

**JACKSONVILLE HARBOR
DUVAL COUNTY, FLORIDA
NAVIGATION STUDY**

**Final
General Reevaluation Report
And Environmental Assessment**

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

October, 2002

SYLLABUS

This report provides the results of engineering, economic, environmental, and real estate studies conducted on the advisability of improving Jacksonville Harbor, Florida, for navigation. The Jacksonville Port Authority requested the original study through a resolution from the Committee on Public Works and Transportation of the United States House of Representatives and is the sponsor.

The general reevaluation report examines an extension of the Water Resources Development Act (WRDA) of 1999, 40-foot project depth, from river mile 14.7 to mile 20. While that segment received consideration in the September 1998 feasibility study, sufficient benefits did not exist for deepening at that time. Since that time conditions have changed in that 5.3 mile segment concerning petroleum bulk movements and container ship traffic as well as changes in ownership and expansion of petroleum and container ship terminals. A reevaluation of benefits based on new information provided the impetus for this study.

Study Results

Study results concluded that deepening the existing main Federal channel from a 38 to a 40-foot project depth from about river mile 14.7 to mile 20 (Cut 50 through Terminal Channel Station 65:00) with addition of a widener at the Chaseville Turn represents the National Economic Development (NED) plan of improvements. That group of improvements is identified as plan 3A, which consists of a combination of measures including the Chaseville Turn widener and deepening of main channel segments 3A1 and 3A2. The 40-foot project depth includes a 2-foot required and 2-foot allowable overdepth to replace the existing advance maintenance template of the 38-foot project.

The total first cost of the NED plan is presently estimated as \$15,962,000. Equivalent annual benefits and costs, based on a discount rate of 6.125 percent and a 50-year period of economic evaluation, are estimated as \$1,995,000 and \$1,184,000, respectively. Equivalent annual net benefits amount to \$811,000. The benefit to cost ratio is 1.7 to 1.

Construction and maintenance of the proposed NED Plan make use of an existing upland confined disposal facility on the west end of Bartram Island. That confined disposal facility will receive all material excavated from the main channel and widener.

Risk and Uncertainty

Risk and uncertainty associated with the economic analysis are addressed through sensitivity analyses that modify the values associated with key assumptions and/or input parameters to determine the impact of the change on estimated benefits. A sensitivity analysis assuming zero growth demonstrated that future growth is required

for economic justification of the proposed improvements in Segment 3A2, but not required Segment 3A1. Recognizing the dynamic nature of the shipping business and the historic utilization of the Port's Talleyrand Terminal in Segment 3A2, it was determined that assumed annual growth rates for containerized cargo, which represents approximately 92 percent of total benefits in Segment 3A2, would require additional sensitivity analyses. Accordingly, two alternative scenarios to the "most likely" or base forecasted rates were assessed:

Scenario 1: Corps guidance recommends adjusting estimated growth rates after year 20 (2025) of the project life to account for greater uncertainty. A growth rate of 3 percent was assumed to year 20; and 1.5 percent, or one-half of the 3 percent, for the remaining 30 years for containerized cargo. The 3 percent is slightly below typical gross domestic product (GDP) and real personal income. The 1.5 percent is approximately annual population growth.

Scenario 2: Actual tonnage for fiscal year 2002 is used as a base and tonnage increased each year by only 1.5 percent. The compound annual growth rates for the two scenarios are shown below, contrasted to the "most likely", or base forecast:

Base:	Scenario 1:	Scenario 2:
2001 1.5%	2001 1.5%	2001 Actual
2002 1.5%	2002 1.5%	2002 Actual
2003 3.0%	2003 3.0%	2003 1.5%
2004 4.0%	2004 3.0%	2004 1.5%
2005 to 2010 5%	2005 to 2024 3.0%	2005 to 2024 1.5%
2011 to 2055 3 %	25 to 2055 1.5%	2025 to 2055 1.5%

Benefits were computed using these alternative average annual growth rates and are compared to the project cost in Table D-26 and Table D-27, respectively, of the Economics Appendix. Segment 3A2 is economically justified for both scenarios.

**JACKSONVILLE HARBOR, FLORIDA
DUVAL COUNTY
GENERAL REEVALUATION REPORT**

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INTRODUCTION

1. The Jacksonville Port Authority working through the House Public Works and Transportation Committee requested the Corps study the feasibility of improving navigation in Jacksonville Harbor. The Port Authority believes that the existing navigation project could be improved for operational efficiency and safety of deep draft commercial vessels by providing a deeper channel with widening in certain areas. Such deepening and widening could reduce vessel operation costs on the existing project.

2. A reconnaissance study and report completed in April 1994, indicated sufficient justification for investigations to continue in more detail assessing project feasibility. Funding to initiate the study was received in August 1994. Additional funding enabled completion of the feasibility study. The Final Feasibility Report and Environmental Impact Statement, dated September 1998, was funded and initiated on August 5, 1994, submitted to South Atlantic Division September 25, 1998, and approved by HQUSACE with the signing of the Chief of Engineers on April 21, 1999. That report received authorization in the Water Resources Development Act (WRDA) of 1999 and included deepening the main channel from a project depth of 38 feet to 40 feet from the entrance channel to about river mile 14.7. A copy of the September 1998 EIS is available on our web site at <http://www.saj.usace.army.mil/pd/envdocs/envdocsb.htm>. and a copy of the July 1997 U.S. Fish and Wildlife Service Coordination Act Report (CAR) at <http://www.saj.usace.army.mil/pd/envdocs/JaxHbr/car.html>.

3. This General Reevaluation Report examines an extension of the WRDA 1999, authorized 40-foot project depth, from river mile 14.7 to mile 20. While that segment received consideration in the September 1998 feasibility study, sufficient benefits did not exist for deepening at that time. Since that time conditions have changed concerning petroleum bulk movements and container ship traffic in that segment as well as changes in ownership and expansion of petroleum and container ship terminals. A reevaluation of benefits based on new information provided the impetus for this study.

NEW PETROLEUM BULK MOVEMENTS

4. In July 1998, the District received a letter from ST Services requesting a reanalysis of transportation savings benefits due to changed conditions. ST Services owns and operates a marine petroleum product facility located in Segment 3A. In December 1995, it purchased the facility from Steuart Petroleum Company, which had purchased the adjacent Shell Oil facility in 1991. Since ST Services purchased the facility annual petroleum product receipts have increased from 5 million barrels to 20 million barrels, and deeper-drafting tankers are calling. The significant growth is due to ST Services expansion of business to achieve a more efficient use of the terminal's capacity, which was previously underutilized. The economic analysis in the feasibility report was based on information received from Steuart Petroleum Company. The analysis reflects cargo and vessel traffic data through 1993. This information resulted in minor tidal delay elimination benefits. Based on more recent data provided by ST

Services, the District determined that a reanalysis of transportation savings benefits was warranted. However, the District also determined that there was insufficient time to complete an appropriate reevaluation of navigation improvements in Segment 3A in time for incorporation of any improvements into the WRDA 1999. Accordingly, the District decided that it would pursue a post authorization change if the reanalysis determined that navigation improvements were economically justified.

NEW CONTAINER SHIP OPERATIONS

5. A December 12, 2000, letter from the Jacksonville Port Authority (JPA) requested further evaluation of the main channel to include the JPA Talleyrand Terminals. One of JPA's existing container ship operators grew and developed a partnership with other lines to expand into the South American market. The leading partner in that consortium is currently a tenant at JPA's newly renovated Talleyrand Terminal. The Talleyrand Terminal provides a significant rail advantage for that group's expanded service. The new container ship and petroleum tanker movements provided the impetus for this reevaluation.

STUDY AUTHORITY

6. A reevaluation request in the Water Resources Development Act of 1999, 106th Congress, U.S. House of Representatives Report 106-298, Conference Report, dated August 5, 1999, Section 101(a) (17) provides the study authority as follows:

"The conferees understand the Report of the Chief of Engineers for the navigation project at Jacksonville Harbor, Florida, recognizes that a re-evaluation of the project based on a potential change in the commercial navigation fleet could result in redesignation of the locally referred plan as the National Economic Development Plan. Furthermore, if the locally preferred plan is redesignated as the National Economic Development Plan, cost sharing for the recommended plan shall be in accordance with section 101 of the Water Development Act of 1986."

7. Authorization of the Final Feasibility Report and Environmental Impact Statement authorization in the Water Resources Development Act (WRDA) of 1999 and receipt of Preconstruction Engineering and Design (PED) funds enabled the continuation of the study process to determine the feasibility of extending the 40-foot project depth from mile 14.7 to mile 20.

STUDY PURPOSE AND SCOPE

8. The study involved an evaluation of problems associated with navigation on the existing Jacksonville Harbor project. Specifically, the study reviewed the needs of the Port Authority, commercial shippers, pilots, and concerns of the United States Coast Guard (USCG) and Navy (USN). Overall environmental, social, and economic

concerns were evaluated in the study area and identified to the extent possible within the limits of available technology and study funding restrictions.

9. Alternative solutions for correcting problems and providing deeper and wider channels for safer transit of large commercial vessels with more cargo tonnage onboard were identified for evaluation of costs, benefits, and environmental impacts associated with implementation. Base data for that evaluation came from existing survey and maintenance work records on the harbor project as well as information from the sponsor, commercial shippers, USCG, USN, Federal and State agencies. The Final Feasibility Report and Environmental Impact Statement dated September 1998 provided reference information for core borings, hydrographic surveys, disposal area surveys, and tidal data and velocity profile data in support of hydrodynamic and ship simulation modeling work.

10. Economic investigations provided tangible navigation benefits. An environmental assessment reviewed U.S. Fish and Wildlife Service Coordination, National Marine Fisheries Service coordination, and cultural resource investigations. The study resulted in the formulation of a plan that appears to safely, effectively, and economically resolve the commercial navigation problems with a minimum impact on the environment.

PRIOR STUDIES AND REPORTS

11. Federal interest in navigation on the St. Johns River started as early as 1869. Interest in improving the St. Johns River from Jacksonville to the Atlantic Ocean for deep draft commercial vessels has been a continued effort since that time. Table 1 contains the prior studies and reports over the years on that reach of the river which is today the deep draft portion of the Jacksonville Harbor project.

Table 1
Prior Studies and Reports
Jacksonville Harbor

		CHIEF OF					
		ENGINEERS	PUBLISHED DOCUMENTS				
TYPE	REPORT	RECOMMEN-	CONGRESSIONAL DOCUMENTS				
<u>STUDY</u> ¹	<u>DATE</u>	<u>DATIONS</u>	<u>TYPE</u> ²	<u>NO.</u>	<u>CONGRESS</u>	<u>SESSION</u>	<u>OTHR</u>
S	01/29/1869	---					3
S	06/30/1872	---					4
S	03/25/1879	Favorable					5
S	02/18/1895	Favorable	H.Ex	346	53	3	6
PE	04/30/1909	Favorable					
S	11/22/1909	Favorable	H	611	61	2	
PE	04/29/1922	Favorable					
S	03/04/1926	Favorable	H	483	70	2	
S	06/03/1935	---					
S	11/19/1940	Favorable	H	322	77	1	
S	05/23/1944	Favorable	S	230	78	2	
S	08/09/1945	Favorable	S	179	79	2	
PE	12/26/1950	Unfavorable					
S	05/19/1965	Favorable	H	214	89	1	
S	05/15/1981	Favorable	H	233	98	2	
R	06/29/1994	Favorable					
FR	04/21/1999	Favorable	S	507	106		7

1 Abbreviations are: PE = Preliminary Evaluations R = Reconnaissance Report
FR = Feasibility Report S = Surveys

2 Symbols are: H = U.S. House of Representatives Document S = U.S. Senate Document

3 Annual Report of the Chief of Engineers, 1869, page 266.

4 Annual Report of the Chief of Engineers, 1872, page 672.

5 Annual Report of the Chief of Engineers, 1879, page 767.

6 Annual Report of the Chief of Engineers, 1895, page 1586.

7 Public Law 106-53, Aug. 17, 1999, 106th Congress, "Water Resources Development Act of 1999", Sec.101(a)(17)

12. Two other studies, not included in table 1, involved the consideration of navigation improvements in the vicinity of Blount Island. Both of those studies were under the authority of Section 107 of the 1960 River and Harbor Act, as amended. The reconnaissance study and report, dated December 1985, considered the Federal

interest of widening the turn at the junction of the main ship channel in Jacksonville and the Blount Island west channel. The study results showed economic justification for the widener. Just prior to the report, Section 102 of Public Law 99-141, dated November 1, 1985, provided the authorization for widening of the turn in Jacksonville with the use of available operation and maintenance funds. Based on language in the Act, no further study was needed for authorization of the work. A second reconnaissance study and report, dated August 1989, considered the deepening of the channel on the west side of Blount Island. The study was favorable but the Jacksonville Port Authority deferred further study pending the availability of funds. Since that time the WRDA 1999 authorization included deepening that channel from 30 feet to 38 feet based on the 04/21/1999 feasibility study listed in Table 1 above.

MILL COVE AND CHICOPIT BAY

13. Two related study areas adjacent to the Jacksonville Harbor Federal navigation project include Mill Cove and Chicopit Bay shown in figure 1. Both areas have experienced shoaling problems as a result of the Federal navigation project. A May 1981 study of Mill Cove recommended two diversion features connected by a channel 6 feet deep by 80 feet wide to improve flow and circulation through the area. As directed by the Board of Engineers for Rivers and Harbors (BERH), a former review agency within the Corps of Engineers, only the flow diversion features were constructed. BERH recommended monitoring of the impact of the diversion features on the cove area before undertaking the 6 by 80-foot channel.

14. Following that recommendation, section 317 of the Water Resources Development Act of 1996 (WRDA 96) modifies the project for navigation, Jacksonville Harbor (Mill Cove), Florida, to direct the Secretary to carry out a project for mitigation, consisting of measures for flow and circulation improvement within Mill Cove, at an estimated total Federal cost of \$2,000,000.¹ No work may be undertaken until funds are appropriated for that purpose.² Fiscal year 2000 appropriations have allowed for initiation of plans and specifications for the flow and circulation improvement channel. Contract award and construction of the flow improvement channel occurred in fiscal year 2002.

15. The Chicopit Bay 1135 Environmental Restoration Study currently in progress, but not approved yet for implementation, will address degradation of the ecosystem in that area. The degradation includes loss of shallow bay bottom habitat due to shoaling; changes in flow and circulation in Chicopit Bay and the adjoining creeks due to growth of the shoal; and loss of feeding ground for dolphins and manatees in Mt. Pleasant and Greenfield Creeks due to insufficient water depths. In addition, the loss of Great Marsh Island as a barrier island has resulted in loss of protection for the nearby bay, marsh and hammocks from erosion due to storms, particularly northeasters which occur in the area in the winter. A restored ecosystem might consist of a functioning barrier island with protected bay, marsh and hammocks, improved circulation, shallower or pre-

¹ Public Law 104-303, October 12, 1996. Section 317. Jacksonville Harbor (Mill Cove), Florida.

² CECW-PE MEMORANDUM FOR Commander, South Atlantic Division, ATTN: CBSAD-ET-PL. SUBJECT: Implementation of Section 317 of Water Resources Development Act of 1996 (WRDA 96) - Jacksonville Harbor (Mill Cove), Florida.

breakthrough depths in the shoal area of the bay, or water depths in the adjacent creeks that allow access to feeding grounds for dolphins and manatees.

MILE POINT EROSION STUDY

16. The Mile Point Erosion Study (905(b) Analysis) initiated in November 1999 will provide a preliminary investigation of shoreline erosion problems along the north shoreline of the St. Johns River near Mile Point. Residents living along Heckscher Driver in the Mile Point area believe the loss of shoreline property is related to past dredging activities near the Intracoastal Waterway and the St. Johns River. Pending further review and subsequent approval during fiscal year 2002 the **Section 905(b) Analysis for the Mile Point Shoreline** will allow for a feasibility phase study. The feasibility study will provide hydrodynamic modeling and ship simulation testing of potential structural alternatives to reduce or relocate the troublesome ebb flow currents at the intersection of the Intracoastal Waterway and the St. Johns River.

17. As an interim measure, adjacent to the Mile Point area where catastrophic shoreline failures have occurred, placement of some of the rock material from the WRDA 1999 authorized future deepening project of the main channel has recently received consideration. A Public Notice dated October 17, 2001, requested comments concerning consideration of that area as an interim alternative disposal site for material from the planned deepening of about 14.7 miles of the main channel for Jacksonville Harbor. As of December 2001 comments have been favorable with adjacent landowners expressing strong support.

WATER PROJECTS

18. Besides the Jacksonville Harbor Federal navigation project, there are several other Federal water projects that have an association with the St. Johns River. The United States Navy has a Federal navigation project at the mouth of the St. Johns River. About 5 miles inland along the river from the coastal shoreline is where the Atlantic Intracoastal Waterway crosses the St. Johns River. The Duval County Shore Protection Project extends from the St. Johns River to the Duval County boundary line with St. Johns County. From Jacksonville to Lake Harney is a small boat channel that connects with the Jacksonville Harbor project.

JACKSONVILLE HARBOR

19. The Jacksonville Harbor Federal navigation project is a deep draft ship channel that serves large commercial bulk and container traffic as well as some U.S. Navy vessels. As noted in the discussions on prior studies and reports, the history of Jacksonville Harbor goes back to the late 1800's as navigation improvements on the St. Johns River started. One of the first navigation problems encounter by early mariners involved getting across the sandbar at the mouth of the St. Johns River. Jean Ribault's log of his discovery of the St. Johns River in the vicinity of Jacksonville about 1562 reads:

“The night now approaching, we returned to our ships, for we durst not hazard our ship because of the bar of sand that was at the mouth of the river; notwithstanding, at full tide there were at least two fathoms and a half of water, and it was but a leap over a surge to pass this bar, not exceeding two cables (1,200 feet) in length, and then afterwards there were six or seven fathoms of water everywhere ... a ship of four to six hundred tons may enter therein at all tides, yea, of afar greater burden if there are pilots.”

20. River and Harbor Act of October 27, 1965. The River and Harbor Act of October 27, 1965, provided for depths of 38 feet in the main ship channel to mile 20 over bottom widths that varied from 400 to 1200 feet. The extra bottom width over 400 feet was in the bends and turns of the river. Completion of that work to provide a depth of 38 feet was in 1978. From mile 20 to Commodore Point, the channel has a depth of 34 feet. The channel has a depth of 30 feet from Commodore Point to the terminus of the project at the Florida East Coast (FEC) railroad bridge. The Arlington Cut channel and old river channel around the north side of Blount Island from Fulton Cut to Dame Point is 30 feet over a bottom width of 400 feet. The 38-foot Jacksonville Harbor project described above is shown on figure 1.

21. WRDA 1999. The most recent deepening authorization occurred in the Water Resources Development Act (WRDA) of 1999 based on the Report of the Chief of Engineers dated April 21, 1999 (figure 1). That authorization consists of deepening a 3-mile-long segment of the West Blount Island (WBI) Channel, modifying 14.7 miles of the main channel in the St. Johns River and constructing five advance maintenance zones or sediment traps. The West Blount Island Channel project depth increases from an existing depth of 30 feet to 38 feet below mean low water from its intersection with the main channel in the St. Johns River to the Jacksonville Port Authority petroleum terminal. The WBI channel width of 300 feet remains the same. Modification of the main channel from the entrance to river mile 14.7 includes realigning a short channel segment, reducing the existing channel bottom widths, and deepening. The realignment occurs along cuts 39 through 41 between miles 7 and 8.3. From the main entrance channel in the Atlantic Ocean to mile 14.7 a reduction in channel bottom widths results in new bottom widths varying from 375 feet to 950 feet, or reductions of 25 to 350 feet from the existing bottom widths which currently vary from 400 to 1200 feet. The project depth of the main channel from the entrance to river mile 14.7 increases from 38 feet to 40 feet.

