total	14	18	20	15	0	1	0	0	68
General Cargo 2008 2009	**33 ft**	**34 ft**	**35 ft**	**36 ft**	**37 ft**	**38 ft**	**39 ft**	**40 ft**	**Total**
>40,000	0%	0%	0%	0%	0%	0%	0%	0%	0%
>30,000, <40,000	8%	4%	0%	4%	0%	0%	0%	0%	16%
>20,000, <30,000	36%	36%	12%	0%	0%	0%	0%	0%	84%
Total	44%	40%	12%	4%	0%	0%	0%	0%	100%
General Cargo 2005	**33 ft**	**34 ft**	**35 ft**	**36 ft**	**37 ft**	**38 ft**	**39 ft**	**40 ft**	**Total**
>40,000	1%	1%	4%	1%	0%	1%	0%	0%	10%
>30,000, <40,000	9%	6%	15%	21%	0%	0%	0%	0%	50%
>20,000, <30,000	10%	19%	10%	0%	0%	0%	0%	0%	40%
Total	21%	26%	29%	22%	0%	1%	0%	0%	100%

Notes: Deadweight Tonnes (DWT)

Source: G.E.C., Inc., from data supplied by St. Johns Bar Pilot Association, November 2009.

Table 40. Jacksonville Harbor DWT and Sailing Draft Distributions in Feet for Inbound Container Vessels, Foreign and Domestic Flags, 2007-2008 and 2008-2009

Container 2007-2008	33 ft Foreign	33 ft US	34 ft Foreign	34 ft US	35 ft Foreign	35 ft US	36 ft Foreign	36 ft US	37 ft Foreign	37 ft US	38 ft Foreign	38 ft US	39 ft Foreign	39 ft US	Total Foreign	Total US	Total All
>50,000	13	0	3	0	0	0	1	0	0	0	0	0	0	0	17	0	17
>40,000, <50,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
>30,000, <40,000	4	0	1	0	3	0	0	0	0	0	0	0	0	0	8	0	8
>20,000, <30,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<20,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	17	0	4	0	3	0	1	0	0	0	0	0	0	0	25	0	25
Container 2008-2009	33 ft Foreign	33 ft US	34 ft Foreign	34 ft US	35 ft Foreign	35 ft US	36 ft Foreign	36 ft US	37 ft Foreign	37 ft US	38 ft Foreign	38 ft US	39 ft Foreign	39 ft US	Total Foreign	Total US	Total All
>50,000	11	0	5	0	7	0	5	0	3	0	1	0	1	0	33	0	33
>40,000, <50,000	2	0	0	0	0	0	1	0	0	0	0	0	0	0	3	0	3
>30,000, <40,000	1	0	5	0	0	0	0	0	0	0	0	0	0	0	6	0	6
>20,000, <30,000	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
<20,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	15	0	10	0	7	0	6	0	3	0	1	0	1	0	43	0	43
Container 2007-2008	33 ft Foreign	33 ft US	34 ft Foreign	34 ft US	35 ft Foreign	35 ft US	36 ft Foreign	36 ft US	37 ft Foreign	37 ft US	38 ft Foreign	38 ft US	39 ft Foreign	39 ft US	Total Foreign	Total US	Total All
>50,000	52%	0%	12%	0%	0%	0%	4%	0%	0%	0%	0%	0%	0%	0%	68%	0%	68%
>40,000, <50,000	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
>30,000, <40,000	16%	0%	4%	0%	12%	0%	0%	0%	0%	0%	0%	0%	0%	0%	32%	0%	32%
>20,000, <30,000	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
<20,000	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Total	68%	0%	16%	0%	12%	0%	4%	0%	0%	0%	0%	0%	0%	0%	100%	0%	100%
Container 2008-2009	33 ft Foreign	33 ft US	34 ft Foreign	34 ft US	35 ft Foreign	35 ft US	36 ft Foreign	36 ft US	37 ft Foreign	37 ft US	38 ft Foreign	38 ft US	39 ft Foreign	39 ft US	Total Foreign	Total US	Total All
>50,000	26%	0%	12%	0%	16%	0%	12%	0%	7%	0%	2%	0%	2%	0%	77%	0%	77%
>40,000, <50,000	5%	0%	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%	7%	0%	7%
>30,000, <40,000	2%	0%	12%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	14%	0%	14%
>20,000, <30,000	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	0%	2%
<20,000	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Total	35%	0%	23%	0%	16%	0%	14%	0%	7%	0%	2%	0%	2%	0%	100%	0%	100%

Notes: Deadweight Tonnes (DWT)

Source: G.E.C., Inc., from data supplied by St. Johns Bar Pilot Association, April 2008 and November 2009.

Table 41. Jacksonville Harbor Outbound Vessels with Sailing Drafts Reported to be 36 Feet or More, 2005-2009

	2005 2006			2006 2007			2007 2008			2008 2009		
Vessel Category	All Calls	>36 ft	% >36 ft	All Calls	>36 ft	% >36 ft	All Calls	>36 ft	% >36 ft	All Calls	>36 ft	% >36 ft
Container Fully Cellular	348	9	0	328	13	0	322	11	0	353	5	1%
General Cargo	216	3	0	207	4	0	179	2	0	191	2	1%
Open Hatch	5	0	0	20	1	0	25	3	0	18	1	6%
Asphalt/Bitumen	6	1	0	10	1	0	1	0	0	0	0	0%
Crude Oil/Products	29	0	0	38	1	0	35	0	0	10	3	30%
Products	81	0	0	90	1	0	92	0	0	71	0	0%
Anchor Handling	9	0	0	8	1	0	13	0	0	9	0	0%
Subtotal	694	13	0	701	22	0	667	16	0	652	11	2%
All Other Vessels	1,217	0	0	1,274	-9	0	1,216	-3	0	1,310	2	0%
Grand Total Vessel Calls	1,911	13	0	1,975	13	0	1,883	13	0	1,962	13	1%

Source: G.E.C., Inc., from data supplied by St. Johns Bar Pilot Association, April 2008 and November 2009.

5.3.3 Vessel Call List

Table 42 presents a summary of the Mile Point inbound impacts for dwt categories of vessels calling Jacksonville Harbor in 2005-2006, 2006-2007, 2007-2008, and 2008-2009. The numbers of impacted vessels (>33 feet sailing draft) are similar across each category. There are fewer impacted vessels in 2007-2008 and 2008-2009 because of the softer economy affecting port cargoes for non-liner trades such as bulkers and general cargo. There is some shift in vessel sizes toward the largest dwt category, as observed for the bulkers and general cargo vessels. The container and tanker fleets show the most stability with respect to numbers and dwt size distributions prior to 2008-2009 For the most recent period, 2008-2009, there has been a further reduction of smaller container vessels, 20,000 to 30,000 dwt, in place of larger vessels, 30,000 to 40,000 dwt, and an increase in the larger vessels >50,000 dwt, which reflects the present of weekly MOL calls commenting in July 2008 at Blount Island as a precursor to weekly calls at the opening of their TraPac terminal at Dames Point in January 2009.[45]

Table 43 compares the three vessel fleets calling Jacksonville Harbor in 2005-2006, 2006-2007, and 2007-2008 with respect to Mile Point inbound restrictions (>33 feet sailing draft) as reported in the 2005 vessel call list. The 2005 vessel call list had a total of 150 restricted bulk calls, 186 restricted tanker calls, 116 restricted container calls, and 68 restricted general cargo calls (refer to column "Total Restricted Calls 2005").

Using the vessel names, the vessel calls in 2005-2006, 2006-2007, and 2007-2008 were matched against the 2005 vessel call list (refer to the column Total Matched Restricted Calls in Table 29).[46] For the 2005-2006 data, 103 bulk carrier calls were matched to the names of restricted bulk carriers that called in 2005. Similarly, 119 tanker, 84 container, and 56 general cargo vessel calls were matched with restricted vessel names in 2005. The matching of the names for 2005-2006 shows that 362 vessel names and calls were the same as the names and calls of restricted vessels in the 2005 restricted call list. For subsequent years, the matching was lower but still substantial. For 2006-2007, a total of 246 vessel calls were matched against the 2005 restricted vessel call list, and 241 calls from 2007-2008 were matched against the 2005 restricted vessel call list.

The Total Pilots Matched Calls in Table 29 is the total number of calls by vessels with identical names in 2005-2006, 2006-2007, and 2007-2008 compared to the 2005 restricted vessel call list. For example, there were 113 bulk vessel calls by the same name matched to bulk carrier names calling in 2005 that were restricted. For 2005-2006, a total of 442 restricted vessel calls were matched to the names of vessels calling in 2005. There continues to be a substantial match for 2006-2007 (278 vessel calls) and 2007-2008 (256 vessel calls).

[45] The MOL NWA calls at TraPac for the period January 2009 to September 2010 are outlined in Table 46.
[46] For example, a total of 59 bulk vessels in the 2005 vessel call list accounted for 150 calls. The Pilots log from 2005-2006 matched 40 of these vessels, which had 103 calls. The same 40 vessels had a total of 113 calls in the 2005-2006 Pilots log, of which 92 were Mile Point draft restricted (>33 ft sailing draft).

Table 42. Jacksonville Harbor Inbound Vessel Calls by DWT for Bulker, Tank, Container, and General Cargo Vessels

Vessel/dwt	Year			
	2005 2006	2006 2007	2007 2008	2008 2009
Bulker				
>50,000	55	69	75	89
>40,000, <50,000	60	54	45	45
>30,000, <40,000	46	42	24	14
>20,000, <30,000	23	21	6	2
<20,000	4	9	6	4
Total	188	195	156	154
Tanker				
>60,000	27	39	30	39
>50,000, <60,000	8	7	16	22
>40,000, <50,000	179	183	184	151
>30,000, <40,000	50	54	41	36
>20,000, <30,000	11	12	5	6
>10,000, <20,000	18	10	14	23
<10,000	7	4	3	3
Total	300	309	293	280
Container				
>50,000	42	42	44	72
>40,000, <50,000	8	6	3	7
>30,000, <40,000	20	26	46	83
>20,000, <30,000	141	110	92	59
<20,000	147	146	136	133
Total	358	330	321	354
General Cargo				
>40,000, <50,000	5	17	21	0
>30,000, <40,000	15	9	8	7
>20,000, <30,000	46	55	51	40
>10,000, <20,000	3	8	5	11
<10,000	160	141	120	132
Total	229	230	205	190

Notes: DWT = deadweight tonnes (metric) measure of vessel gross loading capacity.

Bulk vessels include Bulk Self-Unloading, Bulk, and Bulk with Vehicle Deck

Tank vessels include Chemical Product, Products, Crude Oil, Crude Oil/ Products Replenishment Tanker, Bulk Oil, Chemical Tanker, Asphalt/ Bitumen, and Tanker Unclassified.

Container vessels include Container Fully Cellular and Container/Ro-Ro.

General Cargo vessels include General Cargo, Heavy Load, and Open Hatch.

Container vessel TEU capacities corresponding to dwt are approximately 4,000 (>50,000 dwt), 3,000 (>40,000 dwt), 2,000 (>30,000 dwt), 1,500 (20,000 dwt), and 1,000 (<20,000 dwt).

Source: G.E.C., Inc., from data provided by St. Johns Bar Pilot Association, April 2008 and November 2009.

Table 43. Jacksonville Harbor Draft Impacted Inbound Vessel Calls 2005 Matched with Vessel Draft Impacted Vessel Calls in 2005-2006, 2006-2007, 2007-2008, and 2008-2009

	Total Restricted Calls 2005	Total Matched Restricted Calls	Total Pilots Matched Calls	Matched Pilots Calls >33 ft	Matched Pilots Calls >33 ft/ Total Matched Restricted Calls	Matched Pilots Calls >33 ft/ Total Restricted Calls	Matched Pilots Calls >33 ft/ Total Pilots Matched Calls
2005-2006							
Bulk	150	103	113	92	89%	61%	81%
Tank	186	119	140	98	82%	53%	70%
Container	116	84	136	17	20%	15%	13%
General Cargo	68	56	53	40	71%	59%	75%
Total	520	362	442	247	68%	48%	56%
2006-2007							
Bulk	150	60	65	45	75%	30%	69%
Tank	186	53	65	38	72%	20%	58%
Container	116	80	105	15	19%	13%	14%
General Cargo	68	53	43	33	62%	49%	77%
Total	520	246	278	131	53%	25%	47%
2007-2008							
Bulk	150	69	52	40	58%	27%	77%
Tank	186	46	62	42	91%	23%	68%
Container	116	79	105	19	24%	16%	18%
General Cargo	68	47	37	31	66%	46%	84%
Total	520	241	256	132	55%	25%	52%
2008-2009							
Bulk	150	60	46	34	57%	23%	0%
Tank	186	53	54	30	57%	16%	0%
Container	116	80	99	0	0%	0%	0%
General Cargo	68	53	27	13	25%	19%	0%
Total	520	246	226	77	31%	15%	0%

Notes: Total Restricted Calls 2005 as defined in the Mile Point spreadsheet vessel call list received from Jacksonville District.
Total Matched Restricted Calls indicates the number of vessel names matched between Total Restricted Calls 2005 and Pilots data for 2005-2006, 2006-2007, and 2007-2008 with inbound sailing drafts 33 feet or more.
Total Pilots Matched Calls indicates the number of vessel names matched between Total Restricted Calls 2005 and Pilots data for 2005-2006, 2006-2007, and 2007-2008.
Matched Pilots Calls >33 ft indicates the number of ebb tide restricted vessels (sailing draft >33 ft) represented by the Total Matched Restricted Calls.
In total, the vessel call list received from the Corps shows there were 59 draft restricted bulk vessels that accounted for 150 calls in 2005. A search was performed to determine how many of these 59 vessels from the call list were recorded in the Pilots logs for March 2005- March2008. It was found that 29 of the 59 vessels appeared in the Pilots log for March 2005-March 2006, representing 103 calls in the vessel call list and 113 calls in the Pilots log. In the March 2006-March 2007 Pilots log, there was 15 vessels that appeared in the vessel call list and the Pilots log that matched 60 calls from the vessel call list and 65 calls from the Pilots log. In the March 2007-2008 Pilots log, there was 16 vessels that appeared both in the vessel call list and the Pilots log that matched 69 calls in the vessel call list and 52 from the Pilots log.

Source: G.E.C., Inc.

The column "Matched Pilots Calls >33 ft" is the number of Mile Point restricted vessel calls (>33 ft sailing draft) in years 2005-2006, 2007-2007, and 2007-2008 that could be matched to vessels in 2005. For 2005-2006, there were 92 bulk vessels with drafts >33 feet that could be matched to the names of bulk vessels in the 2005 restricted vessel call list. For 2005-2006, a total of 247 Mile Point restricted vessels (>33 ft sailing draft) could be matched to vessel names restricted in 2005. The significant change between 2005 and the subsequent years is that there are a large number of container vessel names that match (Total Matched Restricted Calls and Total Pilots Matched Calls), but comparatively few of the container vessels are actually draft restricted (>33 ft sailing draft) as per the column "Matched Pilots Calls >33 ft." Similar data for 2006-2007 and 2007-2008 indicate that matched Pilots calls >33 feet are nearly the same as total matched pilots calls for bulk, tanker, and general cargo vessels.

The column “Matched Pilots Calls >33 ft/Total Matched Restricted Calls” indicates how closely each category of vessels that was matched to 2005 was also restricted. In general, there is a high proportion of the matched Pilots calls >33 ft compared to the total restricted calls for all vessel categories other than container. For example, 89 percent and 75 percent of the total matched restricted bulk calls in 2005-2006 and 2006-2007, respectively, were >33 ft sailing draft. For containers, only 20 percent, 19 percent, and 24 percent of the total matched restricted calls for each year and 2005 were >33 ft sailing draft.

The column “Matched Pilots Calls >33 ft/Total Restricted Calls 2005” indicates how the population of restricted vessels has not changed over the periods 2005-2006, 2006-2007, and 2007-2008 compared to 2005. In 2005-2006, 61 percent, 53 percent, and 59 percent of the 2005 restricted vessel calls for bulk, tanker, and general cargo, respectively, could be matched to the names of the same vessels. For 2006-2007, 30 percent, 20 percent, and 49 percent of the bulk, tanker, and general cargo names, respectively, of restricted calls could be matched to 2005 restricted calls. For 2007-2008, 27 percent, 23 percent, and 46 percent of the bulk, tanker, and general cargo names, respectively, could be matched to the names of restricted vessel calls in 2005.

The column “Matched Pilots Calls >33 ft/Total Pilots Matched Calls” indicates the extent to which the different fleets are impacted by Mile Point (>33 ft sailing draft). For 2005-2006, 81 percent, 70 percent, and 75 percent of the total Pilots matched calls compared to 2005 were Mile Point restricted (>33 ft sailing draft) for bulk, tanker, and general cargo, respectively. For 2006-2007, 69 percent, 58 percent, and 77 percent of the bulk, tanker, and general cargo vessels, respectively, that could be matched to 2005 (Total Pilots Matched Restricted Calls) would be Mile Point draft restricted (>33 ft sailing draft). For 2007-2008, 77 percent, 68 percent, and 84 percent of the bulk, tanker, and general cargo vessels, respectively, that could be matched to 2005 (Total Pilots Matched Restricted Calls) would be Mile Point draft restricted (>33 ft sailing draft).

The comparative analysis of the vessel names and calls between 2005 and 2005-2006, 2006-2007, and 2007-2008 suggests that a large number of the same vessels in the fleet were calling Jacksonville Harbor during this period. This is particularly true for containers. However, except for containers, a substantial proportion of the vessel fleets calling Jacksonville Harbor are Mile Point restricted (>33 ft sailing draft). The implication is that other than container ships there is a substantial continuity among the names of the vessels calling Jacksonville Harbor that are Mile Point draft restricted (>33 ft sailing draft) between 2005 and the subsequent years of 2005-2006, 2006-2007, and 2007-2008.

The high degree of similarity between restricted vessels for 2005-2006, 2006-2007, 2007-2008, and 2008-2009 (except for container vessels) should be reflected in similar sailing draft distributions. Table 44 shows the sailing draft distributions that are Mile Point restricted (>33 ft) between 33 ft and 40 feet for 2005-2006, 2006-2007, 2007-2008, and 2008-2009. The data displayed for each vessel category (bulk, tanker, general cargo, and container) show the number of inbound calls by draft and the percentage of each year’s restricted calls by sailing draft.

Table 44. Jacksonville Harbor Inbound Mile Point Impacted Sailing Draft Distribution, 2005-2009

Bulk	33 ft	34 ft	35 ft	36 ft	37 ft	38 ft	39 ft	40 ft	Total
2005-2006	20	4	7	32	25	21	4	16	129
2006-2007	12	0	10	28	11	26	14	27	128
2007-2008	1	1	21	12	7	29	23	33	127
2008-2009	4	2	4	11	6	40	33	32	132
Bulk Distribution									
2005-2006	16%	3%	5%	25%	19%	16%	3%	12%	100%
2006-2007	9%	0%	8%	22%	9%	20%	11%	21%	100%
2007-2008	1%	1%	17%	9%	6%	23%	18%	26%	100%
2008-2009	3%	2%	3%	8%	5%	30%	25%	24%	100%
Tank									
2005-2006	12	22	17	25	32	38	0	0	146
2006-2007	22	14	16	22	39	37	0	0	150
2007-2008	21	6	20	27	46	35	0	0	155
2008-2009	15	12	15	31	32	29	1	0	135
Tank Distribution									
2005-2006	8%	15%	12%	17%	22%	26%	0%	0%	100%
2006-2007	15%	9%	11%	15%	26%	25%	0%	0%	100%
2007-2008	14%	4%	13%	17%	30%	23%	0%	0%	100%
2008-2009	11%	9%	11%	23%	24%	21%	1%	0%	100%
General Cargo									
2005-2006	13	10	6	6	0	4	0	0	39
2006-2007	14	16	8	6	4	5	2	0	55
2007-2008	10	22	8	3	4	3	4	5	59
2008-2009	11	11	3	4	5	3	3	0	40
General Cargo Distribution									
2005-2006	33%	26%	15%	15%	0%	10%	0%	0%	100%
2006-2007	25%	29%	15%	11%	7%	9%	4%	0%	100%
2007-2008	17%	37%	14%	5%	7%	5%	7%	8%	100%
2008-2009	28%	28%	8%	10%	13%	8%	8%	0%	100%
Container									
2005-2006	15	3	0	0	0	0	0	0	18
2006-2007	11	4	0	0	0	0	0	0	15
2007-2008	17	4	3	1	0	0	0	0	25
2008-2009	15	10	7	6	3	1	1	0	43
Container Distribution									
2005-2006	83%	17%	0%	0%	0%	0%	0%	0%	100%
2006-2007	73%	27%	0%	0%	0%	0%	0%	0%	100%
2007-2008	68%	16%	12%	4%	0%	0%	0%	0%	100%
2008-2009	35%	23%	16%	14%	7%	2%	2%	0%	100%

Notes: Pilots data represents years 2005-2006, 2006-2007, 2007-2008, and 2008-2009.

Source: G.E.C., Inc.

In general, the 2005-2006 sailing draft distribution reflects a shift toward deeper drafts and related Mile Point impacts in other years. In subsequent years, there is a degree of shift in sailing draft distributions in the bulk and general cargo fleet towards deeper drafts. For example, 15 percent of the bulk vessels called with drafts 39 and 40 ft in 2005-2006, compared to 32 percent in 2006-2007, 44 percent in 2007-2008, and 49 percent in 2008-2009. For general cargo vessels, nearly all calls were less than 37 ft in 2005-2006 except for 10 percent that were 37 ft or more in 2005-2006, 20 percent that were 37 ft or more in 2006-2007, 27 percent that were 37 ft or more in 2007-2008, and 29 percent that were 37 ft or more in 2008-2009. The shift in the tanker distribution is less pronounced. In 2005-2006, 48 percent called at 37 and 38 ft compared to 51 percent in 2006-2007, 53 percent in 2007-2008 and 46 percent in 2008-2009. As noted earlier, there are comparatively few container vessels that are traditionally Mile Point draft impacted (>33 ft sailing draft) prior to 2009. Consequently, the sailing draft distribution in 2007-2008 appears similar to 2005-2006, although the number of affected vessels is 25 in 2007-2008 compared to 43 in 2008-2009. The sailing draft distribution for containers in 2008-2009 reflects deeper inbound drafts, 37 feet or more, not previously recorded in prior years. This should reflect the large Panamax vessels deployed by NWA for its TraPac related services (also calling Savannah Harbor).

5.3.4 Dames Point Container Vessel Sailing Draft Distributions

Between the period January 12, 2009, and September 2, 2010, there were a total of 129 container vessel calls at the TraPac Dames Point container terminal at Jacksonville Harbor. The calls consisted of 119 Panamax and 10 Post-Panamax vessels.[47]

Table 12 contains the vessel calls at TraPac from the commencement of operations, January 2009, to September 2010. For most of 2009 (after May), there was about one vessel call per week.[48] During the later part of 2009, the number of calls increased to two weekly and remained that way until June 2010 when a third weekly call was instituted. The most recent call is for Post-Panamax container vessels in a Southeast Asia ECUS Suez deployment. Otherwise, all of the other calls have had Panama Canal rotations and have been Panamax vessels.

Table 45 contains the sailing draft distributions inbound and outbound for the Panamax and Post-Panamax calls at TraPac Dames Point container terminal from its inception in January 2009 to September 2010. The Panamax inbound call sailing drafts range from 31 feet to 40 ft but are clustered in the 34 to 35 ft range. The Panamax outbound call sailing drafts range from 27 ft to 38 ft and are clustered in the 34 to 35 ft range. The Post-Panamax call sailing drafts to date (not

[47] During the period January through March 2009, there are only four recorded calls at TraPac (January 12, January 19, January 26 and February 25) that would be in the 2008-2009 database. There was one call in April (04/06) and two calls in May, and it appears that weekly calls commenced in June 2009. This period of time, January to June 2009, coincides with very weak container volumes, rationalization of services, and skipped port calls at Jacksonville for Mile Point schedule constraints.

[48] The initial plan of operations in January 2008 was for two weekly services calling Dames Point in addition to other ECUS ports, including Savannah. One of the two ECUS services was discontinued early in 2009 in response to declining box volumes for world trade lanes. The other service was affected subsequently by rationalization with another service which limited the box volumes that could be moved by MOL on this service due to a vessel sharing agreement.

affected by the Panama Canal) inbound range from 36 to 40 ft, clustered in the 36 to 38 ft range, and outbound sailing drafts range from 36 to 38 ft with the same cluster.

Table 45. Container Vessel Sailing Drafts Calling TraPac January 2009 to September 2010

	Post Panamax		Panamax		
Draft	Inbound	Outbound	Inbound	Outbound	Total
40	1	0	1	0	2
39	1	0	0	0	1
38	2	3	12	15	32
37	4	5	12	5	26
36	2	2	9	17	30
35	0	0	21	23	44
34	0	0	39	31	70
33	0	0	13	15	28
32	0	0	9	9	18
31	0	0	3	2	5
30	0	0	0	1	1
27	0	0	0	1	1
Total	10	10	119	119	258

Sources: Jacksonville Port Authority; and G.E.C., Inc.

Table 46 contains the sailing draft distribution percentages for the Panamax (Panama Canal) and Post-Panamax (Suez Canal) services calling TraPac Dames Point between January 2009 and September 2010. In some instances, vessels have by passed Jacksonville or otherwise embarked to Savannah prior to calling Jacksonville, depending on Mile Point tidal delays, vessel drafts, and sailing schedules. From the perspective of Mile Point, about 40 percent of the current inbound Panamax calls would not be affected by the Mile Point tidal constraint.[49] From the perspective of Mile Point, only about 15 percent of the current outbound Panamax calls would be affected by the tidal constraint (>36 ft sailing draft).

Table 46 indicates that the Post-Panamax fleet of container vessel calls at Jacksonville are currently clustered at or above 36 ft sailing draft and all are consequently affected by the Mile Point inbound tidal draft constraint (>34 ft sailing draft) and substantially affected by the Mile Point outbound tidal draft constraint (>36 ft sailing draft). The Post-Panamax calls at Jacksonville are in a rotation that includes Halifax, New York, Norfolk, Jacksonville, and Savannah. Savannah is currently the last ECUS port rotation in response to heavy load cargoes such as forest products. Consequently, these vessels will leave Jacksonville with sufficient draft capacity to load more cargo, mostly heavy export variety, at Savannah before embarking from the ECUS to the Far East (Singapore). A change in rotation from Savannah as the last port of

[49] This assumes that all of these vessels that have called at the port have proven to have exceptional handling characteristics transiting to TraPac or Blount Island Terminals with a fresh water draft of 34 ft or less may start in at any time and any stage of the tide. It also assumes that none of these vessels sailing at 34 ft draft or less were otherwise light loaded to avoid Mile Point delays.

call for the ECUS would likely affect the outbound sailing drafts at Jacksonville that are now constrained by loading at Savannah as the last ECUS port call.

Table 46. Container Vessel Sailing Draft Distributions Calling TraPac January 2009 to September 2010

	Post Panamax		Panamax		
Draft	Inbound	Outbound	Inbound	Outbound	Total
40	10.0%	0.0%	0.8%	0.0%	0.8%
39	10.0%	0.0%	0.0%	0.0%	0.4%
38	20.0%	30.0%	10.1%	12.6%	12.4%
37	40.0%	50.0%	10.1%	4.2%	10.1%
36	20.0%	20.0%	7.6%	14.3%	11.6%
35	0.0%	0.0%	17.6%	19.3%	17.1%
34	0.0%	0.0%	32.8%	26.1%	27.1%
33	0.0%	0.0%	10.9%	12.6%	10.9%
32	0.0%	0.0%	7.6%	7.6%	7.0%
31	0.0%	0.0%	2.5%	1.7%	1.9%
30	0.0%	0.0%	0.0%	0.8%	0.4%
27	0.0%	0.0%	0.0%	0.8%	0.4%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

Sources: Jacksonville Port Authority; and G.E.C., Inc.

6.0 VESSEL TIDAL DELAY COSTS FOR MILE POINT ANALYSES

Vessel delay costs for Mile Point analyses were previously based on FY 2005 vessel operating costs that were updated to 2007 vessel operating costs. The FY 2007 vessel operating costs were compiled for at sea and at port situations that primarily reflect differences in fuel consumptions. The Mile Point vessel tidal delay costs were developed from a simple average of the at sea and the at port costs to reflect that tide delayed vessels would normally anchor off the coast or slow steam.[50]

The 2008 vessel costs are presented for more situations particular to vessel speeds and related fuel consumption at sea and at port.[51] The at sea conditions include service speed, economic speed, half power, and base idle. The in port conditions include within harbor channel transit, maneuvering, base idle, and dockside static condition. The 2008 vessel costs selected as most representative of “at sea” waiting for Mile Point inbound tidal delay was “base idle” and most representative of “in port” waiting for Mile Point outbound tidal was “dockside static” condition; that is, inbound vessels delayed by Mile Point would incur base idle at sea average total vessel

[50] The average of at sea hourly vessel costs and in port hourly vessel costs would reflect that tide delayed vessels would normally anchor off the coast or slow steam. The use of at sea hourly vessel costs assumes full fuel consumption associated with normal transit speeds, which is inconsistent with vessel that are delayed by tidal conditions at sea.

[51] The 2008 vessel operating costs represent a refinement of costs with respect to vessel speed and operation and fuel consumption that disaggregate the traditional “at sea” and “at port” conditions.

costs inclusive (Propulsion\Prime Mover(s) and Auxiliary Power Generation), and outbound vessels delayed by Mile Point would incur dockside static condition at port average total vessel costs inclusive (Propulsion\Prime Mover(s) and Auxiliary Power Generation).

The change from the 2008 report in the current analysis does not compute a composite vessel operating delay cost as a simple average of "at sea" and "in port." The current analysis computes the vessel inbound delay cost as "base idle" component at sea and "dockside/static condition" in port. These two costs are used independent of each other and are not averaged.[52]

The changes in the 2008 vessel operating costs will result in lower vessel unit (hourly) delay costs for two reasons. First, the 2008 vessel operating costs are generally lower than the 2007 vessel operating costs, particularly for container vessels. Second, the 2008 at sea "base idle" is about one-half of the 2007 "at sea" cost. The 2008 at port vessel "dockside/static condition" cost is about the same (slightly less) than the 2007 "in port" vessel cost.

As an illustration of the changes in vessel costs affecting the Mile Point delay costs, a large Panamax container vessel of 4,800 TEU capacity and about 65,000 dwt will be used. The old at sea hourly cost would be $2,852 based on the regression: $0.0405 * DWT + $220. The new at sea base idle hourly cost is computed to be $1,244 based on the regression: $0.014613 * DWT + $295. The old in port hourly cost would be $917 based on the regression: $0.0098*DWT + $280. The new in port hourly cost is computed to be $842 based on the regression: $0.008162 * DWT + $311. The average hourly delay cost for inbound and outbound vessels would be $1,884 based on the simple average of the old at sea hourly cost ($2,852) and the old in port hourly cost ($917). The average hourly delay cost for inbound and outbound vessels would currently be $1,244 and $842, respectfully. A container vessel delayed 4.30 hours inbound corresponding to a 38 ft sailing draft would have old costs of $8,101 ($1,884 * 4.30 hours = $8,101). A container vessel delayed 4.30 hours inbound corresponding to a 38 ft sailing draft would have revised costs of $5,349 ($1,244 * 4.30 hours = $5,349). Outbound container vessels sailing at 38 ft would have delay costs under the old costs of $8,101 ($1,884 * 4.30 = $8,101). Outbound container vessels sailing at 38 ft would have revised delay costs of $3,620 ($842 * 4.30 = $3,620). For this example, the revised inbound delay costs are 66 percent of the previous inbound delay costs ($5,349/$8,101 = 0.66). For this example, the revised outbound delay costs are 45 percent of the previous outbound delay costs ($3,620/$8,101 = 0.45).

Table 47 summarizes the regression coefficients for the major categories of affected vessels for the 2008 and 2007 costs.[53]

[52] Averaging would be appropriate if the same Mile Point sailing draft constraints existed for inbound and outbound and vessel drafts were the same or similar in both directions. Clearly this is not the case, particularly with bulk carriers usually discharging at Jacksonville. However, container vessel drafts inbound and outbound will tend to be similar because of the relatively small volumes of cargo transferred at any single port call.

[53] All vessel costs are based on a linear regression for dwt that is particular to each major vessel category and foreign versus U.S. flag.

Table 47. Vessel Operating Costs for Delay (Idle) at Sea and Port, 2007 and 2008

Vessel Type and Location	Daily/ Hourly	2008 Slope	2008 Intercept	2007 Slope	2007 Intercept
Foreign Flag Tanker At Sea	Daily	$0.137797	$9,018		
	Hourly	$0.005742	$376	$0.0056	$736
Foreign Flag Tank at Port	Daily	$0.122598	$7,269		
	Hourly	$0.005108	$303	$0.0032	$447
US Flag Tanker at Sea	Daily	$0.392916	$23,548		
	Hourly	$0.016371	$981	$0.0121	$1,583
US Flag Tanker at Port	Daily	$0.376921	$21,827		
	Hourly	$0.015705	$909	$0.0097	$1,294
Foreign Flag Bulker at Sea	Daily	$0.119055	$7,164		
	Hourly	$0.004961	$298	$0.0058	$587
Foreign Flag Bulker at Port	Daily	$0.103525	$5,425		
	Hourly	$0.004314	$226	$0.0034	$299
Cellular Foreign Flag at Sea	Daily	$0.350715	$7,069		
	Hourly	$0.014613	$295	$0.0405	$220
Cellular Foreign Flag in Port	Daily	$0.195880	$7,469		
	Hourly	$0.008162	$311	$0.0098	$280
Foreign Flag General Cargo at Sea	Daily	$0.393000	4095		
	Hourly	$0.016375	$171	$0.0237	$334
Foreign Flag General Cargo at Port	Daily	$0.356184	2670.7895		
	Hourly	$0.014841	$111	$0.0151	$146

Source: G.E.C., Inc. as adopted from FY 2007 and FY 2008 Vessel Operating Costs.

Aside from the differences in the composition and level of the vessel delay hourly costs, the current analysis will be different from the 2008 analysis for container vessels for several reasons.[54] First, the 2008 analysis was done in the absence of any historical sailing draft distribution for large Panamax container vessels calling Jacksonville Harbor on global trade routes. The 2008 analysis assumed an average inbound Panamax sailing draft of 37 ft, resulting in that all inbound TraPac (and Hanjin) Panamax container vessels were Mile Point delayed for inbound movements. However, in the absence of a historical sailing draft distribution, the 2008 analysis assumed that all outbound TraPac (and Hanjin) Panamax container vessels were not Mile Point delayed with sailing drafts 36 ft or less.

Second, the 2008 analysis was done in accordance with the St. Johns Bar Pilot Association "St. Johns River Navigational Guidelines" (2008) that stipulated that inbound vessels drawing more than 33 ft fresh water would be Mile Point tidal constrained. The revised analysis uses the current St. Johns Bar Pilot Association Guidelines (2010) that stipulate that inbound vessels "that have called at the port and have proven to have exceptional handling characteristics, transiting to TraPac or Blount Island Terminals, with a fresh water draft of 34 ft or less, may start in at anytime and any stage of the tide" (refer to section 1.1). Thus, there has been a shift of the Bar Pilots operating procedures from 2008 that now allows certain vessels with "exceptional

[54] The original Mile Point draft report was submitted September 19, 2008. Minor revisions were subsequently made in response to review comments resulting in October 22, 2008, and February 12, 2009, reports. Hence, the previous analysis is referenced to 2008.

handling characteristics" to transit to TraPac/Blount Island terminals unrestricted by Mile Point with sailing drafts less than 34 ft instead of previously less than 33ft.[55] Therefore, there will be fewer vessels affected as per the current sailing draft distribution at least from the perspective of Panamax container vessels that normally would be expected to have drafts in the mid 30 ft range for the current Panama Canal configuration with a spread to the upper and lower 30 ft range (refer to Table 46).[56]

Table 46 indicated that the majority of the inbound TraPac Panamax container vessels affected by Panama Canal transits were affected by Mile Point inbound (>34 ft sailing draft) and not affected by Mile Point outbound (>36 ft sailing draft). This is similar to the 2008 analyses which assumed all inbound global Panamax container calls were affected by Mile Point and none of the outbound transits of the same fleet was affected by Mile Point (36 ft or less). Table 46 indicates that for the existing Post-Panamax ECUS rotation wherein Jacksonville is the next to last call before Savannah, all of the inbound transits are Mile Point affected (>34 ft sailing draft), and only 20 percent of the outbound transits are not Mile Point affected (<36 ft sailing draft).

The 2008 analysis would have assumed that the Panamax inbound transits called at an average of 37 ft, in the absence of any applicable historical (actual) sailing draft distribution data for these large Panamax in global trades, and departed at 36 ft draft or less.[57] The applicable Mile Point tidal delay cost would have been 4.105 hours * $1,184 = $7,734 inbound and $0 outbound for a total Mile Point tidal delay cost per call (inbound and outbound) of $7,734. The current analysis using Panamax sailing draft distribution applicable to the current Panama Canal would exclude nearly 54 percent of the inbound calls having sailing drafts 34 ft or less and include only 17 percent of the outbound calls more than 36-ft. sailing draft. The comparative costs for an equivalent delayed inbound vessel would be (4.105 hours *$1,244) * 0.46 = $2,349, and the comparative costs for an equivalent delayed outbound vessels would be (4.105 hours * $842) * 0.17 = $587.59. Total equivalent comparative costs for existing Panamax inbound and outbound would be $2,937 ($2,349 + $588 = $2,937). For the existing Panamax fleet, the changes in the vessel costs with respect to level and speed (fuel consumption) related changes and the existing sailing drafts (with a one foot higher inbound sailing draft allowance, 34 ft versus 33 ft) for Mile Point tidal delay occurrence results in lower effective equivalent delay costs, $7,734 in 2008 compared to $2,937 for the Panamax class affected by the existing Panama Canal.

The 2008 analyses did not explicitly allow for deeper Panamax sailing drafts with the completion of the expansion of the Panama Canal, and no Post-Panamax vessels were included in the analyses. The current analyses will include deeper sailing draft Panamax and Post-Panamax container vessels as applicable with an expanded Panama Canal for the with-project conditions. These deeper draft calls will be more Mile Point sailing draft impacted (>34 ft inbound and >36 ft outbound) and have larger hourly delays as a result, particularly when the Panama Canal fresh water draft of 38 ft is no longer applicable constraining the Panamax container drafts to usually

[55] Effectively, there has been a one foot reduction in the Mile Point inbound tidal delay constraint from 33ft (2008) to 34 ft (2010).

[56] Arguably, the Mile Point inbound tidal delay constraint raised from 33 ft to 34 ft will not impact much if any of a large Panamax fleet or Post-Panamax fleet calling with larger drafts that are not otherwise constrained by existing Panama Canal sailing drafts after the expansion of the Canal is completed circa 2014.

[57] Prior to January 2009, Jacksonville had seen virtually no major global container services calling with very large Panamax or Post-Panamax vessels.

this draft (38 ft fresh water) or less unless intermittent port calls result in increased sailing draft between the Canal and the ECUS ports above South Florida.

7.0 DETERMINE CURRENT COMMODITY MOVEMENT COST

7.1 INTRODUCTION

The Jacksonville District supplied a Mile Point benefit spreadsheet to be used for calculating the without-project delay costs and benefits resulting from with-project reductions of existing ebb tide constrained sailing drafts. The spreadsheet consists of ten worksheets (including various linkages among them) as follows: (1) Project Information; (2) Alternative Plans; (3) Growth; (4) Restriction WO Project; (5) Restriction W Project; (6) Ebb and Tide Delay Without; (7) Ebb and Tide Delay With; (8) Tide Tables; (9) Benefit Calculation; and (10) Vlookup.

The spreadsheet calculates the vessel average delay hours as a function of sailing draft and tides, effectively acting as a typical tide delay function, but with lower sailing draft tidal delay thresholds reflecting the Mile Point restrictions (>33 ft sailing draft inbound and >36 ft sailing draft outbound).[58] The Mile Point without-project inbound sailing draft restriction of >33 ft is used as the basis for all delay estimates except for the NWA vessels calling TraPac for which a 34 ft inbound delay threshold is used. The Mile Point inbound sailing draft restriction (>33 ft) is applied to a vessel call list contained in the worksheet Restriction WO Project to establish the delay time and associated vessel costs.[59] Modifications to the Mile Point sailing draft restriction as a result of with-project conditions are applied to a vessel call list contained in the worksheet Restriction W Project to establish the changes in delay time and associated vessel costs.

Once the baseline vessel delay costs are calculated for a particular vessel call list (interactions between the Restriction WO Project and Ebb and Tide Delay Without and between the Restriction W Project and Ebb and Tide Delay With), the Growth worksheet will allow the reductions in vessel delay costs associated with the different fleets (bulk, tanker, container, general cargo) to change in response to projected changes in vessel calls. The Growth worksheet allows for changes in the vessel calls for each year of the project life, 2015 to 2065.[60]

7.2 WITHOUT-PROJECT EBB TIDE DELAYS

The vessel call list was developed from the 2005 vessel call list contained in the spreadsheet as received from the District. The 2005 vessel call list was updated to reflect the current fleet composition (dwt and sailing draft) calling in 2007-2008 and 2009-2010. The time frame of four 12-month periods between 2005-2009 had been used to establish that the most recent 12 months in 2007-2008 or 2008-2009 appeared to be the most representative of the baseline fleet.