ST. JOHNS RIVER - JACKSONVILLE TO LAKE HARNEY

22. The initial navigation project authorization was in the Rivers and Harbors Act of March 1899 for a channel 13 feet deep over a bottom width of 200 feet deep from the Jacksonville FEC railroad bridge to Palatka. The River and Harbors Act of June 25, 1910, authorized a channel depth of 8 feet over a bottom width of 100 feet from Palatka to Sanford where the channel depth reduced to 5 feet and extended to Lake Harney. Further improvements provided the current depths of 12 feet from Palatka to Sanford and 10 feet from Sanford to Lake Harney over the same bottom width (100 feet). Figure 2 shows the project that exists between Jacksonville and Lake Harney. Commercial traffic on that waterway consists primarily of tugs moving barges with fuel for the power plants along the river.

U.S. NAVY CHANNEL

23. The United States Navy has a channel at the mouth of the St. Johns River to provide access for naval ships between the Mayport Navy Basin and the Atlantic Ocean. The basin and channel have a depth of 42 feet. From the ocean to the junction of the side channel into the Navy Basin, maintenance of the ship channel is part of Federal Civil Works program. From the junction with the main Jacksonville Harbor ship channel, the United States Navy has the responsibility to maintain the side channel into and including the Navy basin at Mayport.

DUVAL COUNTY SHORE PROTECTION

24. Authorization of the Duval County Shore Protection Project was in 1965. The project provided for a protective and recreational beach with nourishment for the first 10 years along 53,000 feet of shore from the St. Johns River to the Duval-St. Johns County line (shown on figure 3). Section 934 of the 1986 Water Resources Act (Public Law 99-662) allows the Secretary of the Army, acting through Chief of Engineers, to extend periodic beach nourishment at authorized shore protection projects for a period of 50 years. A Section 934 study found that future periodic nourishment is feasible for the project and the findings are in an October 1990 reevaluation report.

25. Suitable sand material from the Jacksonville Harbor navigation project goes primarily in the Mayport Naval Station shoreline reach of the Duval County Shore Protection Project. That material comes mainly from maintenance of the entrance channel and inner channel reach near Mayport. The Mayport Naval Station shoreline is the most northern area of the shore protection project. Sand placed in that area provides protection to upland development and a source of supply for continued nourishment of the shore to the south.

26. About 603,000 cubic yards of maintenance dredging material from the Jacksonville Harbor Entrance Channel was placed on Huguenot Park and along the Navy property south of the St. Johns entrance in 1999. The next renourishment contract for the project is currently scheduled for award in FY 2002. Approximately 1.0 million cubic yards of sand is anticipated to be required from a least cost disposal site for this renourishment.³

LITTLE TALBOT ISLAND

27. The feasibility report for the shore protection study for Little Talbot Island in Duval County was completed in November 1998. Construction of a revetment to the south shoreline of Little Talbot Island, Highway A1A and the bridge crossing over Fort George Inlet was recommended in the report. The Florida Department of Transportation is the non-Federal sponsor. The Water Resources Development Act of 1999, Section

³ Colonel Joe R. Miller, District Engineer, Jacksonville District, Presentation to the 43rd Annual Meeting of the Florida Shore and Beach Preservation Association, September 2, 1999, Ft. Lauderdale, FL.

101(b), authorized this project, subject to completion of the Chief of Engineers Report by December 31, 1999.⁴

INTRACOASTAL WATERWAY PROJECT

28. The Intracoastal Waterway Project is primarily a small boat channel that extends from Trenton, New Jersey to Miami, Florida along the east coast of the United States. That waterway crosses the St. Johns River at about mile 5 on the Jacksonville Harbor Federal navigation project on figure 1. At that crossing, the waterway on each side of the river has a bottom width of 125 feet at a depth of 12 feet.

PLAN FORMULATION

29. Jacksonville Harbor is in Duval County and at the mouth of the St. Johns River where it empties into the Atlantic Ocean. The harbor project provides access to deep draft vessel traffic using terminal facilities located in the City of Jacksonville. Those port facilities handle around 19 million tons of cargo a year based on statistics in recent years. That tonnage is sufficient to place the port among the top three cargo ports in the State of Florida. The city is the largest urban and business complex in northeast Florida and southeast Georgia.

EXISTING CONDITIONS

30. From the Atlantic Ocean inland to about Blount Island, there are tidal saltwater marshes on either side of the St. Johns River. The saltwater marshes on the north side of the river are more visible from the river because the south side in that reach has a higher land mass along the bank. That land supports trees and large shrubs as well as commercial and residential development along most of the shoreline. The marsh area behind that development receives tidal flows through the various creeks with openings into the St. Johns River. The primary development on the south side in that reach is at Mayport near the mouth of the river. Once past Mayport, the southern shoreline opens to a large expanse of marsh along the river west to the St. Johns Bluff area. Here the shoreline rises steeply on the south bank and residential development begins along the shore in the City of Jacksonville.

31. In the vicinity of Blount Island on the river, the old St. Johns River channel goes to the north of the island and a manmade cut is to the south of the island. The island itself was once a series of islands in the St. Johns River. The islands were connected using training walls along the river channel to contain the main body of water flow in that navigation channel. Dredged material from maintenance work to remove shoals went along the backside of the training walls and gradually filled the river bottom between the islands. The manmade cut along the south side of Blount Island, known as the Dames Point-Fulton Cut, removed three sharp turns in the river to enable larger

⁴ Colonel Joe R. Miller, District Engineer, Jacksonville District, Presentation to the 43rd Annual Meeting of the Florida Shore and Beach Preservation Association, September 2, 1999, Ft. Lauderdale, FL.

vessels in the world fleet to safely navigate the river. Material from that cut went into the Blount Island areas and into the formation of Bartram Island (formally known as Quarantine Island). Blount Island has since become a major port area for the City of Jacksonville.

32. West of Blount Island, the St. Johns River channel changes direction as it moves around the major metropolitan area of Jacksonville to the upstream limit of the deep draft navigation project. Most of the commercial development and deep draft terminals are in scattered locations on the north and west sides of the river. Most of the south and east sides of the river are residential areas and undeveloped lands such as Bartram Island.

TIDES AND CURRENTS

33. The St. Johns River is tidal up to and above Jacksonville. According to the National Oceanic and Atmospheric Administration⁵, the mean range of tide decreases from 5.5 feet at the ocean to 4.5 feet at Mayport within a 2 mile distance. The jetties and the river topography effectively damp the signal as it progresses into the entrance. The following table summarizes the mean range of tide (mean high water - mean low water) at representative locations:

Table 2		
Mean Tidal Ranges		
Mile (Approx. distance from ocean entrance)	Location	Mean Range of Tide (feet)
2.2	Mayport	4.5
11.0	Dames Point	3.2
15.1	Navy Fuel Depot	2.6
23.2	Jacksonville, Acosta Bridge	1.5
Note: All values computed relative to the 1960-78 National Tidal Datum Epoch		

34. In the St. Johns River, the tidal current consists of saltwater flow interacting with freshwater discharge. According to the U.S. Geological Survey seawater moving upstream from the mouth of the St. Johns River mixes with the river water to form a zone of transition. The chemical character of the water in this zone varies from seawater near the coast to freshwater farther inland. Between the City of Jacksonville and the ocean, the river shows some vertical stratification between seawater and overlying river water. Daily maximum chloride concentrations in the river range from 2,000 mg/L at the Main Street Bridge to 19,000 mg/L at Mayport 50 percent of the days. At Drummond Point, about halfway between these two sites, daily maximum chloride

⁵ *Tide Tables 1997 High and Low Water Predictions, East Coast of North South America Including Greenland*, Issued 1996, National Oceanic and Atmospheric Administration, National Ocean Service, 241.

concentrations exceeded 10,000 mg/L about 50 percent of the days and 15,000 mg/L less than 7 percent of the days.⁶

35. Published Advice. According to the *United States Coast Pilot*, four areas of particular concern exist in the St. Johns River. Vessels should make every effort to avoid meeting at those areas. The first when proceeding from the sea is the Intracoastal Waterway (IWW) at about mile 5. The IWW is used extensively by tows and its junction with the St. Johns River is subject to strong and unpredictable crosscurrents at various stages of the tide. Repair docks on the north side, which may require speed reductions, further complicate the situation.

36. The second area is the Dames Point Turn at about mile 11. Navigation of this sharp turn is complicated by crosscurrents coming from the old channel behind Blount Island which tend to set a vessel deep into the bend on both the flood and ebb. In addition, the channel in this area is used as a turning basin for vessels using Blount Island terminal and the waterfront facilities in the old channel to the west of Blount Island.

37. The third area known as Trout River Cut at about mile 17 extends through rock formations. Deep loaded vessels must exercise great care not to leave the channel in this area. Local knowledge is necessary to predict current effects as they tend to set across the channel on both the flood and ebb. Poor handling vessels should use an assist tug when transiting the area of the Trout River Cut and Chaseville Turn to avoid being set on vessels transferring at the many oil terminals on the west bank of the river.

38. The fourth area or Commodore Point at about mile 22 consists of a nearly 90-degree turn complicated by the Hart Bridge with its piers in the turn and the Mathews Bridge just to the north. Poor handling vessels or those with questionable engines should use assist tugs to avoid being set on the support piers of either bridge.⁷

39. Currents. The currents are strong in the river as far upstream as Jacksonville. The velocity of the current between the jetties is 1.9 knots on the flood and 2.3 knots on the ebb. At downtown Jacksonville (Commodore Point), the velocity of current is about 1 knot. The winds have considerable effect on the water level and velocity of the currents. Strong northerly and northeasterly winds raise the water level about 2 feet at Jacksonville. Strong southerly and southwesterly winds lower the water level about 1 to 1.5 feet, increase the ebb, and decrease or interrupt the flood.⁸

⁶ *Appraisal for the Interconnection Between the St. Johns River and the Surficial Aquifer, East-Central Duval County, Florida*, U.S. Geological Survey, Water Resources Investigations Report 82-4109, Tallahassee, Florida, 1983, 5.

⁷ *United States Coast Pilot, Atlantic Coast: Cape Henry to Key West*, 1993 (29th) Edition, National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, 153-154.

⁸ *United States Coast Pilot, Atlantic Coast: Cape Henry to Key West*, 1993 (29th) Edition, U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), National Ocean Service, 153-155.

EXISTING TERMINAL FACILITIES

40. The primary concentration of port facilities on Jacksonville Harbor is between mile 8 and 23 of the Federal navigation project as shown in figure 2. Blount Island is a major port terminal area between mile 8 and 11. The Jacksonville Port Authority (JPA) terminal on Blount Island is 867 acres of container, cars, and bulk storage mostly on the western half of the island. The JPA is a major landowner for existing facilities in that area. From mile 11 to mile 13.5 along the northwest end of Dames Point, JPA started development of a new bulk cargo terminal known as the Ed Austin Terminal. The current site consists of 91 acres on a 565-acre site and first received bulk movements in 1995. From mile 14 to 19 there are several privately owned petroleum and bulk terminals scattered in that reach. In the mile 19 to 20 reach is the JPA Talleyrand Terminal which has about 173 acres for containerized and breakbulk cargo.

41. Blount Island. Located on figure 2, the Blount Island Marine Terminal is located approximately 11 miles west of and upriver from the Atlantic Ocean. The JPA terminal at Blount Island has about 6,630 feet of marginal wharf along the south and west sides. The port has eight container cranes including three with a 40-ton capacity, three with a 45-ton capacity, and two with a 50-ton capacity. The port in this location also has multiple units of container stacking equipment with 40 and 45-ton capacities. Transit shed warehousing on port property totals about 240,000 square feet. Open storage is about 566 acres. Railroad tracks connect the island with the mainland and extend to the marginal wharf and two transit sheds. State Road 105 and 9A connects the island to Interstate 95, 295, and 10.

42. General cargo, containers, and automobiles are the main traffic items at the Jacksonville Port Authority's Blount Island terminals. Berths 1, 2, and 3 handle containers traffic along the western end of the Dames Point-Fulton Cutoff channel. Five cranes serve those berths for the handling of containers. A multilevel automobile ramp is also on the western end of the island along the cutoff channel for unloading cars. Additional roll on-roll off (RORO) berths are on the west side of the island for unloading cars. A new auto dock on the west side of the island started operation in 1998.

43. JPA built the new multi-purpose/automobile dock on the terminal's west channel, along with a \$4.8 million bridge over Blount Island's main entrance road, Dave Rawls Boulevard. This bridge allows vehicles using the new dock west of this road to move quickly to the newly-developed auto processing facility east of this road without impeding traffic entering or exiting the terminal.

44. JPA has completed construction on several major projects designed to improve handling and movement of cargo at Blount Island. The first group of these projects completed in 1998 included the construction of a modern 80,000-square foot vehicle processing facility. In late 1999, JPA opened 73,000-square feet of new facilities for Blount Island's second vehicle processor. The processors clean, inspect and add accessories to cars and trucks brought in by rail, truck or ship to the terminal before the vehicles are distributed to dealerships throughout the Southeastern United States.

Combined with vehicles moving through the Talleyrand Marine Terminal, vehicle processors at JPA handled more than 511,000 vehicles in fiscal year 1999.⁹

45. Jacksonville Electric Authority. At about the midpoint of Blount Island on the south side is the unloading facility for coal, which the Jacksonville Electric Authority (JEA) and the Jacksonville Port Authority (JPA) jointly own. That facility removes the coal from the ship to a covered conveyor that crosses the island and channel to a 500,000 ton storage area at the St. Johns River Power Park (SJRPP) near the river. SJRPP is a joint-venture between JEA and Florida Power and Light (FP&L). Each public utility receives 50 percent of the SJRPP's energy output. The unloading facility has a minimum rate of 750 tons per hour with an average of 1500 tons per hour. That plant can receive coal by water or rail.

46. Located adjacent and south of the coal-fired power plant JEA also operates the Northside Power Generating Plant. Currently the Northside Plant contains three power generating units. Units 1 and 3 usually average approximately 30 percent of their operational capacity. Unit 2 is currently idle. JEA plans to modify units 1 and 2 to burn petroleum coke by Spring 2002. Those modifications will allow units 1 and 2 to operate at capacity and burn approximately 1.6 million tons of petroleum coke per year. Unit 3 will continue as an intermediate type generator operating approximately 30 percent of the time on 206,000 tons of fuel oil annually. The facility will also use 535,000 tons of limestone as a desulfurization agent. All commodities will be received by vessel at the Northside Plant dock.

47. Ed Austin Terminal. The Ed Austin Terminal (JPA Bulk Terminal) is located about mile 13.4 on figure 2. The terminal handles bulk cargoes such as granite and limerock and currently contains about 91 acres on a 617-acre site. Operations started in 1995. Useable berthing space consists of about 1200 feet of fendered bulkhead adjacent to the Federal channel. This facility receives about 1.2 million tons of granite and limerock annually.

48. Talleyrand Terminal. The JPA terminal at Talleyrand is about mile 19 to 20 on figure 2. The terminal facilities handle containers, import cars, general cargo, and liquid bulk. General cargo includes steel, lumber, coffee, paper, and frozen goods. Tank storage is 8.1 million gallons. The tank farm has two stainless steel dock lines to accommodate food grade commodities. At the northern end of the terminal 840,000 tons a year of gypsum is currently imported and unloaded at a rate of 1,000 tons/hour.

49. To handle the ships and cargo, the Talleyrand Terminal has 4,800 feet of marginal wharf adjacent to 173 acres of paved, lighted, and secured space. The area has a refrigerated warehouse with 120,000 square feet of space and a second with 40,000 square feet of refrigerated and dry cargo space. Along the marginal wharf there are six panamax container cranes; one 50-ton; two 45-ton; and three 40-ton capacity container cranes; a 100-ton multi-purpose gantry whirly crane; and two 50-ton rubber tired gantry cranes; and three 40-ton container stackers. Highway connections enable access to Interstate 95, 10, and 295. Three rail lines provide service with tracks into the area.

⁹ Jacksonville Port Authority, JAXPORT Blount Island Marine Terminal, JAXPORT Marine Division, <http://www.jaxport.com>, 1998.

50. JPA Terminal Expansion. Total cargo tonnage for all three JPA terminals totaled about 7.5 million tons in FY 1999 and 7.1 million tons in FY 2000. Since 1990 tonnage for the marine terminals increased about 54 percent. Expansion of the three terminals continues. On the west side of the Blount Island terminal addition of the new auto dock is scheduled for completion in 1998. Other development on Blount Island includes 75 acres for an automobile processor, construction of an overpass and construction of an 80,000-square-foot auto processing building. The Ed Austin Terminal started handling bulk cargo in 1995 and plans exist to expand the 91 acre site. An additional 42 acres on the north end of the Talleyrand Terminal began development in 1997 to upgrade container operations.¹⁰

51. Petroleum Terminals. From mile 11 to 22 there are seven locations on figure 2 that handle petroleum products for 11 oil terminals. Each of those facilities has tank storage and access to the Interstate network of roads for overland delivery. Overall, the combined tank storage is about 5.2 million barrels. The JEA liquid fuel dock is located north of river mile 11 and the Navy Fuel Depot is located at about river mile 16. Between river miles 13 and 15 three terminals have about 1.8 million barrels of tank storage and a throughput of about 1.3 million tons of petroleum products in 1993. Between river miles 17 and 18 two terminals have a combined tank storage of about 2.1 million barrels. Between river miles 18 and 19 north of the port authority's Talleyrand Terminal four terminals contain about 781,000 barrels of tank storage. Throughput at those terminals is about 680,000 tons a year of gasoline, diesel and fuel oils.

52. Dry Bulk Terminals. From mile 11 to 22 on figure 2 there are three terminals (excluding the Ed Austin and Talleyrand Terminals) that handle dry bulk material. They handle gypsum, phosphate and related products, steel products, and cement. The gypsum locations receive about 160,000 tons of gypsum a year by ship and 50,000 tons per year of gypsum byproduct from the nearby coal fired power plant. Self-unloading drybulk carriers can typically unload gypsum at a rate of 1,000 tons per hour onto a conveyor system which transports it to the 70,000 ton rock storage area. A phosphate facility at about river mile 18 can load dry non-acidic material at the rate of 3,000 tons per hour. To handle acidic bulk products, the system can unload a ship of super-phosphoric acid at the rate of 48 rail cars or 4,650 metric tons an hour. Storage facilities include six concrete silos each with a capacity of 4,000 tons and rubber lined tanks for acidic products. The Commodores Point Terminal at about river mile 22 handles cement in six bulk storage silos at the terminal. That terminal also has 154,800 square feet of warehousing and a total of 2,750 feet of wharf used for the berthing of cement bulk vessels and general cargo ships.

53. Container Terminal. Most of the container movements are through the Jacksonville Port Authority terminals at Blount Island and Talleyrand. The only other container operation is at a terminal for roll on-roll off (RORO) container barges and vessels about 20 miles from the mouth of the river on figure 2. The terminal area is about 65 acres with 3,000 feet of marginal wharf and 30,000 square feet of

¹⁰ Jacksonville Port Authority 2001-2002 Official Directory and Web Resource Guide. Fourteenth Edition. Jacksonville Port Authority, Jacksonville, Florida. Pages 10-14.

warehousing. The open storage area for the containers is 165 acres with paving, fencing, and lighting.

WATERBORNE COMMERCE

54. Jacksonville Harbor is the primary deep-draft port for waterborne commerce in northeast Florida. The closest major ports to Jacksonville Harbor are Savannah Harbor located about 125 statute miles to the north in Georgia, and Canaveral Harbor about 150 miles to the south in Florida.

55. Traffic. Both recreational and commercial use of the St. Johns River is heavy. As stated in records from the *Waterborne Commerce of the United States, Part 1*, the following table 3 shows inbound trips and outbound trips for commercial vessel movements on Jacksonville Harbor.

56. Various types of vessels move cargo on Jacksonville Harbor. The Jacksonville Port Authority reported 1,683 vessel movements in FY 1999. That movement is a large part of the total movement but not all as there are other private terminals not included in that estimate. Both the Blount Island and Talleyrand Terminals of the Jacksonville Port Authority handle car carriers, bulk ships and barges, and container ships. Car carriers bring automobiles from Japan to both Blount Island and Talleyrand on specialized vessel carriers or dual purpose RORO vehicle carriers, which rarely draft more than 30 feet. The container ships are mainly the lift-on lift-off (LOLO) type vessels that use the Port Authority terminals.