[58] The average expected delay based on tide cycles was 3.73 hours for sailing drafts 33 ft to 36 ft, then 4.105 hours for 37 ft, 4.305 hours for 38 ft, and 5.555 hours for 39 and 40 ft drafts. It should be noted that improvements to Mile Point would not eliminate that portion of the tide delays attributable to tide riding behavior with respect to sailing drafts greater than 38 ft for the existing 40 ft project and two-foot underkeel clearance allowances.

[59] Exceptions to the 33 ft sailing draft inbound constraint are noted for any applications to NWA vessels calling TraPac.

[60] The population growth rates are used for the Growth worksheet other than for new services associated with a planned Hanjin terminal at Dames Point.

Previously, it has been noted that there were distinct similarities with regard to the vessel fleets contained in the fleets calling in 2007-2008 and 2008-2009 (refer to Table 44). Table 48 contains an example of the Restriction WO Project (vessel call list).

The 2007-2008 and 2008-2009 Mile Point impacted sailing draft distributions from Table 44 were used to develop a current vessel call list for bulkers, general cargo, and containers (exclusive of container vessels calling TraPac which are only included in the last three months of the 2008-2009 data). The current Mile Point Restriction WO Project vessel call list consisted of 127 bulk vessel calls, 155 tanker vessel calls (differentiated by foreign and U.S. flag), 59 general cargo vessel calls, and 25 container vessel calls currently calling Jacksonville Harbor (other than at TraPac). Another 156 inbound and 156 outbound container calls are added to the vessel call list to reflect the 2010 TraPac container terminal that opened in 2009 and is largely not reflected in the 2007-2008 baseline. The 156 calls (inbound and outbound) reflect the current minimum of three container services each with weekly calls at Jacksonville Harbor. No other calls by other operators are included in the base year, but it is likely that some will occur in response to excess capacity at the facility.[61]

The 2005 vessel call list assumed a 40 ft sailing draft for the 4,000 TEU Panamax size NWA and other container line vessels that would be expected to call Jacksonville Harbor under the existing authorized project depth of 40 ft. The current analysis relies on the more recently observed sailing draft distributions for vessels calling TraPac since January 2009 (refer to Table 44). The without-project container vessel call list is projected to remain unchanged in size for the traditional fleet of regional services calling Talleyrand and Blount Island terminals. However, the NWA fleet of Panamax and Post-Panamax vessels is projected to shift to Post-Panamax vessels for the existing services transiting the Canal that are currently constrained to Panamax size and sailing drafts (38 ft Tropical Fresh Water).

The Restriction WO Project vessel call list is sorted by vessel type with respect to bulk, foreign flag tanker, U.S. flag tanker, general cargo, and container.[62] The calls are further sorted by sailing draft. The Post-Panamax sailing draft observed for the current service calling TraPac is used for the Post-Panamax services that would assume the Panamax deployments with the completed expansion of the Panama Canal (refer to Table 46).

8.0 DETERMINE ALTERNATIVE COMMODITY MOVEMENT COST

The vessel call list for Without-Project Ebb Tide Delays (Restriction WO Project) is used for the with-project conditions with respect to existing Mile Point tidal constraints (>33 ft sailing draft inbound and >36 ft sailing draft outbound). The reconfiguration of the training wall (Reconfiguration) was assumed to remove all Mile Point sailing draft restrictions (>33 ft sailing draft inbound and >36 ft sailing draft outbound) for all self-propelled vessels.[63]

[61] The vessel call list in 2005 contained 175 Mitsui calls in addition to the container vessels previously identified as calling Jacksonville Harbor (refer to Table 30).
[62] The analysis of container vessels did not find any U.S. flag calls that were Mile Point restricted (>33 ft sailing draft).
[63] It is recognized that Pilots may make exceptions for particular specified individual vessels based on unique characteristics and handling circumstances.

Table 48. Restriction Without-Project (Vessel Call List) Example

Transit Code	Commodity	Flag	Vessel Type	Vessel Type Code	Deadweight (Short Tons)	Length Between Perpendiculars	Extreme Breadth	Actual Transit Draft (Feet)	Design Draft (Feet)	Speed (Knots per Hour)	Gross Cargo Capacity	Lading Weight Capacity by (Short Tons)	Volumetric Capacity (Cubic Meters)	Volumetric Capacity (Cubic Feet)	Stowage Factor (Cubic Feet Per Short Ton)
BRUSSEL	Bulk Cargo	MARS	BKF	BKF	45292	623.63	96.33	32.75	36.60	15.50	0.92	41649	50330	541744	1
TEXAS	Bulk Cargo	0	BAF	BAF	35204	502.20	83.97	32.92	34.51	19.00	0.91	32144	33000	355207	1
TEXAS	Bulk Cargo	0	BAF	BAF	35204	502.20	83.97	32.92	34.51	19.00	0.91	32144	33000	355207	1
TEXAS	Bulk Cargo	0	BAF	BAF	35204	502.20	83.97	33.00	34.51	19.00	0.91	32144	33000	355207	1
ANTWERPEN	Bulk Cargo	0	BKF	BKF	49912	623.63	96.33	33.50	36.60	15.50	0.92	45897	50330	541744	1
FANY	Bulk Cargo	0	BKF	BKF	48045	580.56	99.83	33.92	37.13	14.00	0.92	44180	53594	576877	1
TEXAS	Bulk Cargo	0	BAF	BAF	35204	502.20	83.97	34.50	34.51	19.00	0.91	32144	33000	355207	1
W. H. BLOUNT	Bulk Cargo	BAHA	BKF	BKF	72073	705.17	105.75	35.25	42.64	14.75	0.94	67445	75142	808816	1
BUNGA MELOR TIGA	Bulk Cargo	BAHA	BKF	BKF	47505	579.90	100.11	35.92	36.87	15.15	0.92	43684	54290	584369	1
FRONTIER STAR	Bulk Cargo	PANA	BKF	BKF	51437	593.68	101.68	35.58	38.11	14.50	0.92	47466	59820	643893	1

Transit Code	Lading Capacity by Volume	Applied Lading Capacity (Short Tons)	Bunkerage, Stores, Water, Crews (Short Tons)	Ballast (Short Tons)	Fully Loaded Transit Weight	Block Plane Coefficient	Water Plane Coefficient	Immersion Rate (Short Tons per Inch)	Deviation from Design Draft (Feet)	Applied Maximum Design Draft	Actual Maximum Design Draft	Actual Transit Draft	Expected Entry Delay	Hourly Vessel Operating Costs	Expected Entry Delay Cost	Maximum Entry Delay Cost
BRUSSEL	541744	41649	2429	340	44417	0.77	0.85	135.73	0.54	36.07	36.07	32.75	0.01	$539	$5	2,012
TEXAS	355207	32144	2040	264	34448	1.88	1.68	189.02	0.33	34.18	34.18	32.92	0.01	$966	$10	3,605
TEXAS	355207	32144	2040	264	34448	1.88	1.68	189.02	0.33	34.18	34.18	32.92	0.01	$966	$10	3,605
TEXAS	355207	32144	2040	264	34448	1.88	1.68	189.02	0.33	34.18	34.18	33.00	3.73	$966	$3,605	3,605
ANTWERPEN	541744	45897	2677	374	48948	0.77	0.85	135.73	0.59	36.01	36.01	33.50	3.73	$554	$2,065	2,065
FANY	576877	44180	2577	360	47117	0.79	0.86	132.96	0.58	36.54	36.54	33.92	3.73	$548	$2,044	2,044
TEXAS	355207	32144	2040	264	34448	1.88	1.68	189.02	0.33	34.18	34.18	34.50	3.73	$966	$3,605	3,605
W. H. BLOUNT	808816	67445	3086	541	71071	0.83	0.89	177.39	0.47	42.17	39.08	35.25	3.73	$623	$2,323	3,459
BUNGA MELOR TI	584369	43684	2548	356	46587	0.75	0.83	128.92	0.59	36.28	36.28	35.92	3.73	$546	$2,038	2,038
FRONTIER STAR	643893	47466	2647	386	50499	0.78	0.85	137.31	0.57	37.54	37.54	35.58	3.73	$558	$2,083	2,293

Source: G.E.C., Inc.

The Restriction W Project vessel call lists were adopted accordingly to reflect all affected existing and projected container vessels and inclusion of all vessels more than 38 ft sailing draft (Reconfiguration) from Mile Point ebb tide delays. However, vessels with more than 38 ft sailing draft were still tide delayed under the existing authorized channel depth and associated underkeel clearances.

9.0 DETERMINE FUTURE COMMODITY MOVEMENT COST

9.1 INTRODUCTION

The future without-project commodity projections are the same as the future with-project conditions with respect to the removal of the Mile Point tidal constraint. This section will develop the Mile Point tidal constrained fleets as subsets of the universe of the fleets for dry bulk cargo, liquid bulk cargo, general cargo and container cargo from the future without-project conditions projections (refer to Section 4.3) for the future with-project conditions. The container projections for Mile Point will reflect the traditional regional fleet, excluding Dames Point development, and the global fleet represented by Dames Point containerized cargo development (refer to sections 4.3.5 and 4.3.6).

9.2 DRY BULK

The future without-project and with-project dry bulk fleet affected by Mile Point is a subset of the total dry bulk fleet and related future without-project and future with-project projections calling Jacksonville Harbor (refer to Table 15). Table 49 contains the Mile Point fleet of tidal constrained dry bulk vessels as a subset of the universe of dry bulk commodity and vessel projections for the without-project conditions projections in Table 15. The base year dry bulk fleet, 2007-2008, impacted by Mile Point is projected to grow based on north Florida population projections from a total of 127 vessel calls in 2008 to 274 vessel calls by 2064. The Mile Point impacted dry bulk fleet consists of 72 calls >50,000 dwt, 42 calls >40,000 dwt, nine calls >30,000 dwt, two calls >20,000 dwt, and two calls less than 20,000 dwt for the base year, 2008. The projected annual calls by each dwt category are contained in Table 49.

9.3 LIQUID BULK

The future without-project and with-project liquid bulk fleet affected by Mile Point is a subset of the total liquid bulk fleet and related future without-project projections and future with-project projections calling Jacksonville Harbor (refer to Table 18). Table 50 contains the Mile Point fleet of tidal constrained liquid bulk vessels as a subset of the universe of liquid bulk commodity and vessel projections for without-project conditions in Table 18. The base year liquid bulk fleet, 2007-2008, impacted by Mile Point is not projected to grow but rather to remain constant over the period 2008-2064 at a total of 155 annual vessel calls. The Mile Point impacted liquid bulk fleet consists of 21 calls >60,000 dwt, nine calls >50,000 dwt, 102 calls >40,000 dwt, 21 calls >30,000 dwt, and two calls >20,000 dwt for the base year, 2008. The projected annual calls by each dwt category are contained in Table 50.

Table 49. Jacksonville Harbor Dry Bulk Commodity Projections Related to Mile Point Tidal Constraint: Future Without-Project and Future With-Project

Total Annual Dry Bulk Vessel Calls and WCSC Commodity Tons				
Year	Calls	STons (000)	Average	Mtons (000)
2005-2006	188	5,223	27,782	4,738
2006-2007	195	5,798	29,733	5,260
2007-2008	156	6,430	41,218	5,833
2008-2009	154	7,469	48,500	6,776

Total Annual Dry Bulk Vessel Calls Affected by Mile Point by Vessel Size (DWT)				
DWT	2005	2006	2007	2008
>50,000	70	73	72	75
>40,000	38	42	42	44
>30,000	15	9	9	9
>20,000	3	2	2	2
<20,000	3	2	2	2
Subtotal	129	128	127	132

Total Annual Mile Point Affected Dry Bulk Vessel Capacity (DWT) Calls by Vessel Size				
DWT	2005	2006	2007	2008
>50,000	3,150,000	3,285,000	3,564,000	4,050,000
>40,000	1,368,000	1,512,000	1,701,000	1,782,000
>30,000	405,000	243,000	283,500	283,500
>20,000	67,500	45,000	45,000	45,000
<20,000	40,500	27,000	27,000	27,000
Subtotal	5,031,000	5,112,000	5,620,500	6,187,500

					DWT	>50,000	>40,000	>30,000	>20,000	<20,000
					DWT Share	63.41%	30.26%	5.04%	0.80%	0.48%
	Dry Bulk	Growth Rates			Shipment Size	49,500	40,500	31,500	22,500	13,500
Year	Mtons (000)	Low	Medium	High	Total Calls					
2008	5,620	1.27	2.41	3.56	127	72	42	9	2	2
2009	5,755	1.27	2.41	3.56	130	74	43	9	2	2
2010	5,894	1.27	2.41	3.56	133	76	44	9	2	2
2011	6,036	1.27	2.41	3.56	136	77	45	10	2	2
2012	6,182	1.27	2.41	3.56	140	79	46	10	2	2
2013	6,331	1.27	2.41	3.56	143	81	47	10	2	2
2014	6,483	1.27	2.41	3.56	146	83	48	10	2	2
2015	6,639	1.27	2.41	3.56	150	85	50	11	2	2
2016	6,746	0.69	1.61	2.55	152	86	50	11	2	2
2017	6,855	0.69	1.61	2.55	155	88	51	11	2	2
2018	6,965	0.69	1.61	2.55	157	89	52	11	2	2
2019	7,077	0.69	1.61	2.55	160	91	53	11	3	3
2020	7,191	0.69	1.61	2.55	162	92	54	12	3	3
2021	7,288	0.42	1.34	2.31	165	93	54	12	3	3
2022	7,385	0.42	1.34	2.31	167	95	55	12	3	3
2023	7,484	0.42	1.34	2.31	169	96	56	12	3	3
2024	7,585	0.42	1.34	2.31	171	97	57	12	3	3
2025	7,686	0.42	1.34	2.31	174	98	57	12	3	3
2026	7,777	0.22	1.18	2.16	176	100	58	12	3	3
2027	7,869	0.22	1.18	2.16	178	101	59	13	3	3
2028	7,962	0.22	1.18	2.16	180	102	59	13	3	3
2029	8,056	0.22	1.18	2.16	182	103	60	13	3	3
2030	8,151	0.22	1.18	2.16	184	104	61	13	3	3
2031	8,247	0.22	1.18	2.16	186	106	62	13	3	3
2032	8,344	0.22	1.18	2.16	189	107	62	13	3	3
2033	8,443	0.22	1.18	2.16	191	108	63	14	3	3
2034	8,542	0.22	1.18	2.16	193	109	64	14	3	3
2035	8,643	0.22	1.18	2.16	195	111	65	14	3	3
2036	8,745	0.22	1.18	2.16	198	112	65	14	3	3
2037	8,848	0.22	1.18	2.16	200	113	66	14	3	3
2038	8,953	0.22	1.18	2.16	202	115	67	14	3	3
2038	9,058	0.22	1.18	2.16	205	116	68	15	3	3
2040	9,165	0.22	1.18	2.16	207	117	68	15	3	3
2041	9,273	0.22	1.18	2.16	210	119	69	15	3	3
2042	9,383	0.22	1.18	2.16	212	120	70	15	3	3
2043	9,493	0.22	1.18	2.16	215	122	71	15	3	3
2044	9,605	0.22	1.18	2.16	217	123	72	15	3	3
2045	9,719	0.22	1.18	2.16	220	125	73	16	3	3
2046	9,833	0.22	1.18	2.16	222	126	73	16	3	3
2047	9,950	0.22	1.18	2.16	225	127	74	16	4	4
2048	10,067	0.22	1.18	2.16	227	129	75	16	4	4
2049	10,186	0.22	1.18	2.16	230	130	76	16	4	4
2050	10,306	0.22	1.18	2.16	233	132	77	17	4	4
2051	10,428	0.22	1.18	2.16	236	134	78	17	4	4
2052	10,551	0.22	1.18	2.16	238	135	79	17	4	4
2053	10,675	0.22	1.18	2.16	241	137	80	17	4	4
2054	10,801	0.22	1.18	2.16	244	138	81	17	4	4
2055	10,928	0.22	1.18	2.16	247	140	82	17	4	4
2056	11,057	0.22	1.18	2.16	250	142	83	18	4	4
2057	11,188	0.22	1.18	2.16	253	143	84	18	4	4
2058	11,320	0.22	1.18	2.16	256	145	85	18	4	4
2059	11,454	0.22	1.18	2.16	259	147	86	18	4	4
2060	11,589	0.22	1.18	2.16	262	148	87	19	4	4
2061	11,725	0.22	1.18	2.16	265	150	88	19	4	4
2062	11,864	0.22	1.18	2.16	268	152	89	19	4	4
2063	12,004	0.22	1.18	2.16	271	154	90	19	4	4
2064	12,145	0.22	1.18	2.16	274	156	91	19	4	4

Notes: Calls = total annual number of dry bulk vessel calls at Jacksonville Harbor.
STons = total calendar year WCSC foreign dry bulk short tons.
Average = average dry bulk short tons per vessel call.
Mtons = total calendar year WCSC foreign dry bulk metric tons.
DWT = deadweight cargo capacity of vessels.
Capacity = Total DWT applied to each vessel category and annual calls.
Growth Rates = Hinterland population projections.
DWT Share = Share of total annual commodity tons carried on each vessel size category.
Shipment Size = Estimated average shipment size for each vessel size category.

Source: G.E.C., Inc.

Table 50. Jacksonville Harbor Liquid Bulk Commodity Projections Related to Mile Point Tidal Constraint: Future Without-Project and Future With-Project

Total Annual Liquid Bulk Vessel Calls and WCSC Commodity Tons				
Year	Calls	STons (000)	Average	Mtons (000)
2005-2006	300	8,719	29,063	7,910
2006-2007	309	9,037	29,246	8,198
2007-2008	293	7,532	25,706	6,833
2008-2009	280	7,476	26,700	6,782

Total Annual Liquid Bulk Vessel Calls Affected by Mile Point by Vessel Size (DWT)				
DWT	2005	2006	2007	2008
>60000	19	20	21	20
>50,000	8	9	9	9
>40,000	97	98	102	90
>30,000	20	21	21	15
>20,000	2	2	2	1
>10,000	0	0	0	0
<10,000	0	0	0	0
Subtotal	146	150	155	135

Total Annual Mile Point Affected Liquid Bulk Vessel Capacity (DWT) Calls by Vessel Size				
DWT	2005	2006	2007	2008
>60000	798,000	780,000	756,000	840,000
>50,000	280,000	315,000	270,000	270,000
>40,000	2,716,000	2,548,000	2,448,000	2,160,000
>30,000	420,000	441,000	378,000	270,000
>20,000	0	28,000	24,000	12,000
>10,000		0	0	0
<10,000	0	0	0	0
Subtotal	4,214,000	4,112,000	3,876,000	3,552,000

					DWT	>60,000	>50,000	>40,000	>30,000	>20,000	>10,000	<10,000
					DWT Share	0.195046	0.069659	0.631579	0.097523	0.006192	0	0
	Liquid Bulk	Growth Rates			Shipment Size	36000	30000	24000	18000	12000	0	0
Year	Mtons (000)	Low	Medium	High	Total Calls							
2008	3,876	0	0	0	155	21	9	102	21	2	0	0
2009	3,876	0	0	0	155	21	9	102	21	2	0	0
2010	3,876	0	0	0	155	21	9	102	21	2	0	0
2011	3,876	0	0	0	155	21	9	102	21	2	0	0
2012	3,876	0	0	0	155	21	9	102	21	2	0	0
2013	3,876	0	0	0	155	21	9	102	21	2	0	0
2014	3,876	0	0	0	155	21	9	102	21	2	0	0
2015	3,876	0	0	0	155	21	9	102	21	2	0	0
2016	3,876	0	0	0	155	21	9	102	21	2	0	0
2017	3,876	0	0	0	155	21	9	102	21	2	0	0
2018	3,876	0	0	0	155	21	9	102	21	2	0	0
2019	3,876	0	0	0	155	21	9	102	21	2	0	0
2020	3,876	0	0	0	155	21	9	102	21	2	0	0
2021	3,876	0	0	0	155	21	9	102	21	2	0	0
2022	3,876	0	0	0	155	21	9	102	21	2	0	0
2023	3,876	0	0	0	155	21	9	102	21	2	0	0
2024	3,876	0	0	0	155	21	9	102	21	2	0	0
2025	3,876	0	0	0	155	21	9	102	21	2	0	0
2026	3,876	0	0	0	155	21	9	102	21	2	0	0
2027	3,876	0	0	0	155	21	9	102	21	2	0	0
2028	3,876	0	0	0	155	21	9	102	21	2	0	0
2029	3,876	0	0	0	155	21	9	102	21	2	0	0
2030	3,876	0	0	0	155	21	9	102	21	2	0	0
2031	3,876	0	0	0	155	21	9	102	21	2	0	0
2032	3,876	0	0	0	155	21	9	102	21	2	0	0
2033	3,876	0	0	0	155	21	9	102	21	2	0	0
2034	3,876	0	0	0	155	21	9	102	21	2	0	0
2035	3,876	0	0	0	155	21	9	102	21	2	0	0
2036	3,876	0	0	0	155	21	9	102	21	2	0	0
2037	3,876	0	0	0	155	21	9	102	21	2	0	0
2038	3,876	0	0	0	155	21	9	102	21	2	0	0
2038	3,876	0	0	0	155	21	9	102	21	2	0	0
2040	3,876	0	0	0	155	21	9	102	21	2	0	0
2041	3,876	0	0	0	155	21	9	102	21	2	0	0
2042	3,876	0	0	0	155	21	9	102	21	2	0	0
2043	3,876	0	0	0	155	21	9	102	21	2	0	0
2044	3,876	0	0	0	155	21	9	102	21	2	0	0
2045	3,876	0	0	0	155	21	9	102	21	2	0	0
2046	3,876	0	0	0	155	21	9	102	21	2	0	0
2047	3,876	0	0	0	155	21	9	102	21	2	0	0
2048	3,876	0	0	0	155	21	9	102	21	2	0	0
2049	3,876	0	0	0	155	21	9	102	21	2	0	0
2050	3,876	0	0	0	155	21	9	102	21	2	0	0
2051	3,876	0	0	0	155	21	9	102	21	2	0	0
2052	3,876	0	0	0	155	21	9	102	21	2	0	0
2053	3,876	0	0	0	155	21	9	102	21	2	0	0
2054	3,876	0	0	0	155	21	9	102	21	2	0	0
2055	3,876	0	0	0	155	21	9	102	21	2	0	0
2056	3,876	0	0	0	155	21	9	102	21	2	0	0
2057	3,876	0	0	0	155	21	9	102	21	2	0	0
2058	3,876	0	0	0	155	21	9	102	21	2	0	0
2059	3,876	0	0	0	155	21	9	102	21	2	0	0
2060	3,876	0	0	0	155	21	9	102	21	2	0	0
2061	3,876	0	0	0	155	21	9	102	21	2	0	0
2062	3,876	0	0	0	155	21	9	102	21	2	0	0
2063	3,876	0	0	0	155	21	9	102	21	2	0	0
2064	3,876	0	0	0	155	21	9	102	21	2	0	0

Notes: Calls = total annual number of liquid bulk vessel calls at Jacksonville Harbor.
STons = total calendar year WCSC foreign and domestic liquid bulk short tons.
Average = average liquid bulk short tons per vessel call.
Mtons = total calendar year WCSC foreign and domestic liquid bulk metric tons.
DWT = deadweight cargo capacity of vessels.
Capacity = Total DWT applied to each vessel category and annual calls.
Growth Rates = Hinterland population projections.
DWT Share = Share of total annual commodity tons carried on each vessel size category.
Shipment Size = Estimated average shipment size for each vessel size category.

Source: G.E.C., Inc.

9.4 GENERAL CARGO

The future without-project and with-project general cargo fleet affected by Mile Point is a subset of the total general cargo fleet and related future without-project projections and future with-project projections calling Jacksonville Harbor (refer to Table 19). Table 51 contains the Mile Point fleet of tidal constrained general cargo vessels as a subset of the universe of general cargo commodity and vessel projections for without-project conditions in Table 19. The base year general cargo fleet, 2007-2008, impacted by Mile Point is projected to grow based on north Florida population projections from a total of 59 vessel calls in 2008 to 128 vessel calls by 2064. The Mile Point impacted general cargo fleet consists of 17 calls >40,000 dwt, six calls >30,000 dwt, and 36 calls >20,000 dwt for the base year, 2008. The projected annual calls by each dwt category are contained in Table 51.

9.5 CONTAINERIZED CARGO EXCLUDING DAMES POINT

The future without-project and with-project container fleet affected by Mile Point exclusive of Dames Point container terminal developments is a subset of the total container fleet and related future without-project projections and with-project projections calling Jacksonville Harbor (refer to Table 21). Table 52 contains the Mile Point fleet of tidal constrained container vessels as a subset of the universe of container commodity and vessel projections for without-project conditions in Table 21. The base year container fleet, 2007-2008, impacted by Mile Point is projected to grow based on north Florida population projections from a total of 25 vessel calls in 2008 to 54 vessel calls by 2064. The Mile Point impacted container fleet (excluding Dames Point) consists of 17 calls >50,000 dwt and eight calls >30,000 dwt for the base year, 2008. The projected annual calls by each dwt category are contained in Table 52.

9.6 DAMES POINT CONTAINERIZED CARGO

The future without-project and with-project container fleet calling present and prospective container terminals at Dames Point affected by Mile Point is developed from the container tonnage future without-project projections and with-project projections for these terminals (refer to Table 23). Table 53 develops the Dames Point container fleet of tidal constrained Panamax and Post-Panamax container vessel calls in response to the corresponding Dames Point container cargo without-project conditions projections in Table 23. The MOL/NWA TraPac vessel calls are based on an average of 370 total moves per call.[64] Year 2010 total moves, 57,500, would result in a total of 155 annual vessel calls (57,500 total annual moves/370 average total moves per call = 155 calls per year).

The base year total moves are projected to grow in response to growth in container cargo tons based on north Florida population projections (refer to Table 23). The base year fleet calls for TraPac (MOL/NWA) to grow from 155 vessel calls in 2010 to 549 vessel calls by 2064. The prospective Hanjin Dames Point marine container terminal has total base year moves of loaded and empty boxes of 120,749. Hanjin/CKYH calls are based on an average of 525 total moves

[64] Container terminal productivity for shore side cranes is measured in moves between the vessel and shore that customarily assume one box per move regardless of the size of the box or loaded or empty status of the box. From the standpoint of container crane productivity, box size or status has no effect assuming one box per move.

Table 51. Jacksonville Harbor General Cargo Commodity Projections Related to Mile Point Tidal Constraint: Future Without-Project and Future With-Project

Total Annual General Cargo Vessel Calls and Jax Port Break Bulk Commodity Tons				
Year	Calls	STons (000)	Average	Mtons (000)
2005-2006	229	1,213	5,297	1,100
2006-2007	230	1,162	5,052	1,054
2007-2008	205	953	4,649	865
2008-2009	190	775	4,079	703

Total Annual General Cargo Vessel Calls Affected by Mile Point by Vessel Size (DWT)				
DWT	2005	2006	2007	2008
>40,000	2	16	17	10
>30,000	4	5	6	3
>20,000	33	34	36	27
>10,000		0	0	0
<10,000		0	0	0
Subtotal	39	55	59	40

Total Annual General Cargo Vessel Capacity (DWT) Calls by Vessel Size				
DWT	2005	2006	2007	2008
>40,000	24,000	192,000	204,000	120,000
>30,000	36,000	45,000	45,000	27,000
>20,000	198,000	204,000	180,000	162,000
>10,000	0	0	0	0
<10,000	0	0	0	0
Subtotal	258,000	441,000	429,000	309,000

					DWT	>40,000	>30,000	>20,000	>10,000	<10,000
					DWT Share	0.475524	0.104895	0.41958	0	0
	Break Bulk	Growth Rates			Shipment Size	12000	7500	5000	0	0
Year	Mtons (000)	Low	Medium	High	Total Calls					
2008	429	1.27	2.41	3.56	59	17	6	36	0	0
2009	439	1.27	2.41	3.56	60	17	6	37	0	0
2010	450	1.27	2.41	3.56	62	18	6	38	0	0
2011	461	1.27	2.41	3.56	63	18	6	39	0	0
2012	472	1.27	2.41	3.56	65	19	7	40	0	0
2013	483	1.27	2.41	3.56	66	19	7	41	0	0
2014	495	1.27	2.41	3.56	68	20	7	42	0	0
2015	507	1.27	2.41	3.56	70	20	7	43	0	0
2016	515	0.69	1.61	2.55	71	20	7	43	0	0
2017	523	0.69	1.61	2.55	72	21	7	44	0	0
2018	532	0.69	1.61	2.55	73	21	7	45	0	0
2019	540	0.69	1.61	2.55	74	21	8	45	0	0
2020	549	0.69	1.61	2.55	75	22	8	46	0	0
2021	556	0.42	1.34	2.31	77	22	8	47	0	0
2022	564	0.42	1.34	2.31	78	22	8	47	0	0
2023	571	0.42	1.34	2.31	79	23	8	48	0	0
2024	579	0.42	1.34	2.31	80	23	8	49	0	0
2025	587	0.42	1.34	2.31	81	23	8	49	0	0
2026	594	0.22	1.18	2.16	82	24	8	50	0	0
2027	601	0.22	1.18	2.16	83	24	8	50	0	0
2028	608	0.22	1.18	2.16	84	24	8	51	0	0
2029	615	0.22	1.18	2.16	85	24	9	52	0	0
2030	622	0.22	1.18	2.16	86	25	9	52	0	0
2031	630	0.22	1.18	2.16	87	25	9	53	0	0
2032	637	0.22	1.18	2.16	88	25	9	53	0	0
2033	644	0.22	1.18	2.16	89	26	9	54	0	0
2034	652	0.22	1.18	2.16	90	26	9	55	0	0
2035	660	0.22	1.18	2.16	91	26	9	55	0	0
2036	668	0.22	1.18	2.16	92	26	9	56	0	0
2037	675	0.22	1.18	2.16	93	27	9	57	0	0
2038	683	0.22	1.18	2.16	94	27	10	57	0	0
2038	691	0.22	1.18	2.16	95	27	10	58	0	0
2040	700	0.22	1.18	2.16	96	28	10	59	0	0
2041	708	0.22	1.18	2.16	97	28	10	59	0	0
2042	716	0.22	1.18	2.16	99	28	10	60	0	0
2043	725	0.22	1.18	2.16	100	29	10	61	0	0
2044	733	0.22	1.18	2.16	101	29	10	62	0	0
2045	742	0.22	1.18	2.16	102	29	10	62	0	0
2046	751	0.22	1.18	2.16	103	30	10	63	0	0
2047	759	0.22	1.18	2.16	104	30	11	64	0	0
2048	768	0.22	1.18	2.16	106	30	11	64	0	0
2049	778	0.22	1.18	2.16	107	31	11	65	0	0
2050	787	0.22	1.18	2.16	108	31	11	66	0	0
2051	796	0.22	1.18	2.16	109	32	11	67	0	0
2052	805	0.22	1.18	2.16	111	32	11	68	0	0
2053	815	0.22	1.18	2.16	112	32	11	68	0	0
2054	824	0.22	1.18	2.16	113	33	12	69	0	0
2055	834	0.22	1.18	2.16	115	33	12	70	0	0
2056	844	0.22	1.18	2.16	116	33	12	71	0	0
2057	854	0.22	1.18	2.16	117	34	12	72	0	0
2058	864	0.22	1.18	2.16	119	34	12	73	0	0
2059	874	0.22	1.18	2.16	120	35	12	73	0	0
2060	885	0.22	1.18	2.16	122	35	12	74	0	0
2061	895	0.22	1.18	2.16	123	35	13	75	0	0
2062	906	0.22	1.18	2.16	125	36	13	76	0	0
2063	916	0.22	1.18	2.16	126	36	13	77	0	0
2064	927	0.22	1.18	2.16	128	37	13	78	0	0

Notes: Calls = total annual number of general cargo vessel calls at Jacksonville Harbor.
STons = total calendar year Jax Port break bulk short tons.
Average = average break bulk short tons per vessel call.
Mtons = total calendar year Jax Port break bulk metric tons.
DWT = deadweight cargo capacity of vessels.
Capacity = Total DWT applied to each vessel category and annual calls.
Growth Rates = Hinterland population projections.
DWT Share = Share of total annual commodity tons carried on each vessel size category.
Shipment Size = Estimated average shipment size for each vessel size category.

Source: G.E.C., Inc.

Table 52. Jacksonville Harbor Containerized Cargo Commodity Projections Related to Mile Point Tidal Constraint Excluding Dames Point: Future Without-Project and Future With-Project

Total Annual Containerized Calls by All Vessels and Jax Port Containerized Commodity Commodity Tons				
Year	Total Calls	STons (000)	Average	Mtons (000)
2005-2006	824	4,075	4,945	3,697
2006-2007	765	3,638	4,756	3,300
2007-2008	786	3,600	4,580	3,266
2008-2009	833	3,894	4,675	3,533

Total Annual Container Cargo Vessel Calls Affected by Mile Point by Vessel Size (DWT)				
DWT	2005	2006	2007	2008
>50,000	9	7	17	33
>40,000	0	0	0	0
>30,000	9	8	8	10
>20,000	0	0	0	0
<20,000	0	0	0	0
Subtotal	18	15	25	43

Total Annual Container Cargo Self Propelled Vessel Calls and Jax Port Containerized Commodity Tons				
Year	Total Calls	STons (000)	Average	Mtons (000)
2005-2006	358	1,770	4,945	1,606
2006-2007	330	1,569	4,756	1,424
2007-2008	321	1,470	4,580	1,334
2008-2009	354	1,655	4,675	1,501

Total Annual Container Cargo Vessel Capacity (DWT) Calls by Vessel Size				
DWT	2005	2006	2007	2008
>50,000	75,600	58,800	142,800	231,000
>40,000	0	0	0	0
>30,000	44,100	39,200	39,200	49,000
>20,000	0	0	0	0
<20,000	0	0	0	0
Subtotal	119,700	98,000	182,000	280,000

					DWT	>50,000	>40,000	>30,000	>20,000	<20,000
	Container Cargo	Growth Rates			DWT Share	0.784615	0	0.215385	0	0
					Shipment Size	8400	0	4900	0	0
Year	Mtons (000)	Low	Medium	High	Total Calls					
2008	182	1.27	2.41	3.56	25	17	0	8	0	0
2009	186	1.27	2.41	3.56	26	17	0	8	0	0
2010	191	1.27	2.41	3.56	26	18	0	8	0	0
2011	195	1.27	2.41	3.56	27	18	0	9	0	0
2012	200	1.27	2.41	3.56	27	19	0	9	0	0
2013	205	1.27	2.41	3.56	28	19	0	9	0	0
2014	210	1.27	2.41	3.56	29	20	0	9	0	0
2015	215	1.27	2.41	3.56	30	20	0	9	0	0
2016	218	0.69	1.61	2.55	30	20	0	10	0	0
2017	222	0.69	1.61	2.55	30	21	0	10	0	0
2018	226	0.69	1.61	2.55	31	21	0	10	0	0
2019	229	0.69	1.61	2.55	31	21	0	10	0	0
2020	233	0.69	1.61	2.55	32	22	0	10	0	0
2021	236	0.42	1.34	2.31	32	22	0	10	0	0
2022	239	0.42	1.34	2.31	33	22	0	11	0	0
2023	242	0.42	1.34	2.31	33	23	0	11	0	0
2024	246	0.42	1.34	2.31	34	23	0	11	0	0
2025	249	0.42	1.34	2.31	34	23	0	11	0	0
2026	252	0.22	1.18	2.16	35	24	0	11	0	0
2027	255	0.22	1.18	2.16	35	24	0	11	0	0
2028	258	0.22	1.18	2.16	35	24	0	11	0	0
2029	261	0.22	1.18	2.16	36	24	0	11	0	0
2030	264	0.22	1.18	2.16	36	25	0	12	0	0
2031	267	0.22	1.18	2.16	37	25	0	12	0	0
2032	270	0.22	1.18	2.16	37	25	0	12	0	0
2033	273	0.22	1.18	2.16	38	26	0	12	0	0
2034	277	0.22	1.18	2.16	38	26	0	12	0	0
2035	280	0.22	1.18	2.16	38	26	0	12	0	0
2036	283	0.22	1.18	2.16	39	26	0	12	0	0
2037	287	0.22	1.18	2.16	39	27	0	13	0	0
2038	290	0.22	1.18	2.16	40	27	0	13	0	0
2038	293	0.22	1.18	2.16	40	27	0	13	0	0
2040	297	0.22	1.18	2.16	41	28	0	13	0	0
2041	300	0.22	1.18	2.16	41	28	0	13	0	0
2042	304	0.22	1.18	2.16	42	28	0	13	0	0
2043	307	0.22	1.18	2.16	42	29	0	14	0	0
2044	311	0.22	1.18	2.16	43	29	0	14	0	0
2045	315	0.22	1.18	2.16	43	29	0	14	0	0
2046	318	0.22	1.18	2.16	44	30	0	14	0	0
2047	322	0.22	1.18	2.16	44	30	0	14	0	0
2048	326	0.22	1.18	2.16	45	30	0	14	0	0
2049	330	0.22	1.18	2.16	45	31	0	14	0	0
2050	334	0.22	1.18	2.16	46	31	0	15	0	0
2051	338	0.22	1.18	2.16	46	32	0	15	0	0
2052	342	0.22	1.18	2.16	47	32	0	15	0	0
2053	346	0.22	1.18	2.16	47	32	0	15	0	0
2054	350	0.22	1.18	2.16	48	33	0	15	0	0
2055	354	0.22	1.18	2.16	49	33	0	16	0	0
2056	358	0.22	1.18	2.16	49	33	0	16	0	0
2057	362	0.22	1.18	2.16	50	34	0	16	0	0
2058	367	0.22	1.18	2.16	50	34	0	16	0	0
2059	371	0.22	1.18	2.16	51	35	0	16	0	0
2060	375	0.22	1.18	2.16	52	35	0	16	0	0
2061	380	0.22	1.18	2.16	52	35	0	17	0	0
2062	384	0.22	1.18	2.16	53	36	0	17	0	0
2063	389	0.22	1.18	2.16	53	36	0	17	0	0
2064	393	0.22	1.18	2.16	54	37	0	17	0	0

Notes: Calls = total annual number of vessels for containerized cargo at Jacksonville Harbor.
STons = total calendar year JaxPort containerized cargo short tons.
Average = average containerized cargo short tons per vessel call.
Mtons = total calendar year JaxPort containerized cargo metric tons.
DWT = deadweight cargo capacity of vessels.
Capacity = Total DWT applied to each vessel category and annual calls.
Growth Rates = Hinterland population projections.
DWT Share = Share of total annual commodity tons carried on each vessel size category.
Shipment Size = Estimated average shipment size for each vessel size category.

Source: G.E.C., Inc.

Table 53. Dames Point Global Marine Container Terminal Projected Vessel Calls: Future Without-Project and Future With-Project

Year	TraPac/NWA Total Moves	TraPac/NWA Annual Calls	TraPac/NWA Calls/Week	Hanjin/CKYH Total Moves	Hanjin/CKYH Annual Calls	Hanjin/CKYH Calls/Week
2010	57,500	155	2.99	120,749	230	4.42
2011	58,886	159	3.06	123,660	236	4.53
2012	60,305	163	3.13	126,640	241	4.64
2013	61,758	167	3.21	129,692	247	4.75
2014	63,247	171	3.29	132,817	253	4.87
2015	64,771	175	3.37	136,018	259	4.98
2016	66,332	179	3.45	139,296	265	5.10
2017	67,930	184	3.53	142,653	272	5.23
2018	69,568	188	3.62	146,091	278	5.35
2019	71,244	193	3.70	149,612	285	5.48
2020	72,961	197	3.79	153,218	292	5.61
2021	74,719	202	3.88	156,910	299	5.75
2022	76,520	207	3.98	160,692	306	5.89
2023	78,364	212	4.07	164,564	313	6.03
2024	80,253	217	4.17	168,530	321	6.17
2025	82,187	222	4.27	172,592	329	6.32
2026	84,168	227	4.37	176,751	337	6.47
2027	86,196	233	4.48	181,011	345	6.63
2028	88,274	239	4.59	185,374	353	6.79
2029	90,401	244	4.70	189,841	362	6.95
2030	92,580	250	4.81	194,416	370	7.12
2031	94,811	256	4.93	199,102	379	7.29
2032	97,096	262	5.05	203,900	388	7.47
2034	99,436	269	5.17	208,814	398	7.65
2035	101,832	275	5.29	213,846	407	7.83
2036	104,286	282	5.42	219,000	417	8.02
2037	106,800	289	5.55	224,278	427	8.22
2038	109,373	296	5.68	229,683	437	8.41
2039	112,009	303	5.82	235,218	448	8.62
2040	114,709	310	5.96	240,887	459	8.82
2041	117,473	317	6.11	246,693	470	9.04
2042	120,304	325	6.25	252,638	481	9.25
2043	123,204	333	6.40	258,726	493	9.48
2044	126,173	341	6.56	264,962	505	9.71
2045	129,214	349	6.72	271,347	517	9.94
2046	132,328	358	6.88	277,887	529	10.18
2047	135,517	366	7.04	284,584	542	10.42
2048	138,783	375	7.21	291,442	555	10.68
2049	142,127	384	7.39	298,466	569	10.93
2050	145,553	393	7.57	305,659	582	11.20
2051	149,060	403	7.75	313,026	596	11.47
2052	152,653	413	7.93	320,569	611	11.74
2053	156,332	423	8.13	328,295	625	12.03
2054	160,099	433	8.32	336,207	640	12.32
2055	163,958	443	8.52	344,310	656	12.61
2056	167,909	454	8.73	352,608	672	12.92
2057	171,956	465	8.94	361,105	688	13.23
2058	176,100	476	9.15	369,808	704	13.55
2059	180,344	487	9.37	378,720	721	13.87
2060	184,690	499	9.60	387,848	739	14.21
2061	189,141	511	9.83	397,195	757	14.55
2062	193,700	524	10.07	406,767	775	14.90
2063	198,368	536	10.31	416,570	793	15.26
2064	203,148	549	10.56	426,610	813	15.63

Notes: Assumes average average annual projected population growth 2010-2030.
NWA = New World Alliance carriers.
CKYH = CKYH alliance carriers.
TraPac = Dames Point marine container terminal annual loaded boxes operated by TraPac for NWA.
Hanjin = Dames Point planned marine container terminal annual boxes operated by Hanjin for CKYH.
Total Moves = imports plus loaded and empty exports.
NWA Annual Calls reflect an average of 370 moves per call.
CKYH Annual Calls reflect an average of 525 moves per call.
Dames Point Hanjin Marine Container Terminal assumed operational by 2015.