Table 3		
Vessel Movements		
YEAR	INBOUND TRIPS	OUTBOUND TRIPS
1999	6175	6276
1998	6219	6195
1997	5048	5069
1996	4963	4881
1995	4,809	4,810
1994	5,848	5,822
1993	6,071	6,088
1992	5,759	5,776
1991	4,840	4,833
1990	4,259	4,254
1989	4,417	4,340
1988	4,957	4,922
1987	4,624	4,545
1986	4,588	4,617
1985	4,549	4,540

57. The movements of gypsum, phosphate, and petroleum move on bulk vessels and tankers through private terminals. The bulk coal ships use a terminal on Blount Island operated by the Jacksonville Electric Authority which the Jacksonville Electric Authority (JEA) and the Jacksonville Port Authority (JPA) jointly own. The container terminal to the south of the Port Authority's Talleyrand Terminal handles RORO container barges and ships. Average transit drafts of the barges is not more than 15 feet. The ship drafts range from 29 to 31 feet. Those vessels serve Puerto Rico, South America, and other Caribbean ports.

58. In the vicinity of Blount Island there are various kinds of ship movements. Container vessels are mainly LOLO. Lancer class container vessels, using Blount Island, have a maximum draft of 32 feet and transport containers to and from Puerto Rico on a weekly basis. Atlantic class vessels transport empty containers into Jacksonville from Europe. Self-unloading dry bulk carriers in the 30,000 to 40,000 deadweight ton (DWT) range bring gypsum from Mexico to the terminal on the Blount Island West Channel. Bulk carriers of 20,000 DWT bring gypsum from Nova Scotia in 28-30 shipments a year.

59. Due to the constraining depth of Blount Island West Channel, residual fuel oil deliveries involve both ship and barge. The fuel arrives in 30,000 to 60,000 DWT tankers from Freeport in the Bahamas. Direct delivery to the terminal is rare and only with the smaller ships under restricted conditions. The vessels usually arrive and offload a portion of the fuel at a private terminal farther upriver before returning to the JEA terminal for delivery of the remaining fuel. The fuel, offloaded initially, is then loaded on a barge for delivery to the power plant. Larger ships may even light-load in order to get into Jacksonville Harbor.

60. Other deliveries of petroleum products involve tankers from St. Croix in the Virgin Islands and Corpus Christi, Texas. A 31,000 DWT tanker delivers oil derivatives from Texas to a terminal near the Broward River, while other oil products from St. Croix, which has a maximum allowable draft of 55 feet, arrive on 52,000 DWT ocean going barges to another private terminal near the same river. With the current Federal project depth of 38 feet some light-loading in addition to tidal delays occur with the ocean going barges. Additional tugs are also needed in shifting the vessels from one terminal to another.

61. The Navy Fuel Depot receives about 30 shipments a year on government owned tankers of about 28,000 DWT. The fuel comes primarily from Texas. Tankers in the 30,000 to 40,000 DWT range deliver most of the oil products to terminals just beyond the north end of the JPA Talleyrand Terminal. Tankers of about 60,000 DWT make the other deliveries involving from six to ten trips a year. Tidal delays sometimes occur with these vessels but no light-loading.

62. Commerce. Freight traffic through Jacksonville Harbor include the following commodities: gypsum, coal, petroleum products, automobiles, chemicals, crude materials, paper products, metals, food products, and machinery. Records from the Waterborne Commerce of the United States, Part 1, show the tonnages for the various

commodities moving through Jacksonville Harbor. Table 4 shows the total tonnage for the harbor over several years and table 5 has a breakdown of the major tonnage items from 1985 through 1999.

63. The primary type of cargo transiting Jacksonville Harbor is liquid bulk. As shown in table 5 petroleum and petroleum products represent the main category of tonnage using the harbor ranging from 5.5 to 10.7 million tons over the period of 1985 to 1999 with a high of 10.7 million tons in 1998. Major dry bulk includes coal increasing from 14 tons in 1985 to 1.4 million tons in 1999 with a high of 2.3 million tons in 1993. Gypsum included 437,000 tons in 1995 and limestone/granite 417,000 tons of other dry bulk materials in 1995. For FY 1999 the Jacksonville Port Authority reports 4.2 million tons of containerized cargo and 899,000 tons of vehicles (automobiles) and parts. JPA shows an increase in total cargo tonnage from FY 1995 of 5.7 million tons to 7.5 million tons in FY 99.

YEAR	TONS
1999	19,257,000
1998	21,190,000
1997	18,186,000
1996	16,737,000
1995	15,693,000
1994	18,914,000
1993	18,905,000
1992	17,209,000
1991	16,364,000
1990	15,120,000
1989	15,185,000
1988	15,823,000
1987	13,497,000
1986	12,446,000
1985	11,332,000

Table 5				
Waterborne Commerce				
YEAR	AMOUNTS IN TONS			
	GYPSUM	COAL	PETROLEUM	VEHICLES
1999	483,000	1,361,000	9,880,000	827,000
1998	605,000	1,645,000	10,744,000	880,000
1997	929,000	1,332,000	8,794,000	648,000
1996	775,000	1,366,000	8,088,000	682,000
1995	437,000	1,342,000	7,277,000	565,000
1994	1,031,000	2,081,000	9,331,000	672,000
1993	789,000	2,254,000	10,017,000	630,000
1992	721,000	1,371,000	8,704,000	647,000
1991	834,000	1,829,000	7,410,000	564,000
1990	645,000	1,125,000	6,647,000	587,000
1989	920,000	811,000	6,680,000	583,000
1988	1,102,000	55,000	7,005,000	701,000
1987	909,000	137	5,916,000	802,000
1986	946,000	279	6,010,000	788,000
1985	981,000	14	5,531,000	705,000

BRIDGES

64. Within the Jacksonville Harbor area, six bridges cross the St. Johns River and two bridges cross the St. Johns River Old River Channel north of Blount Island. These bridges are described in the table 6 and located in figure 5 to mile 22.

PROSPECTIVE FUTURE CONDITIONS

65. An assessment into the future involves a review of past trends leading up to current situations and the likelihood of those conditions continuing into the future with or without change. Within the study area there are economic, environmental, and technical changes underway that will likely impact future conditions. Changing demands of the population will greatly influence those conditions.

66. Population. The Jacksonville metropolitan statistical area (JMSA) is probably a closer representation of the study area than just the City of Jacksonville. The JMSA includes the counties of Baker, Clay, Duval, Nassau, and St. Johns. The 1992 Florida Statistical Abstract lists the past populations for the JMSA in each census year since 1960. The overall population for that area has grown during that period as shown in Table 7. The University of Florida publication in July 1993 on population studies for the

State are the source of the 1970 and 1980 numbers. The numbers from 1990 to 2040 come from studies completed in 1992 by the Bureau of Economic Analysis in the U.S. Department of Commerce. A contrasting set of numbers, where available from the University of Florida studies, is also shown for the City of Jacksonville which is the largest of the five county area.

Table 6					
Bridges Pertinent to the Jacksonville Harbor Navigation Project					
Miles Above Mouth	Name/ Location	Type	Clearances (feet)		Purpose
			Horz	Vert	
	St. Johns River				
11.0	Dames Point	Fixed	906	160	highway
20.4	Mathews Terminal Channel	Fixed	705	152	highway
	Arlington Channel		376	86	highway
22.0	Isaiah D. Hart	Fixed	960	141	highway
24.7	John T. Alsop	Vert/lift	350	40	highway
24.9	St. Elmo W. Acosta	Fixed	195	56	highway
24.9	Florida East Coast Railway	Bascule	195	5	railroad
	St. Johns River Old River Channel				
2.9	Seaboard Coastline Railroad	Fixed	19	8	railroad
3.0	Blount Island Channel Bridge	Fixed	63	10	highway

Table 7		
Population (1,000's)		
Year	5 County	City of Jacksonville
1960		
1970	613	504
1980	722	541
1990	925	635
2000	1050	736
2010	1147	-
2020	1234	-
2040	1322	-

67. With an increasing population, area demands tend to grow as the population seeks to sustain or better its current standard of living. As the demand for products expands, the supply will likely grow to satisfy that demand. To support that demand, the port imports will likely be a part of that growth to serve the needs of the area. Whether a deeper depth on Jacksonville Harbor occurs is not likely to have significant impact one way or the other on the area population growth or demand.

68. Harbor Terminals. The Jacksonville Port Authority is already experiencing a demand for terminals to handle more cargo. In order to meet that demand, the Port Authority is actively pursuing development of terminals for existing and anticipated future demands. This development includes the relocation of existing terminals to make room for new terminals as well as the acquisition of lands and construction of landside facilities to accommodate more ships and cargoes. The port is looking at a phased development of newly acquired property on Dames Point and acquiring additional properties in all three areas of Talleyrand, Blount Island, and Dames Point. A market analysis for the port indicates substantial growth in containerized cargo to be a major force in future development.

69. The recommended port development alternative for Dames Point includes container, automobile, dry bulk, and break-bulk terminals. The existing Dames Point site has about 600 acres of developable property of which about 400 acres is suitable for marine terminal development. The container terminal is a RORO facility of about 40 acres. The automobile facility is to have two terminals of about 75 acres each. The break-bulk facility would handle two operators with about 10 acres each. A 10-acre auto rail yard is part of the alternative to serve the two automobile terminals. The dry bulk facility would be in an area roughly 30 acres. The recommended development alternative still leaves additional waterfront property for potential expansion.

70. The main focus on Blount Island is to be containers. The recommended development alternative is for relocating existing facilities from Blount Island to accommodate two major container carriers. The relocations would include one automobile terminal operator, a dry bulk operator, and a RORO container operator to the Dames Point terminal area. The Jacksonville Port Authority also has the option to develop a 112-acre area on Blount Island.

71. The alternative for development of the Talleyrand area involves the acquisition of lands owned by a major container carrier operation. That carrier is adjacent to property which the Port Authority already owns. This would allow the Port Authority to consolidate the existing operations to more efficiently utilize the area.

72. Harbor Traffic. With no change in the existing harbor depth, the anticipated vessel traffic would increase. Usage of the existing harbor channel would become more congested as the harbor pilots can only pass in certain reaches of the harbor. The traffic is likely to be a mixture of various size vessels with the preponderance of those being the smaller ocean carriers. With a deeper channel in the harbor, the larger deep draft ships could operate more efficiently with larger cargo loads resulting in fewer trips to the port. As cargo tonnage through the port increases in the future, the traffic in the harbor would increase. The amount of increase would be based on the size vessels carrying the cargo and the depth of the channel for those vessels to handle the cargo. Fleet composition and projections for ships carrying coal, limestone/granite, petroleum-coke, liquid petroleum products, and containers are contained in the benefits appendix D (For Official Use Only) of the September 1998 Final Feasibility Report and EIS. For this report fleet appendix D provides composition and projections for ships servicing the petroleum, dry bulk, and container terminals between miles 14.7 and 20.

73. Harbor Tonnage. The Jacksonville Harbor Federal project channel serves both private and public terminals. Most of the liquid and dry bulk terminals are in private ownership. The Jacksonville Port Authority operates the public terminals that handle bulk, breakbulk cargoes, containers, and automobiles. For FY 2000 containerized cargo accounts for over 53 percent (3,797,000 out of 7,114,000 tons) of the Jacksonville Port Authority total cargo traffic.¹¹ Other major cargo movements on the Federal channel include vehicle imports along with bulk movements of coal, gypsum, limestone, granite, petroleum-coke and liquid petroleum products.

74. For the segment under consideration, river miles 14.7 to 18.2, the economic analysis in appendix D discusses the various movements and provides a projection of tonnage based on available data. Only the tonnage for which there was a projected benefit has a projected amount. Future tonnages with and without project for liquid petroleum and liquified petroleum gas (propane) products are included over the anticipated project life of 2004-2054.

75. Bartram Island Environmental Conditions. Bartram (Quarantine) Island appears on survey maps of the Jacksonville Harbor area as early as 1895 apparently as a result of dredged material placement. Placement of dredged material in subsequent years

¹¹ Jacksonville Port Authority 2001-2002 Official Directory and Web Resource Guide. Fourteenth Edition. Jacksonville Port Authority, Jacksonville, Florida. Page 10.

behind the Dames Point Training Wall extended Bartram Island to the configuration shown on figure 1. As a result of its continued use for dredged material placement, Bartram Island has been heavily impacted. Some of the island's original vegetative cover remains, mainly in the form of fringing smooth cordgrass, along with black needle rush, glasswort, saltwort salt grass salt marsh bulrush, sea ox-eye, groundsel and marsh elder. Much of the island is typified, however, by early successional plants as a result of disposal activities. A shallow open-water impoundment created by disposal activities occupies the far western section of the island. The section east of the Dames Point Bridge also has several wet depressions supporting willow and wax myrtle. Grasses and other herbaceous vegetation occurs on the dike slopes. Other vegetation occurring sparsely on the island includes black cherry, sumac, southern red cedar, slash and longleaf pine, oaks and cabbage palm. The mosaic of various successional species is of benefit to resident and migratory birds, including roosting herons and egrets. Although no wading birds rookeries were observed, a number of least terns were observed on bare sand within the large diked area east of the Dames Point Bridge, by FWS personnel during their June 1996 visit, which could be an indication of nesting activity. The salt marsh and shallow water impoundment support fish, reptiles, including the diamond-back terrapin, many species of shore and wading birds, and marsh specialists such as the marsh wren and clapper rail.

76. With or without the proposed deepening of segment 3A between river miles 14.7 and 20, figure 2, Bartram Island will continue to receive placement of dredge material not suitable for construction fill or beach placement in the existing confined disposal facilities on the east and west ends of the island. Authorization of the 40-foot project from the entrance channel to river mile 14.7, figure 1, in the Water Resources Development Act (WRDA) of 1999 included raising the existing dikes of one segment of the confined disposal area on the east end of Bartram Island. The Jacksonville Port Authority (JPA) recently raised the dikes on the west confined disposal facility (CDF) 10 feet to an elevation of 28.5 feet in August 1999. That modification provided an additional 6.5 million cubic yards of capacity for the upland confined disposal facility on the west end of Bartram Island.

77. With or without the proposed deepening of segment 3A the District Migratory Bird Protection Policy will continue to require bird monitoring of the disposal facility. Recent monitoring during the raising of the dikes on the west (CDF) indicated low levels of bird activity and nesting success due to the presence of predators. Frequent use of Bartram Island for placement of dredge material and predators including wild hogs and raccoons indicate this area will not be subject to windows for bird nesting.

PROBLEM IDENTIFICATION

78. Many of the vessels that currently use Jacksonville Harbor must light-load or wait on tidal advantage in order to enter or leave the harbor causing increased transportation costs. The current 38-foot project depth of Jacksonville Harbor from mile 14.7 to mile 20 also impacts the introduction of larger vessels into the fleet that would visit the harbor. The loss of those larger vessels results in a loss of transportation efficiencies to the port. In April 2002 a contract award occurred for deepening the main channel from a project depth of 38 feet to 40 feet from the entrance channel to river

mile 14.7 as a result of the WRDA 1999 authorization. Accordingly, the without project condition for the main channel consists of a 40-foot project depth from the entrance channel at river mile 0 to 14.7 and a 38-foot project depth from mile 14.7 to 20.

WITHOUT PROJECT CONDITION

79. Draft Restrictions. The present authorized channel between miles 14.7 and 20 is maintained at 38 feet mean low water (MLW). Channel widths vary from 400 to 660 feet. Two-way traffic is permitted in most of the reaches but is restricted in some of the narrower reaches during peak tidal currents with some of the larger vessels. Outbound and inbound traffic is restricted to a maximum 34-foot draft and vessel length of less than 700 feet during peak ebb tides.

80. According to the St. Johns Bar Pilot Association vessels with lengths of 700 feet or more drafting between 32 and 34 feet must use a tug escort with a vessel docked at ST Services during ebb tide. Vessels with drafts greater than 34 feet cannot transit outbound during the ebb tide with or without a vessel docked at ST Services.

81. Difficult Currents. The *United States Coast Pilot* warns deep draft ships of the Trout River Cut at about mile 17. It states that deep-loaded vessels must exercise great care not to leave the channel in this area. Local knowledge is necessary to predict current effects, as they tend to set across the channel on both the flood and ebb. Poor handling vessels should use an assist tug when transiting the area of the Trout River Cut and Chaseville Turn (figures 3 and 7) to avoid being set on vessels transferring at the many oil terminals on the west bank of the river. One harbor pilot noted that an outbound container ship demolished the Shell Oil dock opposite buoy 71 years ago in clear weather. Also a poor handling outbound container ship collided with a tanker at Stuart Oil Terminal in the 1970s after turning buoy 71. Currently ST Services owns both Shell and Stuart Oil Terminals.

82. Bank Suction Effects. The Jacksonville Port Authority (JPA) noted in a letter dated March 30, 2001, that one of their major container carriers refuses to bring larger ships into Jacksonville as long as navigation restrictions exist in the area of the Chaseville Turn or about river miles 17 – 18. JPA explains that navigating the Chaseville Turn outbound on an ebb current requires extreme rudder positions and power demands on the ship. A ship at the ST Services dock presents unusual circumstances that require effective rudder response from the passing ship. Effective rudder response requires a certain speed, but due to the proximity of the moored ship to the channel, the passing vessel cannot exceed six knots or risk a bank suction force that would break the docked ship from its moorings. That situation again places restrictions on the less maneuverable and deeper draft ships, which by the nature of the channel have limited options to maintain a safe distance from a tanker docked at ST Services.

PLANNING OBJECTIVES AND CONSTRAINTS

83. The Federal objective, required in water and land resource planning, is to make a contribution toward National Economic Development (NED) consistent with protecting

the nation's environment. Planning objectives of this study involved the use of available information to evaluate improvements for Jacksonville Harbor to efficiently and safely accommodate larger vessels while preserving environmental and cultural resources impacted by navigation improvements.

PLANNING OBJECTIVES

84. Planning objectives relate directly to the previously mentioned problems and opportunities and guide the formulation and evaluation of plans. Specific planning objectives for the General Reevaluation Report for Jacksonville Harbor were to:

- Determine if sufficient light loading, tidal delay, or other commercial navigation benefits exist to deepen river miles 14.7 through mile 20 of the Federal channel from an existing project depth of 38 feet to the 40-foot depth currently authorized and under construction from the entrance channel to mile 14.7 of the main channel;
- Examine measures which would reduce or redirect the impact of difficult flood and ebb currents in the area of the Chaseville Turn and ST Services Terminal;
- Evaluate measures which would allow the St. Johns Bar Pilots and the Captain of the Port to remove restrictions requiring a tug escort on ships with lengths of 700 feet or more drafting between 32 and 34 feet with a vessel docked at ST Services during the ebb tide;
- Examine measures to reduce the bank suction or surge effect from passing ships that tends to break a docked ship from its moorings at the ST Services Terminal in the Chaseville Turn;
- Determine if proposed measures meet the needs of future commercial ship navigation requirements;
- Identify environmental and cultural resources in the study area and potential impacts from deepening or widening to those resources;
- Review the impact of proposed measures on the existing harbor maintenance and future dredged material management plans; and
- Identify the NED plan for Jacksonville Harbor which most efficiently and safely accommodates existing and larger vessels while preserving environmental and cultural resources.

PLANNING CONSTRAINTS

85. Constraints are restrictions that limit the planning process. Constraints could include resources, legal, or policy constraints. Resource constraints are usually associated with limits on knowledge, expertise, experience, ability, data, information, money, and time. Legal and policy constraints include those defined by law, Corps policy and guidance. Plan formulation involves meeting the study objectives while not violating the constraints. Specific study constraints include:

- Limits on evaluation of Federal channel depths to 39 and 40-foot project depths for river miles 14.7 to 20, since the maximum project depth for river miles 0 to 14.7, currently under construction, is 40 feet based on a Water Resources Development Act of 1999 authorization;
- Blasting as a construction method of removing rock from the prior 38-foot project deepening of river miles 14.7 to 20 in the 1970s did not receive public support; and
- The St. Johns Bar Pilot Association and the Captain of the Port require ships with lengths of 700 feet or more drafting between 32 and 34 feet to use a tug escort with a vessel docked at ST Services during the ebb tide.

86. The formulation and analysis of alternative plans to achieve planning objectives were based on Water Resources Council's Principles and Guidelines, the National Environmental Policy Act of 1969, and related Corps regulations. Those guidelines provide for developing alternative resource management systems that address planning objectives.

ALTERNATIVE PLAN CONSIDERATIONS

87. The 1998 feasibility study and subsequent WRDA 1999 authorization resulted in approval for deepening the main ship channel (segments 1 and 2 of figure 2) from an existing project depth of 38 feet to an authorized project depth of 40 feet. That authorization also included deepening the West Blount Island Channel (segment 4 of figure 2) from a project depth of 30 to 38 feet. Construction of segment 4 completed in April 2002. While segment 3A of figure 2 received consideration in the September 1998 feasibility study, sufficient benefits did not exist for deepening at that time. Since that time conditions have changed concerning petroleum bulk movements and container traffic in that segment as well as changes in ownership and expansion of petroleum terminals. A reevaluation of benefits based on new information provided the impetus for this review.

88. For this General Reevaluation Report (GRR) Segment 3A was divided into two smaller segments called 3A1 and 3A2. Segment 3A1 extends from mile 14.7 to mile 18.2, while 3A2 extends from mile 18.2 to mile 20 as shown in figure 2.

89. As a result of the WRDA 1999 authorization the without project condition for Jacksonville Harbor provides a main channel project depth of 40 feet from the junction with the U.S. Navy military channel at mile 0 near the jetties to mile 14.7 and a 38-foot main channel project depth from mile 14.7 to 20 at Talleyrand Terminal in Jacksonville. There are no major commercial ship terminals within the first 9 to 10 miles of that channel from the military channel west along the waterway. The only deep draft terminal in that reach is the U.S. Naval Station at Mayport. That station has a military channel with a depth of 42 feet from the ocean to the Navy Basin just inside the jetties. From the junction with the navy channel, the commercial civil works channel has an authorized depth of 40 feet for 1 mile east along the military channel then a depth of 42

feet that extends along the military channel to the 42-foot depth contour in the ocean. Both the military and non-military vessels use the same channel from the ocean to the 40-foot civil works channel existing on the Jacksonville Harbor project.

90. U.S. Navy Plans. During the 1998 feasibility study the U.S. Navy expressed interest in the studies and plans to deepen Jacksonville Harbor. The reason for that interest relates to Navy considerations of Mayport Naval Station as a potential home port for a nuclear aircraft carrier. That carrier would require a channel with a depth of about 50 feet. Coordination with the Navy indicates that deepening would occur after further deepening is done on the civil works project. Deepening of the Jacksonville harbor project first from the ocean through the jetties would lessen the Navy's cost for deepening in that reach but would not enable the operation of the nuclear carrier unless a depth of 50 feet or greater is possible.

91. The 1998 feasibility study resulted in authorization of a 40-foot project from the entrance channel to river mile 14.7. Since the WRDA 1999 authorized 40-foot project depth precedes the current study area limits of river miles 14.7 to 20, no additional depth for non-military vessels will receive consideration during this study. Should future feasibility study findings indicate deepening the existing civil works project for Jacksonville Harbor is favorable, a report will go forward to Congress for authorization. Once authorization and construction funding are available, the possibility exists for the Navy work to be done at the same time as the civil works project. The Navy would incur the cost for deepening the channel below the authorized depth for the civil works project.

Non-Structural Alternatives

92. Alternative - No Action. If there is no action to deepen river miles 14.7 through 20 of Jacksonville Harbor, the most probable future conditions consist of the harbor continuing operation under the current conditions. The existing fleet of ships currently visiting the harbor would continue, but with less of an increase in cargo carrying capacity due to continued light loading and tide delays associated with the 38-foot depth of the main channel from river mile 14.7 through 20. Port plans for development of the Talleyrand Terminal would not go forward as quickly for the handling of future increased cargoes associated with transportation efficiencies of a deeper channel. The number of ship transits in the harbor is likely to increase, since ships have to make additional trips to provide the required petroleum products and containerized cargo since loading deeper would not be an option. Higher levels of congestion and problems would result. Under those conditions there is likely to be longer and more frequent delays in moving vessels in and out of the harbor past the Chaseville Turn.

93. Tug Assistance in place of Widening. Non-structural measures, such as the use of tugs in place of the proposed Chaseville Turn Widener, received consideration, but were not analyzed because of information provided by the St. Johns Bar Pilot Association. Tug assistance in place of widening for vessels with drafts greater than 34 feet would not help the current situation as those vessels displace too much water even at reduced speeds to transit safely past a docked tanker at ST Services during the ebb current with the current channel configuration. The displacement of that size ship results in a suction effect, that places increased tension on the mooring lines of a

docked tanker, which could pull it away from the oil terminal at ST Services. For an example of a suction effect see the St. Johns Bar Pilot video at:

<ftp://ftp.saj.usace.army.mil/pub/uploads/Tom%20Smith/JaxHarbor/SurgeDemo.mpg>

The proposed additional channel width of the Chaseville Turn widener would provide sufficient clearance to mitigate the suction effect and remove the transit restriction as indicated in the St. Johns Bar Pilot Association letter dated June 14, 2001 and included in the correspondence section of the Environmental Assessment. Using tugs would not change the degree of risk created by a combination of the current channel configuration, a discharging oil tanker, strong ebb currents affecting steering control, and the suction caused by the displacement of the deep draft vessel.

Structural Alternatives

94. Alternative Channel Reaches for Deepening. For the September 1998 feasibility study, in deciding what alternatives to consider for deepening, the location and identification of the various terminals were necessary along the river. The somewhat clustered location of terminal facilities provided the basis for selecting four channel segments on the Jacksonville Harbor project to consider as shown in figure 2. Three of those channel segments were on the main ship channel extending from the ocean past Blount Island to the Mathews Bridge. Identification of the four segments follows:

- Segment 1 - Atlantic Ocean to Mile 11
- Segment 2 - Mile 11 to Mile 14.7
- Segment 3A - Mile 14.7 to Mile 20
- Segment 3B - Mile 20 to Mile 21.7
- Segment 4 - West Blount Island Channel

The fourth segment is the channel on the west side of Blount Island. Each of those segments underwent an economic and environmental analysis to determine the justification for deepening during the 1998 feasibility study. Depths of consideration in each segment were at one foot increments from 40 feet to 45 feet.

95. For this General Reevaluation Report (GRR) Segment 3A was broken down into two smaller segments called 3A1 and 3A2. Segment 3A1 extends from mile 14.7 to mile 18.2, while 3A2 extends from mile 18.2 to mile 20 as shown in figure 2. While segment 3A received consideration in the September 1998 feasibility study, sufficient benefits did not exist for deepening at that time. Since that time conditions have changed concerning petroleum bulk movements and container ship traffic in that segment as well as changes in ownership and expansion of petroleum and container terminals. A reevaluation of benefits based on new information provided the impetus for this review.

96. Channel Widening. Except for two areas, the Chaseville Turn near ST Services and Training Wall Reach (figure 3) at the intersection of the IWW with the St. Johns River, current ship movements on Jacksonville Harbor appear to have an acceptable width. Future vessels are not expected to be significantly larger than those in the

existing fleet. Chaseville Turn and Training Wall Reach include areas where the harbor pilots, port authority representatives, and ship operators would like some additional width. The area the harbor pilots requested most for widening is between miles 17 and 18 of figure 2 or the Chaseville Turn. Whether problems in those areas need extra channel width or an adjustment in channel alignment became part of the evaluation involving the ship simulation study. Further iterations of the planning process resulted in comparisons of costs and benefits for the deepening plans with widening options. The plans with widening contained high costs due to rock excavation requirements. Sufficient benefits did not exist during the 1998 feasibility study to justify deepening or widening between miles 17 and 18.

ALTERNATIVE EVALUATIONS

97. The September 1998 feasibility plan considerations identified alternatives for evaluation. Those plans (A, B, and C) included the deepening, narrowing, and widening of several segments of the existing harbor channel. Those segments, identified as 1 through 3 on the main ship channel and segment 4 on the West Blount Island Channel (figure 2), provided the basis for evaluating deepening to depths of 40-45 feet. The evaluation involved information from topographic and bathymetric surveys, and subsurface investigations to obtain quantity estimates on material to be dredged with deepening. Ship simulation, hydrodynamic and sediment transport modeling studies allowed evaluation of plans for impacts to ship handling and sedimentation. Sediment sampling for water quality evaluation of dredged material, submerged historic properties surveys, and cultural resource assessment of proposed dredged material areas provided coordination of plans with environmental and technical agencies to assess impacts of deepening. An economic analysis took into account the transportation benefits from deeper channel depths and the cost of dredging those depths to include the disposal of material.

INITIAL ALTERNATIVES

98. During the 1998 feasibility study discussions with study team members including the sponsor, St. Johns Bar Pilots, and WES representatives resulted in development of two initial alternatives, plans A and B. Plan A involved narrowing the existing 38-foot channel width while plan B widened it.

99. Plan A. Plan A narrowed the channel within the bottom width limits of the existing 38-foot channel alignment. Plan A used the existing channel alignment and resulted in a reduced main channel bottom width. That bottom width reduction decreased the excavation quantities by reducing the impact of the side-slope dredging template. Plan A moved the sides of main channel further away from the shoreline and reduced the potential impact on shoreline erosion. Proposed bottom width changes in comparison to the existing main channel varied from a reduction of 25 to 250 feet depending on the location. Plan A was developed to respond to the shoreline erosion concerns.

100. Plan B. Plan B kept the existing main channel alignment and added wideners in locations suggested by the St. Johns Bar Pilots. Most areas widened from an existing width of 500 feet to 575 feet. The following sections of the existing Federal channel contained proposed wideners:

- Miles 5 to 6 (Training Wall Reach) channel widener on south side
- Miles 6.7 to 8.2 (White Shells Cut Range & St. Johns Bluff Reach) Channel shifted to the north
- Miles 8.2 to 10.5 (Dames Point-Fulton Cutoff Range) channel widener on north side
- Miles 12.5 to 13.3 (Brills Cut Range) channel widener on south side
- Miles 14.7 to 16 (Drummond Creek Range) channel widener on south side
- Miles 16.3 to 17.3 (Trout River Cut Range) channel wideners on east and west sides
- Miles 17.3 to 17.8 (Chaseville Turn) channel widener on east side

101. For the September 1998 feasibility study plans A and B became the initial plans used for testing in the Ship Simulator at the Waterways Experiment Station in Vicksburg, Mississippi. Plan C resulted from ship simulation tests of those two plans.

SHIP SIMULATION TESTING OF ALTERNATIVE PLANS

102. The supplemental report section and engineering appendix A of the September 1998 *Navigation Study for Jacksonville Harbor, Duval County, Florida – 04810 Final Feasibility Report and Environmental Impact Statement* contains a detailed evaluation of the ship simulation testing of plans A, B, and C. Saint Johns Bar Pilot Association and Jacksonville Docking Masters Association representatives worked with District and Waterways Experiment Station (WES) personnel to test the alternative plans. Initial testing of Plans A and B resulted in development of plan C which combined elements of plan A that narrowed the existing 38-foot deep channel with parts of plan B which widened it. Since alternative depths of 40-45 feet were under consideration for deepening, a depth of 42 feet was chosen for ship simulation testing. That depth represents a midpoint for results from the ship simulation testing which are valid for a range of two feet above or below the test depth of 42 feet. Ship simulation testing results are valid for depths of 40 to 44 feet.

103. Plan C. Testing of plans A and B described above resulted in development of plan C. Plan C consists of the following features combined from plans A and B:

- plan A width from the ocean to about mile 4.6;
- Miles 5 to 6 (Training Wall Reach) plan B channel widener on south side;
- Miles 6 to 6.7 (Short Cut Turn) plan A width;
- Miles 6.7 to 8.2 (White Shells Cut Range & St. Johns Bluff Reach) plan B channel shift to the north (figures 10 & 11);
- Miles 8.2 to 10.5 (Dames Point-Fulton Cutoff Range) plan B channel widener on north side (figures 10 & 12);
- Miles 10.5 to 12.5 (Dames Point Turn & Quarantine 1, Upper Range) plan A channel width;
- Miles 12.5 to 13.3 (Brills Cut Range) plan A channel width;
- Miles 13.3 to 16.2 (Broward Point Turn to Drummond Creek Range) plan A channel width;

- Miles 16.3 to 17.3 (Trout River Cut Range) plan B channel wideners on east and west sides;
- Miles 17.3 to 17.8 (Chaseville Turn) plan A channel width;
- Miles 17.8 to 18.7 (Long Branch Range) plan A channel width;
- Miles 18.7 to 19.5 (Terminal Channel) plan A channel width with turning basin added (figures 10 & 13); and
- Miles 19.5 to 21.3 (Terminal Channel) plan A channel width.

Plan C also contained a flow improvement channel for Mill Cove. That feature was removed after a separate authorization was received in planning guidance correspondence mentioned below.

MILL COVE FLOW IMPROVEMENTS

104. Plan C originally contained a flow improvement channel described in the *WES Ship Simulation Study* and the *Hydrodynamic and Sediment Transport, Mill Cove, St. Johns River Study* in the supplemental report section of the September 1998 *Navigation Study for Jacksonville Harbor, Duval County, Florida – 04810 Final Feasibility Report and Environmental Impact Statement*. Engineering appendix A of that report contains design information on the flow improvement channel. The 6-foot deep by 80-foot wide channel extends from the existing weir and diversion feature at the eastern end of Bartram Island through Mill Cove (figure 3) to the opening between a second diversion feature (“No-name” island) at the west end of Mill Cove and the shore. The purpose of the channel is to improve the flow of water through Mill Cove to decrease sediment accumulating in the area.

105. The hydrodynamic and sediment transport study for Mill Cove tested four different plan C configurations for the Bartram Island disposal area (north shoreline of Mill Cove) and a fifth with a change in the bathymetry. The fifth alternative contained the 6-foot deep by 80-foot wide flow improvement channel.

106. After receipt of CECW-PE and CESAD-ET-PL memorandums on the implementation of Section 317 of the Water Resources Development Act of 1996 (WRDA 96) - Jacksonville Harbor (Mill Cove), Florida, shown in the pertinent correspondence appendix C, the improvement feature was removed from plan C. That guidance directs the Secretary to carry out a project for mitigation, consisting of measures for flow and circulation improvement within Mill Cove, at an estimated total Federal cost of \$2,000,000.¹² No work can occur until funds are appropriated for that purpose.¹³ The St. Johns Water Management District, the sponsor, has provided 100 percent of the required funds. Award of a construction contract occurred on 25 Oct 01 for \$1.89 Million. Construction completed in fiscal year 2002.

¹² Public Law 104-303, October 12, 1996. Section 317. Jacksonville Harbor (Mill Cove), Florida.

¹³ CECW-PE MEMORANDUM FOR Commander, South Atlantic Division, ATTN: CESAD-ET-PL. SUBJECT: Implementation of Section 317 of Water Resources Development Act of 1996 (WRDA 96) - Jacksonville Harbor (Mill Cove), Florida.

GEOTECHNICAL INVESTIGATIONS

107. During the 1998 feasibility study plan C involved widening in areas not previously blasted from construction of the current 38-foot project depth, analysis of core boring information in the “rock hardness” section of the 1998 appendix A indicates that blasting would be required for plan C. A comparison of plan C costs to available benefits did not result in a justifiable plan C alternative. To reduce the 1998 study costs, modifications to plan A followed.

108. For this General Reevaluation Report (GRR) the blasting requirements section of appendix A indicates the required dredging grades can be achieved without blasting. A review of existing and additional after dredge surveys and core borings from Cut 50, Station 4+00 to Terminal Channel, Station 65+00 or Segment 3A (3A1 + 3A2) provided information indicating that conventional dredging equipment can achieve the required grades without blasting.

PLAN A , 3A1, and 3A2 MODIFICATIONS

109. During the 1998 feasibility study the analysis of plan A to reduce costs developed into three modifications based on construction methods and location of disposal areas. Plan A1 involved blasting, plan A2 required no blasting, and plan A3 (figure 1) contained an additional channel width reduction to avoid as much rock as possible and use of a clamshell dredge for excavation. Further evaluation of plan A1 and A2 costs with available benefits resulted in removal of those two plans from consideration and returned the focus of investigations to plan A3.

FINAL ALTERNATIVES

110. For this GRR the reduced channel width of plan A3 represented the plan initially evaluated for further consideration from mile 14.7 to mile 20. Subsequent evaluations of geotechnical information, the most recent hydrographic surveys, along with costs and benefits allowed assessment of the full existing channel width for segments or plans 3A1 and 3A2 (figure 2) instead of the narrowed width of plan A3 (figure 1).

111. While segment 3A of figure 2 received consideration in the September 1998 feasibility study, sufficient benefits did not exist for deepening at that time. Since that time conditions have changed concerning petroleum bulk movements and container traffic in that segment as well as changes in ownership and expansion of petroleum and container ship terminals. A reevaluation of benefits based on new information provided the impetus for this review.

112. Initially a letter from the one of the oil terminal operators in segment 3A, figure 2, noting a change in ownership and acquisition of an adjacent oil terminal, recommended reevaluation of potential benefits relating to their facility. The Sponsor reviewed the assessment of changed conditions and requested the Corps to reevaluate the potential for deepening within the section of the main ship channel designated as segment 3A1 of figure 2.

113. During the process of that reevaluation the Sponsor notified the Corps of a change in operations at their Talleyrand Terminal. An existing container ship operator acquired a similar Talleyrand Terminal tenant to expand their current operations at the JPA. That container ship company has added larger ships to its current operation with the idea of making Jacksonville a load center. That company with its consortium partners will select a southeastern port for consolidation of its South American service. According to company officials the Talleyrand Terminal at Jacksonville is a strong candidate because of on-site rail connections. In a letter to the Corps, dated December 12, 2000, the Sponsor requested reconsideration of potential deepening of the main ship channel to their Talleyrand Terminal along with segment 3A1. Segment 3A2 of figure 2 contains the JPA Talleyrand Docks and Terminal.

114. Authorization of the September 1998 *Navigation Study for Jacksonville Harbor, Duval County, Florida – 04810 Final Feasibility Report and Environmental Impact Statement* resulted in a 40-foot project depth from the entrance channel to about mile 14.7. Since that depth constrains the remainder of the main channel (river miles 14.7 – 20), only project depths of 39 or 40 feet could receive further consideration. Segments or plans 3A1 and 3A2 consist of the following proposed navigation features.

Plan 3A1. Plan 3A1 extends from about river mile 14.7 to 18 or Cuts 50 - 54 with:

- a project depth of 39 or 40 feet plus 2 feet required and 2 feet of allowable overdepth;
- over the existing channel width;
- includes a widener at the Chaseville Turn shown in figures 3 and 4; and
- upland confined disposal area (DA/Q1) on the west end of Bartram Island.

Plan 3A2. Plan 3A2 extends from about river mile 18 to 20 or Cuts 55 - Terminal Channel Station 65+00 with:

- a project depth of 39 or 40 feet plus 2 feet required and 2 feet of allowable overdepth;
- over the existing channel width; and
- includes a turning basin as shown in figures 3 and 4.
- upland confined disposal area (DA/Q1) on the west end of Bartram Island.

QUANTITY ESTIMATES

115. The evaluation to determine quantity estimates involved the use of recent bathymetric surveys as shown in the engineering appendix A. The estimates of the excavation in cubic yards to deepen the incremental channel segments (segments 3A1 and 3A2) are in table 8 by the different project depths. To determine the amount of rock in the estimates, existing and new core boring information was analyzed. The quantities in that table represent initial construction of segments 3A1 and 3A2. After-dredge surveys (number 00-250, 00-273, 00277, and 01-021) provided the most recent hydrographic surveys for computation of volumes. Appendix A contains a more detail breakdown of the rock and non-rock quantities by cut and station. Table 8 shows total quantities by cut as referenced from the MCACES estimate of appendix A. Project depths shown include a 2-foot required and 2-foot allowable overdepth. See figures 7 and 8.