Source: G.E.C., Inc.

per call. Year 2010 total moves grow to 136,018 moves by 2015, which is the projected time of the planned terminal to be operational. In 2015, the Hanjin/CKYH vessel calls would be 259 on 136,018 total moves (136,018 total annual moves/525 average total moves per call = 259 calls). This is projected to grow based on north Florida population growth projections to 813 vessel calls by 2064.

9.7 MARINE TERMINAL CARGO THROUGHPUT CAPACITY ESTIMATES

9.7.1 Dames Point Container Terminal

The existing TraPac terminal is a two-berth facility (2,400-foot continuous quay wall) capable of simultaneously berthing two Post-Panamax container ships with a total of six shore side cranes. The prospective Hanjin facility would be of similar berth size for two Post-Panamax container vessels. Marine container throughput (other things being equal) will be determined by berth capacity. The conventional wisdom is that congestion at marine container berths rises exponentially after berth occupancy reaches 70 percent. In the case of MOL/NWA and Hanjin/CKYH, there will likely be more latitude for higher berth occupancy since they control the operation of both the facilities and the vessels.

Using a 70 percent berth occupancy norm, the total annual vessel hours are 6,048 per berth or 12,096 for the facility (24 hours per day * 360 days per year = 8,640 hours * 0.70 = 6,048 hours per berth * 2 berths = 12,096 total vessel berthage hours available from the facility). If it is assumed that TraPac will use two shore side container cranes per vessel call and make an average of 30 moves per hour (loaded and empty boxes) for 370 moves per call, the vessel crane work time would be 6.17 hours (370 moves per call/60 moves per hour from two cranes = 6.17 vessel working hours). If the vessel dwells at the berth for a total of eight hours, annual TraPac berth occupancy would be 1,240 hours in 2010 (155 calls * 8 hours berth occupancy per call = 1,240 total berth occupancy hours). Berth occupancy in 2064 for projected 549 calls would be 4,392 hours (549 calls * 8 hours per call = 4,392 berth occupancy hours). Thus, there is little likelihood of any berth congestion affecting TraPac operations for the present and projected growth of annual calls. With a total of 158 acres of developed site, there is ample space for annual container throughput that is suggested by these calls and moves. For example, the total TraPac box moves projected in 2064, 203,148 (refer to Table 23), would correspond to approximately 365,000 TEUs. The available space suggests a container yard throughput capability at least double this volume.

Similarly, if we assume that the planned Hanjin/CKYH facility will use three shore side container cranes per vessel call and make an average of 30 moves per hour (loaded and empty boxes) for 525 moves per call, the vessel work time would be 5.83 hours (525 moves per call/90 moves per hour from three cranes = 5.83 vessel working hours). If the vessel dwells at the berth for a total of eight hours, annual Hanjin (CKYH) facility berth occupancy would be 2,072 hours in 2015 (259 calls * 8 hours berth occupancy per call = 2,072 total berth occupancy hours). Berth occupancy in 2064 for a projected 813 calls would be 6,504 hours (813 calls * 8 hours per call = 6,504 berth occupancy hours). Thus, there is little likelihood of any berth congestion affecting Hanjin/CKYH operations for the projected growth of annual calls. The Hanjin

throughput volume projected in 2064, 426,610 box moves (refer to Table 23), would correspond to approximately 770,000 TEUs. The available space for a fully developed Hanjin facility (roughly equal in size to the TraPac facility from an expansion option) suggests a container yard throughput capability sufficiently larger than this throughput volume to avoid any capacity constraints.

9.7.2 Dry Bulk Terminals

Table 15 indicates that the existing dry bulk cargoes as of 2008 were projected to increase from 6.776 million tons in 2008 to 14.644 million tons in 2064. The current Jacksonville Harbor dry bulk facility annual throughput capacities (excluding Keystone Terminal Facility under development and the cargo is not included in the Mile Point commodity projections 2008 base year) are as follows: (1) Jacksonville Electric Authority coal – 4.0 million tons; (2) Jacksonville Electric Authority coke, coal and limestone – 6.0 million tons; (3) Rinker Materials – 4.2 million tons; (4) Martin Marietta Materials – 4.0 million tons; and (5) Vulcan (Florida Rock) 4.0 million tons. Total dry bulk capacity for the cargoes projected in 2008 is 22.2 million tons annually.

9.7.3 General Cargo Terminals

General cargo is projected to grow from 865,000 tons in 2008 (refer to Table 19) to 1.869 million tons in year 2064. Break bulk cargo is handled at Talleyrand and Blount Island terminals. Jax Port regards that there is ample current capacity to handle all of the projected general cargo at these facilities.

9.8 FUTURE WITHOUT-PROJECT AND WITH-PROJECT FLEETS AFFECTED BY MILE POINT

Table 54 contains the expected number of annual vessel calls affected by Mile Point for the period 2010 to 2064. Growth rates in the number of annual vessel calls and resulting Mile Point delay savings were specified for each vessel category other than liquid bulk using the population growth rates (refer to Table 11).[65] Table 38 reflects TraPac container calls of three weekly services. The vessels would be Mile Point tidal delay impacted for both inbound and outbound movements. Other vessels, Container, Dry Bulk, General Cargo and Liquid Bulk, are impacted only for inbound movements (>33 ft. sailing drafts).

Tables 55, 56, and 57 reflect the expansion of Dames Point marine container terminals to include a new Hanjin facility that would be operational in 2015. The CKYH alliance that has five services at Savannah Harbor would call Dames Point at a planned Hanjin terminal. The CKYH services are shown for three calls per week (Table 55), four calls per week (Table 56), and five calls per week (Table 57).

Tables 55, 56, and 57 will serve as vessel call lists for the subsequent Case 1 analysis that looks at the non-traditional global container fleets calling Dames Point (TraPac and Hanjin terminals) for the 50-year period of analysis with annual growth corresponding to the population growth

[65] The projected growth rate for liquid cargoes at Jacksonville Harbor was zero (no growth).

Table 54. Annual Vessel Calls Affected By Mile Point, with Traditional Containers and TraPac, 2010 - 2064

Year	TraPac Out	TraPac In	Container	Dry Bulk	General Cargo	Liquid Bulk	Total
2010	156	156	25	127	59	154	677
2011	160	160	26	130	60	154	690
2012	164	164	26	133	62	154	703
2013	168	168	27	136	63	154	716
2014	172	172	27	140	65	154	729
2015	174	174	28	142	66	154	739
2016	177	177	28	144	67	154	748
2017	180	180	29	147	68	154	758
2018	183	183	29	149	69	154	767
2019	186	186	30	151	70	154	777
2020	188	188	30	153	71	154	785
2021	191	191	31	155	72	154	794
2022	193	193	31	157	73	154	802
2023	196	196	31	160	74	154	811
2024	199	199	32	162	75	154	820
2025	201	201	32	164	76	154	828
2026	203	203	33	166	77	154	836
2027	206	206	33	168	78	154	844
2028	208	208	33	169	79	154	852
2029	211	211	34	171	80	154	860
2030	213	213	34	173	80	154	867
2031	215	215	34	175	81	154	874
2032	217	217	35	177	82	154	882
2033	219	219	35	178	83	154	889
2034	221	221	35	180	84	154	896
2035	224	224	36	182	85	154	904
2036	226	226	36	184	85	154	911
2037	228	228	37	186	86	154	919
2038	230	230	37	188	87	154	926
2039	233	233	37	189	88	154	934
2040	235	235	38	191	89	154	942
2041	237	237	38	193	90	154	950
2042	240	240	38	195	91	154	958
2043	242	242	39	197	92	154	966
2044	245	245	39	199	92	154	974
2045	247	247	40	201	93	154	982
2046	249	249	40	203	94	154	990
2047	252	252	40	205	95	154	999
2048	254	254	41	207	96	154	1,007
2049	257	257	41	209	97	154	1,016
2050	260	260	42	211	98	154	1,024
2051	262	262	42	213	99	154	1,033
2052	265	265	42	216	100	154	1,042
2053	267	267	43	218	101	154	1,051
2054	270	270	43	220	102	154	1,060
2055	273	273	44	222	103	154	1,069
2056	276	276	44	224	104	154	1,078
2057	278	278	45	227	105	154	1,087
2058	281	281	45	229	106	154	1,096
2059	284	284	45	231	107	154	1,106
2060	287	287	46	233	108	154	1,115
2061	290	290	46	236	110	154	1,125
2062	293	293	47	238	111	154	1,135
2063	295	295	47	241	112	154	1,145
2064	298	298	48	243	113	154	1,154

Notes: TraPac has three weekly calls in 2010. Vessel drafts are Mile Point affected in both directions.

Source: G.E.C, Inc.

Table 55. Annual Vessel Calls Affected By Mile Point, with Traditional Containers, TraPac, 2010 - 2064 and CKYH (3 calls/week) in 2015

Year	CKYH out	CKYH In	TraPac Out	TraPac In	Container	Dry Bulk	General Cargo	Liquid Bulk	Total
2010			156	156	25	127	59	154	677
2011			160	160	26	130	60	154	690
2012			164	164	26	133	62	154	703
2013			168	168	27	136	63	154	716
2014			172	172	27	140	65	154	729
2015	156	156	174	174	28	142	66	154	1,051
2016	159	159	177	177	28	144	67	154	1,065
2017	161	161	180	180	29	147	68	154	1,080
2018	164	164	183	183	29	149	69	154	1,095
2019	166	166	186	186	30	151	70	154	1,110
2020	169	169	188	188	30	153	71	154	1,122
2021	171	171	191	191	31	155	72	154	1,135
2022	173	173	193	193	31	157	73	154	1,149
2023	175	175	196	196	31	160	74	154	1,162
2024	178	178	199	199	32	162	75	154	1,175
2025	180	180	201	201	32	164	76	154	1,187
2026	182	182	203	203	33	166	77	154	1,200
2027	184	184	206	206	33	168	78	154	1,212
2028	186	186	208	208	33	169	79	154	1,225
2029	188	188	211	211	34	171	80	154	1,237
2030	190	190	213	213	34	173	80	154	1,248
2031	192	192	215	215	34	175	81	154	1,259
2032	194	194	217	217	35	177	82	154	1,270
2033	196	196	219	219	35	178	83	154	1,281
2034	198	198	221	221	35	180	84	154	1,292
2035	200	200	224	224	36	182	85	154	1,304
2036	202	202	226	226	36	184	85	154	1,315
2037	204	204	228	228	37	186	86	154	1,327
2038	206	206	230	230	37	188	87	154	1,339
2039	208	208	233	233	37	189	88	154	1,350
2040	210	210	235	235	38	191	89	154	1,362
2041	212	212	237	237	38	193	90	154	1,375
2042	214	214	240	240	38	195	91	154	1,387
2043	217	217	242	242	39	197	92	154	1,399
2044	219	219	245	245	39	199	92	154	1,412
2045	221	221	247	247	40	201	93	154	1,424
2046	223	223	249	249	40	203	94	154	1,437
2047	225	225	252	252	40	205	95	154	1,450
2048	228	228	254	254	41	207	96	154	1,463
2049	230	230	257	257	41	209	97	154	1,476
2050	232	232	260	260	42	211	98	154	1,489
2051	235	235	262	262	42	213	99	154	1,502
2052	237	237	265	265	42	216	100	154	1,516
2053	239	239	267	267	43	218	101	154	1,529
2054	242	242	270	270	43	220	102	154	1,543
2055	244	244	273	273	44	222	103	154	1,557
2056	247	247	276	276	44	224	104	154	1,571
2057	249	249	278	278	45	227	105	154	1,585
2058	252	252	281	281	45	229	106	154	1,599
2059	254	254	284	284	45	231	107	154	1,614
2060	257	257	287	287	46	233	108	154	1,629
2061	259	259	290	290	46	236	110	154	1,643
2062	262	262	293	293	47	238	111	154	1,658
2063	264	264	295	295	47	241	112	154	1,673
2064	267	267	298	298	48	243	113	154	1,688

Notes: TraPac has three weekly calls in 2010. Vessel drafts are Mile Point affected in both directions.
CKYH calls commence with the completion of the Hanjin Dames Point marine container terminal at 2015.

Source: G.E.C, Inc.

Table 56. Annual Vessel Calls Affected By Mile Point, with Traditional Containers, TraPac, 2010 - 2064 and CKYH (4 calls/week) in 2015

Year	CKYH out	CKYH In	TraPac Out	TraPac In	Container	Dry Bulk	General Cargo	Liquid Bulk	Total
2010			156	156	25	127	59	154	677
2011			160	160	26	130	60	154	690
2012			164	164	26	133	62	154	703
2013			168	168	27	136	63	154	716
2014			172	172	27	140	65	154	729
2015	208	208	174	174	28	142	66	154	1,155
2016	211	211	177	177	28	144	67	154	1,171
2017	215	215	180	180	29	147	68	154	1,187
2018	218	218	183	183	29	149	69	154	1,204
2019	222	222	186	186	30	151	70	154	1,221
2020	225	225	188	188	30	153	71	154	1,235
2021	228	228	191	191	31	155	72	154	1,249
2022	231	231	193	193	31	157	73	154	1,264
2023	234	234	196	196	31	160	74	154	1,279
2024	237	237	199	199	32	162	75	154	1,294
2025	240	240	201	201	32	164	76	154	1,307
2026	243	243	203	203	33	166	77	154	1,321
2027	245	245	206	206	33	168	78	154	1,335
2028	248	248	208	208	33	169	79	154	1,349
2029	251	251	211	211	34	171	80	154	1,363
2030	254	254	213	213	34	173	80	154	1,375
2031	256	256	215	215	34	175	81	154	1,387
2032	259	259	217	217	35	177	82	154	1,399
2033	262	262	219	219	35	178	83	154	1,412
2034	264	264	221	221	35	180	84	154	1,424
2035	267	267	224	224	36	182	85	154	1,437
2036	269	269	226	226	36	184	85	154	1,450
2037	272	272	228	228	37	186	86	154	1,463
2038	275	275	230	230	37	188	87	154	1,476
2039	278	278	233	233	37	189	88	154	1,489
2040	280	280	235	235	38	191	89	154	1,503
2041	283	283	237	237	38	193	90	154	1,516
2042	286	286	240	240	38	195	91	154	1,530
2043	289	289	242	242	39	197	92	154	1,543
2044	292	292	245	245	39	199	92	154	1,557
2045	295	295	247	247	40	201	93	154	1,571
2046	298	298	249	249	40	203	94	154	1,586
2047	301	301	252	252	40	205	95	154	1,600
2048	304	304	254	254	41	207	96	154	1,614
2049	307	307	257	257	41	209	97	154	1,629
2050	310	310	260	260	42	211	98	154	1,644
2051	313	313	262	262	42	213	99	154	1,659
2052	316	316	265	265	42	216	100	154	1,674
2053	319	319	267	267	43	218	101	154	1,689
2054	322	322	270	270	43	220	102	154	1,704
2055	325	325	273	273	44	222	103	154	1,720
2056	329	329	276	276	44	224	104	154	1,735
2057	332	332	278	278	45	227	105	154	1,751
2058	335	335	281	281	45	229	106	154	1,767
2059	339	339	284	284	45	231	107	154	1,783
2060	342	342	287	287	46	233	108	154	1,800
2061	346	346	290	290	46	236	110	154	1,816
2062	349	349	293	293	47	238	111	154	1,833
2063	352	352	295	295	47	241	112	154	1,849
2064	356	356	298	298	48	243	113	154	1,866

Notes: TraPac has three weekly calls in 2010. Vessel drafts are Mile Point affected in both directions.
CKYH calls commence with the completion of the Hyundai Dames Point marine container terminal at 2015.

Source: G.E.C, Inc.

Table 57. Annual Vessel Calls Affected By Mile Point, with Traditional Containers, TraPac, 2010 - 2064 and CKYH (5 calls/week) in 2015

Year	CKYH out	CKYH In	Tra Pac Out	Tra Pac In	Container	Dry Bulk	General Cargo	Liquid Bulk	Total
2010			156	156	25	127	59	154	677
2011			160	160	26	130	60	154	690
2012			164	164	26	133	62	154	703
2013			168	168	27	136	63	154	716
2014			172	172	27	140	65	154	729
2015	260	260	174	174	28	142	66	154	1,259
2016	264	264	177	177	28	144	67	154	1,276
2017	268	268	180	180	29	147	68	154	1,294
2018	273	273	183	183	29	149	69	154	1,313
2019	277	277	186	186	30	151	70	154	1,331
2020	281	281	188	188	30	153	71	154	1,347
2021	285	285	191	191	31	155	72	154	1,363
2022	288	288	193	193	31	157	73	154	1,379
2023	292	292	196	196	31	160	74	154	1,396
2024	296	296	199	199	32	162	75	154	1,412
2025	300	300	201	201	32	164	76	154	1,427
2026	303	303	203	203	33	166	77	154	1,442
2027	307	307	206	206	33	168	78	154	1,458
2028	310	310	208	208	33	169	79	154	1,473
2029	314	314	211	211	34	171	80	154	1,488
2030	317	317	213	213	34	173	80	154	1,502
2031	320	320	215	215	34	175	81	154	1,515
2032	324	324	217	217	35	177	82	154	1,529
2033	327	327	219	219	35	178	83	154	1,543
2034	330	330	221	221	35	180	84	154	1,557
2035	333	333	224	224	36	182	85	154	1,571
2036	337	337	226	226	36	184	85	154	1,585
2037	340	340	228	228	37	186	86	154	1,599
2038	344	344	230	230	37	188	87	154	1,613
2039	347	347	233	233	37	189	88	154	1,628
2040	350	350	235	235	38	191	89	154	1,643
2041	354	354	237	237	38	193	90	154	1,658
2042	357	357	240	240	38	195	91	154	1,673
2043	361	361	242	242	39	197	92	154	1,688
2044	365	365	245	245	39	199	92	154	1,703
2045	368	368	247	247	40	201	93	154	1,719
2046	372	372	249	249	40	203	94	154	1,734
2047	376	376	252	252	40	205	95	154	1,750
2048	379	379	254	254	41	207	96	154	1,766
2049	383	383	257	257	41	209	97	154	1,782
2050	387	387	260	260	42	211	98	154	1,799
2051	391	391	262	262	42	213	99	154	1,815
2052	395	395	265	265	42	216	100	154	1,832
2053	399	399	267	267	43	218	101	154	1,848
2054	403	403	270	270	43	220	102	154	1,865
2055	407	407	273	273	44	222	103	154	1,882
2056	411	411	276	276	44	224	104	154	1,900
2057	415	415	278	278	45	227	105	154	1,917
2058	419	419	281	281	45	229	106	154	1,935
2059	423	423	284	284	45	231	107	154	1,953
2060	428	428	287	287	46	233	108	154	1,971
2061	432	432	290	290	46	236	110	154	1,989
2062	436	436	293	293	47	238	111	154	2,007
2063	441	441	295	295	47	241	112	154	2,026
2064	445	445	298	298	48	243	113	154	2,044

Notes: TraPac has three weekly calls in 2010. Vessel drafts are Mile Point affected in both directions.
CKYH calls commence with the completion of the Hanjin Dames Point marine container terminal at 2015.

Source: G.E.C, Inc.

(refer to Table 11).[66] Subsequently, sensitivity analyses will be conducted for other vessel calls that reflect different combinations of growth and non-traditional calls (TraPac and Hanjin facilities).

Future commodity movement cost has been determined for the present and projected vessel fleet calling Jacksonville Harbor that is affected by Mile Point tidal delays under without-project conditions. The existing fleet in 2010 is projected using the population growth rates (refer to Table 11) assuming that the three services calling at TraPac Dames Point container terminal (NWA) continue but with Post-Panamax vessels in 2015 owing to the enlargement of the Panama Canal. [67] The Post-Panamax sailing draft distribution (refer to Table 46) for the existing Suez service was used for the Post-Panamax services that will replace existing Panamax services transiting the Panama Canal.

The future commodity movement cost was determined for five prespecified alternatives as stipulated by the Jacksonville District: (1) Case 1 – All vessels, growth for 50 years of with-project conditions including TraPac and CKYH (Hanjin) terminals in place at 2010 and 2015; (2) Case 2 – Existing traffic only (including TraPac) in 2010 and no growth; (3) Case 3 – Base year fleet (2015) including CKYH (Hanjin Dames Point terminal) and no growth beyond 2015; (4) Case 4 – Base year fleet (2015) including CKYH (Hanjin Dames Point terminal) and no growth beyond 2020; and Case 5 – All vessels, growth for 50 years of without-project conditions including TraPac but excluding CKYH (Hanjin Dames Point terminal).[68]

10.0 DETERMINE NED BENEFITS

NED benefits are the time savings to vessels delayed by Mile Point tidal restrictions for entry and exit from Jacksonville Harbor. Table 58 contains the NED benefits for five cases as prespecified by the Jacksonville District. The cases involving a Hanjin marine container terminal at Dames Point reflect commencement in 2015 with three scenarios with respect to weekly calls: (1) three calls per week, 156 calls in 2015 (refer to Table 55); (2) four calls per week, 208 calls in 2015 (refer to Table 56); and (3) five calls per week, 260 calls in 2015 (refer to Table 57). The likely calls for the CKYH alliance at the Hanjin facility have been previously postulated to be five per week. However, there may be some interim startup of less than five calls, with increases to that initial level similar to TraPac.[69]

[66] The global services calling TraPac and Hanjin are distinct from the traditional regional container services, generally with smaller vessels, calling Blount Island and Talleyrand terminals.
[67] The assumption of no new or additional services calling TraPac belies the substantial underutilized capacity of that facility both for NWA and other lines.
[68] The range of benefits has been coordinated with the Jacksonville District to vary from existing fleet no growth scenario (Case 3, lower limit) to assumption of construction of the Hanjin terminal with 5 services per week and growth (Case 1, upper limit).
[69] TraPac does not represent a business model for new terminals having been opened at the time of a major decline in world trade and subsequent rationalizations of some of the container services that had been projected to call ECUS, including Jacksonville Harbor.

Table 58. Present Value of Projected Total Tidal Delay Benefits Under With-Project Conditions, 2015 through 2064

Case	Hanjin Calls	Total Benefits	Container	Dry Bulk	General Cargo	Liquid	AAEQ
1	3	$75,193,465	$58,809,821	$4,000,084	$3,574,427	$8,809,133	$3.576
1	4	$83,173,624	$66,789,980	$4,000,084	$3,574,427	$8,809,133	$3.955
1	5	$91,153,782	$74,770,139	$4,000,084	$3,574,427	$8,809,133	$4.334
2	0	$39,472,755	$25,191,406	$2,889,866	$2,582,350	$8,809,133	$1.877
3	3	$62,606,344	$47,639,659	$3,251,790	$2,905,761	$8,809,133	$2.977
3	4	$69,037,444	$54,070,759	$3,251,790	$2,905,761	$8,809,133	$3.283
3	5	$75,468,544	$60,501,860	$3,251,790	$2,905,761	$8,809,133	$3.589
4	3	$66,376,670	$50,985,552	$3,475,933	$3,106,053	$8,809,133	$3.156
4	4	$73,271,773	$57,880,654	$3,475,933	$3,106,053	$8,809,133	$3.484
4	5	$80,166,876	$64,775,757	$3,475,933	$3,106,053	$8,809,133	$3.812
5	0	51,252,989	34,869,345	$4,000,084	$3,574,427	$8,809,133	$2.437

Notes: Case 1 = All vessels, including TraPac and Hanjin terminals, and growth for all years, 2010-2064.
Case 2 = Existing vessels (2010) and no growth.
Case 3 = All vessels, including TraPac and Hanjin at year 2015 and no growth.
Case 4 = All vessels, including TraPac and Hanjin at year 2015 and growth to 2020.
Case 5 = All vessels, including TraPac, but excluding Hanjin, and growth for all years, 2010-2064.
AAEQ = Average Annual Equivalent Benefits ($000,000).
Federal Water Resources Discount Rate for FY 2011 = 4.125 percent.

Source: G.E.C., Inc.

Figure 7 depicts the present value of the NED benefits for the five cases. Case 1 representing the complete development of Dames Point with respect to Hanjin marine container terminal and growth for the entire period, 2010 through 2064, has a present value of $75.1 million for three CKYH services commencing in 2015, $83.1 million for four CKYH services commencing in 2015, and $91.1 million for five CKYH services commencing in 2015. Each additional CKYH service adds about $7.980 present value to the total NED benefits. The container benefits dominate the total NED benefits, comprising $58.809 million for three CKYH services commencing 2015, $66.789 million for four CKYH services commencing in 2015, and $74.770 million for five CKYH services commencing in 2015. Dry Bulk benefits are $4.000 million, general cargo benefits are $3.574 million, and liquid bulk benefits are $8.809 million.[70] Figure 8 depicts the container benefits (three, four, and five CKYH calls at the planned Hanjin Dames Point terminal per week), dry bulk benefits, general cargo benefits, and liquid bulk benefits for Case 1.

[70] Liquid bulk benefits are disproportionate to the size of the fleet, which is 154 vessels calling 2010 with no growth compared to dry bulk with 150 vessels and growth because of the presence of U.S. flag vessels in the fleet with demonstrably higher vessel operating costs (refer to Table 47).

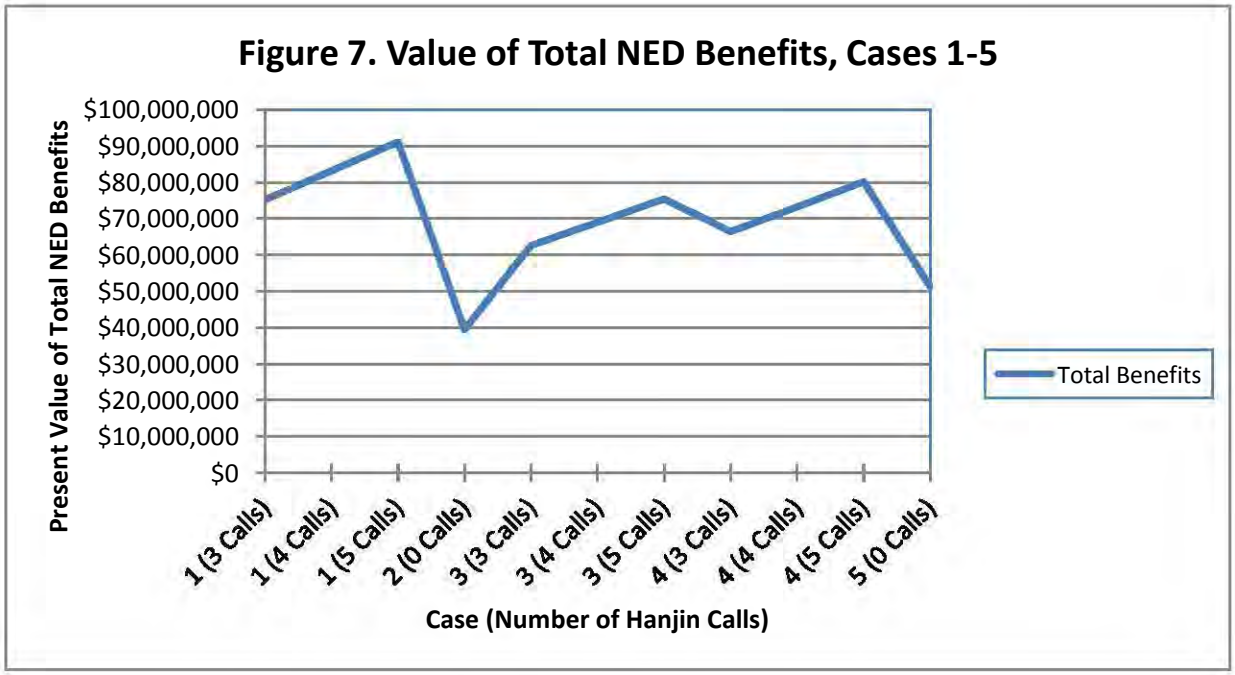
Figure 7. Value of Total NED Benefits, Cases 1-5
Present Value of Total NED Benefits
$100,000,000
$90,000,000
$80,000,000
$70,000,000
$60,000,000
$50,000,000
$40,000,000
$30,000,000
$20,000,000
$10,000,000
$0
1 (3 Calls)
1 (4 Calls)
1 (5 Calls)
2 (0 Calls)
3 (3 Calls)
3 (4 Calls)
3 (5 Calls)
4 (3 Calls)
4 (4 Calls)
4 (5 Calls)
5 (0 Calls)
Case (Number of Hanjin Calls)
Total Benefits

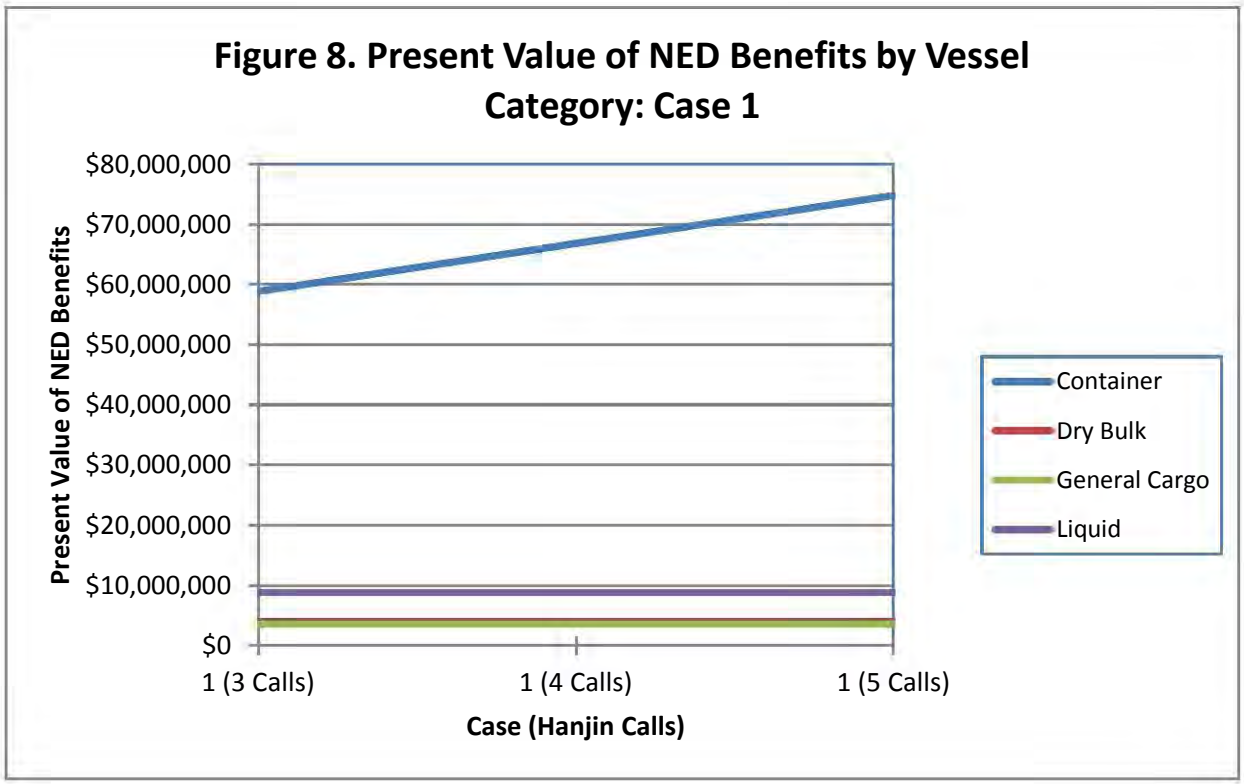
Figure 8. Present Value of NED Benefits by Vessel Category: Case 1
Present Value of NED Benefits
$80,000,000
$70,000,000
$60,000,000
$50,000,000
$40,000,000
$30,000,000
$20,000,000
$10,000,000
$0
1 (3 Calls)
1 (4 Calls)
1 (5 Calls)
Case (Hanjin Calls)
Container
Dry Bulk
General Cargo
Liquid

Case 5 has the same circumstances as Case 1 except that there are no CKYH services to a Hanjin facility at Dames Point. Case 5 benefits with all other vessels, excluding Hanjin calls (refer to Table 54), are $51.252 million with container benefits of $34.869 million. Container benefits are 68 percent of total benefits for Case 5 ($34.869/$51.252 = 0.68).

Case 2 is similar to Case 5 with the exclusion of CKYH vessels at a planned Hanjin Dames Point terminal but allows for no growth after 2010. Total NED benefits are $39.472 million. Container benefits are 64 percent of total benefits for Case 2 ($25.191/$39.472 = 0.64).

Case 4 includes all vessels, including CKYH at a planned Hanjin Dames Point terminal, with growth up to year 2020. Total benefits for Case 4 are $66.376 million for three CKYH services commencing in 2015, $73.271 million for four CKYH services commencing in 2015, and $80.166 million for five CKYH services commencing in 2015. Case 3 is similar to Case 4 except that there is no growth after 2015. Total benefits for Case 3 are $62.606 million for three CKYH services commencing in 2015, $69.037 million for four CKYH services commencing in 2015, and $75.468 million for five CKYH services commencing in 2015. The difference between Case 4 (all vessels growth up to 2020) and Case 3 (all vessels growth up to 2015) is about $4.0 million dollars of present value forgone by the lack of growth between 2015 and 2020.

Case 5 is considered the most conservative scenario, as it is based on existing facilities, and a growth rate tied to hinterland population projections. Case 5 is the basis of the benefits for the benefit cost analysis presented in the main report.

11.0 SENSITIVITY ANALYSES

11.1 DISCOUNT RATE

A discount rate of one-quarter percentage point plus and minus the current federal water resources discount rate for FY 2011 was applied to Case 5 (vessel calls based on existing facilities, and population growth for all years, 2010-2064). The results are summarized in table 59 for discount rates of 4.375 and 3.875 percent, respectively. Total NED benefits are $53.7 million and $49.0 million respectively. Average Annual Equivalent (AAEQ) benefits are $2.444 million and $2.431 million, respectively. For the OMB 7% discount rate, the present value is $32.8 million, and the AAEQ is $2.374 million.

Table 59: Case 5 Discount Rate Sensitivity Analysis

Case 5: Discount Rate Sensitivity		
Discount Rate	**Present Value Benefits**	**AAEQ Benefits**
3.875%	53,645,000	2,444,000
4.125%	51,253,000	2,437,000
4.375%	49,025,000	2,431,000
7.000%	32,762,000	2,374,000

11.2 ALTERNATIVE CKYH SERVICES WITHOUT HANJIN DAMES POINT TERMINAL

The existing TraPac Dames Point terminal is currently substantially underutilized. With three weekly services and existing population growth rates, the terminal will remain substantially under-utilized throughout the with-project conditions. There is ample sustained excess capacity to accommodate many more services. One alternative is that Hanjin may elect to lease space from TraPac and call Dames Point before the Hanjin terminal is completed or call Dames Point TraPac as a postponement/substitute for the immediate development of the Hanjin Dames Point terminal.

From Case 1 (refer to Table 58), each additional CKYH service yields $7.980 million net present value of increased benefits. Therefore, if CKYH calls TraPac with one service, the NED benefits would increase from $51.252 million (refer to Table 58) under Case 5 (all vessels, including TraPac, but excluding Hanjin, and growth for all years, 2010-2064) to $59.232 million. If CKYH calls with two services, the NED benefits would increase from $51.252 million to $67.212 million.

It is conjectural that Hanjin will lease space at TraPac in addition to or in lieu of development of its planned Dames Point terminal. However, scenarios that exclude the Hanjin Dames Point terminal (Cases 2 and 5) should allow for the possibility that Hanjin and the CKYH alliance may elect to share the abundance of existing unused capacity and sunk development costs at TraPac as an alternative to developing their own investment. Similarly, other lines that endeavor to come to Jacksonville with Post-Panamax services may elect to lease space at TraPac.[71] For these lines, there would be a concomitant impact on NED benefits similar to the inclusion of new CKYH services with or without Dames Point Hanjin terminal development.

[71] The TraPac facility is reportedly available to third parties, but development there is likely not particularly attractive to other container lines because of the Mile Point tidal restrictions that severely limit vessel access to the terminal and affect scheduling.

APPENDIX C

REAL ESTATE PLAN FOR
JACKSONVILLE HARBOR (MILE POINT) NAVIGATION PROJECT
DUVAL COUNTY, FLORIDA,
INTEGRATED FEASIBILITY REPORT AND ENVIRONMENTAL ASSESSMENT

APENDIX C

REAL ESTATE PLAN FOR
JACKSONVILLE HARBOR (MILE POINT) NAVIGATION PROJECT
DUVAL COUNTY, FLORIDA,
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REAL ESTATE PLAN FOR
JACKSONVILLE HARBOR (MILE POINT) NAVIGATION PROJECT
DUVAL COUNTY, FLORIDA
INTEGRATED FEASIBILITY REPORT AND
ENVIRONMENTAL ASSESSMENT

1. Statement of Purpose.

a. The purpose of this report is to determine the feasibility of the solution to a water resource problem. An evaluation of benefits, costs, and environmental impacts determines Federal interest.

b. The real estate plan is tentative in nature for planning purposes only and both the final real property acquisition lines and the real estate cost estimates provided are subject to change even after approval of this report.

2. Project Authorization.

This report was authorized by a resolution of the House Committee on Transportation and Infrastructure adopted March 24, 1998 for Mile Point, Florida.

3. Prior Reports

There have been several other studies which were initiated or completed, that relate to the Mile Point area. Information regarding these studies can be found in the main report under section 1.6.1. Prior Reports.

4. Project Location and Description.

a. Mile Point consists of 5,000 feet of shoreline located along the north shore of the St. Johns River and east of the Intracoastal Waterway (IWW). Great Marsh Island and the Mile Point Training Wall divide Chicopit Bay from the St. Johns River. Chicopit Bay is located to the south of the Mile Point area (Main Report Figure 5).

b. The NED plan has been identified as Alternative VE-3B plus Flow Improvement Channel, which combines the reconfiguration of the existing training wall, restoration of Great Marsh Island which is the least cost disposal option, and the creation of a Flow Improvement Channel (FIC) in Chicopit Bay. The training wall reconfiguration includes removal of the western 3,110 feet of the existing Mile Point training wall and the construction of a relocated eastern leg training wall of approximately 2,050 feet. The least cost dredging disposal alternative is to restore the breakthrough at Great Marsh Island by placing dredge material at the Island and constructing a western leg training wall, approximately 4,250 feet (Main Report – Figure 22).

5. Real Estate Requirement

a. Sufficient interest/rights will be obtained from the U.S. Navy to allow removal of the western 3,110 feet of the existing Mile Point training wall and lands located behind said training wall. Sufficient interest/rights will be obtained from the U.S. Navy to allow for the construction of a relocated eastern leg training wall of approximately 2,050 feet.

b. A right-of-entry (ROE) for ingress and egress will be obtained from the Nature Conservancy for access to the adjoining Navy property to the east to perform the required monitoring of the restored salt marsh lands. The monitoring will be done for a period of five years.

6. Government-Owned Land.

All of the project construction area lies below the Ordinary High Water Mark. In addition nearly all the construction area, some 51.2 acres, is within the lands acquired by the Navy through condemnation proceedings for Naval Station at the Mayport facility for the surface fleet. This naval facility is referred to as NS Mayport on the accompanying maps. The U.S. Navy acquired fee title to an approximately 495 acres parcel of land via condemnation (Case No. 3818-Civil-J) in September 1957. The acquired parcel encompasses those lands which have been identified as being required for the Mile Point Project (see attached map). The Army Corps of Engineers will coordinate with the United States Navy for a license that will allow construction on its land. The City of Jacksonville currently has permission to operate the Helen Cooper Park on a portion of the lands required.