Table 8 Plan 3A1 & 3A2 Initial Construction Excavation Quantities in Cubic Yards Reference: MCACES estimate Table A-1 of Engineering Appendix A			
Segment 3A1	Alternative Depths		
	38-Foot Proj 38'+2'+2'=42'	39-Foot Proj 39'+2'+2'=43'	40-Foot Proj 40'+2'+2'=44'
Cut-50	0	196,646	320,986
Cut-51	0	60,160	126,919
Cut-52	0	35,222	59,066
Cut-51/52 Widener	238,269	264,309	290,951
Cut-53	0	57,442	89,333
Cut-54	0	55,662	83,932
Subtotal	238,269	669,441	971,187
ST Services Berth	0	2,559	5,119
U.S. Navy Berth	0	21,545	43,090
Subtotal 3A1	238,269	693,545	1,019,396
Segment 3A2	38-Foot Proj 38'+2'+2'=42'	39-Foot Proj 39'+2'+2'=43'	40-Foot Proj 40'+2'+2'=44'
Cut-55	0	137,906	256,294
Cut-TC	0	184,865	305,236
TC Turning Basin	417,604	496,531	580,806
Subtotal	417,604	819,302	1,142,336
JPA Talleyrand Berth	0	18,981	37,963
Talleyrd Toyota Berth	0	3,241	6,481
Chevron Oil Berth	0	35,396	39,445
Subtotal 3A2	417,604	876,920	1,226,225
Subtotal 3A1 + 3A2	655,873	1,570,465	2,245,621
- Toyota Berth			-6,481
- TC Turning Basin			-580,806
Total 3A1 + 3A2			1,658,334

DISPOSAL AREA CONSIDERATIONS

116. A disposal area study in 1989 considered about 76 sites. The study results indicated 10 inland sites had potential to hold dredged material from the upper reaches of the harbor project. Beach and offshore disposal are the most efficient means of disposal for non-rock material dredged in the ocean and river areas close to the shoreline.

117. In the September 1998 *Navigation Study for Jacksonville Harbor, Duval County, Florida – 04810 Final Feasibility Report and Environmental Impact Statement* nine of

those inland disposal areas received consideration for plan C and are discussed in the Environmental Impact Statement (EIS) section of that report (printed on green paper). Two of those areas are Bartram Island (formerly known as Quarantine Island) and Buck Island on the south side of the river at about mile 6. The remaining plan C potential upland disposal areas are located north and northwest of Blount Island and Dames Point.

118. For this General Reevaluation Report the west end of Bartram Island will receive all the material from segments 3A1 (Cuts 50 – 54) and 3A2 (Cut-55 – Terminal Channel, Station 65+00). The Jacksonville Port Authority raised dikes an additional 10 feet on the west end of Bartram Island in 1998 to increase capacity by five million cubic yards.

ENVIRONMENTAL CONSIDERATIONS

119. Environmental studies investigated existing conditions with regard to the channel area dredging and the potential sites for the disposal of dredged material. Details on the environmental investigations are in the EIS of the September 1998 *Navigation Study for Jacksonville Harbor, Duval County, Florida – 04810 Final Feasibility Report and Environmental Impact Statement*. A copy of that EIS and USFWS CAR is available on the Jacksonville District Web Site at:

<http://www.saj.usace.army.mil/pd/envdocs/envdocsb.htm>; and

<http://www.saj.usace.army.mil/pd/envdocs/JaxHbr/car.html>.

120. Investigations during the 1998 feasibility study covered ocean and beach disposal and the existing conditions on the upland sites. Two sites 9A and 9B were removed from consideration after a comparison of ocean disposal costs (clam shell or hopper dredging) with development of the site as an upland disposal area for hydraulic dredging indicated ocean disposal was less expensive.

121. For plan C alternatives involving expansion of Bartram Island and/or use of potential upland sites 13C, 13D, and 13E mitigation is required for the Bartram Island expansion as outlined in section 4.6 of the EIS. Use of the other upland areas may require mitigation based on impacts to the gopher tortoise, the eastern indigo snake, and potential bald eagle nesting areas. See section 4.4 of EIS. Since expansion of Buck Island by raising the dikes would occur on top of and inside of the existing diked area, no adverse impacts are expected at that site. Use of the beach disposal area would require certain measures to minimize impacts to nesting sea turtles.

122. During the 1998 feasibility study Plan A3 (figures 1 and 6) disposal alternatives for segment 4 involved use of an existing diked upland area on the east end of Bartram Island. Raising of that diked area occurred on top of and inside of the existing dikes so that no adverse impacts would be expected. Ocean disposal for the material from segments 1 and 2 (predominantly rock) will occur at the ODMDS or a nearby artificial reef site (figure 6). No adverse impacts are expected. A final report for Jacksonville Harbor on the "1997 Evaluation of Dredged Material for Ocean Disposal" dated June 2, 1997 in the EIS states that "Aluminum and iron were present in the sediments at much higher concentrations than other heavy metals which were either undetectable or

present at low levels. No cyanide, oil & grease, PCBs, pesticides, PAHs, or doxin were detected in any sediments.”

123. For this General Reevaluation Report a HTRW survey of potential upland disposal sites found no signs of potential HTRW contamination. Recent surveys conducted from February 7 –12, 2000, for offshore placement of maintenance material indicated contaminated sediment in the river bottom along the edge of the turn widener connecting Cut-55 to Terminal Channel. Contaminated sediment (PAH's) first appeared in a report dated March 21, 2000, provided by ppb Environmental Laboratories, Inc. for an evaluation of offshore disposal of maintenance material. The Jacksonville Port Authority plans to remove the contaminated sediment with or without a deepening project. An initial meeting occurred on December 17, 2001, with the Jacksonville Port Authority, the Florida Department of Environmental Protection, the Environmental Protection Agency, and Corps representatives to begin evaluation of potential approaches for removal and disposal of the contaminated sediment.

124. For this General Reevaluation Report to determine if potentially significant historic properties are located in the project area, archival research and field investigations have been conducted for the proposed channel improvements and for dredged material disposal areas that may be constructed for this project. Archival research and a remote sensing survey have been conducted for proposed channel realignment and turning basin construction. The report *Submerged Historic Properties Survey, Jacksonville Harbor, Duval County, Florida* was written by Raymond Tubby, Tidewater Atlantic Research, for the Jacksonville District. That report indicates that 10 potentially significant targets exist in the study area. The Chaseville Turn Widener of plan 3A1 (figures 3 and 4) contains one target and the Terminal Channel Turning Basin of plan 3A2 (figures 3 and 5) contains nine targets identified during the remote sensing survey which generated magnetic and/or sonar characteristics that compare favorably with those associated with previously identified submerged historic properties (Tubby 1997). These targets may represent resources eligible for inclusion in the National Register of Historic Places. Consultation with the Florida SHPO (1998)(Project File No. 980852) recommended diver identification and evaluation of any targets that are in project areas. This additional identification and evaluation will occur during the next phase of the project planning. If any of the targets are determined eligible for listing on the National Register of Historic Places mitigation measures will be developed in consultation with the SHPO.

125. For this GRR plans 3A1 and 3A2 do not include construction of new disposal areas. The existing confined upland disposal area (DA/Q1) on the west end of Bartram Island represents the primary site for disposal for material. Impacts resulting from the use Bartram Island for disposal of material from the proposed project are expected to be minimal because of previous disposal activities in that area and the disturbed nature of the site. If for any reason the primary site is not available, secondary sites include artificial reef sites or the existing ODMDS shown on figure 6.

126. The U.S. Geological Survey, Water-Resources Investigations Report 82-4109 in appendix A of the September 1998 *Navigation Study for Jacksonville Harbor, Duval County, Florida – 04810 Final Feasibility Report and Environmental Impact Statement* is an appraisal of the interconnection between the St. Johns River and the Surficial Aquifer in the east-central part of Duval County. The report states that the proposed

dredging of Jacksonville Harbor is not expected to alter significantly the present surface water-ground water relations. It also states that dredging will have no effect on the Floridan aquifer due to a 300 to 450-foot separation between the Floridan aquifer and the Hawthorn Formation. The Hawthorn Formation is described as generally containing beds of low permeability that confine the water in Floridan aquifer and hydraulically separate it from the surficial aquifer.

127. For the GRR plans 3A1 and 3A2 would extend from mile 14.7 to mile 20. The existing upland confined disposal facility on the west end of Bartram Island would provide sufficient capacity for the disposal of material from both segments 3A1 and 3A2 shown on figure 2. Excavation includes approximately 1,658,000 cubic yards of material. Responses to initial correspondence with Federal, State, and City agencies did not reveal any new environmental considerations to those listed above.

128. Correspondence is included in the Environmental Assessment (EA) or green pages following the main report. Coordination of this EA constitutes consultation with the NMFS under provisions of the Magnuson-Stevens Fishery Conservation and Management Act relative to Essential Fish Habitat (EFH) effects resulting from construction activities associated with the deepening of Cuts 50 – Terminal Channel, Station 65+00 or river miles 14.7 - 20 of the main channel for Jacksonville Harbor. By letters of May 17, 2000 and October 5, 2000 in response to prior scoping letters, NMFS (HCD) has concurred that there is no adverse effect to EFH.

129. Coordination with the U.S. Fish and Wildlife Service in April 2000 indicates that the November 1997 Coordination Act Report (CAR) adequately addressed the proposed navigation modifications and that a new CAR would not be required.

Environmental Commitments (EIS paragraph 4.34)

130. In their 23 July 1997 Fish and Wildlife Coordination Act Report (Appendix C) the FWS listed several Reasonable and Prudent Measures to protect listed species. The U.S. Army Corps of Engineers and contractors commit to avoiding, minimizing or mitigating for adverse effects during construction activities by including those measures in the contract specifications. Except for whales and sea turtles, there are no listed species under the jurisdiction of the NMFS that would be affected by the project. If a hopper dredge is used, its operation would be subject to the requirements of the Regional Biological Opinion concerning these species (revision dated September 25, 1997) from the NMFS. Low-pressure sodium (LPS) lighting was recommended but not required as stated in correspondence from the FWS dated February 17 and March 10, 1998 (See Appendix C). The requirements of a Water Quality Certification from the State would be applied to the project.

Ecosystem Restoration Using Dredged Material (EP-1165-2-1).

131. Ecosystem Restoration Using Dredged Material (EP-1165-2-1). Feasibility studies for new navigation projects or modifications to existing navigation projects shall include an examination of the feasibility of using dredged material for ecosystem restoration. Ecosystem restoration measures included in specifically authorized navigation projects do not rely on the authority of Section 204 of WRDA 1992 and do not count against the annual appropriation limits of Section 204. Funding for

implementation of these measures would be requested as part of the specific Construction, General (CG) funding for the new navigation project or improvement following authorization.

132. A recently approved Section 1135 Preliminary Restoration Plan for Mill Cove, a section of the St. Johns River adjacent to the project area (figure 2), recommends restoration of about 60 acres of salt marsh. The preliminary restoration plan (PRP) would involve dredging shoaled areas of historically deeper water within the Mill Cove area and placing the dredged material south of Bartram Island. The bottom surface would be raised to an elevation that supports salt marsh growth similar to the successful salt marsh mitigation along the east Mill Cove diversion feature. The existing confined disposal facilities on the east and west ends of Bartram Island could also provide material and are under consideration as alternative sources of material in the current Ecosystem Restoration Report (ERR). While use of dredged material from the proposed project deepening received consideration, shoal material from within the Mill Cove area provides a more economical and environmentally acceptable measure. As result of approval of the PRP, the Ecosystem Restoration Report will continue to further evaluate the proposed alternatives suggested by the PRP.

Beneficial Uses of Dredge Material

133. Beneficial uses of dredge material received consideration including recycling of the dredge material for use as construction fill, beach renourishment, and manufactured soil. The material that exists in the proposed deepening area of Cuts 50 through Terminal Channel Station 65+00 consists of a combination of silts, sands, clays, and limestone as described in engineering appendix A. While the potential dredge material contains too much silt for beach placement or construction fill, Dr. Charles R. Lee of the Environmental Laboratory, U.S. Army Engineering Research and Development Center, Waterways Experiment Station tested samples of similar material from the Bartram Island confined disposal facility for use in a manufactured soil. He suggested the dredged material might function as part of a mixture for nursery potting soil after combining it with other organic materials from the Jacksonville area. Subsequent screening tests indicate a high salinity level, which would require additional leaching for use as a manufactured soil. The additional costs for removal, processing, and leaching of the salt from the dredged material have not proved economically feasible to attracted the interest of any private soil manufacturing operations as of yet.

INITIAL FIRST COST OF CONSTRUCTION

134. The engineering analysis on the described alternative plans considered all available information in determining the design conditions for estimating costs. The MCACES estimate in appendix A contains a detail breakdown of initial first costs. For plans 3A1 and 3A2, figure 2, placement of dredged material involves use of the confined upland disposal area (D/A-Q1) on the west end of Bartram Island.

Construction Costs

135. The estimate assumes construction of Cuts 50 – Terminal Channel, Station 65+00, occurs with a 30-inch hydraulic cutter suction dredge. The hydraulic dredge incorporates a cutterhead capable of dredging soft rock. The computed construction

dredging unit cost include additional cost for cutter teeth replacement based on the percentages of rock per Cut.

136. The Jacksonville Port Authority raised dikes an additional 10 feet on the west end of Bartram Island in August 1999 to increase capacity by 6.5 million cubic yards. Raising of those dikes included the necessary weirs to control the return water overflow to insure water quality standards are maintained on the project. Table 9 provides a summary of the first costs for plans 3A1 and 3A2 and references the MCACES estimate found in Appendix A, which contains a detail breakdown of those costs.

137. The proposed project alternatives include the widener, the turning basin, and deepening the channel Segments 3A1 and 3A2 from 38 feet to 39 and 40 feet. The plan formulation process assesses the economic justification of these components on an incremental basis. The widener and turning basin are separable components from the deepening the channel as a first increment; that is, they both can be constructed at the current channel depth of 38 feet. However, the widener and turning basin would have to be deepened commensurate with the deepening alternatives (39 and 40 feet). Moreover, deepening Segment 3A2 to 39 feet, for example, requires that Segment 3A1 be deepened to 39 feet to accrue transportation savings benefits. The incremental first costs and cumulative incremental first costs for the project increments, which total 8, are displayed in Table 9.

138. Table 9 lists each potential navigation feature or project increment group in the most probable sequence of construction for an incremental analysis by depth starting with consideration of the Chaseville Turn widener at a 38-foot project depth. The next increment or segment for evaluation would include the adjacent main channel segment 3A1 to project depths of 39 and 40 feet. The Terminal Channel Turning Basin at project depths of 38 to 40 feet follows. Combinations of each of those increments continue until the maximum possible 40-foot project depth for each combination receives consideration.

139. As part of the construction costs for dredging project depth quantities of 39 and 40 feet the costs in table 9 include quantities for advance maintenance depths of an additional 2 feet required plus 2 feet of allowable overdepth. The additional advance maintenance depths replace the current advance maintenance template for those segments which also includes 2 feet of required plus 2 feet of allowable overdepth. The MCACES estimate also includes berthing area costs for those terminals providing benefits.

Table 9

Jacksonville Harbor First Costs
 Reference: MCACES Cost Estimate 11/13/01

Jacksonville Harbor Incremental First Costs (Project Depth + 2' Required; 2' Allowable)

Project	Project Increment	Incremental First Costs	Cumulative Incremental First Costs
38 Foot Project	1. Create Widener at 38 Feet	\$1,964,600	\$1,964,600
	2. Create Turning Basin at 38 Feet	\$2,697,600	\$4,662,200
39 Foot Project	3. Deepen 3A1 Channel and Widener from Current Depth to 39 Feet	\$3,159,700	\$7,821,900
	4. Deepen 3A2 Channel from Current Depth to 39 Feet	\$5,573,400	\$13,395,300
	5. Deepen Turning Basin from 38 Feet to 39 Feet	\$325,300	\$13,720,600
40 Foot Project	6. Deepen 3A1 Channel and Widener from 39 to 40 Feet	\$2,233,900	\$15,954,500
	8. Deepen 3A2 Channel from 39 to 40 Feet	\$3,032,000	\$18,986,500
	10. Deepen Turning Basin from 39 to 40 Feet	\$219,800	\$19,206,300

Non-construction Costs

140. Non-construction costs shown in the MCACES estimate include real estate administrative costs for re-certification of the existing Jacksonville Port Authority (JPA) upland confined disposal facility at Bartram Island. Preconstruction, engineering, and design costs and construction management costs are also included.

Associated Costs

141. Associated costs include the dredging of the berthing areas of benefiting terminals and modifications to support facilities such as container handling cranes. With the exception of Chevron USA Terminal the bulkhead structures of the other terminals providing benefits require no modifications to accommodate a channel project depth of 40 feet as confirmed by the terminal owners/operators of the U.S. Navy Fuel Depot, ST Services, and the JPA Talleyrand Terminal. Table 18 includes bulkhead modification costs of \$850,000 for the Chevron USA Terminal. No modifications are required to the dockside cranes that service the container ships providing benefits at the JPA Talleyrand Terminal. The 3,700 TEU container ships are currently calling at the Talleyrand Terminal using the existing Panamax-size gantry cranes to discharge cargo. These cranes are efficiently handling the cargo requirements of these vessels now, and are expected to do so for projected future cargo traffic.

MAINTENANCE

142. The existing Federal project for Jacksonville Harbor incorporates maintenance dredging almost every year. Completion of the Jacksonville Harbor project to a project depth of 38 feet occurred in 1979. An estimate of the maintenance dredging based on historical data over a 45 year period (1953-1997) for river miles 0-22 is about 670,000 cubic yards on the average each year.¹⁴ The material removed from the channel during maintenance is mostly sand to about mile 11. From that point the material becomes a mixture of sand and silt to about mile 17 where it becomes mostly silt to mile 20.

143. In consideration of the new navigation features for plans 3A1 and 3A2, which widen the existing channel at two different locations, an increase in maintenance will probably result in the area of the proposed Chaseville Turn Widener and the Terminal Channel Turning Basin. Discussions with Construction-Operations and engineering personnel familiar with past dredging operations in those areas indicate approximately half of the proposed new construction areas would likely shoal to a depth requiring maintenance dredging once every three years. Estimated dredging costs for removal of that material are shown in tables 10 and 11 and included every three years over the 50-year economic life of the project. A present worth value is calculated and then annualized over the 50-year economic life at an interest rate of 6.125 percent. The resulting average annual equivalent maintenance costs are shown as \$104,000 for the Chaseville Turn Widener and \$450,000 for the Terminal Channel Turning Basin.

¹⁴ CEWES-CE-TS, MEMORANDUM FOR RECORD, Subject: St. Johns River Dredging Requirements Study Letter Report, 6 January 1998, P.8.