The Navy can cancel this permission at will and without cost and is willing to do so.

7. Non-Federally-Owned Land

The Nature Conservancy, Inc. owns land adjacent to the proposed project on the west side. This report recommends obtaining a right of entry across the Nature Conservancy lands for the purpose of ingress and egress to the adjoining Navy property for the purpose of monitoring the marsh lands created by this project. Current maps do not indicate that the Nature Conservancy lands will be otherwise impacted, except possibly in a small area that is below the ordinary high water mark. The structure tie-in at the west end appears to be on Navy property according to our maps. Due to their closeness to the project to the property line, a survey will be required to see if any of the Nature Conservancy lands are needed for construction. If part of the tie-in is found to be necessary on The Nature Conservancy's land, fee interest will be required. The estimated cost, if any, would be between $1500 and $2000 per acre. As the likelihood of this acquisition being necessary is very low, it has not been included in this Real Estate Plan at this time. The Nature Conservancy, Inc. is familiar with the proposed project and has indicated their support for the project.

8. Navigational Servitude.

Lands required for the construction and operation of the proposed project all lie below the ordinary high water mark of the St. John's River and as such, are available to the federal government via navigational servitude. Approximately 53 acres of land are within the category of navigational servitude. Unique to this project, the U.S. Navy owns the underlying lands over which navigational servitude is available (see attached map). The Corps of Engineers will not assert navigational servitude against a sister agency. There is a possibility that some lands owned by Nature Conservancy, Inc. may be needed for construction. Such lands, if needed, are also below the ordinary high water mark. The servitude is the right of the United States, under the Commerce Clause of the Constitution, to use lands below the ordinary high water mark, without compensation, to improve navigation. It is a power, not a property right, and the owner of the underlying land is not entitled to compensation, as their ownership interest was always subject to this right.

9. Estates to be Acquired.

Federally owned lands required for project construction and operation will be available via a license of real property from the United States Navy to the Army Corps of Engineers. Remaining lands will be provided via navigational servitude. No additional estates required at this time. A Right of Entry for Ingress and Egress will be obtained from Nature Conservancy, Inc. to cross their property for monitoring purposes.

10. Non-Federal Authority to Participate in the Project.

Jacksonville Port Authority (Sponsor, derives its authority to participate in the project through its creation by an Act of the Legislature of the State of Florida, Chapter 63-1447, Laws of Florida. Section 3 of Chapter 63-1447 provides that the Jacksonville Port Authority shall have the specific authority to enter into contracts, leases or other transactions with any Federal agency. A sponsor capability checklist is attached.

11. Minerals.

There are no known minerals of value in the project area.

12. Hazardous and Toxic Wastes (HTW).

In accordance with Engineering Regulation (ER) 1165-2-132, Hazardous, Toxic and Radioactive Waste (HTRW) Guidance for Civil Works Projects, an initial HTRW assessment appropriate for this project has been completed. There have been no hazardous or toxic wastes identified within the project area.

13. Relocation Assistance Payments (Public Law 91-646).

No person or business will require relocation.

14. Relocations, Alterations, Vacations and Abandonments (Public Law 85-500).

No governmental structures, public utilities, or facilities that come within the purview of Section 111 of the Rivers and Harbors Act of 1958 (PL 85-500) approved 3 July 1958 will be affected by the project.

15. Induced Flooding.

There will be no induced flooding directly associated with this project.

16. Mitigation.

Mitigation proposed for project impacts totaling 8.15 acres would include restoring salt marsh at Great Marsh Island, which has been eroding for the past few decades. As a beneficial use of dredged material, the ACOE will attempt to restore the entire eroded breakthrough at the island, equating to 53 acres of marsh, providing a significantly higher net increase of salt marsh function and value. All the restoration will occur on the 51.2 acres of property owned by the Navy and the remainder on the Nature Conservancy property which is below the mean high water mark.

17. Attitude of Owners

There is one owner directly impacted by the proposed project, the Navy, and one owner impacted to a much less extent by the proposed project, The Nature Conservancy. Both have indicated strong support for the project.

18. Acquisition/Administrative Costs.

a. The estimate of the Federal real estate acquisition/ administrative cost is $69,200.00. This figure includes project real estate planning, review and administrative (license) costs.

b. The non-Federal sponsor will receive credit towards its share of real estate administrative project costs incurred for certification. Administrative costs are estimated to be $10,000.00.

19. Summary of Real Estate Costs. The following cost figures are subject to change prior to construction:

a. Lands and Damages

License/ROE (53 acres: 1.8 The Nature Conservancy, Inc. and 51.2 the U.S. Navy)	0
Improvements and/or severance	0
Severance	0

b. Acquisition - Administrative costs (Includes Corps Real Estate planning and meeting costs)

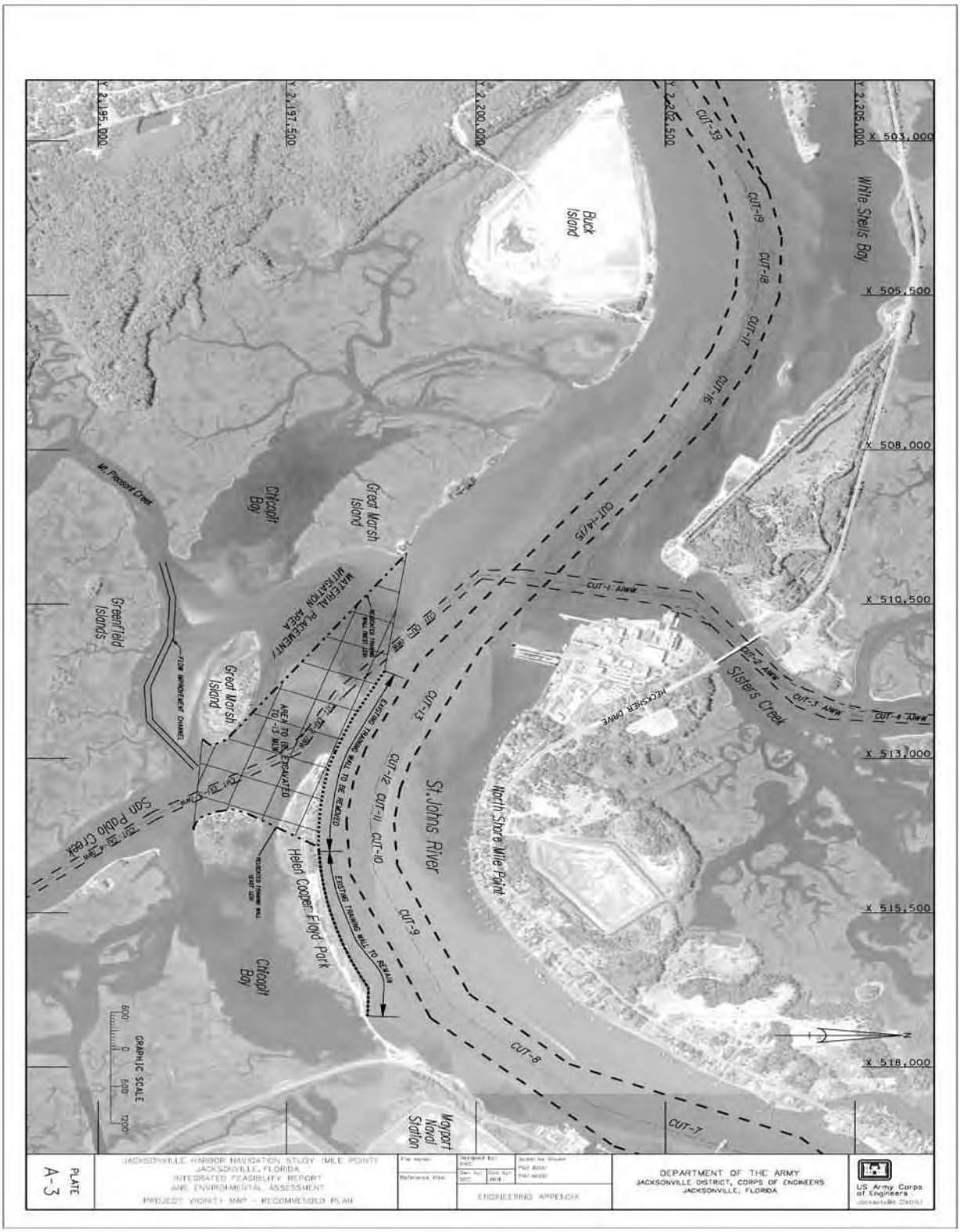
	Federal	$	69,200
	Non-Federal		10,000
c.	Public Law 91-646		0
d.	Contingencies (25%)*	$	19,800
	TOTAL ESTIMATED REAL ESTATE COSTS	$	99,000

*Due to the low value of projected real estate cost, a contingency of 25% was used in the likelihood of some unexpected requirements to be completed in support of the project.

20. Real Estate Acquisition Schedule.

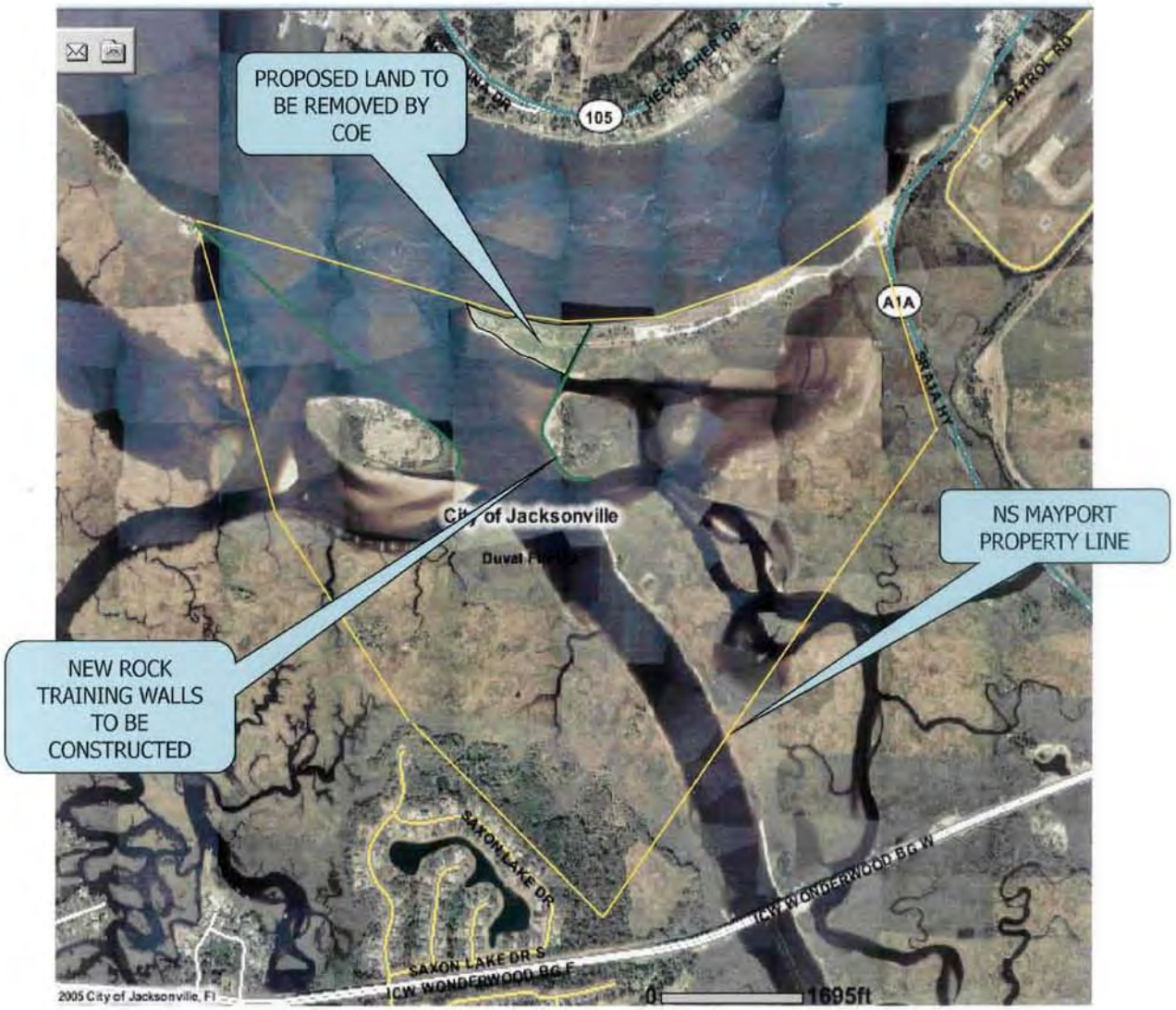
The Army Corps of Engineers, as the responsible lead agency for the Jacksonville Harbor Navigation Project, will coordinate with the United States Navy for the license on impacted real property under its ownership. It is anticipated that the license for the real property from the U. S. Navy to the U. S. Army Corps of Engineers will take approximately 30 – 90 days, after execution of the Project Partnership Agreement. Acquisition of the Right of Entry from The Nature Conservancy is anticipated to take approximately 90 days.

21. Maps. Recommended Plan



22. Maps. Vicinity Map

23. Maps (Navy Property)



24. REAL ESTATE CHART OF ACCOUNTS

01	LANDS AND DAMAGES		
01A00	PROJECT PLANNING/ADMINISTRATIVE	$	79,200
01B--	ACQUISITION		
01B20	BY LOCAL SPONSOR (LS)	$	0
01B40	REVIEW OF LS	$	0
01E—	APPRAISALS		
01E30	BY LS	$	0
01E50	REVIEW OF LS	$	0
01R--	REAL ESTATE PAYMENTS		
01R10	LAND PAYMENTS		
01R1B	BY LS	$	0
TOTAL REAL ESTATE COST EXCLUDING CONTINGENCY		$	79,200
TOTAL REAL ESTATE CONTINGENCY COST (25%) $19,800			
TOTAL PROJECT REAL ESTATE COST		$	99,000

APPENDIX D

MITIGATION PLAN AND INCREMENTAL ANALYSIS

NAVIGATION STUDY FOR JACKSONVILLE HARBOR (MILE POINT) STUDY

DUVAL COUNTY, FLORIDA

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1 MITIGATION PLAN SUMMARY

The U.S. Army Corps of Engineers-Jacksonville District (Corps) proposes to reconfigure the existing training wall (Alternative VE-3B) which lies immediately north of Helen Cooper Floyd Park (HCFP) in Duval County, Florida. As detailed in the main report, Alternative VE-3B would provide navigation benefits as well as reduce erosive forces along the Mile Point shoreline. However, in order to reconfigure the wall, it would be necessary to clear, grub, and dredge the western portion of HCFP. This action would impact a total of 8.15 acres of salt marsh. Using the Uniform Mitigation Assessment Method (UMAM), it was determined that 18.84 acres of mitigation would be required to offset this loss. An onsite meeting was held with the Florida Department of Environmental Protection, U.S. Fish and Wildlife Service and Florida Fish and Wildlife Conservation Commission in order to discuss the UMAM analysis. Coordination on the analysis is still ongoing.

The mitigation would be performed by restoring salt marsh which historically occurred at nearby Great Marsh Island. However, as a beneficial use of dredged material, the Corps proposes to restore the entire eroded breakthrough at the island, which is up to 53 acres of salt marsh. This would provide 34.16 acres of restored salt marsh in addition to the required 18.84 acres of mitigation, and would result in a significant increase of salt marsh acreage. Construction of the proposed west leg of the training wall would protect the restoration area from future erosion. In addition to the wall, temporary structures such as water dams or bio-degradable geo-tubes would be installed along the other sides of the restoration area in order to provide temporary containment. Dredged material from the western portion of HCFP would be piped into this area in order to restore elevations that can support salt marsh. Additional dredged material would be piped into the restoration area from a Flow Improvement Channel (FIC) within Chicopit Bay. This action would restore the natural flow-way between Mt. Pleasant Creek and the Intracoastal Waterway.

Additional components of the mitigation plan include the following: construction of tidal creeks within the restored marsh; sprigging of the 53 acres of marsh with commercially grown salt marsh species; training walls constructed with material known to support oysters and; placement of oyster shell within a newly constructed tidal channel to provide hard substrate for live oyster colonization. The restored marsh and FIC would be monitored for five years, and corrective action taken if needed.

2 PROJECT DESCRIPTION

2.1 Location

The study area is located in the City of Jacksonville, Duval County, Florida (see Attachment 1: Figure 1 – Project Map). It includes the confluence of the St.

Johns River and Intracoastal Waterway (IWW), the Mile Point shoreline, the western portion of Helen Cooper Floyd Park (HCFP), and Great Marsh Island.

2.2 Brief Project Summary

The study purpose is to determine the source of the Mile Point erosion problem and to provide recommendations for reducing or relocating the difficult crosscurrents during the ebb flow at the confluence of the St. Johns River with the IWW. As detailed in the main report, the U.S. Army Corps of Engineers-Jacksonville District (Corps) proposes to reconfigure the existing training wall, which lies immediately north of HCFP. Alternative 3C would reduce or relocate the difficult cross currents as well as reduce erosive forces along the Mile Point shoreline. However, in order to reconfigure the wall, it would be necessary to clear, grub, and dredge the western portion of HCFP. HCFP is part of the Mayport Naval Station, but is managed by the city of Jacksonville as a park.

2.3 Jurisdictional Areas to be Impacted

In 2004, the U.S. Navy contracted CZR Inc. to identify and delineate wetland boundaries on the Mayport Naval Station, including HCFP. The Regulatory Division of the Corps performed a field inspection in 2005, and determined that the wetlands identified by CZR are jurisdictional and concurred with the delineated boundaries (see Attachment 2: Memorandum on Jurisdictional Determination). The Corps obtained the wetlands shape file from CZR, and was able to verify that jurisdictional wetlands would be impacted by the proposed training wall reconfiguration (see Attachment 1: Figure 2-Wetland Delineation Map). Wetland functions within the project footprint would be lost, as this area would be converted to open water or training wall.

2.4 Description of Jurisdictional Areas

CZR identified the wetlands at HCFP as estuarine, intertidal, emergent, persistent, and irregular. As expected, site inspections revealed that the wetland systems identified by CZR, and within the project footprint, consist of low and high salt marsh. A fringe salt marsh has developed between the training wall and the north shore of HCFP (see Attachment 3: Photo 1), and a substantially larger area of higher quality marsh occurs along the south shore of the park (see Attachment 3: Photo 2). In general, the low marsh is dominated by salt marsh cord grass (*Spartina alterniflora*) transitioning in slightly elevated areas to high marsh species such as sea oxeye (*Borrichia spp.*) and salt grass (*Distichlis spicata*). A tidal channel also occurs within the salt marsh along the southern shore of HCFP. The Corps used the Uniform Mitigation Assessment Method (UMAM) to further evaluate the values and functions of the wetlands within the impact area (see Attachment 4: UMAM Analysis). An onsite meeting was held on 19 August 2011 with the Florida Department of Environmental Protection, U.S. Fish and Wildlife Service and Florida Fish and Wildlife Conservation Commission in order to discuss the UMAM analysis. Coordination on the analysis is still ongoing.

3 GOAL OF MITIGATION

3.1 Type of Wetland to be Restored or Created

In compliance with Section 404 of the U.S. Clean Water Act, the Corps proposes to mitigate for the loss of jurisdictional wetlands, specifically salt marsh, caused by the reconfiguration of the training wall. This would be accomplished by restoring salt marsh that historically occurred in the vicinity of the project.

3.2 Acreage of Impacted Wetland

Overlaying the wetlands shape file from CZR on top of the project footprint, the Corps was able to determine that 2.05 acres of salt marsh which fringes the north shore and 6.10 acres of higher quality marsh along the south shore, total of 8.15 acres, would be lost with the proposed removal of the western portion of HCFP.

3.3 Functions to be Performed by the Restored Wetland

The functions provided by the restored salt marsh should be very similar to functions currently provided by the salt marsh which would be impacted by the project.

4 PROPOSED RESTORATION SITE

4.1 Location and Size of Restoration Area

There are no salt marsh mitigation banks that have been established in northeast Florida. That being the case, the Corps proposes to mitigate for salt marsh impacts at HCFP by restoring salt marsh which historically occurred at nearby Great Marsh Island (see Attachment 5: Historical Maps and Aerial Photos of Great Marsh Island). The marsh at this location has been eroding over the years, and recent site inspections have indicated that it is still actively eroding (see Attachment 3: Photos 3 and 4). It should be noted that identifying appropriate mitigation sites can be problematic. However, in this case, the Great Marsh Island site is ideal due its close proximity to the project and the fact that salt marsh historically occurred at this location. Furthermore, the proposed west leg of the training wall should protect the restoration area from future wave erosion, but allow for tidal exchange. Using UMAM, it was determined that 18.84 acres of mitigation would be required to offset the loss of 8.15 acres of salt marsh at HCFP. As a beneficial use of dredged material, the Corps will attempt to restore the entire eroded breakthrough at Great Marsh Island. This would result in the restoration of approximately 53 acres of marsh, and would provide a significantly higher increase of salt marsh acreage.

4.2 Existing Wetland Functions of Restoration Area

Due to on-going erosion, the restoration area is currently open water and there is no emergent vegetation or wetland habitat.

4.3 Present Uses of Restoration Area

Recreational boat traffic is currently navigating through the proposed restoration area in order to reach the St. Johns River. If the area was restored to salt marsh, then recreational boat traffic would need to access the St. Johns River through Chicopit Bay and the Intracoastal Waterway.

5 RESTORATION IMPLEMENTATION PLAN

5.1 Site Preparation - Phase 1

To help insure success, the proposed restoration plan would be implemented in phases. Phase 1 work activities would include the following:

- Survey – Prior to performing any earth moving work, survey data would be collected from the salt marsh within the project footprint at HCFP, and also from the remaining salt marsh adjacent to the eroded restoration area. The survey would be performed using equipment with sufficiently accurate capabilities (accurate to within 1-2 cm), such as Real Time Kinematic equipment. A wetland scientist would accompany the survey team, and would collect a minimum of five elevation points each from high marsh, low marsh and tidal channel locations. This data would be used to determine the necessary elevations for restoring high and low marsh as well as tidal channels within the restoration area. For planning purposes, estimated elevations of + 2 feet above mean lower low water (mllw) for low marsh, + 3 feet above mllw for high marsh, and 0 to -1 feet mllw for tidal channels were used in the main report (see Attachment 1; Figure 4- Planting Detail Typical Profile). Existing elevations or depths of the eroded restoration area would also be determined prior to material placement.

- Structures – The west leg of the training wall would be constructed along the north side of the mitigation site, and would consist of large boulders with smaller filter stone. This structure would allow for tidal exchange, but the filter stone should minimize sediment from passing through. Water dams or geo-textile tubes filled with water or bio-degradable geo-textile tubes filled with sand would be placed along the west, east, and south sides of the mitigation site (see Attachment 1; Figure 3 – Great Marsh Island Restoration Site). The tube along the southern border would follow the shallow contour of the bottom, and therefore would have a slightly undulating shape. It would also have one or more low points to allow for overflow. These temporary structures would contain dredged material during placement activities, as well as avoid turbidity violations. Additional information on the proposed structures can be found within the Engineering Appendix of the main report.

- Dredged Material Placement – Once the structures are in place, dredged material would be pumped by a hydraulic dredge from the western portion of HCFP and the IWW to the restoration site. The pipeline would be periodically moved to different locations within the placement area in order to avoid excessive build-up in one spot, and the target elevation would be slightly greater than the elevations obtained from adjacent marshes in order to account for settling.

- Chicopit Bay Flow Improvement Channel – The proposed restoration of Great Marsh Island would close the existing northern connection between Chicopit Bay and the St. Johns River. This connection was created by the erosion and loss of salt marsh in the 1990's. Shoaling within the bay has also decreased the amount of flow or flushing effect coming from the east, or from the bay's historic connection with the IWW. Therefore, the Corps proposes to construct a flow improvement channel within Chicopit Bay, which should improve the flushing of the bay as well as provide deeper water Essential Fish Habitat. The channel would be constructed from the IWW, through the shoal within the bay, and ending at the mouth of Mt. Pleasant Creek. According to NOAA navigation charts (1993), Chicopit Bay had depths as great as 9 feet, but depths in this area have greatly decreased over subsequent years due to shoaling. Dredged material from the flow improvement channel would be used to restore salt marsh at Great Marsh Island. Additional information on dredging the channel can be found in Appendix A: Engineering Design and Cost Estimates.

5.2 Site Preparation - Phase 2

The dredged material placed within the restoration area would be initially bulked. After a sufficient amount of time has passed to allow for settling, e.g. up to 365 days, the following actions shall be taken:

- Survey – The restoration area would again be surveyed, and a sufficient number of transects and stations would be established in order to obtain adequate coverage. Site elevations would then be compared to the target elevations previously obtained from the adjacent marshes.

- Final Contour – Depending upon the survey results, material would be added or subtracted from the restoration area in order to achieve the desired elevations for low and high salt marsh. If necessary, the first option would be to move material to different locations within the restoration area so that target elevations are achieved. Excess material could be moved off-site, i.e. to Buck Island. Additional material could also be dredged from the remaining shoal in Chicopit Bay, or brought in from the upland area on the eastern end of Great Marsh Island. This upland area is comprised of spoil material, and significant resources are not known to occur at this location. Biological surveys for species like gopher tortoises would be performed prior to using this site as a source of borrow

material, and the site would be graded and planted with native vegetation if borrow material is removed.

- Tidal Channels – A minimum of three tidal channels (in excess of 1.6 acres) would be constructed throughout the restoration area. As stated earlier, bottom elevations of the channels would be comparable to elevations of existing tidal channels in adjacent salt marsh. The channels would have sections that remain submerged (elevation of -1 feet below mllw, average top width of 25 feet and a total linear length in excess of 3,200 feet, or approximately 1.8 acres). Other sections would be exposed at low tide (elevation of 0 to +1 feet above mllw, average top width of 15 feet, and a total linear length in excess of 4,600 feet, or approximately 1.6 acres). The channels would follow the lowest contours of the site after placed material has settled.

- Oyster Habitat – A widener would be constructed in one of the tidal channels. This widened section would be roughly 50 feet in length, with a maximum width of 30 feet, and tapering back to the 5 foot wide channel. Oyster shell shall be placed intermittently within the channel, including the widened section. The shell should be readily colonized by spats, or juvenile oysters. In addition to the tidal channels, the reconfigured east leg (0.37 acres) and new west leg (0.76 acres) of the training wall would be constructed using materials (i.e. boulders, concrete, etc.) that are known to support oysters for a total of 1.13 acres of oyster/intertidal habitat. The creation of this new habitat should offset the loss of the 0.30 acres of oyster habitat within the salt marsh at HCFP and the 0.56 acres along the intertidal edge of the existing training wall, total of 0.86 acres. Field inspections have indicated that the primary oyster habitat at HCFP appears to be confined to mudflats outside the project foot print.

- Planting – The entire restoration area (53 acres) would be planted with commercially grown salt marsh species (i.e. *Spartina alterniflora*). All species would be planted on 3 foot centers, which are equivalent to 4,840 plants per acre (see Attachment 1; Figure 4 – Planting Detail Typical Profile). Since planting would occur after the placed dredged material has settled (i.e. after one year), some natural recruitment is expected and planting could be much less than the 53 acres.

- Structure Removal – If water dams are used, then they would be drained and removed after the area stabilizes. If geo-tubes are used, then they would be allowed to bio-degrade. Geo-tubes should eventually be colonized by plants.

5.3 Monitoring – Phase 3

After the site preparation is completed, the salt marsh restoration area would be monitored on an annual basis for five years. Monitoring would include the following:

- Stability – The stability of the dredged material, tidal channels, as well as the training wall and remaining geo-tube would be assessed. In the event that erosion occurs, the percent of affected area would be determined.

- Hydrology – A qualitative analysis shall be performed to determine whether the hydrology of the site continues to be suitable for low and high marsh habitats.

- Vegetation – Percent cover (including species type) of the restoration area and an adjacent reference wetland would be ascertained using a sufficient number of randomly selected 1-meter^2 quadrants along transect lines.

- Photography – High and low marsh, tidal creeks, as well as the training wall and tubes would be photographed from pre-assigned and marked locations. Vegetation transect lines from the restoration area and reference wetland would also be photographed.

- Annual Reports – Reports would include maps of the restoration area, a description of marsh stability including observed erosion, a qualitative analysis of site hydrology, an analysis of percent cover data including percentage of high marsh, photographs of the restoration area and vegetation transect lines, copies of field data, and recommendations.

Monitoring and corrective action, if needed, of the proposed Flow Improvement Channel (FIC) would also be implemented for five years. The FIC monitoring plan is currently under development.

6 FINAL SUCCESS CRITERIA

The project shall be considered a success, if after five years of monitoring the following criteria are met:

- Loss of restored marsh to erosion is less than 10%.

- Hydrological conditions remain favorable for low and high marsh habitats.

- High marsh comprises at least 10% of the total restoration area.

- Percent cover analysis indicates that the plant community in the restoration area is similar to the adjacent reference wetland.

- The tidal channel seeded with oyster shell remains stable or open.

- The west and east legs of the training wall are colonized by oysters.

7 CONTINGENCY PLAN

Environmental monitoring over a period of five years will help insure the sustainability of the restoration site. The Corps shall be ultimately responsible for ensuring that the final success criteria are met, and will take corrective actions as necessary. If deemed necessary by the Corps, any corrective actions may be monitored for at least five years from the time they were implemented.

8 ADAPTIVE MANAGEMENT

Adaptive management shall be applied during the implementation of this plan. In other words, the Corps shall use a common sense approach to make decisions that may deviate from the plan's design features. For example, it may be beneficial to use other types of containment structures, create additional tidal channels or create a higher percentage of high marsh. Significant changes in this plan shall be coordinated with the appropriate resource agencies.

The salt marsh restoration design at Great Marsh Island is based on existing conditions, or current sea level, in order to achieve requisite elevations that would support low and high salt marsh as well as intertidal oyster beds. The restoration of these habitats cannot be performed using projected future sea level as the target species for these habitats would not be able to survive at current water levels. As an adaptive management measure to address future sea level rise, additional dredged material could be used when appropriate to increase the elevation of the Great Marsh Island restoration site and maintain salt marsh and other habitats.

9 INCREMENTAL ANALYSIS

9.1 Alternative Plans

As discussed in the main report for the Tentatively Selected Plan (TSP), the Corps proposes to reconfigure the Mile Point Training Wall which should allow for the lifting of restrictions to navigation and reduce erosion along Mile Point. The Corps evaluated the following restoration alternatives to mitigate for impacts to salt marsh caused by the TSP:

- Alternative 1 – Mitigation performed on a 1:1 ratio plus 8.15 acres of Planting: This increment was added for comparison sake, but it is not acceptable to regulatory agencies as it does not adequately compensate for the loss caused by the project. Plus, the project would generate dredged material in excess of the amount needed to perform mitigation on a 1:1 ratio. Therefore, this excess material would be transported to

another placement area, i.e. the Buck Island upland disposal site. The proposed 8.15 acre restoration area at Great Marsh Island would be sprigged with commercially grown salt marsh species at 3 foot centers.

- Alternative 2 – Required Mitigation plus 18.84 acres of Planting: As previously stated, the UMAM analysis determined that 18.84 acres of mitigation acreage would be required to offset the 8.15 acres of salt marsh lost at HCFP. However, the project would generate dredged material in excess of the amount of material required to complete the mitigation. Therefore, this excess material would have to be transported to another placement area, i.e. the Buck Island upland disposal site. The proposed 18.84 acre restoration area at Great Marsh Island would be sprigged with commercially grown salt marsh species at 3 foot centers.

- Alternative 3 – Optimal Restoration plus 18.84 acres of Planting: An estimated 45 acres would be restored at Great Marsh Island as previously stated in Alternative 2. However, only the required mitigation area (18.84 acres) would be planted. The remaining 26.16 acres would not be planted, but should be colonized by salt marsh species through natural recruitment.

- Alternative 4 –Optimal Restoration plus 45 acres of Planting: The required mitigation (18.84 acres) would be completed, and up to 26.16 acres of additional salt marsh would be restored at Great Marsh Island for a total of 45 acres. There would be no excess dredged material from the project which would have to be transported to another placement area, i.e. Buck Island. All 45 acres would be sprigged with transplanted salt marsh species at 3 foot centers.

- Alternative 5 – Expanded Restoration plus 18.84 acres of Planting: The 45 acres of eroded marsh at Great Marsh Island would be restored, and 8 acres of additional marsh would be restored for a total of 53 acres. Material for the additional 8 acres of restoration would come from the dredging of the proposed flow improvement channel in Chicopit Bay. Only the required mitigation area (18.84 acres) would be planted. The remaining 34.16 acres would not be planted, but should be colonized by salt marsh species through natural recruitment.

- Alternative 6 – Expanded Restoration plus 45 acres of Planting: The 45 acres of eroded marsh at Great Marsh Island would be restored, and 8 acres of additional marsh would be restored for a total of 53 acres. Material for the additional 8 acres of restoration would come from the dredging of the proposed Flow Improvement Channel in Chicopit Bay. All 45 acres would be sprigged with commercially grown salt marsh species at 3 foot centers.

- Alternative 7 – Expanded Restoration plus 53 acres of Planting: The 45 acres of eroded marsh at Great Marsh Island would be restored, and 8 acres of additional marsh would be restored for a total of 53 acres. Material for the additional 8 acres of restoration would come from the dredging of the proposed flow improvement channel in Chicopit Bay. The proposed 53 acres would be sprigged with transplanted salt marsh species at 3 foot centers.

9.2 Dredged Material Placement Cost

The estimated project cost for each Alternative is shown in Table 1. This project cost includes dredged material placement costs but excludes planting costs Alternative 2 shows the estimated cost for dredged material placement in order to complete the required mitigation (18.84 acres), and the cost for taking surplus material to Buck Island. Alternatives 3 and 4 show the estimated cost for dredged material placement in order to restore 45 acres at Great Marsh Island. Alternative 5, 6, and 7 show the estimated total dredging cost for the expanded restoration area, which is 53 acres.

Table 1: Estimated Project Cost including Dredged Material Placement Cost (does not include planting costs)

ALTERNATIVE	**ESTIMATED COST**
Alternative 1 – Mitigation (1:1 Ratio) 8.15 acres	$41,576,954
Alternative 2 – Required Mitigation 18.84 acres	$41,576,954
Alternative 3 – Optimal Restoration 18.84 acres	$34,126,159
Alternative 4 – Optimal Restoration 45 acres	$34,126,159
Alternative 5 – Expanded Restoration 18.84 acres	$34,604,618
Alternative 6 – Expanded Restoration 45 acres	$34,604,618
Alternative 7 – Expanded Restoration 53 acres	$34,604,618

9.3 Planting Cost

Planting the required mitigation area (18.84 acres) may be mandated by the regulatory agencies. It is generally believed that planting accelerates development of salt marsh plant communities, especially in larger restoration efforts. That being the case, some variation of planting was considered for each alternative. Alternatives 2, 4, and 5 would plant the required mitigation area (18.84 acres only), whereas Alternatives 3 and 6 would plant up to 45 acres, and Alternative 7 would plant up to 53 acres. The estimated planting cost for each alternative is shown in Table 2.

Table 2: Estimated Planting Cost with 29% Contingency

ALTERNATIVE	ESTIMATED COST
Alternative 1 – Mitigation (1:1 Ratio) plus 8.15 acres Planting	$240,206
Alternative 2 – Required Mitigation plus 18.84 acre Planting	$555,273
Alternative 3 – Optimal Restoration plus 18.84 acre Planting	$555,273
Alternative 4 – Optimal Restoration plus 45 acre Planting	$1,326,288
Alternative 5 – Expanded Restoration plus 18.84 acre Planting	$555,273
Alternative 6 – Expanded Restoration plus 45 acre Planting	$1,326,288
Alternative 7 – Expanded Restoration plus 53 acre Planting	$1,562,073

9.4 Cost of Each Mitigation Alternative

The total cost for each alternative is shown in Table 3. Alternative 2 would provide the required mitigation acreage (18.84 acres) to offset project related impacts to salt marsh. Alternatives 3 and 4 are more desirable since they would provide additional restoration benefits, i.e. increased salt marsh functions and values, and they would likely use all dredged material from the western portion of HCFP and the IWW. Alternative 4 would plant only the required mitigation area (18.84 acres). The remaining portion of the restoration site (26.16 acres) would not be planted, but should be colonized by salt marsh species through natural recruitment. Alternatives 5, 6, and 7, are the most desirable because they would restore up to 53 acres of salt marsh at varying rates, and they would all provide capacity for dredged material resulting from the construction of the proposed Flow Improvement Channel.

Table 3: Estimated Total Mitigation Cost for Each Alternative

ALTERNATIVE	ESTIMATED COST
Alternative 1 – Mitigation (1:1 Ratio) plus 8.15 acres Planting	$465,888
Alternative 2 – Required Mitigation plus 18.84 acre Planting	$1,076,973
Alternative 3 – Optimal Restoration plus 18.84 acre Planting	$1,801,372
Alternative 4 – Optimal Restoration plus 45 acre Planting	$2,572,387
Alternative 5 – Expanded Restoration plus 18.84 acre Planting	$2,022,901
Alternative 6 – Expanded Restoration plus 45 acre Planting	$2,793,916
Alternative 7 – Expanded Restoration plus 53 acre Planting	$3,029,701

9.5 Incremental Analysis of Alternatives

Incremental analysis of alternatives is conducted in order to determine the best buy option for the project. This analysis uses the IWR Planning Suite Software to combine management measure into alternatives and perform comparisons.

The previously outlined six alternatives reflect the combined management measures that are feasible for this study. These alternatives are evaluated using incremental analysis of costs and benefit basis to arrive at the best buy alternative.

Analysis with the IWR Planning Suite Software incorporates a realized benefit from each alternative. This benefit can be expressed in Habitat Units (HUs) gained or created. For this analysis, certain combinations of dredging and planting create more acres of material than acres being planted. Unplanted acres refer to the area where dredged material is placed in Great Marsh Island but not planted during construction. Alternatives 3, 5, and 6 have unplanted acreages. The realized benefit of those unplanted acres would be delayed because the development of fully functional salt marsh would take longer. Unplanted areas would also be more subject to erosion. To account for this difference in present and future benefits of the restored salt marsh, a weighting factor is applied. This weighting factor gives a larger realized benefit to the planted acres (0.6), and a smaller weighting factor to the unplanted acres (0.2). Application of these weighting factors for the various alternatives produces a range of HU outputs for the seven alternatives (Table 4).

Table 4: Incremental Analysis of Mitigation Alternatives for Mile Point

Combination of feasible Dredging and Planting Alternatives	Total Cost	Total Project Acreage	Total Planted Acreage	Quantified Habitat Units (HUs)	AAEQ of Total Cost	Incremental Cost (Millions)/ HUs
Alternative 1	$465,888	8.15	8.15	4.89	$23,097	$0.0047
Alternative 2	$1,076,973	18.2	18.2	10.92	$53,393	$0.0049
Alternative 3	$1,801,372	45	18.2	16.28	$89,307	$0.0055
Alternative 4	$2,572,387	45	45	27	$127,532	$0.0047
Alternative 5	$2,022,901	53	18.2	17.88	$100,290	$0.0056
Alternative 6	$2,793,916	53	45	28.6	$138,514	$0.0048
Alternative 7	$3,029,701	53	53	31.8	$150,204	$0.0047

The AAEQ costs for the seven alternatives vary due to differences in planting and final grading costs. Alternative 7 provides an incremental cost which is as low as or lower than other alternatives for the largest gain of 31.8 HUs. Planting the entire 53 acres is also more desirable because it would accelerate the development of a fully functional salt marsh and reduce the chance of the area eroding. In summary, Alternative 7 provides planting for the total restoration site with the inclusion of material from the Flow Improvement Channel and yields an incremental cost as low as or lower than the other alternatives per HU gain.