Project Economic Life:		Average Annual Equivalent (AAEQ) or	
50 Years		Capital Recovery Factor(S):	
Current Rate:	6.125%	6.125% ---->	0.064554
-0.25%:	5.875%	5.875% ---->	0.062340
+0.25%:	6.375%	6.375% ---->	0.066789

ASSUMPTIONS:

- Initial Construction completed by April 2004.
- Mob/Demob included in main channel O&M
- Dredging required once every three years based on past main channel maintenance intervals
- Turn Widener shoaling quantities 56,569 cy

Total Present Valuation(s),	
Excluding Base Period:	
6.125% ---->	\$1,608,766
5.875% ---->	\$1,669,010
6.375% ---->	\$1,551,970

Average Annual Equivalent	
Valuations:	
6.125% ---->	\$103,852
5.875% ---->	\$104,046
6.375% ---->	\$103,654

Year	Period	Applied Discount Factors			Stream Values	Est. O&M Costs for Chaseville Turn Widener		
		6.125%	5.875%	6.375%		6.125%	5.875%	6.375%
2004	0	1.00000	1.00000	1.00000		\$0	\$0	\$0
2005	1	0.94229	0.94451	0.94007		\$0	\$0	\$0
2006	2	0.88790	0.89210	0.88373		\$0	\$0	\$0
2007	3	0.83666	0.84260	0.83077	\$333,299	\$278,857	\$280,837	\$276,895
2008	4	0.78837	0.79584	0.78098		\$0	\$0	\$0
2009	5	0.74287	0.75168	0.73418		\$0	\$0	\$0
2010	6	0.69999	0.70997	0.69018	\$333,299	\$233,307	\$236,632	\$230,036
2011	7	0.65959	0.67057	0.64882		\$0	\$0	\$0
2012	8	0.62152	0.63336	0.60993		\$0	\$0	\$0
2013	9	0.58565	0.59822	0.57338	\$333,299	\$195,198	\$199,385	\$191,108
2014	10	0.55185	0.56502	0.53902		\$0	\$0	\$0
2015	11	0.52000	0.53367	0.50672		\$0	\$0	\$0
2016	12	0.48999	0.50406	0.47635	\$333,299	\$163,313	\$168,001	\$158,767
2017	13	0.46171	0.47609	0.44780		\$0	\$0	\$0
2018	14	0.43506	0.44967	0.42096		\$0	\$0	\$0
2019	15	0.40995	0.42472	0.39574	\$333,299	\$136,637	\$141,557	\$131,899
2020	16	0.38629	0.40115	0.37202		\$0	\$0	\$0
2021	17	0.36400	0.37889	0.34973		\$0	\$0	\$0
2022	18	0.34299	0.35786	0.32877	\$333,299	\$114,318	\$119,276	\$109,578
2023	19	0.32319	0.33801	0.30906		\$0	\$0	\$0
2024	20	0.30454	0.31925	0.29054		\$0	\$0	\$0
2025	21	0.28696	0.30154	0.27313	\$333,299	\$95,645	\$100,501	\$91,034
2026	22	0.27040	0.28480	0.25676		\$0	\$0	\$0
2027	23	0.25480	0.26900	0.24137		\$0	\$0	\$0
2028	24	0.24009	0.25407	0.22691	\$333,299	\$80,022	\$84,682	\$75,628
2029	25	0.22623	0.23997	0.21331		\$0	\$0	\$0
2030	26	0.21318	0.22666	0.20053		\$0	\$0	\$0
2031	27	0.20087	0.21408	0.18851	\$333,299	\$66,951	\$71,353	\$62,830
2032	28	0.18928	0.20220	0.17721		\$0	\$0	\$0
2033	29	0.17836	0.19098	0.16659		\$0	\$0	\$0
2034	30	0.16806	0.18038	0.15661	\$333,299	\$56,015	\$60,122	\$52,197
2035	31	0.15836	0.17037	0.14722		\$0	\$0	\$0
2036	32	0.14922	0.16092	0.13840		\$0	\$0	\$0
2037	33	0.14061	0.15199	0.13011	\$333,299	\$46,865	\$50,658	\$43,364
2038	34	0.13249	0.14356	0.12231		\$0	\$0	\$0
2039	35	0.12485	0.13559	0.11498		\$0	\$0	\$0
2040	36	0.11764	0.12807	0.10809	\$333,299	\$39,210	\$42,685	\$36,025
2041	37	0.11085	0.12096	0.10161		\$0	\$0	\$0
2042	38	0.10445	0.11425	0.09552		\$0	\$0	\$0
2043	39	0.09843	0.10791	0.08980	\$333,299	\$32,805	\$35,966	\$29,929
2044	40	0.09275	0.10192	0.08441		\$0	\$0	\$0
2045	41	0.08739	0.09627	0.07936		\$0	\$0	\$0
2046	42	0.08235	0.09092	0.07460	\$333,299	\$27,447	\$30,305	\$24,864
2047	43	0.07760	0.08588	0.07013		\$0	\$0	\$0
2048	44	0.07312	0.08111	0.06593		\$0	\$0	\$0
2049	45	0.06890	0.07661	0.06198	\$333,299	\$22,963	\$25,535	\$20,656
2050	46	0.06492	0.07236	0.05826		\$0	\$0	\$0
2051	47	0.06117	0.06835	0.05477		\$0	\$0	\$0
2052	48	0.05764	0.06455	0.05149	\$333,299	\$19,213	\$21,515	\$17,161
2053	49	0.05432	0.06097	0.04840		\$0	\$0	\$0
2054	50	0.05118	0.05759	0.04550		\$0	\$0	\$0

Project Economic Life:	Average Annual Equivalent (AAEQ) or
50 Years	Capital Recovery Factor(S):
Current Rate: 6.125%	6.125% ----> 0.064554
-0.25%: 5.875%	5.875% ----> 0.062340
+0.25%: 6.375%	6.375% ----> 0.066789

ASSUMPTIONS:	Total Present Valuation(s),
Initial Construction completed by April 2004.	Excluding Base Period:
Mob/Demob included in main channel O&M	6.125% ----> \$6,967,564
Dredging required once every three years based on past	5.875% ----> \$7,228,484
main channel maintenance intervals	6.375% ----> \$6,721,583
Turning Basin shoaling quantities = 176,480 cy	Average Annual Equivalent
	Valuations:
	6.125% ----> \$449,784
	5.875% ----> \$450,624
	6.375% ----> \$448,928

Year	Period	Applied Discount Factors			Stream Values	Est. O&M Costs for TC Turning Basin		
		6.125%	5.875%	6.375%		6.125%	5.875%	6.375%
2004	0	1.00000	1.00000	1.00000		\$0	\$0	\$0
2005	1	0.94229	0.94451	0.94007		\$0	\$0	\$0
2006	2	0.88790	0.89210	0.88373		\$0	\$0	\$0
2007	3	0.83666	0.84260	0.83077	\$1,443,518	\$1,207,728	\$1,216,303	\$1,199,233
2008	4	0.78837	0.79584	0.78098		\$0	\$0	\$0
2009	5	0.74287	0.75168	0.73418		\$0	\$0	\$0
2010	6	0.69999	0.70997	0.69018	\$1,443,518	\$1,010,453	\$1,024,853	\$996,288
2011	7	0.65959	0.67057	0.64882		\$0	\$0	\$0
2012	8	0.62152	0.63336	0.60993		\$0	\$0	\$0
2013	9	0.58565	0.59822	0.57338	\$1,443,518	\$845,401	\$863,538	\$827,687
2014	10	0.55185	0.56502	0.53902		\$0	\$0	\$0
2015	11	0.52000	0.53367	0.50672		\$0	\$0	\$0
2016	12	0.48999	0.50406	0.47635	\$1,443,518	\$707,310	\$727,614	\$687,618
2017	13	0.46171	0.47609	0.44780		\$0	\$0	\$0
2018	14	0.43506	0.44967	0.42096		\$0	\$0	\$0
2019	15	0.40995	0.42472	0.39574	\$1,443,518	\$591,775	\$613,085	\$571,253
2020	16	0.38629	0.40115	0.37202		\$0	\$0	\$0
2021	17	0.36400	0.37889	0.34973		\$0	\$0	\$0
2022	18	0.34299	0.35786	0.32877	\$1,443,518	\$495,112	\$516,584	\$474,580
2023	19	0.32319	0.33801	0.30906		\$0	\$0	\$0
2024	20	0.30454	0.31925	0.29054		\$0	\$0	\$0
2025	21	0.28696	0.30154	0.27313	\$1,443,518	\$414,238	\$435,272	\$394,268
2026	22	0.27040	0.28480	0.25676		\$0	\$0	\$0
2027	23	0.25480	0.26900	0.24137		\$0	\$0	\$0
2028	24	0.24009	0.25407	0.22691	\$1,443,518	\$346,575	\$366,758	\$327,546
2029	25	0.22623	0.23997	0.21331		\$0	\$0	\$0
2030	26	0.21318	0.22666	0.20053		\$0	\$0	\$0
2031	27	0.20087	0.21408	0.18851	\$1,443,518	\$289,964	\$309,029	\$272,116
2032	28	0.18928	0.20220	0.17721		\$0	\$0	\$0
2033	29	0.17836	0.19098	0.16659		\$0	\$0	\$0
2034	30	0.16806	0.18038	0.15661	\$1,443,518	\$242,600	\$260,387	\$226,066
2035	31	0.15836	0.17037	0.14722		\$0	\$0	\$0
2036	32	0.14922	0.16092	0.13840		\$0	\$0	\$0
2037	33	0.14061	0.15199	0.13011	\$1,443,518	\$202,973	\$219,401	\$187,809
2038	34	0.13249	0.14356	0.12231		\$0	\$0	\$0
2039	35	0.12485	0.13559	0.11498		\$0	\$0	\$0
2040	36	0.11764	0.12807	0.10809	\$1,443,518	\$169,818	\$184,867	\$156,026
2041	37	0.11085	0.12096	0.10161		\$0	\$0	\$0
2042	38	0.10445	0.11425	0.09552		\$0	\$0	\$0
2043	39	0.09843	0.10791	0.08980	\$1,443,518	\$142,080	\$155,768	\$129,622
2044	40	0.09275	0.10192	0.08441		\$0	\$0	\$0
2045	41	0.08739	0.09627	0.07936		\$0	\$0	\$0
2046	42	0.08235	0.09092	0.07460	\$1,443,518	\$118,872	\$131,250	\$107,686
2047	43	0.07760	0.08588	0.07013		\$0	\$0	\$0
2048	44	0.07312	0.08111	0.06593		\$0	\$0	\$0
2049	45	0.06890	0.07661	0.06198	\$1,443,518	\$99,455	\$110,591	\$89,463
2050	46	0.06492	0.07236	0.05826		\$0	\$0	\$0
2051	47	0.06117	0.06835	0.05477		\$0	\$0	\$0
2052	48	0.05764	0.06455	0.05149	\$1,443,518	\$83,209	\$93,183	\$74,323
2053	49	0.05432	0.06097	0.04840		\$0	\$0	\$0
2054	50	0.05118	0.05759	0.04550		\$0	\$0	\$0

Table 12

Jacksonville Harbor AAEQ First Costs

Interest Rate = 6 1/8%

CRF = 0.064554

Jacksonville Harbor Incremental AAEQ First Costs (Project Depth + 2' Required; 2' Allowable)

38 Foot Project	1. Create Widener at 38 Feet	\$126,800	\$126,800
	2. Create Turning Basin at 38 Feet	\$174,100	\$300,900
39 Foot Project	3. Deepen Widener and 3A1 Channel from 38 Feet or Current Depth to 39 Feet	\$204,000	\$504,900
	4. Deepen 3A2 Channel from Current Depth to 39 Feet	\$359,800	\$864,700
	5. Deepen Turning Basin from 38 Feet to 39 Feet	\$21,000	\$885,700
40 Foot Project	6. Deepen Widener and 3A1 Channel from 39 to 40 Feet	\$144,200	\$1,029,900
	7. Deepen 3A2 Channel from 39 to 40 Feet	\$195,700	\$1,225,600
	8. Deepen Turning Basin from 39 to 40 Feet	\$14,200	\$1,239,800

Table 13

Jacksonville Harbor AAEQ O&M
Interest Rate = 6 1/8%

Jacksonville Harbor Incremental AAEQ O&M Costs (2' Required; 2' Allowable)

Project	Project Increment	Incremental AAEQ O&M	Cumulative Incremental AAEQ O&M
38 Foot Project	1. Create Widener at 38 Feet	\$103,900	\$103,900
	2. Create Turning Basin at 38 Feet	\$449,800	\$553,700
39 Foot Project	3. Deepen Widener and 3A1 Channel from 38 Feet or Current Depth to 39 Feet	\$0	\$553,700
	4. Deepen 3A2 Channel from Current Depth to 39 Feet	\$0	\$553,700
	5. Deepen Turning Basin from 38 Feet to 39 Feet	\$0	\$553,700
40 Foot Project	6. Deepen Widener and 3A1 Channel from 39 to 40 Feet	\$0	\$553,700
	7. Deepen 3A2 Channel from 39 to 40 Feet	\$0	\$553,700
	8. Deepen Turning Basin from 39 to 40 Feet	\$0	\$553,700

Table 13-A

Jacksonville Harbor Incremental AAEQ Dike-Raising
Interest Rate = 6 1/8%

Jacksonville Harbor Incremental AAEQ Dike-Raising Costs (2' Required; 2' Allowable)

Project	Project Increment	Incremental AAEQ Dike-Raising	Cumulative Incremental AAEQ Dike-Raising
38 Foot Project	1. Create Widener at 38 Feet	\$1,900	\$1,900
	2. Create Turning Basin at 38 Feet	\$0	\$1,900
39 Foot Project	3. Deepen Widener and 3A1 Channel from 38 Feet or Current Depth to 39 Feet	\$3,600	\$5,500
	4. Deepen 3A2 Channel from Current Depth to 39 Feet	\$3,000	\$8,500
	5. Deepen Turning Basin from 38 Feet to 39 Feet	\$0	\$8,500
40 Foot Project	6. Deepen Widener and 3A1 Channel from 39 to 40 Feet	\$2,600	\$11,100
	7. Deepen 3A2 Channel from 39 to 40 Feet	\$2,100	\$13,200
	8. Deepen Turning Basin from 39 to 40 Feet	\$0	\$13,200

Table 14

Jacksonville Harbor AAEQ IDC
Interest Rate = 6 1/8%

Jacksonville Harbor Incremental AAEQ IDC Costs (2' Required; 2' Allowable)

Project	Project Increment	Incremental AAEQ IDC	Cumulative Incremental AAEQ IDC
38 Foot Project	1. Create Widener at 38 Feet	\$600	\$600
	2. Create Turning Basin at 38 Feet	\$2,600	\$3,200
39 Foot Project	3. Deepen Widener and 3A1 Channel from 38 Feet or Current Depth to 39 Feet	\$4,700	\$7,900
	4. Deepen 3A2 Channel from Current Depth to 39 Feet	\$12,300	\$20,200
	5. Deepen Turning Basin from 38 Feet to 39 Feet	\$100	\$20,300
40 Foot Project	6. Deepen Widener and 3A1 Channel from 39 to 40 Feet	\$7,600	\$27,900
	7. Deepen 3A2 Channel from 39 to 40 Feet	\$11,700	\$39,600
	8. Deepen Turning Basin from 39 to 40 Feet	\$100	\$39,700

Table 15

Jacksonville Harbor AAEQ First Costs, O&M, and IDC
Interest Rate = 6 1/8%

Jacksonville Harbor Incremental AAEQ First Costs, AAEQ O&M Costs, and AAEQ IDC
(2' Required; 2' Allowable)

Project	Project Increment	Incremental AAEQ First Costs, O&M, and IDC	Cumulative Incremental AAEQ First Costs, O&M, and IDC
38 Foot Project	1. Create Widener at 38 Feet	\$233,200	\$233,200
	2. Create Turning Basin at 38 Feet	\$626,700	\$859,900
39 Foot Project	3. Deepen Widener and 3A1 Channel from 38 Feet or Current Depth to 39 Feet	\$212,400	\$1,072,300
	4. Deepen 3A2 Channel from Current Depth to 39 Feet	\$375,300	\$1,447,600
	5. Deepen Turning Basin from 38 Feet to 39 Feet	\$21,100	\$1,468,700
40 Foot Project	6. Deepen Widener and 3A1 Channel from 39 to 40 Feet	\$154,500	\$1,623,200
	7. Deepen 3A2 Channel from 39 to 40 Feet	\$209,700	\$1,832,900
	8. Deepen Turning Basin from 39 to 40 Feet	\$14,300	\$1,847,200

144. Advance maintenance dredging quantities included in the cost estimate allow for a 2-foot required plus a 2-foot allowable overdepth. The additional advance maintenance depths replace the equivalent and existing advance maintenance depths of 2 feet required and 2 feet allowable for that segment of the main channel.

ADVANCE MAINTENANCE

145. Under Jacksonville Harbor's current advance maintenance plan for segment 3A1 and 3A2 or Cuts 50 – Terminal Channel, Station 65+00, an additional 2 feet of required depth plus 2 feet of allowable overdepth is added to the existing 38-foot project depth. That plan received approval in 1997¹⁵. The September 1998 *Navigation Study for Jacksonville Harbor, Duval County, Florida – 04810 Final Feasibility Report and Environmental Impact Statement* modified river miles 0 – 14.7 or Bar Cut to Cut 49 of that plan while leaving Cuts 50 – Terminal Channel the same (38-foot project depth + 2 required + 2 allowable).

146. For the GRR Cuts 50 to Terminal Channel, Station 65+00 will include a 40-foot project depth plus two feet of required depth and 2 feet of allowable overdepth (40-foot project depth + 2 required + 2 allowable). Both the existing and planned channels have equivalent advance maintenance dredging templates. The cost estimate includes project depth quantities of 40 feet plus advance maintenance quantities for the two feet required plus two feet of allowable overdepth for a total dredging depth of 44 feet over the entire channel bottom width from Cuts 50 to Terminal Channel, Station 65+00. Since the existing advance maintenance dredging template is replaced with an equivalent one, no additional advance maintenance costs are anticipated.

AVERAGE ANNUAL EQUIVALENT COSTS

147. The average annual equivalent costs (AAEQ) shown in table 12 -15 are normally figured on construction and increased maintenance of each alternative segment and depth. The AAEQ costs include, the construction or first cost (table 12), increased maintenance for addition of the Chaseville Turn Widener (table 13), the increased maintenance cost for Terminal Channel Turning Basin (table 13), interest during construction (table 14), and a summary of total AAEQ costs (table 15), which is the interest and amortization on the total economic investment for each alternative depth along Cuts 50 to Terminal Channel, Station 65+00, over the economic life of the project. Interest and amortization of first cost including interest during construction and increased maintenance is at a 6 1/8 percent over a project life of 50 years.

BENEFIT ANALYSIS

148. The alternatives are for deepening Cuts 50 through Terminal Channel, Station 65+00 or river miles 14.7 to mile 20 of the existing project channel for Jacksonville Harbor. That reach is identified in the discussions of ALTERNATIVE PLAN

¹⁵ CESAD-ET-CO-M (CESAJ-CO-OM/17 Oct 97) (11-2-240a)^{1st} End Mr. John P. DeVeaux/dsm/(404 331-6742, Subject: Revised Request for Advance Maintenance Dredging , Barcut 3 through Terminal Channel, Station 64+56, Jacksonville Harbor, Florida.

Table 16

Jacksonville Harbor AAEQ Benefits
Interest Rate = 6 1/8%

Jacksonville Harbor Incremental AAEQ Benefits

Project	Project Increment	Incremental AAEQ Benefits	Cumulative Incremental AAEQ Benefits
38 Foot Project	1. Create Widener at 38 Feet	\$451,100	\$451,100
	2. Create Turning Basin at 38 Feet	\$0	\$451,100
39 Foot Project	3. Deepen Widener and 3A1 Channel from 38 Feet or Current Depth to 39 Feet	\$497,300	\$948,400
	4. Deepen 3A2 Channel from Current Depth to 39 Feet	\$540,700	\$1,489,100
	5. Deepen Turning Basin from 38 Feet to 39 Feet	\$0	\$1,489,100
40 Foot Project	6. Deepen Widener and 3A1 Channel from 39 to 40 Feet	\$187,900	\$1,677,000
	7. Deepen 3A2 Channel from 39 to 40 Feet	\$301,200	\$1,978,200
	8. Deepen Turning Basin from 39 to 40 Feet	\$0	\$1,978,200

CONSIDERATIONS and labeled segment 3A (3A1 + 3A2) on the main river channel (figure 2). For segments 3A1 and 3A2 the existing deep draft commercial terminals are shown on figure 2. Benefits for segment 3A1 primarily occur at two petroleum terminals. Terminals providing the primary benefits for segment 3A2 include one petroleum terminal and the JPA Talleyrand Docks and Terminal. The benefit analysis looks at the transportation costs of moving existing and prospective cargo on the river with the existing depths compared to deeper depths. The analysis evaluates those cargo movements over Cuts 50 – through Terminal Channel, Station 65+00 or river miles 14.7 to mile 20. The following analysis involves the benefits associated with each segment under consideration. All benefits are in average annual equivalent (AAEQ) values based on 6 1/8 percent (Fiscal Year 2002 Federal discount rate) over a project life of 50 years. Table 16 provides a summary of the AAEQ benefits by increment at project depths of 38, 39, and 40 feet.