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ATTACHMENT 1

MITIGATION PLAN DRAWINGS

FIGURES 1-4

FIGURE 1: PROJECT MAP

JACKSONVILLE HARBOR, FLORIDA

Legend

- Salt Marsh Restoration Area
- Land Removal
- Existing Channel
- Proposed Configuration for Training wall

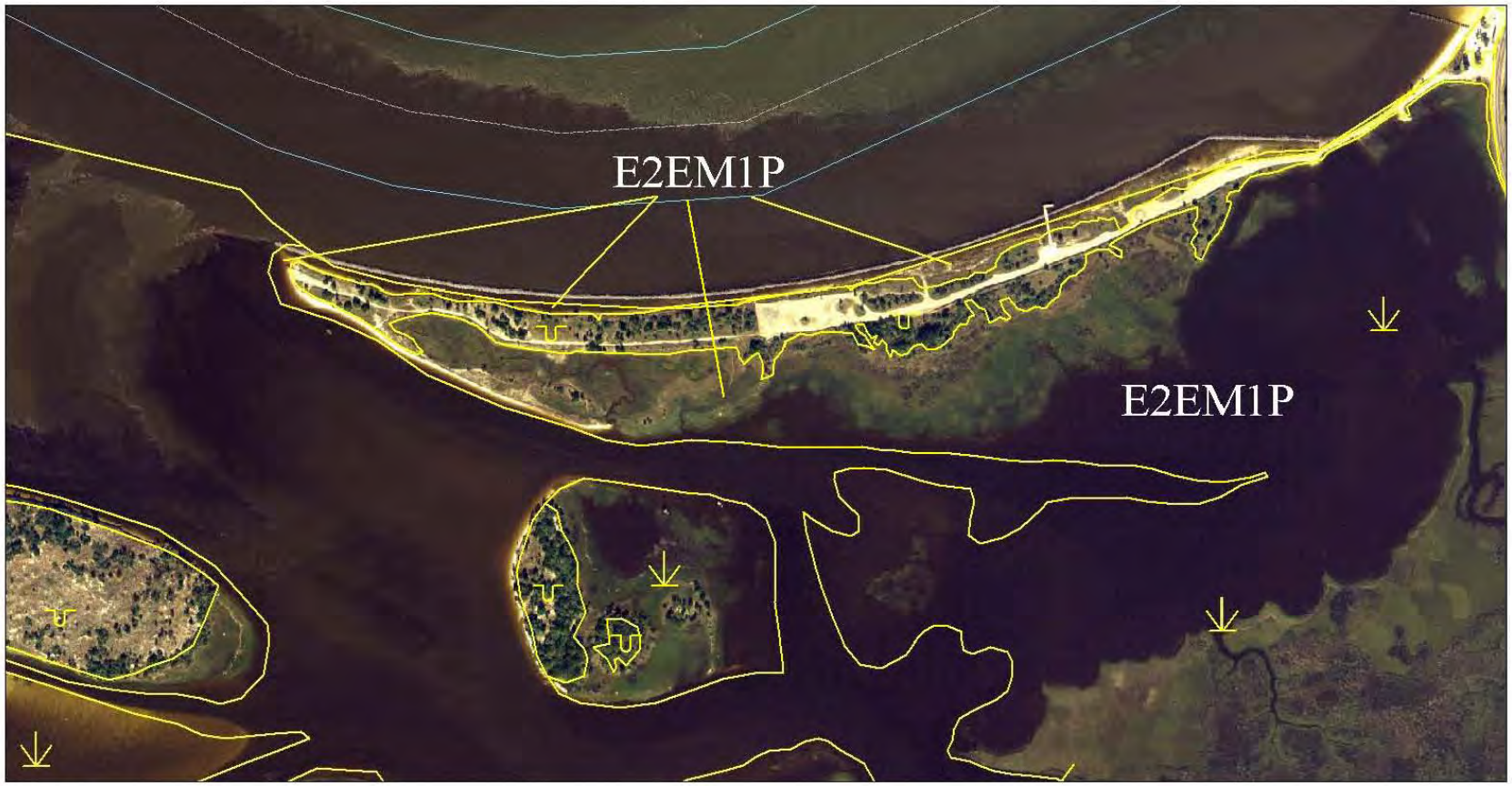
N

0 1 2 4 6 8 Miles

U.S Army Corps of Engineers
Jacksonville District

FIGURE 2: WETLAND DELINEATION

JACKSONVILLE HARBOR MILE POINT WETLAND DELINEATION



Legend

E2EM1P-(Estuarine, Intertidal, Emergent, Persistent, Irregular (Salt marsh)

Existing Channel

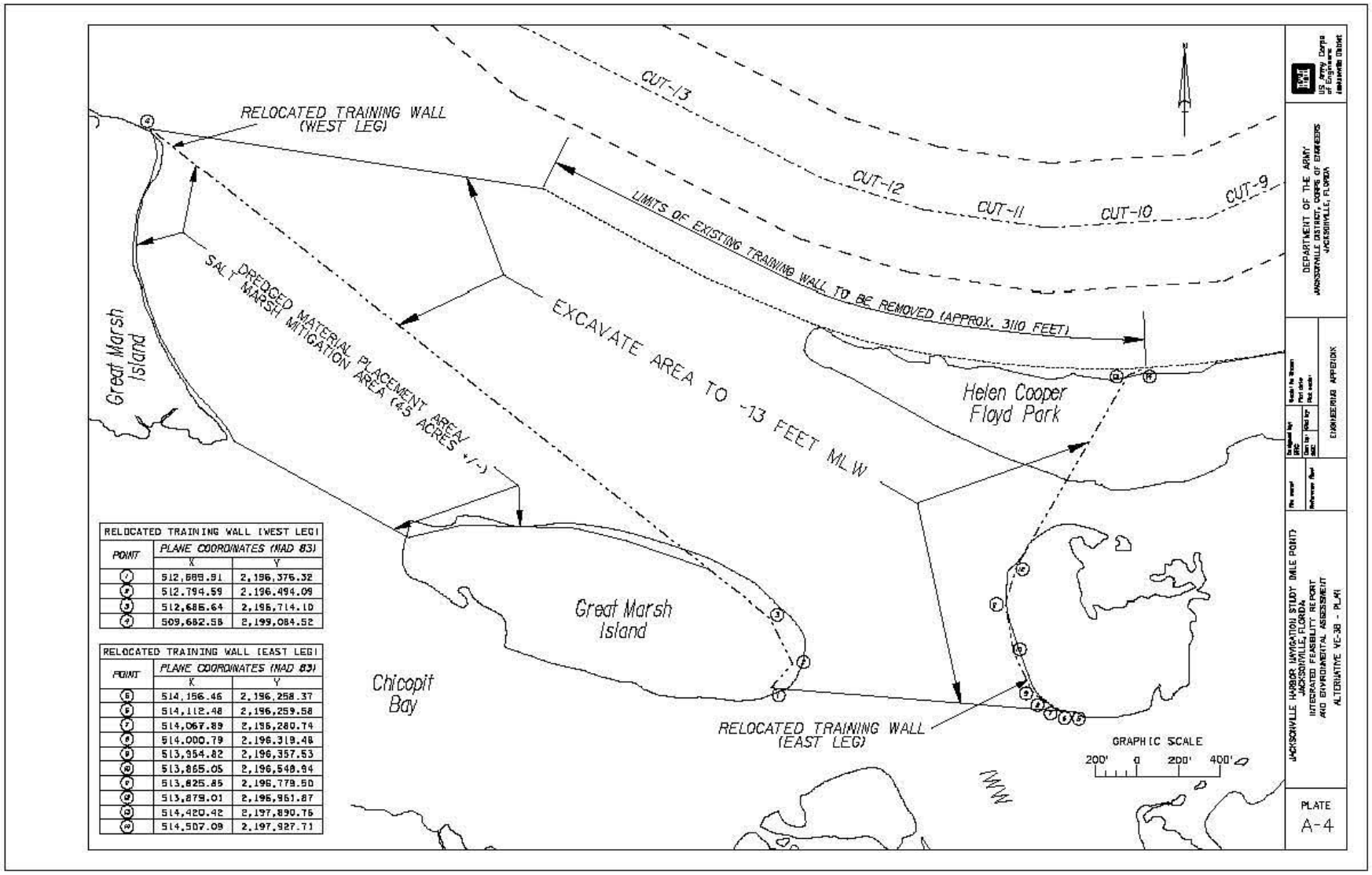
U - Upland

0 0.05 0.1 0.2 0.3 0.4 Miles

N

U.S Army Corps of Engineers
Jacksonville District

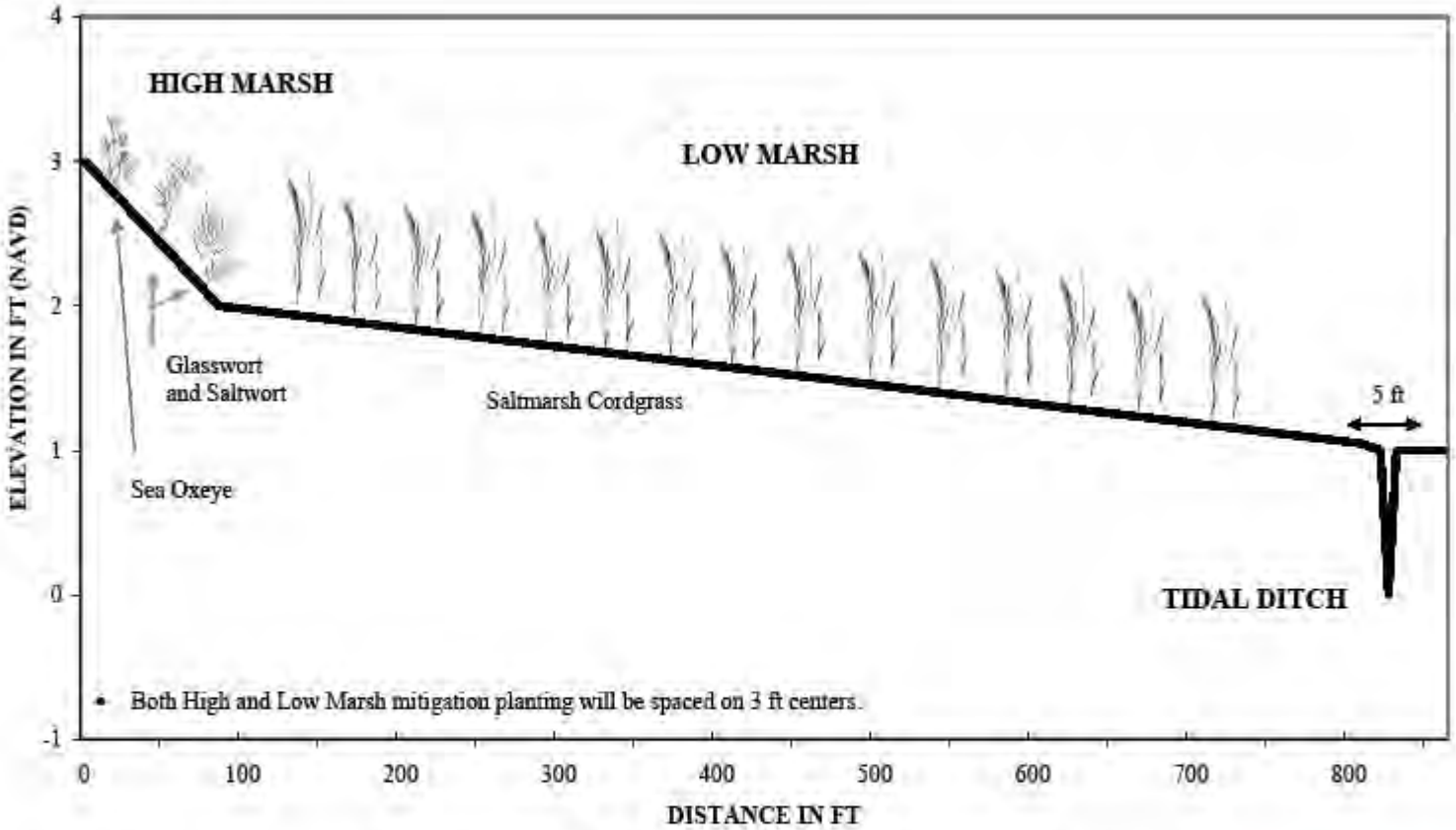
FIGURE 3: GREAT MARSH ISLAND RESTORATION SITE



RELOCATED TRAINING WALL (WEST LEG)		
POINT	PLANE COORDINATES (NAD 83) X	Y
1	512,689.91	2,196,376.32
2	512,794.59	2,196,494.09
3	512,686.64	2,196,714.10
4	509,682.58	2,199,084.52

RELOCATED TRAINING WALL (EAST LEG)		
POINT	PLANE COORDINATES (NAD 83) X	Y
5	514,156.46	2,196,258.37
6	514,112.48	2,196,259.58
7	514,067.89	2,196,280.74
8	514,000.79	2,196,319.48
9	513,954.82	2,196,357.53
10	513,865.05	2,196,548.94
11	513,825.85	2,196,779.50
12	513,879.01	2,196,961.87
13	514,420.42	2,197,890.76
14	514,507.09	2,197,927.71

FIGURE 4: PLANTING DETAIL TYPICAL PROFILE



PLANTING DETAIL-TYPICAL PROFILE

SCALE: 1" = 100'

0 100'

FIGURE #4
PROFILE OF PLANTING DETAIL
MILE POINT TRAINING WALL RECONFIGURATION SALT MARSH RESTORATION AREA
JACKSONVILLE HARBOR, FLORIDA

U.S Army Corps of Engineers
Jacksonville District

PRELIMINARY DRAWINGS: THESE DRAWINGS ARE NOT IN FINAL FORM, BUT ARE BEING TRANSMITTED FOR AGENCY REVIEW.

ATTACHMENT 2

MEMORANDUM ON JURISDICTIONAL DETERMINATION

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P. O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

REPLY TO
ATTENTION OF

CESAJ-RD-NA-J (1145) 18 August 2005

MEMORANDUM FOR Commander, United States Navy, Naval Station Mayport, Mayport, FL 32228-0112

SUBJECT: Department of the Army Permit Number SAJ-2004-9113-JJS

1. Reference is made to your request for review and verification of a U.S. Army Corps of Engineers (Corps) jurisdictional determination submitted by CZR, Inc. for the Department of the Navy. The site was field inspected on January 19, 2005 and March 16, 2005. This review and determination was made using aerial photographs, geological quad sheets, county soils maps, and site-specific information provided by you. Enclosed are 4 copies of the survey submitted to our office which delineate the landward limits of the Corps jurisdiction of the property in question. The project site is Naval Station Mayport in Township 1 South, Ranges 28 East and 29 East, and Township 2 South, Ranges 28 East and 29 East in Jacksonville, Duval County, Florida. A Department of the Army permit would be required for wetland areas indicted on the enclosed surveys. The jurisdictional determination has been assigned number SAJ-2004-9113-JJS.

2. The delineation shown on the enclosed survey represents the approximate upland/wetland boundary for purposes of determining the Corps jurisdictional line. It is noted that multiple wetlands extend off of the property. The verification of the enclosed survey does not provide nor imply the location of any Corps authorized jurisdictional wetlands lines beyond the survey property boundaries. Please be advised that the jurisdictional delineation shown is based on the Corps of Engineers Wetlands Delineation Manual (1987) and is valid for a period **no longer than five (5) years** from the date of this letter unless new information warrants a revision of the determination before the expiration date. If, after the five-year period, this jurisdictional delineation has not been specifically revalidated by the Corps, it shall automatically expire. Any reliance upon this jurisdictional determination beyond the expiration date may lead possible violation of current Federal laws and/or regulations. You may request revalidation of the jurisdictional delineation prior to the expiration date. Any revalidation or

updating will be considered under the method of jurisdictional determination and other applicable regulations in use at the time of the request. Additionally, this delineation has been based on information provided by your office, should we determine that the information was incomplete or erroneous this delineation would be invalid.

3. Since numerous wetlands have been designated as Corps jurisdictional, a Federal Dredge and Fill permit would be required for any proposed impacts to jurisdictional wetlands within the allotted 5-years. If beyond the 5-year timeframe, you are advised to submit a joint permit application reflecting all proposed encroachment into wetlands which may be within the Corps jurisdiction at that time. It is possible that a State permit from the Florida Department of Environmental Protection (DEP) or the St. Johns River Water Management District (SJRWMD) may also be required. Permits may also be required from other local entities.

4. You are cautioned that work performed below the mean high water line or ordinary high water line in waters of the United States, or the discharge of dredged or fill material into adjacent wetlands, without a Department of the Army permit could subject you to enforcement action. Receipt of a permit from the DEP or the SJRWMD does not obviate the requirement for obtaining a Department of the Army permit for the work described above prior to commencing work.

5. Thank you for your cooperation with our permit program. If you have any questions concerning this matter please contact me by mail at the letterhead address, by electronic mail at *Jason.j.spinning@saj02.usace.army.mil*, or by telephone 904-232-1670.

FOR THE COMMANDER:

Jason Spinning 8/18/05

Encl

ROBERT M. CARPENTER
Colonel, Corps of Engineers
Commanding

ATTACHMENT 3

PHOTOS 1-4

Photo 1: Fringe salt marsh between training wall and northern shoreline of Helen Cooper Floyd Park.

Photo 2: Salt marsh along southern shoreline of Helen Cooper Floyd Park. Photo taken in 2008.

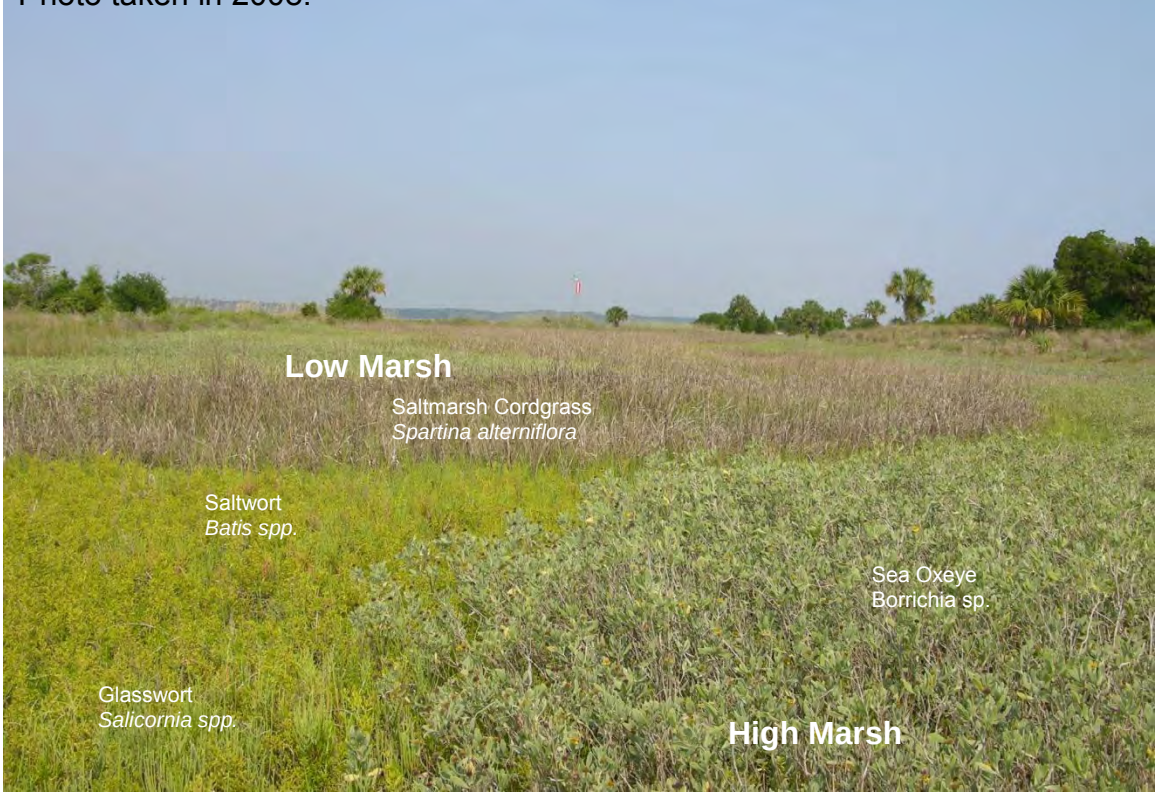


Photo 3: Western shoreline of proposed restoration area. Photo taken in 2008.

Photo 4: Eastern shoreline of proposed restoration area. Photo taken in 2008.

ATTACHMENT 4

UNIFORM MITIGATION ASESSMENT METHODOLOGY

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Mile Point		Mile Point Impact Site

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
642 Salt Marshes; 743 Spoil Areas; 540 Bays and Estuaries; 652 Shorelines; 654 Oyster Bars		Impact	8.15 acres

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
St. Johns River	Class III	NMFS EFH and Habitat Area of Particular Concern.

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

Salt marsh on dredged material at Helen Cooper Floyd Park. Assessment area consists of a fringe salt marsh between a training wall and the park's uplands, and a second larger salt marsh area immediately south of the uplands. Both marsh areas are connected to, or are in the vicinity of, a much larger salt marsh system. Hydrologically connected to St. Johns River and Intracoastal Waterway.

Assessment area description

Low salt marsh dominated by saltmarsh cord grass (*Spartina alterniflora*) transitioning to black needlerush (*Juncus roemerianus*) and then to higher marsh species like sea oxeye (*Borrichia spp.*) and salt grass (*Distichlis spicata*). A small channel runs through the marsh and becomes innundated during incoming tides. The wetland area was identified and delineated by CZR, Inc. on behalf of the the landowners (US Navy). The site was field inspected by USACE Regulatory Division in 2005, and the USACE concurred that this area is jurisdictional.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
In addition to the St. Johns River, an American Heritage River, other significant features include the Timucuan National Ecological and Historic Preserve (over 46,000 acres). Much of the preserve consists of salt marsh.	Not unique, the impact area consists of salt marsh similar to surrounding marsh.

Functions	Mitigation for previous permit/other historic use
Provides foraging and sheltering habitat for wide array of marine organisms.	None

Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found.)	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)
Fishes:over 30 species, e.g. red drum (*Sciaenops ocellata*), sheepshead minnow (*Cyprinodon variegatus*), gobies (Gobiidae), silverside (*Menida* spp.); Decopods: blue crab (*Callinectus sapidus*), penaied shrimp (*Penaeus* spp.), fiddler crabs (*Uca* spp.); Birds: shorebirds, wading birds, other species; Mammals: raccoon (*Procyon lotor*).	Wood stork (Mycteria americana) (E), Snowy egret (*Egretta thula*) (SSC), tri-colored heron (*Egretta tricolor*)(SSC), little-blue heron (*Egretta caerula*)(SSC), white ibis (*Eudocimus albus*) (SSC); foraging, periodic usage.

Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):

Fiddler crabs, blue crab, sheepshead minnows, wading birds (e.g. great egret, snowy egret, tri-colored heron, great blue heron, green heron), greater yellowlegs (*Tringa melanoleuca*), raccoon tracks and scat.

Additional relevant factors:

Helen Cooper Floyd Park is adjacent to an existing training wall (rock structure). The park and adjacent shallow water areas were formed when dredged marterial was sidecast to the south of the training wall many years ago. The wall has probably prevented the assessment area from eroding and disappearing.

Assessment conducted by:	Assessment date(s):
USACE, DEP, USFWS, FWC	8/19/2011

Form 62-345.900(1), F.A.C. [effective date]

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Mile Point		Mile Point Impact Site
Impact or Mitigation	Assessment conducted by:	Assessment date:
Impact	USACE, DEP, USFWS, FWC	8/19/2011

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland assessed	Condition is optimal and fully supports wetland functions	Condition is less than optimal, but sufficient to maintain most wetland functions	Minimal level of support of wetland functions	Condition is insufficient to provide wetland functions

.500(6)(a) Location and Landscape Support	w/o pres or current: 8	with: 1

CURRENT: An estimated 8.15 acres of salt marsh occur within the assessment area (AA). Habitats outside the AA represent nearly the full range of habitats required to fulfill life history requirements of wildlife in Part I. If present, invasive exotic plants are limited to upland area, e.g. chinaberry. Wildlife access to fringe wetland is somewhat obstructed by training wall (TW); south wetland area linked to other wetlands providing unobstructed wildlife corridors; upland wildlife corridors are limited by Mayport development. Functions of AA that benefit downstream fish/wildlife limited by barriers, e.g. nearby development. Land uses, i.e. adjacent development, has adverse impacts on fish and wildlife. TW is a hydrologic impediment for fringe wetland; no impediment or flow restrictions of south wetland to downstream areas. Downstream habitats are not critically linked to AA. WITH: The 8.15 acres of salt marsh would be eliminated and replaced with either open water or TW (rock) and therefore all wetland functions would be lost; however, the estuarine open water water habitat that would be created would be connected to the Intracoastal Waterway and St. Johns River .

.500(6)(b)Water Environment (n/a for uplands)	w/o pres or current: 9	with: 2

CURRENT: The water environment of the assessment area consists of flooded salt marsh and estuarine shallow water habitat under tidal influence. Except for slight flow impediments by TW on the fringe wetland, water levels and flows appear appropriate. Water level indicators are distinct and normal. Soil moisture appropriate. Highly modified area due to past dredged material side casting, but current deposition/erosion levels not atypical. Vegetation zonation is appropriate. Wildlife use is appropriate. Plant community not dominated by tolerant species. Standing water not degraded. Water quality near optimal for salt marsh community. TW affects depth, wave energy, etc. of the fringe wetland, but south wetland is optimal for type of community. WITH: The 8.15 acres of salt marsh and estuarine shallow water would be eliminated and replaced with either open water or TW (rock) and therefore all wetland functions would be lost.

.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	w/o pres or current: 9	with: 1

CURRENT: Plant cover is appropriate and mostly desirable. Invasive plants, if present, are limited to uplands. Normal plant community regeneration. Age and distribution of plants normal. Cavities for nesting/denning limited due to marsh habitat but also by upland quality. Plants in good condition. Management practices are adequate for perpetuation of salt marsh. Topographic features altered by fill but now stable. Siltation and algal growth not excessive. WITH: The 8.15 acres of salt marsh would be eliminated and replaced with either open water or TW (rock) and therefore all wetland functions would be lost; however, the open water and rock habitat provided by the project would support benthos (i.e. oysters) as well as fish species native to this area.

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres: 0.87	with: 0.13

Delta = [with-current]
0.74

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

If mitigation
Time lag (t-factor) =
Risk factor =

For impact assessment areas
FL = delta x acres = 0.74 x 8.15 =6.03

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

Form 62-345.900(2), F.A.C. [effective date 2/2/04]

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Mile Point		Mile Point Mitigation Area

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
540 Bays and Estuaries		Mitigation	

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
St. Johns River	Class III	NMFS EFH and Habitat Area of Particular Concern.

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

Adjacent to remaining salt marsh at Great Marsh Island; part of the island consists of disturbed upland habitat created by past dredged material placement. Hydrologically connected to St. Johns River, Intracoastal Waterway (San Pablo Creek), Chicopit Bay, and Mt. Pleasant Creek.

Assessment area description

Shallow water estuarine habitat with unconsolidated sediment substrate; approximately 400-500 m west and south from impact area. This area was formerly salt marsh, but the marsh has eroded away and has become shallow water estuarine habitat devoid of emergent vegetation, e.g. saltmarsh cord grass (*Spartina alterniflora*).

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
In addition to the St. Johns River, an American Heritage River, other significant features include the Timucuan National Ecological and Historic Preserve (over 46,000 acres). Much of the preserve consists of salt marsh.	Not unique, the mitigation area would consist of salt marsh similar to surrounding marsh.

Functions	Mitigation for previous permit/other historic use
Mitigation area consisting of salt marsh and tidal creek(s) would provide foraging and sheltering habitat for wide array of marine organisms.	NA

Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found)	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)
Fishes:over 30 species, e.g. red drum (*Sciaenops ocellata*), sheepshead minnow (*Cyprinodon variegatus*), gobies (Gobiidae), silverside (*Menida* spp.); Decopods: blue crab (*Callinectus sapidus*), penaied shrimp (*Penaeus* spp.), fiddler crabs (*Uca* spp.); Birds: shorebirds, wading birds, other species; Mammals: raccoon (*Procyon lotor*).	Wood stork (*Mycteria americana*) (E), Snowy egret (*Egretta thula*)(SSC), tri-colored heron (*Egretta tricolor*)(SSC), little-blue heron (*Egretta caerula*)(SSC), white ibis (*Eudocimus albus*) (SSC); foraging, periodic usage.

Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):

Bottle-nosed dophin (*Tursiops truncatus*) .

Additional relevant factors:

As described above, the mitigation area was historically salt marsh, which has eroded and decreased in size. As a beneficial use of dredged material, this project would restore up to 53 acres of low and high salt marsh, oyster beds, tidal channels, and coastal strand (dune) habitat. at Great Marsh Island. This would more than offset the loss of 8.15 acres of salt marsh at the impact site, and would result in a significant increase in acreage of locally desirable marine habitats.

Assessment conducted by:	Assessment date(s):
USACE, DEP, USFWS, FWC	8/19/2011

Form 62-345.900(1), F.A.C. [effective date]

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Mile Point		Mile Point Mitigation Site
Impact or Mitigation	Assessment conducted by:	Assessment date:
Mitigation	USACE, DEP, USFWS, FWC	8/19/2011

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetlands assessed	Condition is optimal and fully supports wetland functions	Condition is less than optimal, but sufficient to maintain most wetland functions	Minimal level of support of wetland functions	Condition is insufficient to provide wetland functions

500(6)(a) Location and Landscape Support	w/o pres or current: 1	with: 8

CURRENT: Estuarine shallow water habitat surrounded by salt marsh and disturbed upland habitat on Great Marsh Island as well as the St. Johns River and Intracoastal Waterway. Condtions in the mitigation area (MA) are insufficient to provide wetland functions, however, the exsiting shallow water habitat is connected to Chicopit Bay. WITH: Habitats outside the MA would provide nearly the full range of habitats required to fulfill life history requirements of wildlife in Part I. Invasive exotic plants would be limited to uplands of Great Marsh Island. Wildlife access to MA would temporarily be limited during construction. Functions of MA that would benefit downstream fish/wildlife. There would be no impediment or flow restrictions to downstream areas. Downstream habitats would not be critically linked to MA. The mitigation salt marsh would be placed in a location where the existing adjacent salt marsh as well as the nearby St. Johns River and Intracoastal Waterway could provide an optimal positive influence.

500(6)(b)Water Environment (n/a for uplands)	w/o pres or current: 2	with: 9

CURRENT: Mitigation site is estuarine shallow water habitat, too deep for emergent vegetation. This area provides a different depth and hydrology than that required by salt marsh, but does allow for the flushing of Chicopit Bay. WITH: Water levels and flows would be appropriate in MA. Water level indicators would be normal. Soil moisture would be appropriate. Deposition/erosion levels would not be atypical. Vegetation zonation would be appropriate. Wildlife use would be appropriate. Plant community would not be dominated by tolerant species. Standing water would not be degraded. Water quality would be near optimal for salt marsh community. Depth, wave energy, etc. would be optimal for type of community. As stated earlier, the proposed training wall would protect the mitigation site from future erosion.

.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	w/o pres or current: 1	with: 9

CURRENT: The estuarine shallow water habitat is too deep for emergent vegetation to become established and therefore salt marsh species are not supported; however, the shallow water habitat does provide habitat for some benthos and species of fish native to this area. WITH: Plant cover would be appropriate and desirable. Invasive plants would be limited to uplands. There would be normal plant community regeneration. Age and distribution of plants would be normal. Caveties for nesting/denning would be limited due to marsh habitat. Enviroment would provide desirable plant quality. Management practices would be adequate for perpetuation of salt marsh. Topographic features would be modified, but appropriate for salt marsh. Siltation and algal growth would not be excessive. Created depth, hydrology, as well planting the dominant plant species would provide near optimal support for a salt marsh community.

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres: 0.13	with: 0.87

If preservation as mitigation:
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas

Delta = [with-current]
0.87-0.13=0.74

If mitigation:
Time lag (t-factor) = 1.14
Risk factor = 2.0

For mitigation assessment areas
RFG = delta/(t-factor x risk) = 0.74/(1.14 x 2.0) = 0.32

Form 62-345.900(2), F.A.C. [effective date 2/2/04]

Mitigation Determination Formulas
(See Section 62-345.600(3), F.A.C.)

For each impact assessment area:
(FL) Functional Loss = Impact Delta X Impact acres

For each mitigation assessment area:
(RFG) Relative Functional Gain = Mitigation Delta (adjusted for preservation, if applicable)/((t-factor)(risk))

(a) Mitigation Bank Credit Determination

The total potential credits for a mitigation bank is the sum of the credits for each assessment area where assessment area credits equal the RFG times the acres of the assessment area scored.

Bank Assessment Area	RFG	X	Acres	=	Credits
example					
a.a.1					
a.a.2					
total					

(b) Mitigation needed to offset impacts, when using a mitigation bank

The number of mitigation bank credits needed, when the bank or regional offsite mitigation area is assessed in accordance with this rule, is equal to the summation of the calculated functional loss for each impact assessment area.

Impact Assessment Area	FL	=	Credits needed
example			
a.a.1			
a.a.2			
total			

(c) Mitigation needed to offset impacts, when not using a bank

To determine the acres of mitigation needed to offset impacts when not using a bank or a regional offsite mitigation area as mitigation, divide functional loss (FL) by relative functional gain (RFG). If there are more than one impact assessment area or more than one mitigation assessment area, the total functional loss and total relative functional gain is determined by summation of the functional loss (FL) and relative functional gain (RFG) for each assessment area.

	FL	/	RFG	=	Acres of Mitigation
example					
a.a.1	6.03		0.32		18.84
a.a.2					
total					

Form 62-345.900(3), F.A.C. [effective date]

ATTACHMENT 5

HISTORICAL MAPS AND AERIALS OF GREAT MARSH ISLAND

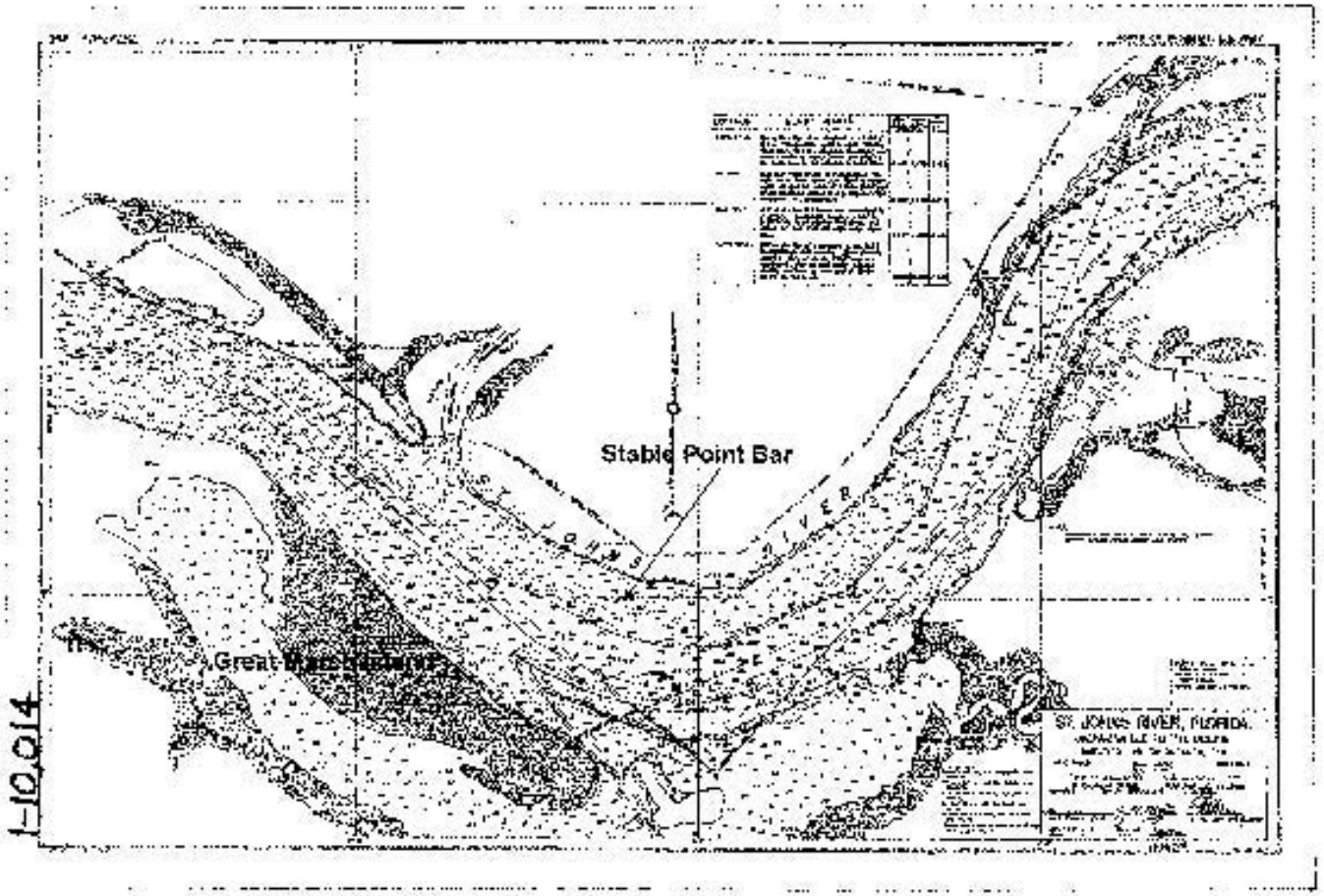
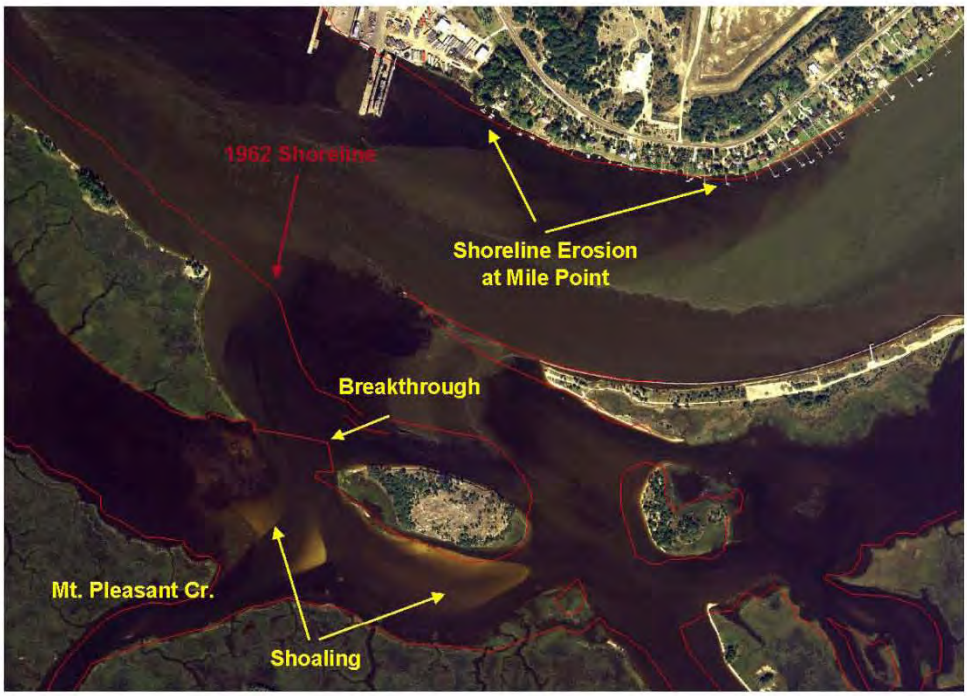


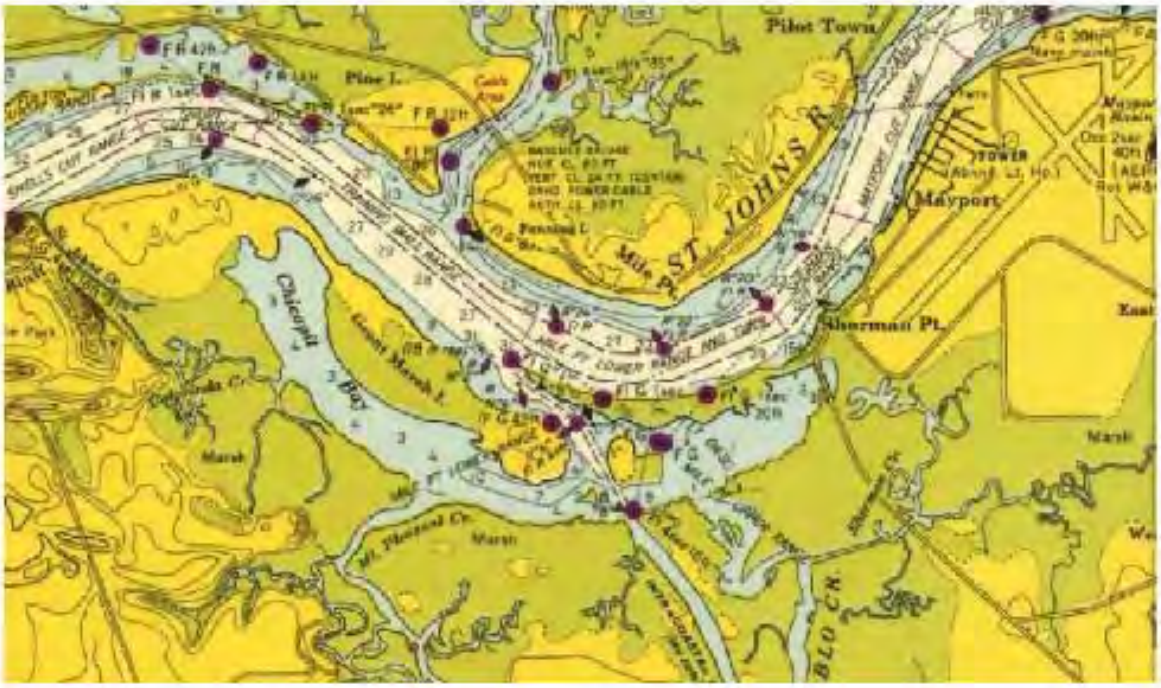
Figure 21. Hydrographic Survey (1934) shows a stable submerged point bar at Mile Point and a stable shoreline around Great March Island prior to the completion/expansion of the Intracoastal Waterway (1935).