BACKGROUND

149. In July 1998, the District received a letter from ST Services requesting a reanalysis of transportation savings benefits due to changed conditions. ST Services owns and operates a marine petroleum product facility located in Segment 3A. In December 1995, it purchased the facility from Steuart Petroleum Company, which had purchased the adjacent Shell Oil facility in 1991. Since ST Services purchased the facility annual petroleum product receipts have increased from 5 million barrels to 20 million barrels, and deeper-drafting tankers are calling. The significant growth is due to ST Service's expansion of business to achieve a more efficient use of the terminal's capacity, which was previously underutilized. The economic analysis in the feasibility report was based on information received from Steuart Petroleum Company. The analysis reflects cargo and vessel traffic data through 1993. This information resulted in minor tidal delay elimination benefits. Based on more recent data provided by ST Services, the District determined that a reanalysis of transportation savings benefits was warranted. However, the District also determined that there was insufficient time to complete an appropriate reevaluation of navigation improvements in Segment 3A in time for incorporation of any improvements into the WRDA 1999. Accordingly, the District decided that it would pursue a post authorization change if the reanalysis determined that navigation improvements were economically justified. Moreover, the US Navy Fuel Depot and US Gypsum are located in Segment 3A. The reanalysis will also include a reevaluation of benefits for those facilities.

150. In a letter dated December 12, 2000, the JPA requested the District assess potential containerized cargo benefits at its Talleyrand Terminal due to deeper drafting container ships that will begin calling in 2001. The District determined that it would be appropriate to reassess all cargo traffic at the Talleyrand Terminal to account for all changed conditions at the facility.

PURPOSE AND SCOPE

151. The purpose of this analysis is to estimate the transportation savings benefits that would accrue to deep-draft vessels calling in Segment 3A, which runs from about river mile 14.7 north of the U.S. Navy Fuel Depot to about river mile 20 at the

Jacksonville Port Authority's (JPA) Talleyrand Terminal. For the analysis Segment 3A is divided into two sub-segments: 3A1 and 3A2. Sub-segment 3A1 consists, in order of river mile, U.S. Navy Fuel Depot, US Gypsum, ST Services, and PCS Phosphate. Sub-segment 3A2 includes Coastal Fuels Marketing/ITAPCO (share terminal facility), Chevron, and JPA Talleyrand Terminal. The Jacksonville Electric Authority's J. Dillion Kennedy Generation Station is located in Sub-segment 3A2. It does have a terminal for the receipt of an occasional receipt of fuel oil. The benefits will be estimated for cargo traffic at these terminal facilities as a result of the proposed harbor improvements, and then compared to the estimated project cost to determine if the improvements are economically justified, and as such, form the basis for a Federal interest in the deep-draft navigation improvements.

152. The scope of the analysis is limited to estimating benefits for a 39-foot and a 40-foot navigation channel depth as the non-Federal sponsor, the Jacksonville Port Authority, has advised that it does not wish to participate in channel improvements beyond 40 feet due to increased cost sharing requirements of the most recent WRDA 1999 deepening authorization. As a result, the entrance channel and main channel that precedes the current study area has an authorized project depth of 40 feet, which limits further evaluation of greater depths upstream.

METHODOLOGY

153. National Economic Development (NED) benefits were assessed following the methodology for deep draft commercial navigation analysis described in the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies, and other relevant Corps of Engineers analyses and policy guidance.

154. Benefits equal the difference between transportation costs without and with a project. All costs are adjusted to the base year of the project, 2005, and are then converted to Average Annual Equivalent (AAEQ) values using the Fiscal Year (FY) 2002 Federal discount rate of 6 1/8%, assuming a 50-year project life. The Federal interest rate used in the September 1998 Feasibility Report was 7 1/8%. The current interest rate is 6 1/8% (FY 2002). As stated above, AAEQ benefits and costs for this analysis are estimated using the current interest rate. Moreover, AAEQ benefits are estimated using interest rates of 5 7/8% and 6 3/8% to account for potential annual adjustments in the Federal interest rate. All costs are at October 2001 price levels.

155. When compared to project costs, project benefits provide the basis for the selection the NED project plan. Only NED benefits are summarized in the economics appendix. Benefit and cost comparisons are evaluated in the Main Report.

156. Two types of benefit categories are considered in the economic analysis: (1) transportation savings benefits that result from vessels being able to carry more cargo and not wait for the tide; and (2) delay reduction or time savings benefits due to increased vessel maneuverability and removal of transit time restrictions. The first category applies to deepening the channel, while the second category applies to the widener and the turning basin.

Benefits Resulting from Deepening the Channel

157. A detailed description of the methodology used for estimating benefits resulting from deepening the channel is provided for ST Services in the economics appendix. This methodology applies to deepening benefits at all facilities. Only key assumptions and parameters are identified for the other facilities if they differ from those utilized for ST Services, along with summary benefit tables. The estimated NED average annual equivalent (AAEQ) benefits and project costs are compared for a 39-foot, 40-foot and 41-foot project depths to determine if the improvements are economically justified and to identify the project depth at which NED net benefits are maximized.

Benefits Resulting from Constructing the Turn Widener and the Turning Basin

158. Benefits for the widener and the turning basin are the operational and delay time differences between the without- and with-project conditions. The time estimates are based on discussions with the port pilots.

ECONOMIC SUMMARY

159. The estimated benefits and costs for several alternative plans provide the means to make an economic analysis. Table 17 has the average annual equivalent (AAEQ) costs and benefits for the segments 3A1 and 3A2 at 38, 39, 40-foot project depths. Costs and benefits receive an evaluation at October 2001 price levels and interest rates with 6 1/8 percent for discounting.

160. As shown in table 17, the greatest net benefits occur at a 40-foot project depth. At the 40-foot project depth for the combination of the Chaseville Turn widener with main channel segments 3A1, and 3A2 produce the greatest positive net benefits. At the optimized depth of 40 feet the AAEQ benefits and costs are \$1,978,000 and \$1,184,000 which provide net benefits of \$794,000. The benefit to cost ratio is 1.7.

161. The economic summary section compares a combination of different plans. As indicated in table 17 the most economical combination of navigation features or segments maximizes at the 40-foot project depth for the Chaseville Turn widener with main channel segments 3A1, and 3A2. For that project depth the combination of the Chaseville Turn widener with main channel segments 3A1 plus 3A2 met the economic criteria for selection and appear to be the least environmentally damaging as compared to the other combination of plans which involve additional segments.

NED PLAN

162. The Federal objective of water resources planning is to contribute to national economic development consistent with protection of the nation's environment. As

Table 17

Jacksonville Harbor Net AAEQ Benefits Widener as First Increment (2' Required; 2' Allowable)

Project	Project Increment	Incremental AAEQ Costs	Incremental AAEQ Benefits	Incremental Net AAEQ Benefits	Applicable AAEQ Costs	Applicable AAEQ Benefits	Applicable AAEQ Net Benefits	Cumulative AAEQ Costs	Cumulative AAEQ Benefits	Cumulative Net AAEQ Benefits	Cumulative Benefit/Cost Ratio
38 Foot Project	1. Create Widener at 38 Feet	\$ 233,200	\$ 451,100	\$ 217,900	\$233,200	\$451,100	\$217,900	\$233,200	\$451,100	\$217,900	1.93
	2. Create Turning Basin at 38 Feet	\$ 626,500	\$ -	(\$626,500)	n/a	n/a	n/a	n/a	n/a	n/a	n/a
39 Foot Project	3. Deepen Widener and 3A1 Channel from 38 Feet or Current Depth to 39 Feet	\$ 212,300	\$ 497,300	\$285,000	\$212,300	\$497,300	\$285,000	\$445,500	\$948,400	\$502,900	2.13
	4. Deepen 3A2 Channel from Current Depth to 39 Feet	\$ 375,100	\$ 540,700	\$165,600	\$375,100	\$540,700	\$165,600	\$820,600	\$1,489,100	\$668,500	1.81
	5. Deepen Turning Basin from 38 Feet to 39 Feet	\$ 21,100	\$ -	(\$21,100)	n/a	n/a	n/a	n/a	n/a	n/a	n/a
40 Foot Project	6. Deepen Widener and 3A1 Channel from 39 to 40 Feet	\$ 154,400	\$ 187,900	\$33,500	\$154,400	\$187,900	\$33,500	\$975,000	\$1,677,000	\$702,000	1.72
	7. Deepen 3A2 Channel from 39 to 40 Feet (NED Plan)	\$ 209,500	\$ 301,200	\$91,700	\$209,500	\$301,200	\$91,700	\$1,184,500	\$1,978,200	\$793,700	1.67
	8. Deepen Turning Basin from 39 to 40 Feet	\$ 14,300	\$ -	(\$14,300)	n/a	n/a	n/a	n/a	n/a	n/a	n/a

shown in table 17 the combination of segments 3A1 and 3A2 at a 40-foot project depth maximizes net national economic development benefits of \$794,000 (AAEQ) and is recommended as the national economic development (NED) plan. For the purpose of this study that combination of the Chaseville Turn widener with main channel segments 3A1 and 3A2 at 40 feet (figure 7), provides the best plan of improvements including:

- Segment 3A1 of the main channel at a 40-foot project depth with a 2-foot required and 2-foot allowable overdepth throughout the existing channel width from about mile 14.7 to mile 18.0 or Cuts 50 – 54;
- A 100 to 200-foot widener along the east side of the Chaseville Turn between miles 17 and 18 (figures 7 and 8);
- Segment 3A2 of the main channel at a 40-foot project depth depth with a 2-foot required and 2-foot allowable overdepth throughout the existing channel width from about miles 18 to 20 or Cut 55 through Terminal Channel Station 65+00;
- The 2-foot required and 2-foot allowable overdepths for segments 3A1 and 3A2 replace the equivalent advance maintenance overdepths of 2 feet require and 2 feet allowable for the existing 38-foot project in that area of the main channel;
- All dredged material from the Chaseville Turn widener, main channel segments 3A1, and 3A2 will go in the upland confined disposal facility (DA/Q1) on the west end of Bartram Island (figure 7).

RECOMMENDED PLAN

163. The recommended plan for navigation improvements at Jacksonville Harbor has to be responsive to local needs and desires as well as the economic and environmental criteria established by Federal and State law. To do this the plan must be able to handle current and forecasted vessel traffic safely with minimum impact on the environment and without excessive delays and damage. Subsequent paragraphs outline the plan design, construction, operation and maintenance procedures as well as summarize the economic and environmental effects. For more detailed information on design refer to appendix A. Refer to the benefit analysis section for a summary of the economic analysis and on environmental matters refer to the Environmental Assessment (EA).

DESIGN VESSELS

164. A description of the design vessels for the simulation of Jacksonville Harbor alternative plans exists in the Waterways Experiment Station (WES) ***Ship Navigation Simulation Study, Jacksonville Harbor, St. Johns River, Florida***, Volume 1: Main Text and Appendix A. That report is in the supplemental report section of the ***Navigation Study for Jacksonville Harbor, Duval County, Florida – 04810 Final Feasibility Report an Environmental Impact Statement*** dated September 1998. Design ships for existing conditions were a 950-foot by 106-foot container ship and a 750-foot by 106-foot tanker/bulk carrier. Design vessels for the proposed plans A, B,

and C included a 984-foot by 122-foot container ship and an 850-foot by 106-foot tanker/bulk carrier. For simulation purposes the tankers always traveled inbound and the container ships outbound. The existing condition tanker for ebb tide draft was restricted to 32 feet. For the existing condition tanker with flood tide and the container ship for both tidal conditions the draft was set at 36 feet. With the proposed channel plans the inbound tanker with ebb tide was set to draft 36 and 40 feet with flood tide. The design container ship for the proposed channel was always set to draft 40 feet.

CHANNEL DESIGN

165. As discussed in the engineering appendix A, this reevaluation resulted in modifications to the existing channel depth and width. Plate A-2 of appendix A shows that the existing channel alignment and width was maintained from Cut 50 – Terminal Channel Station 65+00 except for the addition of a widener along the east side of Cuts 51 – 53.

166. The project depth increased from an existing depth of 38 feet to a new depth of 40 feet over the entire length of the study area. The 40-foot project depth also includes an additional 2-foot required and 2-foot allowable overdepth, which results in calculation of total estimated quantities to a depth of 44 feet. The required and allowable overdepths replace the same existing advance maintenance template for Cut 50 – Terminal Channel Station 65+00.

167. The channel design includes a 100 to 200-foot widener along the east side of Cuts 51 – 53 or the Chaseville Turn as shown in Plate A-2. Plate A-3 provides a cross section of the widener. The widener received testing in the ship simulation of the September 1998 feasibility study. As shown the correspondence appendix C, the St. Johns Bar Pilots confirmed in their June 14, 2001, letter that the widener will enhance navigation and does satisfy their concerns relating to deeper-draft vessels transiting the Chaseville Turn.

168. The channel design involves mainly a determination of depth and bottom width dimensions. In evaluating depth, wave conditions as well as vessel drafts, squat, sinkage, and bottom clearance consist of factors in the analysis. Conditions in the study area are not conducive to a lot of wave action so related allowances for clearances are not a design feature. In selecting a channel depth the economic analysis considered the vessel's loaded draft as well as existing and prospective operating practices for bottom clearance. As mentioned earlier in the BENEFIT ANALYSIS section of this study, the average minimum under-keel clearance actually used in Jacksonville Harbor is 2.7 feet for dry and liquid bulk carriers.

169. In determining a channel bottom width, waterway traffic, vessel size, and area conditions are major considerations. The existing and design vessels for the ship simulation mentioned above are representative of current and future traffic for Jacksonville Harbor. To test the channel plans the ship simulator used maximum spring ebb and flood tides. The operation scenarios, design vessels, and environmental conditions recommended provided the "maximum credible adverse situation," or the worst conditions under which the harbor would maintain normal operations. The simulation tested a variety of meeting and passing situations for all the

channels with two-way traffic. Study of two-way traffic was accomplished with two real-time piloted simulations conducted simultaneously.

REAL ESTATE LAND CERTIFICATION

170. The recommended plan will not require any new lands as indicated in real estate appendix B. The administrative costs shown allow for certification of the upland confined disposal facility on the west end of Bartram Island as property that Jacksonville Port Authority still owns.

RELOCATIONS

171. No existing utilities will require relocation as a result of the proposed recommended plan. Section E of the engineering appendix A identifies the existing submarine utilities that cross segment 3A. Plate A-2 identifies Jacksonville Electric Authority (JEA) power cables at an elevation of -48 Local Mean Low Water (LMLW) and an 8-inch sludge force main at -51 feet that cross the Federal channel. Further research and correspondence with utility companies did not reveal any known submarine crossing of local or long distance telephone, cable television, or drinking water lines in the study area.

NAVIGATION AIDS

172. The United States Coast Guard (USCG) has the responsibility to provide and maintain the proper number of navigation aids needed for day and night navigation on a Federal project. As noted in their 31 Oct 01 letter in EA appendix C, the USCG states that after review of the proposed plans, 3A1 and 3A2, that other than the relocation of several buoys no other aid-to-navigation changes appear necessary. No additional USCG aid-to-navigation costs resulted from their review. As a result, no costs are included for any changes to the navigation aids for the new channel modifications.

CONSTRUCTION

173. The recommended plan 3A (3A1 + 3A2), as shown on plate A-2, at a 40-foot project depth consists of maintaining the existing channel alignment and bottom width from Cuts 50 – Terminal Channel Station 65+00 except for the widener added at the Chaseville Turn or Cuts 51 - 53.

174. The 40-foot project, plate A-2 of engineering appendix A, consists of removing material from Cuts 50 – Terminal Channel Station 65+00 to a required depth of 42 feet with a 2-foot allowable overdepth. The additional 2 feet required plus 2 feet of allowable overdepth replaces the existing advance maintenance template for the 38-foot project. The confined upland disposal area (DA/Q1) disposal area on the west end of Bartram Island will receive all material from Cuts 50 – Terminal Channel Station 65+00.

175. Based on design, cost, and environmental considerations no blasting is required. For Cuts 50 – Terminal Channel Station 65+00 of the main channel or river miles 14.7 to 20 excavation is estimated using a rock cutter-head dredge which will pump the

material to the existing upland disposal area (DA/Q1) at the West End of Bartram Island.

176. The 40-foot project depth consists of a 2-foot required and a 2-foot allowable overdepth or a 44-foot depth for estimated quantities. The MCACES estimate in Appendix A, table A-1, includes a quantity estimate of 1,658,000 cubic yards for the recommended plan (Segment 3A1 + the Chaseville Turn Widener + Segment 3A2 without the Terminal Channel Turning Basin). Berthing area quantities for the 40-foot project depth of the recommended plan include those terminals providing benefits. The MCACES estimate in appendix A, table A-1, list those berthing area quantities. Berthing areas quantities for the ST Services consist of an estimated 5,000 cubic yards of material. The U.S. Navy Fuel Depot berthing area includes approximately 43,000 cubic yards of material; 39,000 cubic yards for Chevron Oil Terminal; and 38,000 cubic yards for JPA Talleyrand berthing areas. Computation of the above quantities made use of the most recent after-dredge surveys (Survey Numbers 00-250, 00-273, 00-277, and 01-021).

177. Total new work dredging quantities total approximately 1,658,000 cubic yards. In the dredging process the contractor does not shape the side slopes. The anticipated 1(Vertical) on 3(Horizontal) side slopes form naturally with most of the material moving into the channel cut during construction. The estimated construction time totals about 10.4 months including one month for mobilization and demobilization.

178. For estimating purposes the construction process includes a 30-inch hydraulic cutter suction dredge capable of dredging soft rock. The dredge will pump directly to the upland confined disposal facility located on the west end of Bartram Island. The geotechnical investigations section of engineering appendix A indicates that convention dredging equipment can achieve all of the required dredging without the aid of blasting.

179. Environmental monitoring during project construction requires several activities. Installation of warning signs for manatee protection in the construction area precedes dredging activities. Monitoring of the dredging activities occurs daily to maintain turbidity levels within State standards. Disposal of material from the main channel will be in the permitted West Blount Island upland confined disposal facility (DA/Q1).

180. Engineering Appendix plate A-2 shows two different utility lines crossing under the Federal channel at the south end of Cut-55 near the beginning of Terminal Channel. The Jacksonville Electric Authority (JEA) transmission cables have a top of pipe elevation of -48 feet and the Jacksonville Department of Public Utilities sludge force main has a top of pipe elevation of -51 feet. As noted on plate A-2 the proposed deepening would not cause a conflict with either utility. CECW-EP Memorandum, dated 30 August 1995, Subject: Standard Engineering Guidance for Setting Pipeline and Cable cover Requirements in Navigable Waters and Navigation Channels, provides guidance for setting pipeline and cable cover requirements. This memorandum states the following: "The minimum bottom cover for pipelines and cables shall be measured from the maximum depth of dredging. This depth is generally the authorized project depth, plus any over depth for advanced maintenance and the allowable dredging tolerance. The absolute minimum bottom cover for pipelines and cables shall be 48 inches in soil or 24 inches in compacted rock as established by the Office of Pipeline Safety (OPS), Department of Transportation and published in 49 CFR S 192.327 and

49 CFR S195.248. The District practice requires 6 feet (which includes allowances for advance maintenance and allowable overdepths) of cover in soil below the authorized project depth of the navigation channel. The JEA submarine transmission line at a depth of -48 feet meets or exceeds both the District (project depth of -40 feet + (-6) feet of cover in soil = -46feet) and OPS requirements (-44 feet maximum dredging depth + (-4) feet of cover in soil = -48feet) for pipeline and cable cover and as a result does not require relocation. Plans and specifications will indicate that extreme caution is to be exercised when dredging near the utility crossing.

FIRST COSTS

181. The estimated first cost of the NED plan for Cuts 50 – Terminal Channel Station 65:00 is in table 18. All costs are based on October 2001 price levels. Engineering, design, and construction management costs are an estimate based on actual experience for similar type projects. There is no known removal or relocation work required for construction. All lands needed for the project are within the navigable water of the United States. No real estate costs are evident for the project other than the administrative costs identified. The berthing area costs as shown in Table 18 are a 100% sponsor's responsibility. Sponsor berthing area costs for deepening to the same project depth of 40 feet and the resulting bulkhead modifications are included for each segment.