Aerial photo (1962)



Aerial photo (2004) showing the change in river shoreline at Mile Point and Chicopit Bay since 1962. The erosion of Great Marsh Island's north shoreline continued until a breakthrough of the island occurred in the late 1990's.

NOAA NAUTICAL CHART 577 FEBRUARY 1957



APPENDIX E
PERTINENT CORRESPONDENCE

JACKSONVILLE HARBOR (MILE POINT) NAVIGATION PROJECT DUVAL COUNTY, FLORIDA, INTEGRATED FEASIBILITY REPORT AND ENVIRONMENTAL ASSESSMENT

United States Department of the Interior
U. S. FISH AND WILDLIFE SERVICE
7915 BAYMEADOWS WAY, SUITE 200
JACKSONVILLE, FLORIDA 32256-7517

IN REPLY REFER TO:

FWS Log No. 41910-2011-I-0259

September 14, 2011

Colonel Alfred A. Pantano, District Engineer
Department of the Army
Jacksonville District Corps of Engineers
Planning Division, Environmental Branch
PO Box 4970
Jacksonville, Florida 32232-0019
(Attn: Paul Stodola)

Re: Review of and Response to Assessments of Impacts to Federal Trust and Other Natural Resources from the Jacksonville Harbor (Mile Point) Navigation Feasibility Study, Duval County

Dear Colonel Pantano:

Our office has reviewed your correspondence and accompanying information for subject study. The U.S. Army Corps of Engineers (Corps) and Jacksonville Port Authority (JPA) have entered into this study for the purpose of developing a plan to remove or reduce restrictions to navigation for deep-draft commercial vessels transiting the Mile Point area of Jacksonville Harbor. Those restrictions result from strong crosscurrents within the St. Johns River in the vicinity of its confluence with the Intracoastal Waterway (ICW). The combination of the currents and subsequent transit response by commercial vessels also has resulted in extensive erosion of upland and wetland habitats in the vicinity of the project study area. The redistribution of eroded sediments has further exacerbated historic water flows and navigation in nearby tributaries and Chicopit Bay.

The Tentatively Selected Plan (TSP) generally calls for a combination of the following: existing training wall removal and relocations, excavation/dredging of uplands and wetlands and dredging submerged sediments within and contiguous to the western end of Helen Cooper Floyd Park (HCFP), dredging to create a Flow Improvement Channel (FIC) within north Chicopit Bay, and the reconnection of Great Marsh Island by restoration of up to 53 acres of salt marsh and meandering tidal channel. Work duration is estimated at 465 days. The Mile Point study area is located at the confluence of the St. Johns River and Intracoastal Waterway. It encompasses uplands, wetlands, and other intertidal and submerged lands

associated with all or a portion of HCFP, the two separated segments of Great Marsh Island, Chicopit Bay, Pablo Creek, and Mount Pleasant Creek. The approximate center of the work area is located at 30° 22' 44.90" N; 81° 27' 15.74" W. We submit the following comments in accordance with Section 7 of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 *et seq.*), the Marine Mammal Protection Act of 1972, (MMPA) as amended (16 U.S.C. 1361 *et seq.*), the Fish and Wildlife Coordination Act, as amended (FWCA; 16 U.S.C. 661 et seq.) and the National Environmental Policy Act, as amended (NEPA; 42 U.S.C. 4321-4347).

Endangered Species Act/Marine Mammal Protection Act

The Corps evaluated the TSP for potential impacts to federally-listed species and determined that the TSP occurs within the range of the West Indian (Florida) manatee (*Trichechus manatus latirostris*) and its designated critical habitat, the wood stork (*Mycteria americana*), and piping plover (*Charadrius melodus*). The Corps is consulting with the National Marine Fisheries Service on listed species within that agency's jurisdiction. Those species include the loggerhead (*Caretta caretta*), leatherback (*Dermochelys coriacea*), green (*Chelonia mydas*), and Kemp's ridley (*Lepidochelys kempii*) sea turtles in open water, as well as the shortnose sturgeon (*Acipenser brevirostrum*), small tooth sawfish (*Pristis pectinata*) and Northern right whale (*Eubalena glacialis*).

The Corps determined that the proposed TSP may affect, but is not likely to adversely affect, the wood stork. The Corps identified the study area as within the core foraging area of at least one wood stork breeding colony (Pumpkin Hill); a second colony occurs at the Jacksonville Zoo. Suitable foraging habitat in the form of a tidal channel and slough occur within Helen Cooper Floyd Park adjacent to Chicopit Bay and the St. Johns River. Both waters total less than an acre of habitat. The Corps proposes to create in excess of 1.6 acres of suitable foraging habitat in the form of a tidal channel as part of salt marsh restoration and reconnection of Great Marsh Island. This mitigation represents habitat compensation for the expected project impacts, and is consistent with the Wood Stork Key for central and north Peninsular Florida. As a result, we support the proposed habitat restoration and concur with the Corps' determination of effects on the wood stork. **We recommend that the Corps and its contractors commit to working with our agency to insure that the final plan for salt marsh and tidal channel restoration adequately compensates for the expected impacts to suitable wood stork foraging habitat.**

Regarding the piping plover, the Corps acknowledged that the TSP would eliminate approximately 2,800 feet of shoreline and contiguous emergent tidal flats along the southwestern side of HCFP. This habitat is not within designated critical wintering habitat for this species, and is approximately 2.6 miles southwest of the westernmost extent of such habitat. The Corps did not observe piping plovers foraging or roosting at this location during multiple site visits conducted in the fall and winter months. As a result, the Corps determined that the proposed TSP may affect, but is not likely to adversely affect, the piping plover and its designated critical wintering habitat. Our view is that there is ample foraging and roosting habitat within the designated FL-Unit 35. Habitat similar to the expected impact area exists between it and the designated unit. Based on the preceding, we concur

with the Corps' determination of effect for this species and its critical habitat. We will address mitigation of the expected habitat impacts in our comments provided under the FWCA and NEPA.

With respect to the manatee and its designated critical habitat, the available information for Duval County indicates that significantly fewer manatees have been observed in the vicinity of the study area compared to more upstream locations of the St. Johns River and its tributaries. Those sightings decrease further as colder weather and declining water temperatures cause animals to migrate south to warmer environments. The ICW, however, is a critical travel corridor for manatees during their spring and fall migrations. We therefore anticipate a temporary increase in the number of animals transiting the study area from March through May, and again from September through November.

Based on the available information, the Corps anticipates that the in-water work to remove a portion of the existing training wall and construct the two new walls will only occur during daylight hours. This work likely will be performed using a crane and barge. The Corps will require a dedicated manatee observer to be present for all in-water work associated with the removal and/or placement of boulders or other structures. The Corps also anticipates using a 16 inch cutter-suction dredge operating 24 hours a day, seven days a week. The dredged material will be piped to the wetland mitigation site. The excavated material likely will be mixed with the wetland and submerged sediments into a liquid slurry that also will be piped to the mitigation site. That site will be enclosed on its northern boundary by means of rock and possibly some number of flow-through concrete structure units (CSUs) serving as Wave Attenuation Devices (WADs). The southern boundary will be enclosed using geotextile tubes or bags filled with excavated material. Those structures will be left in place and are expected to gradually degrade over time.

Based on the preceding and the inclusion of the most recent standard manatee conditions for in-water work into the project plans and specifications, the Corps has determined that the TSP may effect, but is not likely to adversely affect, the manatee or its designated critical habitat.

The Corps in support of the above cites lack of evidence of take of a manatee from any dredging equipment, or the type of waterborne construction equipment being proposed for this work. Since completion of the project biological assessment, one such mortality was confirmed this past July within the Miami River (Carol Knox, FWC, pers. com). The mortality occurred during a mechanical dredge operation that was using a backhoe in approximately 10 – 12 feet of water. The backhoe bucket struck the animal and caused fatal internal injuries. There was no requirement for a dedicated and experienced manatee observer to be present.

It is our view that a hydraulic dredge in general poses less of a risk of adverse effects to manatee than mechanical dredging. Although we expect manatee presence within the study area to increase during the migratory periods, animals in migration tend to move quickly through the transient areas in route to their specific winter and summer grounds. Based on this, we expect the standard in-water conditions to be sufficient. **We do, however,**

recommend that the Corps include in the project's plans and specifications a requirement for all lighting associated with this operation to be of sufficient intensity and direction so as to provide all personnel enough illumination to observe for manatees with the unaided eye within the distances required under the standard in-water conditions.

We support use of a dedicated manatee observer, **equipped with polarized sunglasses and binoculars,** during removal and placement of training walls and other in-water structures, and the restriction of this work to daylight hours. **In the event mechanical methods are used to conduct the dredging, we recommend that an additional one to two dedicated observers be assigned to this work. All such persons shall be experienced in manatee observation as described in the manatee observer guidelines developed by the Florida Fish and Wildlife Conservation Commission. The Corps shall require the contractor to submit the name(s) of the dedicated observer(s) and supporting information on that observer's qualifications, for our review and concurrence prior to the commencement of the in-water work.**

Regarding the hours of in-water operations, we further recommend that the Corps define in the project plans and specifications the term "daylight hours" as "that period between one-half hour after sunrise to one-half hour before sunset".

A review of the proposed mitigation area revealed additional potential risks for manatees. Those risks include entrapment within the mitigation enclosure, entrainment within a CSU, and physical impacts from the dredge pipeline. In order to reduce these risks of adverse impacts to insignificant or discountable levels, we recommend the Corps include the following additional measures in its project plans and specifications.

- A requirement to limit the size of the openings within the CSUs to no more than 8 inches in diameter, and/or the grating of openings larger than 8 inches
- A requirement to securing the dredge pipeline such that its' placement does not impede manatee movement nor pose a potential physical risk to manatee from crushing, etc.
- A requirement to elevate the mitigation enclosure training wall and southern boundary structures to elevations that would preclude manatees from swimming over the top of the training wall/boundary structures into the enclosure during monthly flood tides
- A requirement to thoroughly inspect the enclosure just prior to final closure from the bay and/or river to insure no manatees are present within the enclosure. In the event of manatee presence within the enclosure, the animal(s) must be allowed to leave it of its (their) own volition, prior to proceeding with final construction
- A requirement to thoroughly inspect the enclosure following its closing to insure no manatees are trapped within it. In the event that one or more animals are observed within the enclosure, all work related to the enclosure must cease immediately. The contractor must notify the Corps without delay, and the Corps likewise contact our office (904)-731-3098 and the Florida Fish and Wildlife

Conservation Commission (FWCC) at 1-888-404-FWCC(3922), to discuss the appropriate response(s)

- In the event take of a manatee occurs as a result of the project, the Corps shall immediately discontinue work and contact our office and FWCC at the above numbers

The Corps has agreed to include all preceding measures and recommendations in its project plans and specifications. As a result, we concur with the Corps' determination that the proposed project will not adversely affect the manatee or its designated critical habitat. In addition, because no incidental take of manatees is anticipated, no such authorizations under the MMPA will be needed.

Although this does not represent a biological opinion as described in section 7 of the Act, it does fulfill the requirements of the Act and no further action is required. If modifications are made to the project; if the Corps/contractor fails to comply with the project plans and specifications; if additional information involving potential effects to listed species becomes available; or if unauthorized take of manatees occurs during construction, consultation will be reinitiated.

Fish and Wildlife Coordination Act/National Environmental Policy Act

The following comments fulfill our coordination requirements and public interest review under FWCA and NEPA, respectively.

The Corps has considered and evaluated five general alternative plans intended to address two major study objectives: the erosion of the Mile Point shoreline and unsafe inbound transit of deep-draft commercial navigation through the Mile Point area during ebb tide. Those plans were characterized by one or more management measures that would address either or both of the major considerations. The No Action alternative was also considered. The results were a total of 14 management measures that the Corps subjected to hydrodynamic modeling.

The results of the initial modeling, and further modeling of the 150-foot training wall reach channel widening measure under different conditions, indicated that relocation of the existing Mile Point Training Wall was the only measure that demonstrated significant change in the distribution and direction of the currents within the navigation channel. These changes met both study objectives.

Based on the above, and an additional cost evaluation of the disposal of the excavated and dredged material from the above relocation, the Corps developed a Tentatively Selected Plan having the following specifications.

- Removal of the western 3110 feet of the existing Mile Point training wall and the construction of a relocated Eastern leg training wall of approximately 2050 feet
- Mechanical excavation and hydraulic dredge of approximately 889,000 cubic

yards of uplands, wetlands, and submerged sediment from within and around the western end of HCFP to a depth of –13 feet mean low water to accommodate the relocated Eastern leg training wall

- Disposal via pipeline of the above material across the ICW and into an enclosed water area created by construction of a 4250-foot training wall across the northern side of the breakthrough at Great Marsh Island. The southern boundary of this enclosure will extend approximately 1200 feet. Redistribution of this material and its seed/root source, supplemented by planting of marsh vegetation are expected to result in the restoration of up to 53 acres of vegetated high and low salt marsh and meandering tidal channel.
- Dredging of a 3623-foot Flow Improvement Channel to a depth of – 7 feet mean low water, along the western side of north Chicopit Bay. The resulting spoil will be placed into the Great March Island restoration area. The FIC is expected to offset any adverse effects to flow within the bay and contiguous Mount Pleasant Creek that may result from the closing of the breakthrough of Great Marsh Island

All usable stone material recovered from the existing training wall will be stockpiled for reuse in either the West or East Leg of the relocated training wall. That material, as well as additional stone and all other materials, equipment, and supplies required for this project are likely to be stockpiled within the middle section of HCFP. Off-loading is likely to occur via one or more barges. The additional materials include Concrete Structure Units that will be part of the West Leg training wall. These CSUs are designed to remain stable while having openings that will permit tidal flow into and out of the northern side of the restoration area. Containment along the southern boundary of the site will be accomplished by means of geotextile bags and tubes filled with excavated material. Both these structures are designed to degrade in time, leaving a natural marsh slope along the bay side of the restoration area.

The vegetated wetlands associated with the impact area represent typical high and low estuarine salt marsh and vegetation typical of the transitional zone between high marsh and uplands. There is an extensive, shallow tidal channel on the southern side of HCFP that supports a variety of benthic fauna and epifauna, including annelids, molluscs, gastropods, crustaceans, and finfish. A fringing salt marsh and tidal slough occurs along the northern side of HCFP between the uplands and existing training wall. Due to its narrowness and abrupt elevation changes, its vegetative community appears somewhat less diverse than the southern wetlands. A submerged, shallow littoral shelf is contiguous to the southern marsh, as is an approximately 1300-foot linear stretch of intertidal sand beach that lies within the impact area. The adjacent disturb uplands contain a variety of woody and herbaceous vegetation similar to that found on the numerous other spoil disposal sites along the St. Johns River and ICW. All of the above directly or indirectly support various species of shorebirds, wading birds, and passerines. The Corps intends to cut down the woody vegetation within the impact area and remove it off site to an approved landfill. The excavated sediment and remaining plant material will be mixed with the dredged sediments for pipeline transport to the restoration site. Elevations at the restoration site will be carefully calculated and field calibrated to insure successful establishment of both high and low marsh flora and fauna.

As noted throughout the Environmental Assessment, the U.S. Fish and Wildlife Service has generally been supportive of the Corps' proposal to restore salt marsh habitat and reconnect Great Marsh Island. We also agree in general with the results of the Unified Mitigation Assessment Methodology applied to both the impact and restoration areas. The current restoration plan does not, however, include re-establishment of the sand beach or littoral shelf as described previously. Such habitats as we noted above are vital components of the coastal strand. **As a result, we recommend that the Corps add the re-establishment of these important habitats in its wetland mitigation plan or as a separate item in its overall project plans and specifications.**

The dredging of the FIC is intended to recreate channel and tidal conditions present within north Chicopit Bay and Mt. Pleasant Creek prior to the breakthrough at Great Marsh Island. However, as a result of the breakthrough and the settling of sand and silt within north Chicopit Bay from that and other areas of erosion, significant emergent shoals have developed within the area. These habitats now provide importing foraging and roosting sites for shorebirds and seabirds on the ebb tide. It appears that the FIC has the potential to impact directly some of these shoals, while the expected increase in boat traffic indirectly may disturb the avifauna using the remaining shoals. **Based on this assessment, we also recommend that the Corps determine the extent of any such impacts, and mitigate for the loss of this habitat by creating additional emergent shoal habitat in more remote and protected locations within north Chicopit Bay.**

In summary, it is our position that the TSP contains actions that will impact terrestrial, aquatic, and semi-aquatic ecosystems and their communities. We support the proposed actions intended to mitigate and compensate for some of those impacts, and strongly urge the Corps to consider our additional recommendations to extend that mitigation to other habitats. Our finding is that as a result of those actions and the abundance of shallow, open-water habitat within and adjacent to the study area, the tentatively selected plan to improvement local navigation and shoreline erosion in the Mile Point area of Jacksonville Harbor will not have significant, long-term impacts on Federal Trust and other natural resources. This represents the finding of our agency and does not incorporate the comments or findings of other agencies of the Department of the Interior.

If you have any questions regarding this response, please contact Mr. John Milio of my staff at the address on the letterhead, or by calling (904) 731-3098.

Sincerely,

for David L. Hankla
Field Supervisor

cc:

Mr. George Getsinger, NMFS
Ms. Barbara Goodman, NPS, Timucuan Ecological and Historic Preserve
Ms. Carol Knox
Fish and Wildlife Conservation Commission
Division of Habitat and Species Conservation
Imperiled Species Management Section
620 South Meridian Street
Tallahassee, Florida 32399

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Southeast Regional Office
263 13th Avenue South
St. Petersburg, FL 33701-5505
(727) 824-5312, FAX (727) 824-5309
http://sero.nmfs.noaa.gov

F/SER31:CH

JUL 13 2011

Mr. Eric Summa
Jacksonville District Corps of Engineers
P.O. Box 4970
Jacksonville, FL 32232

Re: Jacksonville Harbor Mile Point Navigational Study

Dear Mr. Summa:

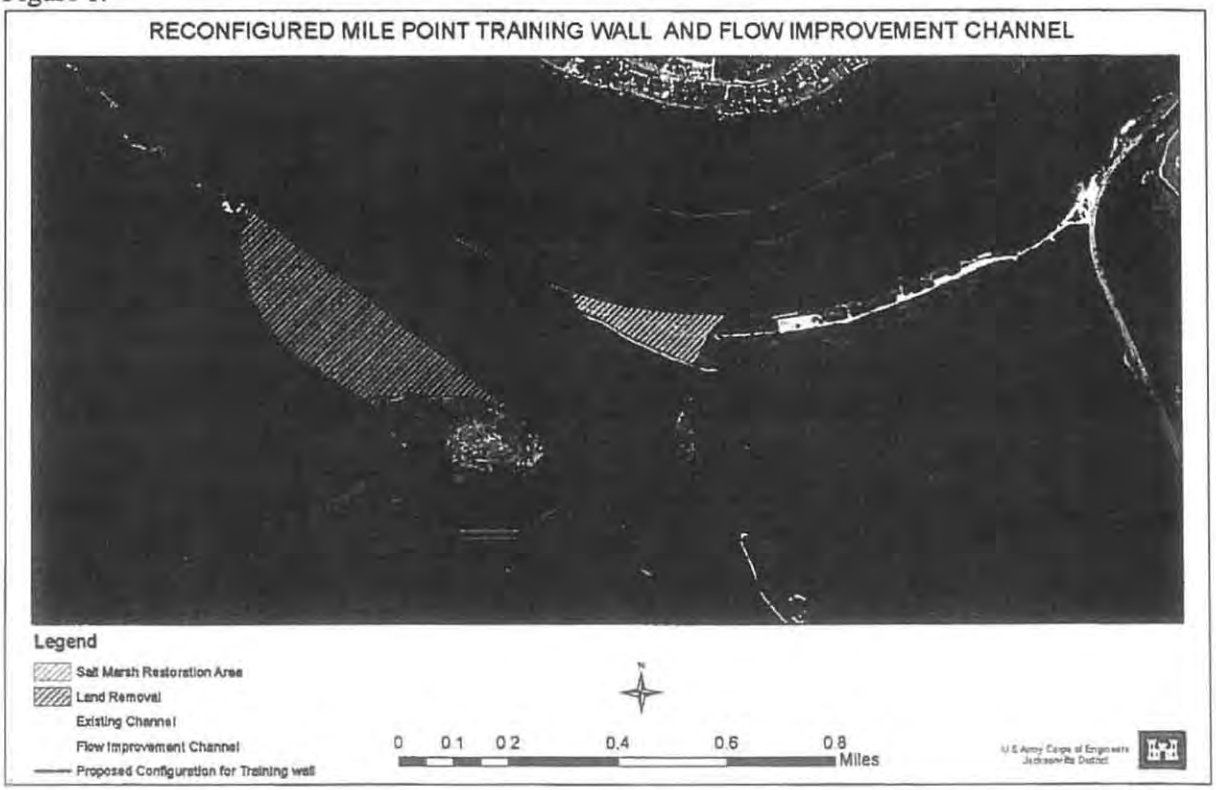
This letter responds to your April 25, 2011, letter regarding Jacksonville Harbor (Mile Point) Navigational study that proposes to alleviate erosive forces along the Mile Point shoreline and eliminate or reduce navigation restrictions to deep-draft vessels at Mile Point. Initially, the COE requested Endangered Species Act (ESA) consultation on the Mile Point Navigational study by letter dated August 14, 2008; however, the information that was provided to us was insufficient to evaluate the project's effects on listed species. Subsequently, NMFS requested additional information and completion of a biological evaluation via e-mail on October 1, 2008. The COE reinitiated consultation with NMFS via e-mail on March 17, 2011. During correspondence, NMFS requested that the COE demonstrate that the Mile Point Navigational study was a separate action from, and thus was not interrelated to, the Jacksonville Harbor Deepening action. On April 25, 2011, the COE provided a biological evaluation and an explanation that demonstrated that the Mile Point Navigation study is a separate action independent of the Jacksonville Harbor Deepening action and that both projects are operating under separate project authorities. You determined the Mile Point project may affect, but is not likely to adversely affect, smalltooth sawfish, swimming sea turtles, and shortnose sturgeon and requested our concurrence, pursuant to Section 7 the Endangered Species Act (ESA). NMFS' determinations regarding the effects of the proposed action are based on the description of the action in this informal consultation. You are reminded that any changes to the proposed action may negate the findings of the present consultation and may require reinitiation of consultation with NMFS.

The Mile Point project is located at 30.3836°N and 81.4522°W (North American Datum of 1983) on the St. Johns River, Jacksonville, Duval County, Florida. The project area (Mile Point) consists of 5,000 feet of shoreline located along the north shore of the St. Johns River between river mile 4 and 5, east of the Intracoastal Waterway (ICW). The ICW intersects with the St Johns River, at nearly a 90-degree angle approximately 5 river miles above the mouth of the St. Johns River. The confluence angle formed where the ICW meets the St. Johns River causes strong crosscurrents, primarily during ebb tides. The St. Johns River flows in a southeasterly direction during ebb tide while the ICW flows in a northwesterly direction; thus, the combination of high flow and the confluence angle causes a

deflection of the main channel's flow to the northeast. The proposed action would reduce crosscurrents on the Mile Point shoreline, thereby reducing and/or eliminating restrictions to navigation and slowing erosion in the project area.

The COE proposes to reconfigure the existing training wall, restore Great Marsh Island using dredged material, and create a flow improvement channel into Chicopit Bay (Figure 1). Relocation of the Mile Point Training Wall (MPTW) includes the removal of the western 3,110 feet of the existing training wall and the construction and relocation of approximately 2,050 feet of the East Leg Training Wall (ELTW). The ELTW incorporates a larger scour apron (25 feet) than the western training wall (10 feet), due to the predicted permanent shift of stronger currents from the east. The relocated ELTW consists of reconstructing 2,050 feet of the training wall and connecting it to the existing structure at Helen Cooper Floyd Park. The West Leg Training Wall (WLTW) consists of constructing 4,250 feet of the training wall across the breakthrough at Great Marsh Island. Construction and relocation activities will require the excavation of approximately 889,000 cubic yards of material. Dredged material will be used to restore 53 acres of salt marsh at the breakthrough at Great Marsh Island and as foundation for the relocated/constructed training walls. It is estimated that approximately14,600 cubic yards of suitable stone material will be recovered from training wall removal. Suitable material will be stockpiled and reused at either the ELTW or the WLTW.

Figure 1.



The salt marsh restoration area is located in an area where the Great Marsh Island had previously occurred, but has since been eroded by the strong crosscurrents at Mile Point. Restoring 53 acres of salt marsh at the breakthrough area at Great Marsh Island will prevent further erosion and

deterioration of the island and the marsh. The flow improvement channel will be constructed to offset any impacts caused by closing off and restoring the marsh area at the breakthrough. The flow improvement channel will improve water quality and flushing in Chicopit Bay. The construction of the flow improvement channel consists of dredging a channel 80 feet wide, 6 feet deep, and 3,623 feet in length through western Chicopit Bay. Dredged material will be used at the Great Marsh Island restoration area. Construction activities will be completed using landside excavators, a cutter-suction dredge, and cranes and barges. Landside excavators will be used to remove material above the mean high water line. A 16-inch cutter-suction dredge will be used to remove material to -13 feet mean low water and perform dredging for the flow improvement channel. Barge-mounted cranes will be required to remove stone segments of the training wall to be removed; this equipment will also be used during construction of the East and West legs of the training walls. The entire project is expected to take 16 months to complete. However, in order to achieve desired elevation, the salt marsh restoration area may need to be adjusted approximately 1 year after initial settling. The applicant will be required to comply with NMFS' Sea Turtle and Smalltooth Sawfish Construction Conditions, dated March 23, 2006.

Five species of sea turtles (loggerhead, green, hawksbill, Kemp's ridley, and leatherback), smalltooth sawfish, and shortnose sturgeon, protected by the ESA, can be found in or near the action area and may be affected by the project. The project is not located within designated critical habitat for any listed species under NMFS' purview. NMFS believes the proposed work is not likely to adversely affect any listed species or designated critical habitat under our purview. Sea turtles, smalltooth sawfish, and shortnose sturgeon could be injured or killed as a result of potential interactions with dredging equipment; however, we believe this effect is discountable because these species are highly mobile and likely to avoid the area during construction. Moreover, NMFS has previously determined that non-hopper-type dredging activities, including cutter-suction dredges, are not likely to adversely affect sea turtles, sturgeon, and sawfish.[1] Sea turtles, smalltooth sawfish, or shortnose sturgeon may be affected by being temporarily unable to forage at the site due to potential avoidance of dredging activities, but these effects will be temporary and there are adequate existing, adjacent foraging and refuge resources available outside of the construction area. Listed species may be affected by being temporarily unable to use the site due to potential avoidance of construction activities and related noise, and physical exclusion from areas contained by turbidity curtains, but these effects will be insignificant. Disturbance from construction activities and related noise will be intermittent and only occur during the day for part of the construction period and turbidity curtains will only enclose small areas at any one time in the project area, will be removed upon project completion, and will not appreciably interfere with use of the area by listed species.

This concludes your consultation responsibilities under the ESA for species under NMFS' purview. Consultation must be reinitiated if a take occurs or new information reveals effects of the action not previously considered, or the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat in a manner or to an extent not previously considered, or if a new species is listed or critical habitat designated that may be affected by the identified action.

[1] November 19, 2003, biological opinion to U.S. Army Corps of Engineers, Combined Gulf of Mexico Districts, on the continued hopper dredging of channels and borrow areas in the Gulf of Mexico.

We have enclosed additional information on other statutory requirements that may apply to this action, and on NMFS' Public Consultation Tracking System to allow you to track the status of ESA consultations. If you have any questions, please contact Calusa Horn by e-mail at Calusa.Horn@noaa.gov. Thank you for your continued cooperation in the conservation of listed species.

Sincerely,

Miles M. Croom

for Roy E. Crabtree, Ph.D.
Regional Administrator

Enclosure

File: 1514-22.F.4
Ref: I/SER/2011/01796

PCTS Access and Additional Considerations for ESA Section 7 Consultations (Revised 7-15-2009)

Public Consultation Tracking System (PCTS) Guidance: PCTS is an online query system at **https://pcts.nmfs.noaa.gov/** that allows federal agencies and U.S. Army Corps of Engineers' (COE) permit applicants and their consultants to ascertain the status of NMFS' Endangered Species Act (ESA) and Essential Fish Habitat (EFH) consultations, conducted pursuant to ESA section 7, and Magnuson-Stevens Fishery Conservation and Management Act's (MSA) sections 305(b)2 and 305(b)(4), respectively. Federal agencies are required to enter an agency-specific username and password to query the Federal Agency Site. The COE "Permit Site" (no password needed) allows COE permit applicants and consultants to check on the current status of Clean Water Act section 404 permit actions for which NMFS has conducted, or is in the process of conducting, an ESA or EFH consultation with the COE.

For COE-permitted projects, click on "Enter Corps Permit Site." From the "Choose Agency Subdivision (Required)" list, pick the appropriate COE district. At "Enter Agency Permit Number" type in the COE district identifier, hyphen, year, hyphen, number. The COE is in the processing of converting its permit application database to PCTS-compatible "ORM." An example permit number is: SAJ-2005-000001234-IPS-1. For the Jacksonville District, which has already converted to ORM, permit application numbers should be entered as SAJ (hyphen), followed by 4-digit year (hyphen), followed by permit application numeric identifier with no preceding zeros. For example: SAJ-2005-123; SAJ-2005-1234; SAJ-2005-12345.

For inquiries regarding applications processed by COE districts that have not yet made the conversion to ORM (e.g., Mobile District), enter the 9-digit numeric identifier, or convert the existing COE-assigned application number to 9 numeric digits by deleting all letters, hyphens, and commas; converting the year to 4-digit format (e.g., -04 to 2004); and adding additional zeros in front of the numeric identifier to make a total of 9 numeric digits. For example: AL05-982-F converts to 200500982; MS05-04401-A converts to 200504401. PCTS questions should be directed to Eric Hawk at Eric.Hawk@noaa.gov. Requests for username and password should be directed to PCTS.Usersupport@noaa.gov.

EFH Recommendations: In addition to its protected species/critical habitat consultation requirements with NMFS' Protected Resources Division pursuant to section 7 of the ESA, prior to proceeding with the proposed action the action agency must also consult with NMFS' Habitat Conservation Division (HCD) pursuant to the MSA requirements for EFH consultation (16 U.S.C. 1855 (b)(2) and 50 CFR 600.905-.930, subpart K). The action agency should also ensure that the applicant understands the ESA and EFH processes; that ESA and EFH consultations are separate, distinct, and guided by different statutes, goals, and time lines for responding to the action agency; and that the action agency will (and the applicant may) receive separate consultation correspondence on NMFS letterhead from HCD regarding their concerns and/or finalizing EFH consultation.

Marine Mammal Protection Act (MMPA) Recommendations: The ESA section 7 process does not authorize incidental takes of listed or non-listed marine mammals. If such takes may occur an incidental take authorization under MMPA section 101 (a)(5) is necessary. Please contact NMFS' Permits, Conservation, and Education Division at (301) 713-2322 for more information regarding MMPA permitting procedures.

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CESAJ-PD-EC 06 September 2011

MEMORANDUM FOR RECORD

SUBJECT: Coordination Act Report for the Jacksonville Milepoint Dredging and Dredge Materials Management Plan and Environmental Assessment.

PURPOSE: To document an informal understanding between the U.S. Army Corps of Engineers, Jacksonville District, and the U.S. Fish and Wildlife Service, North Florida Field Office.Project Information

Project Description. Mile Point is located within the City of Jacksonville, Duval County, Florida. It consists of 5,000 feet of shoreline located along the north shore of the St. Johns River, primarily between river miles 4 and 5, and east of the Intracoastal Waterway (IWW). The approximate center of the proposed work area is located at the following coordinates: 30° 22' 44.90" N; 81° 27' 15.74" W. The preferred alternative is to relocate the Mile Point Training wall along with adding a Chicopit Bay flow improvement channel. This is the Tentatively Selected Plan (TSP) which combines the reconfiguration of the existing training wall, restoration of Great Marsh Island which is the least cost dredged material disposal option, and the creation of a flow improvement channel in Chicopit Bay. The least cost disposal method is to restore the breakthrough at Great Marsh Island by placing dredged material at the Island and constructing a Western Leg Training Wall, approximately 4,250 feet. Restoration of this area provides an opportunity to address impacts caused by the physical decay of the ecosystem through erosion of natural habitat caused by the crosscurrents. Without the project, Great Marsh Island will continue to erode. Restoring Great Marsh Island is both the least cost alternative for dredged material and also provides 53 acres of salt marsh restoration. This alternative provides incidental environmental benefits in addition to providing mitigation for the 8.15 acres impacted by the training wall removal.

Coordination.

The Fish and Wildlife Coordination Act (FWCA; 16 U.S.C. 661 et seq., March 10, 1934, as amended 1946, 1958, 1978, and 1995) requires Federal agencies to consult with the U.S. Fish and Wildlife Service (Service) regarding the impacts to fish and wildlife resources and the proposed measures to mitigate these impacts. Additional coordination authorities exist through the National Environmental Policy Act (NEPA; 42 U.S.C. 4321-4347, January 1, 1970, as amended 1975 and 1982) review process and the consultations required under the Endangered Species Act of 1973 (ESA; 7 U.S.C. 136, 16 U.S.C. 1531 et seq., December 28, 1973). The Service has been in coordination and consultation with the Corps through NEPA and the ESA in which impacts to fish and wildlife resources adequately addressed via these two authorities. The Service will include comments relevant to FWCA in the Service's response to the Corps' Biological Assessment. The Corps and the Service agree to utilize the NEPA review and ESA consultation processes to complete coordination responsibilities under the FWCA. This agreement will avoid duplicate analysis and documentation as authorized under 40 CFR section 1500.4(k), 1502.25, 1506.4, and is consistent with Presidential Executive Order for Improving Regulation and Regulatory Review, released 18 January 2011.

Florida Department of
Environmental Protection
Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Rick Scott
Governor

Jennifer Carroll
Lt. Governor

Herschel T. Vinyard Jr.
Secretary

September 9, 2011

Mr. Paul E. Stodola
Jacksonville District, Planning Division
U. S. Army Corps of Engineers
Post Office Box 4970
Jacksonville, FL 32232-0019

RE: U. S. Department of the Army, Jacksonville District Corps of Engineers
Draft Integrated Feasibility Report and Environmental Assessment
Jacksonville Harbor (Mile Point) Navigation Study - Duval County, Florida
SAI # FL201107115851C (Reference Previous SAI # FL200804024147C)

Dear Mr. Stodola:

The Florida State Clearinghouse has coordinated a review of the above-captioned Draft Integrated Feasibility Report and Environmental Assessment (IFR/EA) under the following authorities: Presidential Executive Order 12372; Section 403.061(42), *Florida Statutes*; the Coastal Zone Management Act, 16 U.S.C. §§ 1451-1464, as amended; and the National Environmental Policy Act, 42 U.S.C. §§ 4321-4347, as amended.

The Florida Department of Environmental Protection (DEP) staff notes that the project will require an Environmental Resource Permit (ERP) under Part IV of Chapter 373, *Florida Statutes*, from the Northeast District Office in Jacksonville. The proposed project impacts to jurisdictional wetlands and/or surface waters, and any proposed mitigation activities offsetting those impacts, will be assessed in accordance with Chapter 62-345, *Florida Administrative Code*.

DEP's Hydrographic Engineer has reviewed the Draft IFR/EA and concurs with the modeling study results for the Tentatively Selected Plan (TSP). Crosscurrents and eddies are key hydrodynamic factors affecting river shoreline stability, particularly in the river winding area. The study results showed that the TSP would reduce shoreline erosion and navigational impediments in the river to improve navigation in Jacksonville

Harbor. DEP's engineering and permitting staff have the following questions and concerns about the Chicopit Bay Flow Improvement Channel (FIC), the new western training wall and the reconfigured eastern training wall:

- The report indicated that post-construction, the peak flow velocities in the vicinity of the FIC (*i.e.*, near the mouth of the Chicopit Bay, leading to the Intracoastal Waterway) would be 3.6 feet per second. What are the peak flow velocities at the same location if the FIC is <u>not</u> constructed?

- Since related local water velocity will diminish after the initial dredging, the FIC may become a sediment/sand trap as tidal and riverine currents move sediments into the channel. Reportedly, port representatives stated in a public meeting that they have no plans to maintenance-dredge the FIC after its excavation. What are the Corps' plans for future maintenance-dredging of the FIC to keep it open?

- Currently, flows from Mt. Pleasant Creek enter the St. Johns River through the area that will become the material placement/mitigation restoration site (*i.e.*, between the eastern and western portions of Great Marsh Island). Upon construction of the new western training wall and the placement of the dredged material, this northward flow of the creek will be eliminated. Will the FIC improvements fully compensate for the loss of this flow vector? Again, what plans are available to maintain the FIC and sustain access to Mt. Pleasant Creek?

- If the western training wall is constructed prior to creation of the FIC, sediments from the upstream drainage basin will accumulate in West Chicopit Bay and flushing is at risk of deteriorating. The same risk would occur if the FIC is not maintained, as stated above. Until a sustainable maintenance commitment is identified and construction sequencing of the western wall, restoration site and FIC are addressed to prevent flushing impairment, the DEP may not have the reasonable assurance necessary to provide State Water Quality Certification for the project as presented in the Draft IFR/EA.

- The reconfigured eastern training wall will block an existing channel between Helen Cooper Floyd Park and a salt marsh island directly south of the park that leads to the eastern portion of Chicopit Bay. Another channel exists south of the salt marsh island between San Pablo Creek and eastern Chicopit Bay, but its bathymetry appears shallower than the planned FIC. Will the new eastern training wall significantly impact the channel hydrology to East Chicopit Bay? How will the change in flow velocities affect wetland habitat along the shoreline of the salt marsh island?

Further coordination with DEP's Northeast District staff is recommended to facilitate resolution of the above issues. For additional information and assistance, please contact Mr. Jim Maher, P.E., at (904) 256-1650 or Ms. Connie Webel at (904) 256-1652.

The Florida Fish and Wildlife Conservation Commission (FWC) advises that in-water work on the project could adversely affect the Florida manatee and marine turtles. Since no information was provided detailing the timing or duration of the proposed construction and dredging activities, FWC cannot recommend specific avoidance and minimization measures for the manatee, other than the 2011 Standard Manatee and Marine Turtle Construction Conditions for in-water work. As more details become available, further consultation with FWC staff will be necessary to determine the site-specific conservation measures for the project. The following additional information should be included in the Final IFR/EA to facilitate FWC's future review of the project: complete and detailed plans for the Great Marsh Island restoration, and habitat surveys identifying and quantifying affected marine habitats. For additional information and assistance, please refer to the enclosed FWC letter and contact Ms. Kristen Nelson Sella at (850) 922-4330.

The St. Johns River Water Management District (SJRWMD) notes that its staff has been communicating directly with the U. S. Army Corps of Engineers regarding the hydrologic effects of the project, such as the potential for erosion to affect the shoreline and emergent vegetation within Chicopit Bay, and will continue this coordination. The SJRWMD advises that a high mortality rate among young dolphins was reported during deepening of the St. Johns River navigation channel. Staff therefore recommends the careful placement of dredge spoil pipes along the river channel near active populations, to avoid potential impairment of communications between adult and juvenile dolphins. For additional information, please see the enclosed SJRWMD comments. Should you require further details or assistance, please contact Mr. Dean Campbell, SJRWMD Technical Program Manager, at (386) 329-4360.

Based on the information contained in the Draft IFR/EA and the enclosed state agency comments, the state has determined that, at this stage, the proposed federal action is consistent with the Florida Coastal Management Program (FCMP). To ensure the project's continued consistency with the FCMP, the concerns identified by reviewing agencies must be addressed prior to project implementation. The state's continued concurrence will be based on the activity's compliance with FCMP authorities, including federal and state monitoring of the activity to ensure its continued conformance, and the adequate resolution of issues identified during this and subsequent reviews. The state's final concurrence of the project's consistency with the FCMP will be

determined during the environmental permitting process in accordance with Section 373.428, *Florida Statutes*.

Thank you for the opportunity to review the proposal. Should you have any questions regarding this letter, please contact Ms. Lauren P. Milligan at (850) 245-2170.

Yours sincerely,

Sally B. Mann

Sally B. Mann, Director
Office of Intergovernmental Programs

SBM/lm
Enclosures

cc: Jodi Conway, DEP, Northeast District
Roxane Dow, DEP, BBCS
Joe Walsh, FWC
Steve Fitzgibbons, SJRWMD

Project Information	
Project:	FL201107115851C
Comments Due:	08/19/2011
Letter Due:	09/20/2011
Description:	DEPARTMENT OF THE ARMY, JACKSONVILLE DISTRICT CORPS OF ENGINEERS - DRAFT INTEGRATED FEASIBILITY REPORT AND ENVIRONMENTAL ASSESSMENT, JACKSONVILLE HARBOR (MILE POINT) NAVIGATION STUDY - JACKSONVILLE, DUVAL COUNTY, FLORIDA.
Keywords:	ACOE - JACKSONVILLE HARBOR (MILE POINT) NAVIGATION STUDY - DUVAL CO.
CFDA #:	12.107

Agency Comments:

NE FLORIDA RPC - NORTHEAST FLORIDA REGIONAL PLANNING COUNCIL

No Comments

DUVAL - DUVAL COUNTY

No comments from the Duval County Planning and Development Department.

FISH and WILDLIFE COMMISSION - FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

The FWC advises that in-water work could adversely affect the Florida manatee and marine turtles. Since no information was provided detailing the timing or duration of the proposed construction and dredging activities, FWC cannot recommend specific avoidance and minimization measures for the manatee, other than the 2011 Standard Manatee and Marine Turtle Construction Conditions for in-water work. As more details become available, further consultation with FWC staff will be necessary to determine the site-specific conservation measures for this project. Staff requests that additional information be included in the Final IFR/EA to facilitate FWC's review and future state permitting of the proposal: complete detailed Great Marsh Island restoration plans and habitat surveys identifying and quantifying the affected marine habitats. For additional information and assistance, please refer to the enclosed FWC letter and contact Ms. Kristen Nelson Sella at (850) 922-4330.

STATE - FLORIDA DEPARTMENT OF STATE

No Comment/Consistent

TRANSPORTATION - FLORIDA DEPARTMENT OF TRANSPORTATION

The FDOT Seaport Office and District Two have no comments.

ENVIRONMENTAL PROTECTION - FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

DEP staff notes that an ERP under Part IV of Chapter 373, F.S., will be required from the Northeast District Office in Jacksonville. The proposed project impacts to jurisdictional wetlands and/or surface waters, and any proposed mitigation activities offsetting those impacts, will be assessed in accordance with Chapter 62-345, F.A.C. The DEP's Hydrographic Engineer has reviewed the Draft IFR/EA and concurs with the modeling study results for the Tentatively Selected Plan (TSP). The crosscurrent/eddy is a key hydrodynamic factor affecting river shoreline stability, typically in the river winding area. The study results showed that this plan will reduce shoreline erosion and navigation restrictions to improve navigation in Jacksonville Harbor. Questions arise, however, from the engineer and ERP permitting staff regarding the new Chicopit Bay Flow Improvement Channel (FIC), new western training wall and reconfigured eastern training wall. Further coordination with DEP Northeast District staff is recommended to facilitate resolution of the referenced issues. For additional information and assistance, please refer to the state clearance letter and contact Mr. Jim Maher, P.E., at (904) 256-1650 or Ms. Connie Webel at (904) 256-1652.

ST. JOHNS RIVER WMD - ST. JOHNS RIVER WATER MANAGEMENT DISTRICT

District staff have been communicating directly with the U.S. Army Corps of Engineers about this project (e.g., relative to concerns about hydrologic effects, such as the potential for erosion to affect the shoreline and emergent vegetation within Chicopit Bay) and will continue this coordination. The Tentatively Selected Plan includes adding a Chicopit Bay flow improvement channel, which involves dredging. USACE should work closely with the marine mammal experts at the University of North Florida to develop and use best management practices that will protect the resident dolphin population from dredging-related impacts. [-- Background information/note: Last year, the St. Johns River experienced a well-documented marine mammal mortality event. In addition, there was an unusually high death rate among young dolphins occurred coincident with the deepening of the St. Johns River Channel. Although it is not certain, it has been suggested that the placement of the dredge spoil pipes along the channel of the river in a location where the river's dolphin population is active, and at a time when young dolphins are still reliant upon their mothers, may have impaired the ability of mothers and their young to communicate. For further information, please contact District Technical Program Manager, Dean Campbell, at (386) 329-4360.--]

Florida Fish and Wildlife Conservation Commission

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Kathy Barco
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Managing fish and wildlife resources for their long-term well-being and the benefit of people.

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32399-1600
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Hearing/speech-impaired:
(800) 955-8771 (T)
(800) 955-8770 (V)

MyFWC.com

September 2, 2011

Ms. Lauren P. Milligan
Department of Environmental Protection
Florida State Clearinghouse
3900 Commonwealth Boulevard, M.S. 47
Tallahassee, FL 32399-3000
Lauren.Milligan@dep.state.fl.us

RE: SAI #FL201107115851C, Jacksonville District Corps of Engineers – Draft Integrated Feasibility Report and Environmental Assessment – Jacksonville Harbor (Mile Point) Navigation Study – Duval County

Dear Ms. Milligan:

The Division of Habitat and Species Conservation, Imperiled Species Management Section, of the Florida Fish and Wildlife Conservation Commission (FWC) has coordinated our agency's review of the Draft Integrated Feasibility Report and Environmental Assessment (EA) for Jacksonville Harbor (Mile Point) Navigation Study-Duval County, Florida. We are providing the following input under the National Environmental Policy Act, the Fish and Wildlife Coordination Act, and the Coastal Zone Management Act/Florida Coastal Management Program (CZMA/FCMP).

Project Description

The project is located at Mile Point in Jacksonville Harbor, Duval County. Mile Point consists of approximately 5000 feet of shoreline located along the north side of the St. Johns River and east of the Intracoastal Waterway (IWW). The study evaluated the Mile Point erosion problem and analyzed options that would reduce or relocate difficult cross currents during the ebb flow. The Tentatively Selected Plan is to relocate the existing Mile Point training wall along with adding a Chicopit Bay flow improvement channel, locating both of these features along the south shore of the St. Johns River at the intersection with the IWW. This would include the removal of the western 3110 feet of the existing training wall and the construction of a relocated Eastern Leg training wall of approximately 2050 feet. The proposed estimate of dredged material is 889,000 cubic yards.

Potentially Affected Resources

Wildlife and their habitats: Once an alternative is selected and an application is submitted, the FWC will be able to more thoroughly review and provide more specific comments on the project; until then, we are submitting general comments. Listed species that may occur in the study area are included in the table below.

Scientific Name	Common Name	Status*
Trichechechus manatus latirostris	Florida manatee	FE
Eubalaena glacialis	Northern right whale	FE
Charadrius melodus	Piping plover	FT
Haemotopus palliatus	American oystercatcher	SSC
Mycteria americana	Wood stork	FE

Caretta caretta	Loggerhead sea turtle	FT
Chelonia mydas	Green sea turtle	FE
Lepidochelys kempii	Kemp's ridley sea turtle	FE
Acipenser brevirostrum	Shortnose sturgeon	FE
Pristis pectinate	Smalltooth sawfish	FE

* SSC – State Species of Special Concern; FT - Federally Threatened; FE - Federally Endangered. Federally listed species are also included on the Florida Endangered and Threatened Species list as "Federally designated endangered and threatened species."

The project would impact approximately 8.15 acres of saltmarsh habitat at Helen Cooper Floyd Park, which has been identified as Essential Fish Habitat. In addition, our staff notes that there may be impacts to potential nesting habitat for the American oystercatcher.

Issues and Recommendations

Impacts to wildlife: In-water work could adversely affect the Florida manatee and marine turtles. Since no information was provided in terms of the need for, or seasonality of, the length of or duration of project work, nor whether dredging will be utilized, it would be premature for us to recommend specific avoidance and minimization measures for the manatee at this time. While we have no preference regarding the alternatives, we do not foresee that potential adverse impacts associated with this work could not be adequately offset with appropriate conservation measures. Possible manatee conservation measures that may be recommended by our agency could include restrictions on blasting; monitoring of turbidity barriers; exclusionary grating on culverts; requiring the presence of qualified manatee observers during in-water work; a defined or limited construction window; and no nighttime work. Once more details become available, further coordination with our agency will be necessary in order to determine site-specific measures for this project. At a minimum, we suggest that the 2011 Standard Manatee and Marine Turtle Construction Conditions for in-water work (enclosed) be incorporated into these documents as conservation measures and followed for all in-water activity.

Impacts to habitat: There are currently multiple information gaps related to potential habitat impacts and habitat restoration aspects of the proposed project. If the Corps of Engineers includes the information requested below in the final EA, it would facilitate our review of the project and accelerate the future permitting process. In addition, this information will provide the FWC's marine habitat staff with information that will assist them in providing technical recommendations towards successful habitat minimization and mitigation. Therefore, we recommend that the following information be included in the final EA:

1. Complete detailed restoration plans so state agencies can assess the habitat restoration/mitigation aspects of this project, including:

    a) Potential effects that the newly proposed channel may have on the southeast portion of Great Marsh Island;
    b) The total amount of fill required to create the Great Marsh Island restoration site and identify the individual sources of fill and the amount of fill that will be used from each site;
    c) Proposed construction elevations for Great Marsh Island and the expected subsidence elevations; and

d) Origin of nursery stock that will be used for planting the restoration sites and the species that will be used.

2. The results of habitat surveys identifying and quantifying the existing marine habitats that would be impacted by the proposed project, other than the 8.15 acres of salt marsh at Helen Cooper Floyd Park.

3. Identify the material that would be used to construct the new training wall as well as the construction designs for the structures. If possible, include a discussion on the potential types of construction methodology.

Summary

As information is developed for this project that is not available at this time, FWC may have additional comments regarding appropriate conservation measures. We have confirmed the appropriateness of a phased consistency determination with the Corps of Engineers (*pers. communication* Paul Stodola, August 31st, 2011), and FWC and the Corps are in agreement that the final consistency determination will be provided during the permitting phase when all the details will be available. Therefore, FWC is evaluating this project for CZMA consistency using a phased approach pursuant to 15 CFR 930.36(d). The information available in the draft EA outlines the conceptual plan and design of the project, and FWC agrees that this concept is consistent with provisions in the FCMP. Because details are still forthcoming, the final CZMA consistency for the project will be evaluated during the environmental permitting process. As this project moves forward, please have your agency staff and the applicant's representatives coordinate with my office as needed. We can be contacted at FWCConservationPlanningServices@MyFWC.com or I can be called directly at 850-413-6966. If your staff has any specific questions regarding our comments in this letter, I encourage them to contact Kristen Nelson Sella at (850) 922-4330 or Kristen.Sella@MyFWC.com.

Sincerely,

Joseph Walsh, Ph.D.
Sub-section Leader
Habitat Conservation Scientific Services Section

jw/kns
ENV 1-3-2
Jacksonville Harbor Navigation Study_3534_090211
Enclosure
cc: Mr. Paul E. Stodola, USACE, Paul.E.Stodola@usacc.army.mil
Ms. Samantha J. Borer, USACE, Samanthat.J.Borer@usacc.army.mil

STANDARD MANATEE AND MARINE TURTLE CONSTRUCTION CONDITIONS FOR IN-WATER WORK

July 2011

The permittee shall comply with the following conditions intended to protect manatees and marine turtles from direct project effects:

a. All personnel associated with the project shall be instructed about the presence of marine turtles, manatees and manatee speed zones, and the need to avoid collisions with (and injury to) these protected marine species. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act, the Endangered Species Act, and the Florida Manatee Sanctuary Act.

b. All vessels associated with the construction project shall operate at "Idle Speed/No Wake" at all times while in the immediate area and while in water where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.

c. Siltation or turbidity barriers shall be made of material in which manatees and marine turtles cannot become entangled, shall be properly secured, and shall be regularly monitored to avoid manatee entanglement or entrapment. Barriers must not impede manatee or marine turtle movement.

d. All on-site project personnel are responsible for observing water-related activities for the presence of marine turtles and manatee(s). All in-water operations, including vessels, must be shutdown if a marine turtle or manatee comes within 50 feet of the operation. Activities will not resume until the animal(s) has moved beyond the 50-foot radius of the project operation, or until 30 minutes elapses if the animal(s) has not reappeared within 50 feet of the operation. Animals must not be herded away or harassed into leaving.

e. Any collision with or injury to a marine turtle or manatee shall be reported immediately to the Florida Fish and Wildlife Conservation Commission (FWC) Hotline at 1-888-404-3922, and to FWC at ImperiledSpecies@myFWC.com. Collision and/or injury should also be reported to the U.S. Fish and Wildlife Service (for north Florida, Jacksonville 1-904-731-3336 or for south Florida Vero Beach 1-772-562-3909).

f. Temporary signs concerning manatees shall be posted prior to and during all in-water project activities. All signs are to be removed by the permittee upon completion of the project. Temporary signs that have already been approved for this use by the FWC must be used. One sign which reads *Caution: Boaters* must be posted. A second sign measuring at least 8 ½" by 11" explaining the requirements for "Idle Speed/No Wake" and the shut down of in-water operations must be posted in a location prominently visible to all personnel engaged in water-related activities. These signs can be viewed at MyFWC.com/manatee. Questions concerning these signs can be sent to the email address listed above.

CAUTION: MANATEE HABITAT

All project vessels

IDLE SPEED / NO WAKE

When a manatee is within 50 feet of work
all in-water activities must

SHUT DOWN

Report any collision with or injury to a manatee:

Wildlife Alert:

1-888-404-FWCC(3922)

cell *FWC or #FWC

COUNTY: DUVAL
SCH-CORPS-NEPA
2011-03436

DATE: 7/7/2011
COMMENTS DUE DATE: 8/19/2011
CLEARANCE DUE DATE: 9/5/2011
SAI#: FL201107115851C
REFER TO: FL200804024147C

MESSAGE:

STATE AGENCIES	WATER MNGMNT. DISTRICTS	OPB POLICY UNIT	RPCS & LOC GOVS
ENVIRONMENTAL PROTECTION	ST. JOHNS RIVER WMD		
FISH and WILDLIFE COMMISSION			
X STATE			

The attached document requires a Coastal Zone Management Act/Florida Coastal Management Program consistency evaluation and is categorized as one of the following:

Federal Assistance to State or Local Government (15 CFR 930, Subpart F). Agencies are required to evaluate the consistency of the activity.

X Direct Federal Activity (15 CFR 930, Subpart C). Federal Agencies are required to furnish a consistency determination for the State's concurrence or objection.

Outer Continental Shelf Exploration, Development or Production Activities (15 CFR 930, Subpart E). Operators are required to provide a consistency certification for state concurrence/objection.

Federal Licensing or Permitting Activity (15 CFR 930, Subpart D). Such projects will only be evaluated for consistency when there is not an analogous state license or permit.

Project Description:

DEPARTMENT OF THE ARMY, JACKSONVILLE DISTRICT CORPS OF ENGINEERS - DRAFT INTEGRATED FEASIBILITY REPORT AND ENVIRONMENTAL ASSESSMENT, JACKSONVILLE HARBOR (MILE POINT) NAVIGATION STUDY - JACKSONVILLE, DUVAL COUNTY, FLORIDA.

To: Florida State Clearinghouse

AGENCY CONTACT AND COORDINATOR (SCH)
3900 COMMONWEALTH BOULEVARD MS-47
TALLAHASSEE, FLORIDA 32399-3000
TELEPHONE: (850) 245-2161
FAX: (850) 245-2190

EO. 12372/NEPA

- [x] No Comment
- [ ] Comment Attached
- [ ] Not Applicable

Federal Consistency

- [x] No Comment/Consistent
- [ ] Consistent/Comments Attached
- [ ] Inconsistent/Comments Attached
- [ ] Not Applicable

From:

Division/Bureau: Historical Resources

Reviewer: Michael Hart

Date: 8/24/11

Laura A. Kammerer
Deputy SHPO
8.25.11

RECEIVED
AUG 26 2011
DEP Office of Intergovt'l Programs

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

August 16, 2011

Samantha Borer
U.S. Army Corps of Engineers
Jacksonville District
Planning Division
P.O. Box 4970
Jacksonville, Florida 32232-0019

Subject: Review of the Navigation Study for Jacksonville Harbor (Mile Point), Draft Integrated Feasibility Report and Environmental Assessment, Duval County, Florida (dated June 2011)

Dear Ms. Borer:

Consistent with Section 102(2)(c) of the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act, the U.S. Environmental Protection Agency (EPA) has reviewed the Navigation Study for Jacksonville Harbor (Mile Point), Draft Integrated Feasibility Report and Environmental Assessment, Duval County, Florida (the "Draft IFR/EA"). EPA understands that Mile Point is located in Duval County, Florida and consists of about 5000 feet of shoreline located along the north shore of the St. Johns River and east of the Intracoastal Waterway (IWW). The study's overall purpose is to determine plans to evaluate the on-going Mile Point erosion problem and to provide technical recommendations for reducing or relocating the difficult crosscurrents during the ebb flow at the confluence of the St. Johns River with the IWW. Due to safety concerns, the St. Johns Bar Pilots and the Captain of the Port, United States Coast Guard (USCG), have enacted a restriction which requires inbound vessels with a draft greater than 33 feet to be restricted to transiting "close to or on a flood tide before entering the harbor to avoid the difficult ebb flow currents." The U.S. Army Corps of Engineers (Corps) reports that any corrective action project will contribute to National Economic Development (NED) Plan and be in accordance with all national environmental statutes, applicable executive orders, and other Federal planning requirements.

EPA understands that the Jacksonville Port Authority has agreed to be a non-Federal financial sponsor of any corrective action, and we note that this Jacksonville Mile Point study assesses Federal interest in navigation improvements with a particular emphasis on erosion of the Mile Point shoreline. EPA notes that an evaluation of benefits, costs, and environmental impacts will determine the Federal interest. The feasibility study was authorized by a resolution of the House Committee on Transportation and Infrastructure adopted March 24, 1998 for Mile Point, Florida. between Florida Environmental Protection (FDEP) Monuments R-44 and R-51.

EPA notes that the Draft IFR/EA appropriately summarizes historical Corps activities and studies in the area related to the continued erosion of the Mile Point shoreline and the effects of the navigation restrictions. The Draft IFR/EA also appropriately recounts the history of geotechnical failures on the north Mile Point shoreline due to erosion, including a serious failure event at parcel no.8856, in which the head scarp appears to have eroded up to 100 feet back from the seawall. Other erosion events from 1986 to 1997 are also documented in the Draft IFR/EA. These failures have reportedly contributed to the difficult crosscurrents at the confluence of the IWW and the St. Johns River during the ebb tide, leading the St. Johns Bar Pilots to enact navigation restrictions for inbound vessels with a transit draft greater than 33 feet to avoid transiting during the ebb tide. The navigational restrictions reportedly affect many types of large ships such as Bulkers, Tankers, Container Vessels, and General Cargo vessels. Jacksonville Harbor is also experiencing growth for both Container and Bulk Vessels, and Container services for the new Mitsui terminal are now in operation.

EPA notes that the Draft IFR/EA appropriately concludes that any proposed corrective action(s) must be in the national interest and can only be constructed if the environment is protected from unacceptable impacts. EPA understands that any benefits of corrective action(s) should minimize the impacts of the flows out of the IWW during the ebb tide, slow or redirect the velocities away from the north bank, and slow the progression of erosion. Reducing or redirecting the difficult crosscurrents in the harbor will allow the pilots to reduce or eliminate navigational restrictions impeding the free movement of vessels. EPA notes that the Corps has demonstrated through computer modeling that the potentially dangerous crosscurrents exiting the IWW southern channel under ebb tide can be redirected to more closely parallel the alignment of the Federal navigation channel instead of being focused toward the erosion prone areas along the northern shoreline of Mile Point.

Corrective action will probably lead to some adverse impacts, though, including loss of salt marsh adjacent to the existing Mile Point training wall - -and this would have to be mitigated. EPA concurs with any measures taken by the Corps that will avoid, minimize, and compensate for adverse impacts to salt marsh. EPA also concurs with the Corps' goal of selecting the least cost dredging alternative that also features beneficial uses of dredged material. Finally, EPA also supports the Corps' proposal for creation of habitat beyond the required mitigation, and we also support flow improvement measures that prevent any adverse impacts to the restoration of Great Marsh Island.

EPA notes that the Draft IFR/EA appropriately evaluates a wide range of non-structural and structural alternatives, as well as evaluating combinations of these alternatives.

Non-structural alternatives evaluated included:

- *operational measures such as light-loading, use of tide, additional tugs,*
- *the No action alternative*

Structural alternatives evaluated included:

- *North shoreline groin field*
- *San Pablo Creek IWW Submerged Weir*
- *Rebuild Mile Point Training Wall*
- *150-Foot Training Wall Reach Widening*
- *Eastern Chicopit Bay Diversion*
- *Relocate (Reconfigure) Mile Point Training Wall*
- *Short Cut Widener*
- *Removal of the waterward portion of the Mile Point Training Wall under the O&M Program*

EPA notes the Draft IFR/EA features a Tentatively Selected Plan (TSP) which combines the reconfiguration of the existing training wall, restoration of Great Marsh Island (which is the least cost disposal option), and the creation of a flow improvement channel (FIC) in Chicopit Bay. The training wall reconfiguration includes removal of the western 3110 feet of the existing Mile Point training wall and the construction of a relocated Eastern Leg training wall of approximately 2050 feet. Total estimated quantity of material to be excavated is approximately 889,000 cubic yards (cy). All usable stone material recovered from the existing training wall will be stockpiled for use in either the West or East Leg of the relocated training wall. All other material excavated will be placed as beneficial use in the Salt Marsh Mitigation Area at Great Marsh Island and as foundation construction material for the relocated training wall. The Draft IFR/EA notes that the Corps has estimated that approximately 14,600 cy of armor stone can be recovered for reuse purposes, but additional studies are recommended to precisely calculate the exact quantities of stone available for reuse.

The Corps' hydrodynamic computer modeling of the TSP has shown a reduction in the crosscurrents in the navigation channel. It is anticipated that the new realignment of the Mile Point training wall would produce flows coming out of the IWW from the south that are more aligned with the Federal channel. This is expected to provide a decrease in water velocity in the areas north of the channel at Mile Point and slow the progression of the erosion that has occurred at the north bank of Mile Point. A computer ship simulation was also appropriately run to test the effects of the alternatives on the crosscurrents at Mile Point. The Draft IFR/EA notes that members of the St. Johns Bar Pilot Association that participated in the computer ship simulation process found "favorable results in reducing the crosscurrents at Mile Point under the preferred alternative."

EPA notes that a majority of the St. Johns Bar Pilots support the TSP (as expressed in a letter 15 May 2008), and EPA also notes that these bar pilots consequently believe that the improvements will reduce or eliminate the restrictions associated with IWW crosscurrents. A second computer ship simulation was run on September 14-17, 2009, and reportedly confirmed the first analysis, demonstrating favorable results for the Relocation of the Mile Point training wall alternative in reducing or eliminating tidal restrictions at Mile Point. EPA concurs with the Corps' on-going NEPA outreach

program in meeting with the U.S. Coast Guard officials, harbor pilots, commercial towing company representatives, tug/barge operators, as well as the environmental resource agencies and adjacent landowners to discuss the Jacksonville Mile Point study and the hydrodynamic computer modeling results.

While, EPA finds Draft IFR/EA to be well written and very detailed, we recommend that the Final IFR/EA should conclusively address and resolve the following potential issues/problems that have been raised as part of the NEPA process. The resolution to these issues should be thoroughly documented in the Final IFR/EA:

- Official correspondence with the U.S. Coast Guard about risk analysis should be included with the Final IFR/EA.

- Specific and detailed information should be provided (or referenced) that addresses any changes in local sedimentation or shoaling rates that may be caused by the proposed work. In addition to shoreline erosion on the north shore of Mile Point, a breakthrough has occurred at Great Marsh Island on the southern bank of the St. Johns River, and this has led to severe shoaling in Chicopit Bay. The Corps should conclusively address the potential for increased shoaling in Chicopit Bay and flow alterations.

- Conclusive information about the eligibility for listing of the Great Marsh Island prehistoric site should be included in the Final IFR/EA.

- The Corps should conclusively address the north bank homeowners' concerns about increased future erosion of their property and subsequent property losses. These homeowners on the north bank of the river at Mile Point have experienced significant shoreline erosion to their property and have legitimate and serious concerns about future property losses; therefore, final recommendations for solving these erosion problems should be included in the Final IFR/EA in the Problems and Opportunities section.

- The Final IFR/EA should also include the computer model predicted velocities along Mile Point and demonstrate that they are within acceptable limits.

- The Corps should also show the proposed work will not adversely affect the salt marshes in the Greenfield and Four Pines Islands areas.

- Pursuant to Section 7 of the Endangered Species Act, coordination with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) reportedly has been initiated. The Corps and the USFWS have entered into an agreement on the review of the draft Fish and Wildlife Coordination Act Report for this project. The Final IFR/EA should include copies of all official correspondence with NMFS and USFWS, as well as the Jacksonville Port Authority (JPA).

- A report on any future real estate negotiations (that occurred after the Draft IFR/EA was issued) regarding the expansion of the Great Marsh Island

Restoration Area should be included, as well as an update on the efforts of the Mayport Naval Station and the Nature Conservancy on their real estate agreements.

- A report of issues raised at future public meetings should also be included in the Final IFR/EA.

- The status of the existing Mile Point training wall's eligibility for the National Register of Historic Places should be documented in the Final IFR/EA.

We appreciate the opportunity to review the project. EPA requests a copy of the signed Finding of No Significant Impact (FONSI) for our files if it is eventually issued for this project. Should you have questions, feel free to coordinate with Paul Gagliano, P.E., of my NEPA staff, at 404/562-9373 or at gagliano.paul@epa.gov, or EPA Region 4's Eric Hughes, located in your Jacksonville District office.

Sincerely,

Heinz J. Mueller, Chief
NEPA Program Office
Office of Policy and Management

cc Eric Hughes, USEPA Region 4 -Jacksonville District office

SEMINOLE TRIBE OF FLORIDA
TRIBAL HISTORIC PRESERVATION OFFICE

TRIBAL HISTORIC
PRESERVATION OFFICE

SEMINOLE TRIBE OF FLORIDA
AH-TAH-THI-KI MUSEUM

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SECRETARY
PRISCILLA D. SAYEN

TREASURER
MICHAEL D. TIGER

Paul Stodola
Jacksonville District Corps of Engineers
P.O. Box 4970
Jacksonville, FL 32232-0019

THPO#: 008548

July 25, 2011

Subject: Comments on the EA for the Jacksonville Harbor (Mile Point) Navigation Study, Duval County, Florida

Dear Mr. Stodola,

The Seminole Tribe of Florida's Tribal Historic Preservation Office (STOF-THPO) has received the Jacksonville District Corps of Engineers' correspondence concerning the aforementioned project. The STOF-THPO has no objection to your findings at this time. However, the STOF-THPO would like to be informed if cultural resources that are potentially ancestral or historically relevant to the Seminole Tribe of Florida are inadvertently discovered during the construction process. We thank you for the opportunity to review the information that has been sent to date regarding this project. Please reference ***THPO-008548*** for any related issues.

We look forward to working with you in the future.

Sincerely,

Direct routine inquiries to:

Willard Steele
Tribal Historic Preservation Officer
Seminole Tribe of Florida

Anne Mullins
Compliance Review Supervisor
annemullins@semtribe.com

JP:am:ws

St. Johns Bar Pilot Association

PORT OF JACKSONVILLE
FLORIDA
4910 OCEAN STREET
ATLANTIC BEACH, FLORIDA 32233
Telephone - 904-249-5631
FAX - 904/249-7523

September 3, 2010

Mr. Steve Ross
Project Manager
Jacksonville District
U.S. Army Corps of Engineers
701 San Marco Blvd
Jacksonville, FL 32207

Dear Mr. Ross,

As per our previous May 15, 2008 letter, the river pilots of the St. Johns Bar Pilot Association remain concerned with the very strong currents and cross currents that exist on the St. Johns River. Over the last several decades one area in particular has received much attention. It is the junction of the St. Johns River and the Atlantic Intracoastal Waterway – the Mile Point Area. This condition has unfortunately gone uncorrected and continues to impact the safe movement of maritime trade in and out of the Port of Jacksonville. The southern side of this intersection holds particular hazards to passing ship traffic as it has a "training wall". This rock structure was used in the last century to "train" river currents in the desired direction, using the strong river currents to keep the river swept, thus reducing the need for dredging. The drawback of this old method of channel design in this particular application is that the current coming out of the Intracoastal Waterway during outgoing tides is forced to pass around the end of this rock structure. It does this at nearly a ninety degree angle with surprising strength – sometimes as much as 4 knots. This cross current is strong enough to push a deeply loaded ship across and possibly out of the ship channel with all of the negative consequences including grounding. With BAE Systems (Ex-Atlantic Marine) Shipyard located on the north bank this creates a hazard of considerable concern.

We have been very fortunate to date that no serious incidents or accident has occurred at Mile Point despite the considerable hazard to navigation and safety concerns these current conditions represent. The way in which our pilots have dealt with this hazard to date has been to avoid it with deep draft vessels by limiting start in times on all vessels with draft over 33′ to the flood current only, while this cross current doesn't exist. This restriction causes significant delays for individual vessels as well as concentrating deep draft traffic during times of flood current, creating traffic congestion throughout the waterway.

In addition to the safety and hazards to navigation; these conditions and subsequent restrictions result in the port and its new 40′ channel being underutilized.

This issue becomes even more critical as the size and capacity of ships calling on Jacksonville has increased over the past 15 years to take advantage of economy of scale. With the advent of Post-Panamax vessels calling on Jacksonville expected to increase in the years to come; this condition is only going to become a greater hazard and safety issue.

In order to facilitate the modernization of the Jacksonville Harbor channel and correct the Mile Point issue, the St. Johns Bar Pilots has in the past worked closely with the U.S. Army Corps of Engineers (USACE) through Ship Simulation Studies of various proposed solutions at their Vicksburg, Mississippi facility. Members of the St. Johns Bar Pilot Association continue to participate regularly in a USACE Ship Stimulation Study of proposed solutions to this cross current problem at Mile Point. I would like to note the existing currents in this area have been very difficult to replicate or model. Even so, our members reviewed the results of the ongoing feasibility study and have found it to be an excellent starting point that field experience will help to validate and refine. The St. Johns Bar Pilots and the port/maritime community continue to depend on USACE selecting and implementing a solution to correct this issue. We also urge you to expedite any corrective action and give serious consideration to the training wall modification, channel widening, and hopefully, a combination of both. We remain confident in the ability of the USACE to select the alternative that will ensure safe transit of all vessels, especially deep draft vessels through the Mile Point area. Time is of the essence.

Upon completion of the USACE recommended solution for the Mile Point area and a short testing period for validation of Ship Simulation results, the St. Johns Bar Pilot Association will be able to remove the Mile Point restrictions on deep draft vessels that are currently in effect. This commitment is the best we can offer given the complicated current effects in the Mile Point Area and our dedication to the safety of vessel transits. We will continue to coordinate with the U.S. Army Corps of Engineers and the Jacksonville Port Authority during the design and construction of this project as well as future improvement projects, hopefully to include a significant deepening and widening of the Federal Channel.

Thank you for your time and consideration to this very important matter of safety.

Sincerely,

James P. Winegeart
President, St. Johns Bar Pilot Association

St. Johns Bar Pilot Association

PORT OF JACKSONVILLE
FLORIDA
4910 OCEAN STREET
MAYPORT, FLORIDA 32233
Telephone - 904-249-5631
FAX - 904/249-7523

May 15, 2008

Mr. Steve Ross
Project Manager
Jacksonville District
U.S. Army Corps of Engineers
701 San Marco Blvd.
Jacksonville, Fl. 32207

Dear Mr. Ross,

The river pilots of the St Johns Bar Pilot Association have dealt with the very strong currents and cross currents that exist on the St Johns River for many decades, safely facilitating the movement of maritime trade in and out of the Port of Jacksonville. Over the years, especially in recent years, ships have increased in size and carrying capacity to take advantage of economy of scale. To facilitate this increased efficiency ports must be capable of handling these larger vessels with dredged channels that are deeper and wider with consideration for cross currents. In order to facilitate the modernization of our ship channel the St Johns Bar Pilots have worked closely with the US Army Corps of Engineers (USACE) through Ship Simulation Studies of various proposed solutions at their Vicksburg, Mississippi facility.

Over the last several decades one area in particular that has received much attention is the junction of the St Johns River and the Atlantic Intracoastal Waterway- the Mile Point Area. The southern side of this intersection holds particular hazards to passing ship traffic as it has a training wall. This rock structure was used in the last century to "train" river currents in the desired direction, using the strong river currents to keep the river swept, thus reducing the need for dredging. The drawback of this old method of channel design in this particular application is that the current coming out of the Intracoastal Waterway during outgoing tides is forced to pass around the end of this rock structure which it does at nearly a ninety degree angle with surprising strength- sometimes as much as 4 knots. This cross current is strong enough to push a deeply loaded ship across and possibly out of the ship channel with all of the negative consequences including grounding.

The way in which we have dealt with this hazard to date has been to avoid it with deep draft vessels by limiting start in times on all vessels with a draft over 33' to the flood current only, while this cross current doesn't exist. This restriction causes delays for individual vessels as well as concentrating deep draft traffic during times of flood current, creating traffic congestion throughout the waterway.

Members of the St Johns Bar Pilot Association have participated in a USACE Ship Simulation Study of proposed solutions to this cross current problem at Mile Point. The currents that exist in this area are very difficult to model with the various currents that meet in this area. Even so, our members have reviewed the results of this study and have found it to be a very good starting point that field experience should validate. The St Johns Bar Pilots and the port community are depending on the USACE to select and implement one or more of the proposed solutions. We urge you to give serious consideration to the training wall modification, channel widening, and hopefully, a combination of both. We are confident in the ability of the USACE to select the alternative that will ensure safe transit of all vessels, especially deep draft vessels through the Mile Point area.

Upon completion of the USACE recommended solution for the Mile Point area and a short testing period for validation of Ship Simulation results, the St Johns Bar Pilot Association will be able to remove the Mile Point restrictions on deep draft vessels that are currently in effect. This commitment is the best we can offer given the complicated current effects in the Mile Point Area and our dedication to the safety of vessel transits. We will continue to coordinate with the U.S. army Corps of Engineers during the design and construction of this project as well as future improvement projects, hopefully to include a significant deepening and widening of the Federal Channel.

Thank you for your time and consideration to this very important matter of safety.

Sincerely,

John Atchison

John Atchison, President
St Johns Bar Pilot Association

St. Johns Bar Pilot Association

DP-5

PORT OF JACKSONVILLE
FLORIDA
4910 OCEAN STREET
MAYPORT, FLORIDA 32233
Telephone - 904-249-5631
FAX - 904/249-7523

July 24, 2003

Mr. Jerry Scarborough
U.S. Army Corps of Engineers
701 San Marco Blvd.
Prudential Building
Jacksonville, Fl. 32207-8175

Subject: Jacksonville Harbor, Mile Point Range

Dear Mr. Scarborough,

The St. Johns Bar Pilots requests that improvements be made to the Mile Point Range. The present situation of the Mile Point Range presents draft restrictions and navigation hazards that must be remedied in order for ship traffic to pass safely.

We strongly recommend that the Mile Point Range be widened to the south side of the river to alleviate this problem.

Sincerely,

J. Brown

Joseph J. Brown,
President

cc: Anthony F. Orsini,
Jacksonville Port Authority

JJB\jmm

Florida Department of Environmental Protection

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole
Secretary

May 15, 2008

Mr. Paul E. Stodola
Planning Division, Jacksonville District
U.S. Army Corps of Engineers
P.O. Box 4970
Jacksonville, FL 32232-0019

RE: Department of the Army, Jacksonville District Corps of Engineers – Scoping Notice
Navigation Improvement Study of Jacksonville Harbor in the Vicinity of Mile Point
Jacksonville, Duval County, Florida.
SAI # FL200804024147C

Dear Mr. Stodola:

The Florida State Clearinghouse, pursuant to Presidential Executive Order 12372, Gubernatorial Executive Order 95-359, the Coastal Zone Management Act, 16 U.S.C. §§ 1451-1464, as amended, and the National Environmental Policy Act, 42 U.S.C. §§ 4321, 4331-4335, 4341-4347, as amended, has coordinated a review of the referenced scoping notice.

The Florida Department of Environmental Protection's (DEP) Northeast District office in Jacksonville advises that an Environmental Resource Permit (ERP) and a sediment and erosion control plan will be required. Because the proposed activities will have significant impacts on the hydrologic flows of the St. Johns River and issues regarding the location and effectiveness of the Little Jetty and Training Wall are unresolved, each of the listed alternatives should be carefully studied. The Corps of Engineers is advised to coordinate with the DEP Bureau of Beaches and Coastal Systems and Florida Fish and Wildlife Conservation Commission and provide additional information regarding: potential wetland resource and protected species impacts, structural plans, design alternatives, area hydrodynamics/hydraulics, navigational effects, etc. For further information on ERP permitting requirements, please contact Mr. Martin Seeling at (850) 414-7728.

Based on the information contained in the scoping notice and the enclosed state agency comments, the state has determined that, at this stage, the proposed federal action is consistent with the Florida Coastal Management Program (FCMP). The concerns identified by our reviewing agencies must, however, be addressed prior to project implementation. The state's continued concurrence with the project will be based, in part, on the adequate resolution of issues identified during this and subsequent reviews. The

state's final concurrence of the project's consistency with the FCMP will be determined during the environmental permitting stage.

Thank you for the opportunity to review the proposal. Should you have any questions regarding this letter, please contact Ms. Suzanne E. Ray at (850) 245-2172.

Yours sincerely,

Sally B. Mann

Sally B. Mann, Director
Office of Intergovernmental Programs

SBM/ser
Enclosure

cc: Beth Weatherford, DEP Northeast District

AIRPORTS
- Jacksonville International
- Craig
- Herlong

JAXPORT

JACKSONVILLE PORT AUTHORITY
Post Office Box 3005
2831 Talleyrand Avenue
Jacksonville, Florida 32206-0005
http://www.jaxport.com

SEAPORTS
- Blount Island Terminal
- Talleyrand Terminal
- Ed Austin Terminal

December 12, 2000

Mr. Jerry Scarborough, Project manager
U. S. Army Corps of Engineers
Jacksonville District
400 West Bay Street
P.O. Box 4970
Jacksonville, FL 32232-0019

Subject: Jacksonville Harbor Deepening Extension to Talleyrand

Dear Mr. Scarborough;

The Jacksonville Port Authority has an opportunity to bring a significant new business to our City. Columbus Lines USA and their consortium partners will select a southeastern port for consolidation of their South American service. Columbus lines, the leading partner in this consortium is currently a tenant at our newly renovated Talleyrand terminal. This expanded service will require the significant rail advantage of the Talleyrand terminal.

The Jacksonville Port Authority has been working on this project for some time and sees this new business as vital to the economic growth of the Authority and to the City of Jacksonville. As you can see by the enclosed letter from Mr. Rudolph Ramm, Vice President of Operations for Columbus Lines, the Talleyrand terminal is the favored choice for consolidation of this new service except for the water depth currently available. Their present fleet and the six (6) new 3,700 TEU ships will need the advantage of a –40 foot or greater harbor to realize the efficiencies of their operation.

We request that the Corps of Engineers immediately proceed to reopen the Feasibility Study on the Jacksonville Harbor and provide due consideration to this new development. The Jacksonville Port Authority considers this promise of new business, combined with the economic advantages previously identified for ST Services as justification for continuing the deepening process to the Talleyrand terminal. Failing our effort to attain suitable water depth at the Talleyrand terminal, Jacksonville may face the loss of current cargo utilizing this port.

We offer our total support to the Corps to expedite this process.

Sincerely,

Anthony F. Orsini, Director
Marine Engineering & Construction

Enclosure (1)

Copy: Rick Ferrin
Rudolph Ramm
T. Martin Fiorentino
Ed Austin
Mark Hulsey
Linda Scherrer

HAMBURG SÜD

COLUMBUS LINE USA, INC.

December 6, 2000

Mr. Fredrick R. Ferrin
Vice President, Marine
Jacksonville Port Authority
2831 Talleyrand Ave.
Jacksonville, FL 32206

Dear Mr. Ferrin:

Hamburg-Süd and its affiliate Columbus Line has enjoyed an excellent relationship with the Port of Jacksonville over the course of many years which association was strengthened earlier this year through the purchase of Crowley American Transport.

Our continued expansion into the South American market has resulted in partnerships with other lines such as our sister company Alianca, P&O Nedlloyd, CSAV, Maersk Sealand, Evergreen, APL and Lykes. We are also looking forward to the delivery of six (6) new 3,700 TEU container ships scheduled for delivery in the first quarter of 2001. In order to maximize the efficiency of our service, we are actively looking to consolidate our operations into fewer southeastern ports. The Port of Jacksonville offers a variety of advantages to our company that would favor our selection, but the water draft available at your Talleyrand Terminal may not be sufficient for our needs. A project channel depth of -40 feet or greater will offer a distinct advantage for our new ships.

Given an assurance of adequate depth at Talleyrand Marine Terminal, we will be able to give Jacksonville favorable consideration in our port selection process.

Sincerely,

Rudolph Ramm
Vice President - Operations

RR:mmo

AIRPORTS
- Jacksonville International
- Craig
Maiborg
- Cecil Field

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Jacksonville, Florida 32206-0005
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SEAPORTS
- Blount Island Terminal
Talleyrand Terminal
- Ed Austin Terminal

March 30, 2001

Mr. Jerry Scarborough, Project Manager
U.S. Army Corps of Engineers
400 West Bay Street
P.O. Box 4970
Jacksonville, FL 32232-0019

Subject: Hazards to Navigation

Dear Mr. Scarborough,

The primary mission of the Jacksonville Port Authority is to grow the port of Jacksonville and increase the economic and employment base of the city. To this end, we are at the cusp of bringing a major container carrier load center to Jacksonville. The impact of this load centering serves our mission and brings new business and jobs to Jacksonville. Unfortunately, two safety issues have come to the front that may prevent our city from realizing this economic boost. Two places in the St. Johns River present hazards to navigation and restrict the movement of deep draft ships to certain tidal conditions. These restrictions are unacceptable to the container carrier. Even without the issue of new business, these hazards must be addressed and cured.

The first issue is the dangerous currents that exist in the Training Wall Reach at the confluence of the St Johns River and the Intracoastal Waterway (ICW) to the north and south. Ships entering the port on an ebb tide must "set" to the extreme southern side of the Training Wall Reach in order to prepare for the concentrated current flowing north into the river from the ICW to the south. This current is very strong on an ebb flow and pushes the ship to the north side of the channel towards the docks at Atlantic Marine. As soon as the bow of the ship manages the passage beyond Atlantic Marine, a strong current exiting the ICW from the other side of the river then pushes it from the opposite direction,. The ship is already in a left-rudder condition to steer away from the facilities at Atlantic Marine. The new "push" from the north moves the bow of the ship back to the south side of the channel, requiring the pilot to call for extreme reversal of rudder settings and power to correct for the external influences on the ship. While this maneuver can be (and is) safely negotiated by the Pilots, a limitation is enacted by the Pilots and Captain of the Port to restrict this passage to vessels that draw

32 feet or less under an ebb tide condition. Ships deeper than 32 feet must wait for the tidal (and current) conditions to subside before entering the port.

We see two possible solutions to this problem. One involves the dispersion of concentrated flow exiting the ICW from the south. This reduction in flow may be accomplished by opening a flow channel at the eastern end of the "Little Jetties Park." This opening will permit a significant amount of the tidal flow to exit into the river through the eastern portion of Chicopit Bay, thus reducing the flow at the ICW exit. A bridge could be constructed over this new exit point from Chicopit Bay that would continue public access to the park. The addition of this bridge will actually provide an improvement to the park as the shoulders of the present roadway are constantly eroding and are difficult to maintain.

The second solution is to provide an area for increased "set" of the inbound ship in preparation for encountering the flow from the ICW to the south. This can be accomplished by widening the Training Wall Reach to the south by 100 to 150 feet. Pilots would then be able to direct the bow of the ship at a more acute angle to the ebb flow of the current from the ICW. This angle would result in less movement of the ship and additional channel width for the resultant movement that does occur. Less radical rudder movements would be required and a safer passage would be assured for deeper draft vessels.

While each of these solutions will help significantly to reduce hazardous conditions experienced at this juncture, both improvements are probably necessary in order to remove all vessel draft restrictions.

The other condition of concern is the Chaseville Turn. This is another portion of the river where navigation hazards require vessel draft restrictions. Negotiating this turn outbound on an ebb current again requires extreme rudder positions and power demands on the ship. The problems of the turn are compounded by the unfortunate placement of the dock at ST Services. A ship at this berth is essentially "in the channel" and presents unusual circumstances that need effective rudder response from the passing ship. Effective rudder response means speed, but due to the proximity of the moored ship to the channel, the passing vessel cannot exceed six knots or risk a wake suction that would break the docked ship from its moorings. This situation again places restrictions on deeper draft vessels as the deeper ships are naturally less maneuverable and by nature of the channel are limited in their options.

The only solution we see to this condition is a significant widening of the channel to the east, from a point in the Long Branch Range to marker G"69". This widening will permit ships passing a moored vessel to maintain a safe distance from the ST Services dock. A safer distance will allow better speed for rudder response and room to maneuver.

It is unfortunate that we have spent considerable time and effort to provide a deeper channel for the Port of Jacksonville, while issues such as these will continue to place significant restrictions on movement of deep draft vessels. The benefits of the deeper channel may not be realized if deep draft vessels cannot endure the restrictions and move their cargo to another port. The nature of the shipping industry is focusing intently on time and efficiency. The Jacksonville Port Authority has invested hundreds of millions of dollars to provide one of the most efficient cargo ports on the east coast; but if shippers cannot meet their schedules due to draft restrictions, then all the benefits of our port may be lost if they move to another city.

These issues are very serious and need immediate attention and resolution. Please contact me as soon as possible for a time and place to meet and start the process. The continued viability of the port of Jacksonville may be at stake.

Sincerely,

Anthony F. Orsini
Director, Marine Engineering & Construction

C: Col. Greg May
Richard Bonner
Rick Ferrin
David Kaufman
Randy Murray
Victoria Robas
Frank Jones

AIRPORTS
- Jacksonville International
- Craig
- Herlong
- Cecil Field

JAXPORT

JACKSONVILLE PORT AUTHORITY
Post Office Box 3005
2831 Talleyrand Avenue
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April 30, 2001

Mr. Jerry Scarborough, Project Manager
U.S. Army Corps of Engineers
Jacksonville District
400 West Bay Street
P.O. Box 4970
Jacksonville, FL 32232-0019

Subject: Crosscurrents @ St. Johns River & ICW

Dear Jerry,

At our meeting on the 23rd of April, 2001, we discussed the crosscurrents at the confluence of the St. Johns River and the Intracoastal Waterway. This intersection of waterways is a safety concern that has resulted in draft restrictions on deep draft vessels. The main cause of concern is the velocity at which the water exiting the south ICW impacts transiting vessels on an ebb tide flow.

We have furthered this discussion with the tug and barge pilots who agree that the currents at this location pose a hazard to safe navigation. Our concept of resolving this problem includes widening the exit of the south ICW as it enters into the St. Johns River or opening the eastern end of Little Jetties Park with a bridge, thus decreasing the velocity. We would ask that the Corps of Engineers include this concept into your present erosion study of Mile Point. We feel that the solution to the navigation problem may also benefit the erosion situation encountered on the north bank of the river.

We also request that the Corps postpone the reconstruction of phase 2 of the Little Jetties Training Wall until a solution to the navigation issue is reached.

If you have any questions or comments on the content of this letter, please contact me directly at (904) 630-3062.

Sincerely,

Anthony F. Orsini,
Director, Marine Engineering & Construction

Cc: Rick Ferrin
Victoria Robas

Post-it® Fax Note 7671	Date 4-30-01	# of pages ▶ 1
To Jerry Scarborough	From Tony Orsini	
Co./Dept. C.O.E.	Co. Jaxport	
Phone #	Phone #	
Fax # 232-1213	Fax # 630-3062	

Project Information	
Project:	FL200804024147C
Comments Due:	05/02/2008
Letter Due:	05/16/2008
Description:	DEPARTMENT OF THE ARMY, JACKSONVILLE DISTRICT CORPS OF ENGINEERS - SCOPING NOTICE - NAVIGATION IMPROVEMENT STUDY OF JACKSONVILLE HARBOR IN THE VICINITY OF MILE POINT - JACKSONVILLE, DUVAL COUNTY, FLORIDA.
Keywords:	ACOE - JACKSONVILLE HARBOR NAVIGATION STUDY AT MILE POINT - DUVAL CO.
CFDA #:	12.107

Agency Comments:

NE FLORIDA RPC - NORTHEAST FLORIDA REGIONAL PLANNING COUNCIL

No Comments

DUVAL - DUVAL COUNTY

FISH and WILDLIFE COMMISSION - FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

No Comments Received

ENVIRONMENTAL PROTECTION - FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

The Florida Department of Environmental Protection's (DEP) Northeast District office in Jacksonville states that all of the proposed activities are navigational and will, thus, fall under the DEP's permitting authority. Staff advises that an Environmental Resource Permit (ERP) and a sediment and erosion control plan will be required. Because the proposed activities will have significant impacts on the hydrologic flows of the St. Johns River and issues regarding the location and effectiveness of the Little Jetty and Training Wall are unresolved, each of the listed alternatives should be carefully studied. The Corps of Engineers is advised to coordinate with the DEP Bureau of Beaches and Coastal Systems and Florida Fish and Wildlife Conservation Commission (FWC) and provide additional information regarding: potential wetland resource and protected species impacts, structural plans, design alternatives, area hydrodynamics/hydraulics, navigational effects, etc. For further information on ERP permitting requirements, please contact Mr. Martin Seeling at (850) 414-7728.

ST. JOHNS RIVER WMD - ST. JOHNS RIVER WATER MANAGEMENT DISTRICT

No Comments Received

For more information or to submit comments, please contact the Clearinghouse Office at:

3900 COMMONWEALTH BOULEVARD, M.S. 47
TALLAHASSEE, FLORIDA 32399-3000
TELEPHONE: (850) 245-2161
FAX: (850) 245-2190

Visit the Clearinghouse Home Page to query other projects.

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(800) 955-8770 (V)
MyFWC.com

April 22, 2008

Department of the Army
Jacksonville District Corps of Engineers
Ms. Rebecca S. Griffith, Ph.D., PMP
Chief, Planning Division
P. O. Box 4970
Jacksonville, FL 32232-0019

Dear Ms. Griffith:

We received your recent documents concerning the change to the Jacksonville Harbor project in the vicinity of Mile Point, Duval County, Florida. We forwarded the information to Regional Director Roland Garcia in the Fish and Wildlife Commission's Lake City office which is located at 3377 E. US Highway 90, Lake City, FL 32055.

LTC Garcia's region covers the Duval County area, and you may wish to send all future correspondence directly to him for faster response.

Thank you, and if we can be of further assistance, please let us know.

Sincerely,

Elaine Richardson

Elaine Richardson
Regional Operations Manager

IN REPLY REFER TO:

United States Department of the Interior

National Park Service
Timucuan Ecological and Historic Preserve
Fort Caroline National Memorial
13165 Mt. Pleasant Road
Jacksonville, Florida 32225

L7619 (RM-rb)

April 10, 2008

Paul Stodola
Environmental Branch
U.S. Army Corps of Engineers
P.O. Box 4970
Jacksonville, FL 32232-0019

Dear Mr. Stodola:

Thanks you for the opportunity for the Timucuan Ecological and Historic Preserve to comment on the proposed alterations to the Mile Point area of the St. Johns River. The informal meeting held on January 30, 2008 was very informative. As you know, representatives from the Preserve have been following this discussion for many years. After reviewing aerial photographs and the information provided by the Army Corps, we would like to make the following suggestions for additional investigations so that we may more fully understand the proposed undertaking:

1. Examination of aerial photographs from 1943 show the eastern end of Great Marsh Island covered in sand, assumed to be dredge spoil. Do any records or charts of the area exist prior to the placement of the dredge spoil? Knowledge of the size and shape of Great Marsh Island would be necessary to understand the circulation of water in Chicopit Bay prior to the alterations that have been made in association with the creation of the Intracoastal Waterway and the training walls on the St. Johns River.

2. It appears there are several proposals for the placement of new training walls adjacent to Great Marsh Island. During the Harbor Deepening Scoping Meeting on February 7, 2008, a proposed training wall running from Great Marsh Island to Buck Island was shown. However, in the March 31, 2008 letter requesting comments, the length of the proposed training wall is shown much shorter. No information was presented as to the heights or additional walls or dikes that will be needed to retain the proposed fill to be placed. More information as to exact length, height, type of material, and plans to prevent the movement of the fill is needed. Where will the fill needed to create the wetlands originate?

3. More detailed hydrological modeling is needed to determine the water flow into and out of Chicopit Bay. Historic aerial photographs and local lore suggests that in past decades Chicopit Bay was significantly deeper than today. The tidal marshes in and around Chicopit Bay have both ecological and recreational significance to Timucuan Preserve and the Theodore Roosevelt Area, which has extensive hiking trails and a bird observation tower.

TAKE PRIDE IN AMERICA

4. Additional hydrological modeling is needed to determine the potential for increased erosion to the eastern end of Great Marsh Island or the salt marshes around Greenfield Islands should the proposed training walls be constructed..

We look forward to the continued review of information concerning the Mile Point area of the St. Johns River. If there are any questions, please do not hesitate to contact the Preserve's Chief of resource Stewardship, Richard Bryant, at (904) 221-7567 x15 or via email at Richard_Bryant@nps.gov.

Sincerely,

Barbara Goodman

Barbara Goodman
Superintendent

cc: TNC, Stevens
North Florida Aquatic Preserves, Myers
The River Keeper, Armingeon

FLORIDA DEPARTMENT OF STATE
Kurt S. Browning
Secretary of State
DIVISION OF HISTORICAL RESOURCES

Mr. Paul Sodola
Jacksonville USACE
P.O. Box 4970
Jacksonville, FL 32232-0019

May 9, 2008

Re: DHR No.: 2008-2599/Received by DHR: April 2, 2008
Project: Jacksonville Harbor- Mile Point
County: Duval

Dear Mr. Sodola:

Our office reviewed the referenced project for possible impact to historic properties listed, or eligible for listing in the *National Register of Historic Places*. The review was conducted in accordance with the Section 106 of the National Historic Preservation Act of 1966 as amended, and 36 CFR Part 800: Protection of Historic Properties; and the National Environmental Policy Act of 1969, as amended and the implementing state regulations. The State Historic Preservation Officer is to advise and assist state and federal agencies when identifying historic properties (archaeological, architectural, and historical) listed, or eligible for listing, in the *National Register of Historic Places* (NRHP), assessing the project's effects on such properties, and considering alternatives to avoid or reduce adverse effects.

Our review of our Florida Master Site File data and other available environmental data indicates that unrecorded archaeological properties may occur within the proposed project area. Additionally, according to our records the project area has never been subjected to a systematic remote sensing archaeological survey to identify and evaluate submerged cultural resources. Therefore, it is the opinion of this office that a systematic remote sensing survey should be conducted for the project. Archaeological investigations should be conducted in correlation with the proposed project in order to avoid duplication of investigation efforts.

The typical remote sensing archaeological survey utilizes modern remote sensing technology, that includes magnetometer data, side-scan sonar data, and depth recorded capabilities. The remote sensing data should be real-time correlated with Differential Global Positioning System

positioning data and recorded at 25-30 meter intervals (line spacing). Most importantly, an accredited nautical archaeologist should direct archaeological survey investigations with experience in the operation of remote sensing instrumentation and specific knowledge of maritime history in the St. Johns River study area. All anomalies determined to indicate a potential significant cultural resource should be ground-truthed by divers with specific training in underwater archaeological techniques; otherwise they must be identified for avoidance with a 500-foot buffer during sand removal activities.

The resultant survey report must conform to the specification set forth in Chapter 1A-46, *Florida Administrative Code,* and will need to be forwarded to this agency in order to complete the reviewing process for the proposed sand borrow project and its impacts. The results of the analysis will determine if significant cultural resources would be disturbed. In addition, if significant remains are located, the data described in the report and the consultant's conclusions will assist this office in determining measures that must be taken to avoid, minimize, or mitigate adverse impacts to archaeological sites and historical properties listed, or eligible for listing in the NRHP, or otherwise significant.

If there are any questions concerning our comments or recommendations, please contact Michael Hart, Historic Sites Specialist, by phone at (850) 245-6333, or by electronic mail at mrhart@dos.state.fl.us. We appreciate your continued interest in protecting Florida's historic properties.

Sincerely,

Frederick P. Gaske

Frederick P. Gaske, Director, and
State Historic Preservation Officer

Xc: Grady Caulk, Planning Division- Corps of Engineers

The Nature Conservancy
Protecting nature. Preserving life.™

The Nature Conservancy
9953 Heckscher Drive
Jacksonville, FL 32226-2503

Tel (904) 598-0004
Fax (904) 251-0008

nature.org

April 14, 2008

Paul Stodola
Environmental Branch
U.S. Army Corps of Engineers
P.O. Box 4970
Jacksonville, FL 32232-0019

Dear Mr. Stodola:

The Nature Conservancy appreciates the opportunity to comment on the proposed changes to the Mile Point area of the St. Johns River. As neighbors of the project, the notification meeting held on January 30, 2008 was very informative. After reviewing all of the information provided by the Army Corps of Engineers we do have some concerns and would like more information on the following question so that we may more fully understand the proposed undertaking.

1) The proposed project will remove 8.15 acres of saltmarsh from Helen Cooper Floyd Park, is the proposed marsh creation the only mitigation for the removal of salt marsh?

2) During the meeting in January, there were two proposed scenarios for marsh creation. The first scenario is the creation of 18.2 acres and the second scenario proposes to create 41.4 acres. Where will the fill to create marsh beyond the 8.15 acres of removed salt marsh come from? How would the flows and flushing be affected in Chicopit Bay between the two scenarios? Would oyster reefs in the area be impacted?

3) Marsh creation would include plantings. What is the plan for monitoring success of the sand placement into productive saltmarsh?

4) As of the date of our meeting the length and height of the training wall was unknown. As adjacent land owners we are concerned about the length of the training wall. Will the training wall be extended beyond the property line and what effects will it have on the erosion of our property?

5) We are interested in the sediment movement along the training wall. Will the position of the training wall change the flows in Chicopit Bay and cause sedimentation? What is the potential for increased erosion on the southern end of Great Marsh Island?

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6) Does the marsh creation and associated fill serve a design purpose for the training wall?

7) This proposed project is part of the Jacksonville Harbor project. How do the different scenarios in the Mile Point project fit into the whole Harbor project?

Again, we thank you for the opportunity to be involved in this process. We look forward to the continued review of information concerning the Mile Point area of the St. Johns River.

Sincerely,

Hallie Stevens
NE Florida Program Director
The Nature Conservancy

Nelson Eason
1965 Ivylgail Drive East
Jacksonville, FL 32225
904-219-3469

April 10, 2008

Department of The Army
Jacksonville District Corps of Engineers
Planning Division, Environmental Branch
PO Box 4970
Jacksonville, FL 32232-0019

Dear Mr. Stodola;

In response to a letter I received from Representative Andrew Crenshaw pertaining to the "Chicopit Bay situation", I would like to address The Corps of Engineer's Planning Division with my concern as a representative, and resident of the impacted area known as Spanish Point, Spanish Marsh, Blackhawk Bluff, Bennet Estates, and Greeenfield Creek. I would like to emphasize that the economic, environmental, and recreational impact of the Planning Division's decision is vital to our community. It is without residential opinion, but simply fact that the Chicopit Bay area should be restored to its condition prior to the failing of the "Little Jetties". The neglect for maintenance in this area has created the desperate need for restoration and preservation.

Personally, I have resided on Mt. Pleasant Creek for twenty-one years. During my years I have witnessed the evolution of Great Marsh Island eroding into Chicopit Bay as a result of the incoming tides overtaking the neglected "Little Jetties". A few years ago that evolution had personally forced me to sell my 36' trawler due to obvious navigational degradation in the area. My situational reaction was met with assurance from Representative Tilly Fowler that action would be taken. Following Representative Fowler's term, Representative Andrew Crenshaw said he would continue the legacy and assist the community with the solution. This response was eight years ago, and our community is eagerly awaiting restoration to the Bay.

Our fundamental understanding regarding the relationship between cause and effect disassociates itself with budgetary limitations, time restraints, and office terms. The beneficial effects of The Planning Division's decision for restoring and preserving the bay will span generations of residents and wildlife in the area. The effect of neglecting the area by the Corps of Engineers, and the Jacksonville Port Authority has brought forth the necessity, and consequently a cause for action. The effects of dredging the channel have been instrumental in the degradation of the Jetties, erosion of Great Marsh Island, and the disappearance of Chicopit Bay. Further channel-dredging will increase devastation to our community if the "no action alternative" referenced in Representative Crenshaw's letter is chosen. That choice will stimulate our community as the affected class to proceed with a class action suit based on wrongful neglect, diminished property values, and compensatory damages. Our legal reaction to "no-action" would hope to stall further dredging implementation. Your correspondence is very much appreciated.

Thank you;

Nelson Eason

Cc: Rep. Andrew Crenshaw
Rick Ferrin – Jacksonville Port Authority
Rebecca Griffith – Jacksonville District Corps of Engineers
Mayor John Peyton
William Bishop – Jacksonville City Council District 2

ANDER CRENSHAW
4TH DISTRICT, FLORIDA
DEPUTY MINORITY WHIP

COMMITTEE ON APPROPRIATIONS
SUBCOMMITTEE ON
MILITARY CONSTRUCTION,
VETERANS' AFFAIRS, AND RELATED AGENCIES
SUBCOMMITTEE ON
STATE, FOREIGN OPERATIONS, AND
RELATED PROGRAMS

UNITED STATES
HOUSE OF REPRESENTATIVES

April 3, 2008

Mr. Nelson E. Eason
1965 Ivylgail Dr E
Jacksonville, FL 32225

Dear Mr. Eason:

Over the last year you have contacted me to express your concern over the Chicopit Bay situation and the much anticipated Mile Point Study. I appreciate you taking the time to share your thoughts on this matter and your understanding that the hydrological modeling takes time.

As you know we have kept your issue very much on the front burner with the Army Corps of Engineers, and I am pleased to enclose an informational letter about the project in the vicinity of Mile Point. You will find enclosed a letter from Dr. Rebecca Griffith, Chief of Planning for the ACOE. A second sheet outlines the project actions that may take place. There is also a no-action alternative that will be considered. A third enclosure is a map of the Mile Point Area that shows the possible changes.

Please review the material and if you wish to comment about environmental and cultural resources, study objectives and features described in the study or if you wish to suggest improvements, please send your comments or inquiries to Paul Stodola at the Post Office Box on the ACOE letterhead by April 30.

Again, I want to thank you for taking the time to contact me. Please feel free to contact me if I can be of any further assistance on this matter.

Sincerely,

ANDER CRENSHAW
Member of Congress

AC: js
Enclosures

127 CANNON HOUSE OFFICE BUILDING
WASHINGTON, DC 20515
(202) 225-2501
FAX: (202) 225-2504

1061 RIVERSIDE AVENUE
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JACKSONVILLE, FL 32204
(904) 598-0481
FAX: (904) 598-0486

212 NORTH MARION AVENUE
SUITE 209
LAKE CITY, FL 32055
(386) 365-3316

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HECKSCHER DRIVE COMMUNITY CLUB

9364 HECKSCHER DRIVE JACKSONVILLE, FL 32226

TOWN MEETING

Position Paper on Proposed Dredging of the St. Johns River

PROBLEM:

Local residents' concern over damage to river banks and loss of property caused by dredging of river.

BACKGROUND:

Erosion along the St. Johns River (SJR) banks greatly increased since the late 1970's. Several sink holes claimed much of the north bank at Mile Point. Some properties in that area lost over 100′ of land. In the opinion of affected land owners, dredging causes accelerated erosion. The absence of adequate research by any government agency, before dredging, can only be considered negligent.

Dr. Barry Beck, Director, Florida Sinkhole Research Institute, University of Central Florida in Orlando, stated that in his expert opinion the sink holes (termed subaqueous slumps) were probably the result of dredging. The Metropolitan Insurance Company denied a claim at the advice of Forensic Engineer Consultants, Yaxley and Gilmore, who agreed with Dr. Beck. These sinkholes and this accelerated erosion are caused occurrences rather than natural disasters.

The US Army Corps of Engineers (CoE) investigated. At the encouragement of US. Representative Charles Bennett, the CoE enlisted the assistance of the CoE Experiment Station in Vicksburg, Mississippi.

The Vicksburg report clouded the assertion by the CoE that the occurrence of sinkholes and accelerated erosion are definitely not caused by CoE dredging.

All the land owners at Mile Point believe that CoE dredging does cause accelerated erosion (as indicated by a previous petition).

The Vicksburg Report acknowledges that the opinions of the land owners have merit.

DISCUSSION:

Elimination of those sandbars at the NE corner of the Intracoastal Waterway (ICW) and the St. Johns River rerouted the ebbing tides against the North Bank. This resulted in increased water velocities of 6 knots (occasionally greater) in very active eddies and vortices. One can only speculate whether dredging is also responsible for the elimination of those sandbars that had forced the water flow into the center of the river.

> NOTE: Long time residents state that, in the 1960's, one could ride a bicycle on a beach extending from the ferry slip to the ICW. Today that bike ride would be in 30 feet of water 200 feet off shore.

One idea that warrants consideration is to build a training wall (retention wall) 400′ into the river and parallel to the north bank in the Mile Point area. This wall should be about eight feet below the surface on low tide. When dredging, the CoE could place the dredge material between the wall and the bank. Several other areas along the SJR, that are routinely dredged, have experienced severely abnormal erosion. The problems in these areas also needs to be addressed.

PROPOSAL:

HDCC requests that the banks of the river be given the same priority of concern and action as the channel. HDCC requests that independent geologists and hydrologists be retained by Jacksonville Port Authority to study and recommend solutions to solve sinkhole and erosion problems along both sides of the river for the entire 14 miles where dredging is proposed.

SUMMARY:

HDCC is intensely interested in the St. Johns River Dredging Plan. We request timely notice and a standing invitation to any meeting held by any agency involved in planing and implementing this project. HDCC believes the protection of the banks deserves the same priority as channel dredging and that solutions to these problems should be funded by both the government and industry in and around Jacksonville who will profit from a deeper channel.

Approved January 11, 1998 by HDCC Board of Directors, Jessie Sammons President

APPENDIX F - SECTION 404(B) (1) EVALUATION

SECTION 404(b) (1) EVALUATION

JACKSONVILLE HARBOR (MILE POINT) NAVIGATION STUDY
DUVAL COUNTY, FLORIDA

I. Project Description

a. Location. The study area is located in the City of Jacksonville, Duval County, Florida. It includes the confluence of the St. Johns River and Intracoastal Waterway (IWW), the Mile Point training wall, the Mile Point shoreline, the western portion of Helen Cooper Floyd Park, and Great Marsh Island.

b. General Description. The work would involve the reconfiguration of the Mile Point training wall (see Appendix A: Engineering Design and Cost Estimates for detailed drawings and more info). The existing western portion of the Mile Point Training Wall as well as the western portion of Helen Cooper Floyd Park would be removed, and the area dredged to a depth of -12 feet plus -1 foot of overdepth, total of -13 feet. This would open up the confluence of the Intracoastal Waterway (IWW) with the St. Johns River, on the south side of the river. Two new sections of training wall would also be constructed. The east leg would tie into the remaining portion of the existing wall, and turn to the south along the eastern side of the IWW. The west leg of the new wall would be built along the western side of the IWW, and would wrap around the northern shoreline of Great Marsh Island. As described in the main report, the objectives of this work are to provide navigation benefits as well as reduce erosion along Mile Point.

The proposed work would impact 8.15 acres of salt marsh at Helen Cooper Floyd Park. Using the Uniform Mitigation Assessment Method, the Corps has determined that 18.84 acres of mitigation would be required to offset this loss. Mitigation would be performed by restoring eroded salt marsh at nearby Great Marsh Island. As a beneficial use of dredged material, the Corps proposes to restore the entire eroded area at the island, which is an estimated 53 acres. . The restoration would close off the current connection between Chicopit Bay and the St. Johns River. This connection was created in the 1990's when the salt marsh in this location eroded away. Consequently, the Corps proposes to construct a flow improvement channel in Chicopit Bay which would help restore the bay's historic eastern connection with the IWW, improve flushing within the bay, and provide deeper water Essential Fish Habitat. The channel would begin at the IWW, go through the bay, and end at the mouth of Mt. Pleasant Creek. All dredged material generated by the project would be used to restore salt marsh at Great Marsh Island (see Appendix D: Mitigation Plan and Incremental Analysis for more detail).

c. Authority and Purpose. Resolution, Docket 2550, of House Committee on Transportation and Infrastructure adopted March 24, 1998 for Mile Point, Florida states: "Resolved by the Committee on Transportation and Infrastructure of the United States House of Representatives, That, the Secretary of the Army is requested to review the report of the Chief of Engineers on Jacksonville Harbor, Florida, published as House Document 214, Eighty-ninth Congress, 1st Session, and other pertinent reports to determine whether any modifications of the recommendations contained therein are advisable at the present time in the interest of navigation and related purposes, with particular reference to erosion of the Mile Point shoreline."

d. General Description of Dredged or Fill Material.

(1) General Characteristics of Material. Dredged material from the project area consists primarily of sand, with some silt, clay, and shell. Quarry rock or concrete structures would be used to reconfigure the Mile Point Training Wall.

(2) Quantity of Material. An estimated 890,000 cubic yards (cy) of dredged material would be removed from the project footprint. Approximately 26,900 cy of armor stone (boulders) would be used to create the east leg of the new training wall, and 11,900 cy of smaller stone would be used for bedding. Concrete structures or an estimated 36,900 cy of armor stone would be used to construct the west leg of the wall, and 18,400 cy of smaller stone would be used for bedding. Approximately 14,600 cy of armor stone from the existing western portion of the Mile Point training wall would be relocated and used to build the new wall.

(3) Source of Material. Dredged material would come from the western portion of Helen Cooper Floyd Park, IWW, and the flow improvement channel. Rock would be quarried.

e. Description of the Proposed Discharge Site(s).

(1) Location. Salt marsh restoration area at Great Marsh Island.

(2) Size. Approximately 53 acres.

(3) Type of Site: Proposed salt marsh restoration site.

(4) Type(s) of Habitat. Historically salt marsh, but has eroded away and become open water.

(5) Timing and Duration of Discharge. Timing of project is undetermined and duration should be less than 16 months. However, additional material may need to be added to the restoration site after initial settling in order

to achieve the desired elevation for salt marsh which would lengthen the duration (see Appendx D: Mitigation Plan and Incremental Analysis for more detail).

f. Description of Disposal Method. A cutter-head dredge shall be used and the dredged material pumped through a pipeline to the restoration site. The restoration site shall be confined with the use of water dams or geo-tubes.

II. Factual Determinations

a. Physical Substrate Determinations.

(1) Substrate Elevation and Slope. The IWW has a sloped bottom with an authorized depth of -12 feet plus 2 feet of allowable overdepth, for a total of -14 feet authorized depth. Actual depths can vary widely through the year due to shoaling. The western portion of Helen Cooper Floyd Park has an estimated average maximum upland elevation of + 6 feet and slopes downward to salt marsh and then open water. The depths of the restoration site vary widely from -0.7 feet to -37.5 feet.

(2) Sediment Type. Unconsolidated with sand, silt, clay and shell.

(3) Dredged/Fill Material Movement. Dredged material will be contained within the restoration area with geo-tubes and water dams (see Appendix A: Engineering Design and Cost Estimates).

(4) Physical Effects on Benthos. Benthic organisms would be impacted by dredging activity and rock placement operations. Re-colonization should begin in less than one year. However, full recovery may require additional time.

(5) Actions to minimize impacts. Dredge location and placement operations would be monitored to insure that construction activities are performed in authorized project areas only, turbidity sampling shall be conducted, and containment structures used at the restoration site.

b. Water Circulation. Fluctuation and Salinity Determinations.

(1) Water Column Effects.

(a) Salinity: No significant effect.
(b) Water Chemistry: No significant effect.
(c) Clarity: Turbidity would temporarily decrease clarity.
(d) Color: Turbidity would temporarily change color.
(e) Odor: No significant effect.
(f) Taste: No significant effect.
(g) Dissolved Gas Levels: No significant effect.

(h) Nutrients: No significant effect.

(2) Current Patterns and Circulation.

(a) Current Patterns and Flow: Dredging and rock placement operations would affect current patterns or flow, which should provide navigation benefits and reduce erosion along Mile Point. The proposed restoration of Great Marsh Island would close the northern connection between Chicopit Bay and the St. Johns River. This connection was created by the erosion and loss of salt marsh. Shoaling within the bay has also decreased the amount of flow or flushing effect coming from the east, or from the bay's historic connection with the Intracoastal Waterway. Therefore, the Corps proposes to construct a flow improvement channel within Chicopit Bay, which should improve the flushing of the bay as well as provide deeper water Essential Fish Habitat.
(b) Velocity: Velocities would change within the study area, but significant impacts are not anticipated.
(c) Stratification: No significant effect.
(d) Hydrologic Regime: Currents in the project area are primarily tidal, and the tidal regime would not be affected.

(3) Normal Water Level Fluctuations. Tides in the project area are semi-diurnal with varying levels throughout the year. The project would not affect normal water level fluctuations.

(4) Salinity Gradients. The project would not affect salinity gradients.

(5) Actions to minimize impacts. Turbidity would be monitored per the requirements of the state permit. If at any time the turbidity standard were exceeded, those activities causing the violation would cease.

c. Suspended Particulate/Turbidity Determinations.

(1) Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Disposal Site. There will be a temporary increase in suspended particulates and turbidity levels in the vicinity of the disposal site.

(2) Effects (degree and duration) on Chemical and Physical Properties of the Water Column.

(a) Light Penetration: Light penetration would decrease during dredging and placement operations in open water sites.
(b) Dissolved Oxygen: Dissolved oxygen levels would not be significantly altered by this project.
(c) Toxic Metals and Organics: Sediments in the study area are not known to contain toxic metals and organics.
(d) Pathogens: This project would not cause any release of pathogens.
(e) Aesthetics: Turbidity would temporarily impact aesthetic quality of the project channel and open water placement locations.

(3) Effects on Biota.

(a) Primary Production, Photosynthesis: The project would not have a significant impact on primary production or photosynthesis.
(b) Suspension/Filter Feeders: Turbidity would affect suspension/ filter feeders, but the effects would be temporary.
(c) Sight Feeders: Sight feeders would be affected by turbidity, but the effects would be temporary.

(4) Actions to minimize impacts. As stated earlier, turbidity would be monitored per the requirements of the state permit. If at any time the turbidity standard were exceeded, those activities causing the violation would cease.

d. Contaminant Determinations. Levels of contaminants are not expected to have a significant impact on plankton, benthos, nekton, or the aquatic food web.

e. Aquatic Ecosystem and Organism Determinations. .

(1) Effects on Plankton: Significant effects on plankton are not anticipated.
(2) Effects on Benthos: Benthos would be impacted by the project, but benthic organisms would be expected to begin recovery within one year. However, full recovery may take a longer period of time.
(3) Effects on Nekton: Significant effects on nekton are not anticipated.
(4) Effects on Aquatic Food Web: As stated earlier, benthos would be impacted, but additional significant effects on the food web are not anticipated.
(5) Effects on Special Aquatic Sites.

(a) Sanctuaries and Refuges: Dredging of the project area is not expected to have a significant impact on the nearby Nassau River-St. Johns River Marshes Aquatic Preserve or the Timucuan Ecological and Historic Preserve. This work would be performed in compliance with the Water Quality Certification issued by the state of Florida.
(b) Wetlands: The proposed work would affect 8.15 acres of salt marsh, which shall be mitigated.
(c) Mud Flats: Significant impacts to mud flats are not anticipated.
(d) Vegetated Shallows: Other than impacts to salt marsh, impacts to other vegetated shallows are not anticipated.
(e) Coral Reefs: There are no coral reefs in the project area.
(f) Riffle and Pool Complexes: There are no riffle and pool complexes in the project area.

(6) Threatened and Endangered Species. The project would not have a significant impact on threatened and endangered species.

(7) Other Wildlife. Loss of wetlands and uplands at Helen Cooper Floyd Park would affect other wildlife. The project as planned includes adequate mitigation for the habitat impact from the navigation project. Impacts to wildlife using upland areas should be minimal.

(8) Actions to Minimize Impacts. Measures shall be taken to avoid or minimize impacts to threatened and endangered species as well as other wildlife (see Section 7.2 of the main report).

f. Proposed Disposal Site Determinations

(1) Mixing Zone Determination. This determination will be in accordance with the Water Quality Certification issued for this project.

(2) Determination of Compliance with Applicable Water Quality Standards.
The work would be conducted in accordance with the Water Quality Certification issued for this project.

(3) Potential Effects on Human Use Characteristic.
(a) Municipal and Private Water Supply: No effects are anticipated.
(b) Recreational and Commercial Fisheries: Impacts to fisheries would not be significant.
(c) Water Related Recreation: Construction activities would temporarily disrupt water related recreation.

(d) Aesthetics: Construction would temporarily impact aesthetics.
(e) Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves: Dredging of the project area is not expected to have a significant impact on the nearby Nassau River-St. Johns River Marshes Aquatic Preserve or the Timucuan Ecological and Historic Preserve. This work would be performed in compliance with the Water Quality Certification issued by the state of Florida.

g. Determination of Cumulative Effects on the Aquatic Ecosystem. Dredging and placement operations would have impacts on the aquatic ecosystem. However, the proposed salt marsh restoration would provide substantial wetland functions and values that should offset these losses. Most impacts during construction should be relatively short-term. The project in conjunction with other on-going activities should not have a significant cumulative effect on the aquatic ecosystem (see Section 7.2.25 for more information).

h. Determination of Secondary Effects on the Aquatic Ecosystem. The proposed work may provide a stimulus for economic growth, which could encourage further deepening of the port. These actions could further impact the aquatic ecosystem.

III. Findings of Compliance or Non-Compliance With the Restrictions on Discharge

a. Adaptation of the Section 404(b)(l) Guidelines to this Evaluation: No significant adaptations of the guidelines were made relative to this evaluation.

b. Evaluation of Availability of Practicable Alternatives to the Proposed Discharge Site Which Would Have Less Adverse Impact on the Aquatic Ecosystem: The proposed discharge site is a salt marsh restoration area, and the restoration shall provide a substantial increase in wetland acreage.

c. Compliance with Applicable State Water Quality Standards: Dredging and material placement activities would be performed in compliance with the Water Quality Certification issued by the state of Florida.

d. Compliance with Applicable Toxic Effluent Standard or Prohibition Under Section 307 Of the Clean Water Act: The discharge operation would not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

e. Compliance with Endangered Species Act of 1973: The proposed project would not jeopardize the continued existence of any species listed as threatened or endangered or result in the destruction or adverse modification of any critical habitat as specified by the Endangered Species Act of 1973.

f. Compliance with Specified Protection Measures for Marine Sanctuaries Designated by the Marine Protection. Research, and Sanctuaries Act of 1972: This act does not apply to this project.

g. Evaluation of Extent of Degradation of the Waters of the United States

(1) Significant Adverse Effects on Human Health and Welfare

(a) Municipal and Private Water Supplies: No effect.
(b) Recreation and Commercial Fisheries: No substantial adverse impacts are anticipated.
(c) Plankton: No substantial adverse impacts are anticipated.
(d) Fish: No substantial adverse impacts are anticipated.
(e) Shellfish: No substantial adverse impacts are anticipated.
(f) Wildlife: No substantial adverse impacts are anticipated.
(g) Special Aquatic Sites: No substantial adverse impacts are anticipated.

(2) Significant Adverse Effects on Life Stages of Aquatic Life and Other Wildlife Dependent on Aquatic Ecosystems: Most impacts should be relatively short-term, and not significant.

(3) Significant Adverse Effects on Aquatic Ecosystem Diversity, Productivity and Stability: No significant adverse effects on aquatic ecosystem diversity, productivity and stability are anticipated.

(4) Significant Adverse Effects on Recreational, Aesthetic, and Economic Values: Recreation and aesthetic values would be temporarily disrupted due to construction activity, but significant effects are not anticipated.

h. Appropriate and Practicable Steps Taken to Minimize Potential Adverse Impacts of the Discharge on the Aquatic Ecosystem: Measures shall be taken to minimize impacts (please see Section 7 of the main report for more information).

i. On the basis of the guidelines the proposed disposal site(s) for the discharge of dredged or fill material is specified as complying with the requirements of these guidelines, with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects on the aquatic ecosystem.

FINDING OF COMPLIANCE
FOR
JACKSONVILLE HARBOR (MILE POINT) NAVIGATION STUDY
DUVAL COUNTY, FLORIDA

1. No significant adaptations of the guidelines were made relative to this evaluation.

2. The proposed reconfiguration of the Mile Point Training Wall would affect current patterns or flow, which should provide navigation benefits and reduce erosion along Mile Point.

3. The work would impact 8.15 acres of salt marsh. This loss would be offset by restoring an estimated 53 acres of salt marsh at nearby Great Marsh Island. All dredged material generated by the project would be placed within the proposed restoration site. The restoration would close the existing northern connection between Chicopit Bay and the St. Johns River. This connection was created by the erosion and loss of salt marsh. Shoaling within the bay has also decreased the amount of flow or flushing effect coming from the east, or from the bay's historic connection with the Intracoastal Waterway. Therefore, the Corps proposes to construct a flow improvement channel within Chicopit Bay, which should improve the flushing of the bay as well as provide deeper water Essential Fish Habitat.

4. The placement of dredged material at the salt marsh restoration site would not violate any applicable state water quality standards with the possible exception of turbidity. Therefore, turbidity standards would be monitored per the Water Quality Certification issued by the state of Florida. If a turbidity violation is noted, then those activities causing the violation shall be terminated. The disposal operation will not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

5. The proposed work will not harm any endangered species or their critical habitat, or violate protective measures for the nearby Nassau River-St. Johns River Marshes Aquatic Preserve or the Timucuan Ecological and Historic Preserve.

6. The proposed dredge work and disposal of dredged material within the salt marsh restoration site will not result in significant adverse effects on human health and welfare, including municipal and private water supplies, recreation and commercial fishing, plankton, fish, shellfish, wildlife, and special aquatic sites. Significant adverse effects on life stages of aquatic life and other wildlife, aquatic ecosystem diversity, productivity and stability, and recreational, aesthetic and economic values will not occur.

7. Appropriate steps shall be taken to minimize potential adverse impacts of the discharge on aquatic systems.

8. On the basis of the guidelines the proposed disposal sites for the discharge of dredged material is specified as complying with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects to the aquatic ecosystem.