182. An existing upland disposal area on the West End of Bartram Island provides the required capacity. The Jacksonville Port Authority (JPA) recently raised the dikes on that disposal facility 10 feet to an elevation of 28.5 feet in August 1999. That improvement provided an additional 6.5 million cubic yards of capacity for the upland confined disposal facility on the west end of Bartram Island. The 1,658,000 cubic yards of dredged material from the proposed new work represents about 26 percent of the new capacity (1,658,000/6,500,000). A District audit of the Jacksonville Port Authority costs for design and construction of the Bartram Island dike raising project identified total costs of \$2,588,672.55.¹⁶ While JPA has already paid for their portion of those costs, 26 percent of the \$2,588,672.55 or \$673,000 has been applied at the appropriate time in the future when the addition of the 1,658,000 cubic yards of dredged material would require the dikes to be raised again. The present worth of that future cost was obtained and then annualized over the 50 year economic life of the project to obtain an annualized cost of \$13,200. That annual cost is included as an economic cost in table 19 and 20, but not as a financial cost for cost sharing purposes in table 23 since JPA has paid those costs.

¹⁶ December 20, 2000, CESAJ-CT (715)MEMORANDUM FOR Deputy District Engineer for Project Management, Attn: Jerry Scarborough, Subject: Review of Costs for the Bartram Island Dike Raising Project, Request for Reimbursement No. 2 Submitted by Jacksonville Port Authority IAW Agreement Under Section 204(e), As Amended, of Public Law 99-662, dated 25 January 1999.

Table 18 - Jacksonville Harbor GRR - Chaseville Turn Widener + 3A1 + 3A2 Main Channel Dredging					
03 = 40-foot Project Depth					
Reference: Brian Blake MCACES estimate dated 09/26/02					
Turning Basin (03 - A/12.02.99/03) Removed					
Toyota Berthing Area (03 - A/12.0299/05) Removed					
Chevron USA bulkhead costs added					
					6/30/2002
			Quantity	15%	Total
			CY	Contingency	Cost
03	40-foot Project Depth				
03 - A	Construction Cost				
03 - A/12	Navigation Ports & Harbors				
03 - A/12.02	Harbors				
03 - A/12.02.01	Mobil, Demobil & Prep Work				
03 - A/12.02.01/01	Dredging, Mobil & Demobil		780,183	117,027	897,210
	Total Mobil, Demobil & Prep Work		780,183	117,027	897,210
03 - A/12.02.16	Pipeline Dredging - Segment 3A1				
03 - A/12.02.16/01	Excavation & Disposal, Cut-50	320,986	1,701,226	255,184	1,956,410
03 - A/12.02.16/02	Excavation & Disposal, Cut-51	126,919	728,515	109,277	837,792
03 - A/12.02.16/03	Excavation & Disposal, Cut-52	59,066	333,723	50,058	383,781
03 - A/12.02.16/04	Excavation & Disposal, Cut-53	89,333	366,265	54,940	421,205
03 - A/12.02.16/05	Excavation & Disposal, Cut-54	83,932	517,021	77,553	594,574
03 - A/12.02.16/06	New Cut-51/52 Widener	290,951	820,482	123,072	943,554
03 - A/12.02.16/07	US Navy Fuel Depot Berth	43,090	247,337	37,101	284,438
03 - A/12.02.16/08	ST Services Berthing Area	5,119	27,131	4,070	31,201
	Total Pipeline Dredging - Segment 3A1	1,019,396	4,741,700	711,255	5,452,955
03 - A/12.02.99	Pipeline Dredging - Segment 3A2				
03 - A/12.02.99/01	Excavation & Disposal, Cut-55	256,294	2,352,779	352,917	2,705,696
03 - A/12.02.99/02	Excavation & Disposal, Cut TC	305,236	2,771,543	415,731	3,187,274
03 - A/12.02.99/03	New Terminal Channel Turning Basin		0	0	0
03 - A/12.02.99/04	Talleyrand Terminal Port Berths	37,963	344,704	51,706	396,410
03 - A/12.02.99/05	Talleyrand Terminal Toyota Berths		0	0	0
03 - A/12.02.99/06	Chevron Oil Terminal Berth	39,445	358,161	53,724	411,885
	Chevron Bulkhead Modifications		0	0	850,000
	Total Pipeline Dredging - Segment 3A2	638,938	5,827,187	874,078	7,551,265
	Total Harbors	1,658,334	11,349,070	1,702,361	13,901,431
	Total Navigation Ports & Harbors		11,349,070	1,702,361	13,901,431
	Total Construction Costs		11,349,070	1,702,361	13,901,431
03 - B	Non-Construction Cost				
03 - B/01	Lands and Damages		14,000	3,500	17,500
03 - B/30	Planning, Engineering & Design	10%	1,135,000	0	1,135,000
03 - B/31	Construction Management (S&I)	8%	908,000	0	908,000
	Total Non-Construction Costs		2,057,000	3,500	2,060,500
	Total 40-foot Project Depth		13,406,070	1,705,861	15,961,931
	Revised Total 40-foot Project Depth				15,961,931
	Interest During Construction				571,600
	Economic Investment				16,533,531
	Annual Costs				
	AAEQ of Economic Investment				1,067,305
	AAEQ of O&M Chaseville Turn Widener				103,852
	AAEQ Bartram Island Dike Raising in 20 years (26% x \$2,588,672.55)				13,200
	Total AAEQ				1,184,357

183. Interest during construction (IDC) in table 18 for the widener, 3A1 channel, and 3A2 channel or the recommended plan is based on Preconstruction, Engineering and Design (PED) taking place at a uniform rate of expenditure and starting at the beginning of construction. IDC also includes a phasing of construction components. Following Corps guidance, IDC is computed on a monthly basis using the current Federal interest rate. IDC is not included for the Bartram Island Dike raising costs mentioned above since construction has already occurred.

FUTURE OPERATIONS AND MAINTENANCE

184. At this time further deepening and widening using recommended plan 3A (3A1 + 3A2) is estimated to increase the shoaling in the harbor by approximately 57,000 cubic yards every three years as a result of the addition of the Chaseville Turn Widener. Increased maintenance costs for removal of that shoal material amount to an estimated Average Annual Equivalent (AAEQ) cost of \$103,852 as shown in tables 10 and 13. The cost estimate includes advanced maintenance dredging for segment 3A or Cuts 50 – Terminal Channel Station 65+00. The advance maintenance dredging quantities included in the cost estimate allow for a 2-foot required plus a 2-foot allowable overdepth. The additional advance maintenance depths of 2 feet required and 2 feet allowable replace the existing advance maintenance depths of 2 feet required and 2 feet allowable for that segment of the main channel. As previously discussed in paragraph 182 an AAEQ cost of \$13,200 is included for future Bartram Island dike raising costs. That annual cost is included as an economic cost in table 19 and 20, but not as a financial cost for cost sharing purposes in table 23 since JPA has paid those costs.

185. The USCG will handle future maintenance required on navigation aids and the Port Authority must provide for maintenance of berthing areas. Maintenance of the general navigation features for commercial navigation, including the Chaseville Turn widener, is a 100% Federal responsibility.

ANNUAL COSTS

186. The estimated annual costs for the recommended plan are in table 19. The annual costs consists of only the increased annual Operations and Maintenance (O&M) for the added Chaseville Turn Widener since there is no expected increase in the annual maintenance costs for USCG navigation aids for the recommended plan over the existing project costs. Interest and amortization of \$1,067,000 at 6 1/8 percent over the economic life of 50 years is shown to pay back the economic investment cost of \$16,554,000 in table 18.

Table 19

ANNUAL COSTS OF RECOMMENDED PLAN

Item	Annual Amount
Economic Investment	\$1,067,000
Future Bartram Island Dike Raising	\$ 13,000
Maintenance:	
Navigation Aids (USCG)	\$ 0
O&M Chaseville Turn Widener	\$ 104,000
TOTAL ANNUAL COSTS	\$1,184,000

ENVIRONMENTAL EFFECTS

187. The Recommended Plan would have the potential of injuring manatees by boat collisions and propeller lacerations during project construction activities. This adverse potential would be neutralized by the manatee protection measures that would be required by any Federal contract let for this project. Turbidity monitoring will be required to maintain State water quality standards. See Environmental Assessment (EA) for more details (the green pages following this section of the report). The environmental quality (EQ) account displays non-monetary effects on significant natural and cultural resources. Table 1 of the September 1998 feasibility study final EIS contains the EQ account. A copy of the September 1998 EIS is available on our web site at <http://www.saj.usace.army.mil/pd/envdocs/envdocsb.htm>. The District web site contains a copy of the July 1997 U.S. Fish and Wildlife Service Coordination Act Report (CAR) at <http://www.saj.usace.army.mil/pd/envdocs/JaxHbr/car.html>.

188. Florida Fish and Wildlife Conservation Commission in their March 9, 2000, letter expressed concerns over potential collisions of commercial vessel traffic with North Atlantic right whales since the offshore area is located within an important calving and nursery area for that imperiled species. Concerning potential collisions of commercial vessels, the economic analysis used primarily the existing fleet of vessels currently transiting Jacksonville Harbor. Transportation savings to those vessels will occur with deepening of the existing harbor, which allows the existing fleet to load deeper. As larger ships are introduced those large vessels replace the existing fleet so the actual number of vessels does not increase over time. The vessel calls or transits through Jacksonville over time will decrease as a result of the proposed deepening.

189. Environmental Commitments identified in paragraph 4.34 ENVIRONMENTAL COMMITMENTS of the September 1998 EIS that apply include the following. In their 23 July 1997 Fish and Wildlife Coordination Act Report (Appendix C) the FWS listed several Reasonable and Prudent Measures to protect listed species. The U.S. Army Corps of Engineers and contractors commit to avoiding, minimizing or mitigating for adverse effects during construction activities by including those measures in the

contract specifications. Except for whales and sea turtles, there are no listed species under the jurisdiction of the NMFS that would be affected by the project. If a hopper dredge is used, its operation would be subject to the requirements of the Regional Biological Opinion concerning these species (revision dated September 25, 1997) from the NMFS. Low-pressure sodium (LPS) lighting was recommended but not required as stated in correspondence from the FWS dated February 17 and March 10, 1998 (See Appendix C of the September 1998 EIS). The requirements of a Water Quality Certification from the State would be applied to the project.

BENEFITS

190. A detailed evaluation of benefits to be derived from implementation of the recommended plan are in table D-22 of the economics appendix D (*FOR OFFICIAL USE ONLY*). Benefits result from transportation costs savings due to reductions in costs associated with the reduction or elimination of tidal delays and light loading. To obtain average annual equivalent values all future values of projected benefits are discounted at an interest rate of 6 1/8 percent over a period of 50 years. The total average annual equivalent (AAEQ) benefits for the recommended plan are \$1,995,000. A summary of those benefits is in table 20.

Channel Segment	Commodity	40-foot Project
Chaseville Turn Widener	All	\$503,000
3A1	Liquid Bulk	\$634,000
3A2	Liquid Bulk – Petroleum	\$67,000
3A2	Liquid Bulk – Chemical	\$1,000
3A2	Containerized	\$772,000
3A2	General Cargo	\$1,000
Total Benefits		\$1,978,000
Benefits During Construct'n		\$17,000
Total Benefits + BDC		\$1,995,000
Total Costs		\$1,184,000
Net Benefits		\$811,000
Benefit/Cost		1.68

ECONOMIC SUMMARY

191. On the recommended plan (NED Plan) the benefits exceed the cost by \$811,000 annually (\$1,995,000 - \$1,184,000). The benefit to cost ratio is equal to the total average annual equivalent benefit of \$1,995,000 divided by the total average annual equivalent cost of \$1,184,000. That ratio is 1.7 to 1.0 as shown in table 20.

FLOOD PLAIN ASSESSMENT

192. Executive Order 11988 requires the Federal Government to avoid, if possible, adverse impacts associated with the occupancy and modification of flood plains as well as direct or indirect support of development in those areas where there is a practical alternative. The existing port facilities at Jacksonville Harbor are already in the 100 year flood plain. Federal improvement of the existing navigation project will encourage continued use of existing facilities on those lands as well as those already planned for future growth in commerce. Port development will occur with or without the proposed improvement.

193. Relocation of cargo facilities such as the gantry cranes, piers, bulkheads, and paved storage areas for containers is not practical for a port serving deep draft ships. The port facilities are about at the 100 year elevation to avoid any serious damages from flooding. Use of alternative Florida ports is impractical as most are in similar flood plain situations. In addition, maintenance dredging activities will cause no flood plain or wetland impacts and consequently no gains or losses of acreages realized in the flood plain or coastal zone. Therefore, the proposed plan is in compliance with the Executive Order calling for enumeration of those possible impacts.

SEA LEVEL RISE

194. Throughout geologic history, global sea level variations, both rise and fall, have occurred. Some authorities have found evidence to indicate that we may be entering a new ice age with a resultant sea level drop. Others argue that increasing atmospheric concentrations of carbon dioxide and other gases are causing the earth to warm, contributing to a sea level rise. Eustatic sea level change is defined as a global change of the oceanic water level. Total relative sea level change is the sum of the eustatic sea level and any local change in land elevation.

195. The National Ocean Service (NOS) has compiled relatively long-term (approximately 50-year duration) records of measured water surface elevations at various locations along United States coastlines. The station closest to the project areas is located at Mayport, Florida. Florida was estimated to be 2.2 millimeters per year (mm/yr). The corresponding estimate of sea level rise, in English units, is about

0.0072 feet per year (ft/yr). Therefore, over the 50-year life of the project, sea level rise is estimate to be 0.36 feet.

DREDGED MATERIAL MANAGEMENT PLAN

196. Placement of the approximately 1,658,000 cubic yards of new work material for the Recommended Plan will occur at the upland confined disposal facility on the west end of Bartram Island. The Jacksonville Port Authority recently raised the dikes on that disposal facility 10 feet to an elevation of 28.5 feet in August 1999. That improvement provided an additional 6.5 million cubic yards of capacity for the upland confined disposal facility on the west end of Bartram Island. As of December 2001 no major dredging event has required use of that disposal area.

197. "The St. Johns River Dredging Requirements Study Letter Report", dated 6 January 1998, estimates 670,000 cubic yards as the average yearly maintenance dredging quantity for Jacksonville Harbor. The study estimates the 670,000 cubic yards per year occur between river miles 0 and 22 of the main channel. Under the existing maintenance approach, material from mile 0 through mile 6.56 is normally disposed of on the Beach. From mile 6.6 through mile 15 the material is designated to either Buck Island or the west end of Bartram Island depending on the quality of the material. From mile 15 through mile 22 the west end of Bartram Island is designated as the disposal area.

198. Based on that designation of shoal material from the Federal channel to specific disposal areas Bartram Island would probably receive about 213,000 CY/YR ($7/22 \times 670,000$ CY/YR). Using that figure Bartram Island would have capacity for about 30 years ($6,500,000$ CY of capacity / $213,000$ CY/YR = 30.5 years) before another required dike raising. Since Bartram Island could infrequently also receive unknown quantities of material not suitable for construction fill or beach placement from river miles 6.6 through 15, for planning purposes, 20 years is used as the anticipated time for the next future dike raising. Based on the designation of the Federal channel to specific combined disposal areas, Buck and Bartram Islands could potentially receive shoal material from river mile 6.6 through mile 20 or about 13.4 miles of the recommended plan. Assuming a uniform deposition rate and ignoring the potential for ocean disposal, those two upland disposal areas could receive about 408,000 CY/YR ($13.4/22 \times 670,000$ CY/YR).

199. The raising of the dikes at Buck Island during 1998 created an additional 1.5 Million CY of disposal capacity for quality material which the Jacksonville Port Authority uses for a continuing source of clean fill material. The Wonderwood Expressway, a major road building program, a short distance from the Buck Island site will require construction fill in the near future. According to the Jacksonville Port Authority potential contractors have already inquired about use of that material. Once construction of the Wonderwood Expressway begins, use of construction fill from Buck Island will result in increased capacity. On the east end of Bartram Island a cross dike recently raised to a height of 45 feet in the confined disposal area will allow potential utilization of that disposal area for maintenance material. Sufficient material now exists in the east end of Bartram Island to allow raising of the existing 25-foot high dikes an additional 20 feet to provide about 1 – 1.5 million cubic yards of additional capacity. Ignoring the potential

increased capacity at Buck Island from the recycling of dredge material for construction fill and the potential use of the east end of Bartram Island (1 –1.5 million cubic yards), current capacity estimates for Buck Island (1.5 million cubic yards) and the west end of Bartram Island (6.5 million cubic yards) total 8.0 million cubic yards.

200. Assuming Buck and the west end of Bartram Islands will receive about 408,000 CY of dredged material per year, Buck and Bartram Islands will have enough future capacity for about 20 years (8,000,000/408,000) based on the above yearly average. That assumption also does not include additional capacity developed in Buck Island as a result of recycling of dredged material for construction fill, the potential use of the east end of Bartram Island or the potential for ocean disposal.

201. The majority of the material from Jacksonville Harbor project is generally suitable for ocean disposal. The Environmental Protection Agency (EPA) designated the Jacksonville Harbor Ocean Dredged Material Disposal Site (ODMDS) with a capacity of 5 million cubic yards per year. Before and after bathymetry of the ODMDS indicates sediment placement does result in mounds, but those mounds do not persist.

202. With an available ocean disposal potential of 5 million cubic yards per year along with approximately 20 years of capacity available in Buck and Bartram Islands, the recommended plan will not impact the Dredge Material Management Plan (DMMP). Therefore, the DMMP does not require revisions as a result of the recommended plan. In addition, a recently approved Section 1135 Preliminary Restoration Plan for Mill Cove, a section of the St. Johns River adjacent to the project area (figure 2), recommends restoration of about 60 acres of salt marsh. The preliminary restoration plan (PRP) would involve dredging shoaled areas of historically deeper water within the Mill Cove area and placing the dredged material south of Bartram Island. The bottom surface would be raised to an elevation that supports salt marsh growth similar to the successful salt marsh mitigation along the east Mill Cove diversion feature of Bartram Island. The existing confined disposal facilities on the east and west ends of Bartram Island are an alternative source of material, which would further increase the above estimated capacity.

PLAN IMPLEMENTATION

203. To implement a plan at Jacksonville Harbor, certain conditions and requirements are necessary to meet State, Local, and Federal standards set by law. A discussion of those responsibilities is in the subsequent paragraphs. In December 2001, a meeting with the sponsor in Jacksonville, Florida occurred to explain the sponsor's cost sharing requirements and related responsibilities. Further coordination occurred at the Alternative Formulation Briefing held in the District office on April 24, 2002. The sponsor understands both areas of accountability.

STATE REQUIREMENTS

204. The Florida Department of Environmental Protection (DEP) reviews all proposed Federal projects in wetlands and water areas to determine whether State Water Quality

Certification will be issued for such work. The U.S. Army Corps of Engineers will request that certification as soon as suitable plans and specifications are available for submission to DEP.

COST SHARING

205. Under the Water Resources Development Act (WRDA) 1986, as amended by Section 201 of WRDA 1996, Federal participation in navigation projects is limited to sharing costs for design and construction of the general navigation features (GNF) consisting of breakwaters and jetties, entrance and primary access channels, widened channels, turning basins, anchorage areas, locks, and dredged material disposal areas with retaining dikes. Non-federal interest are responsible for and bear all costs for acquisition of necessary lands, easements, rights-of-way and relocations; terminal facilities; and dredging berthing areas and interior access channels to those berthing areas.

206. Section 101 of WRDA 1986 requires the project sponsor to bear a percentage share of harbor construction costs for project components that are cost-shared (general navigation features, mitigation) that varies according to the range of water depths where the work is done. That variable cost share is paid during construction.

207. For a commercial navigation project with project depths greater than 20 feet but not in excess of 45 feet, the Non-Federal share for construction is 35 percent (25% during construction and 10% on completion of construction or over time with interest up to 30 years). Credit against that 10 percent contribution is allowed for the value of lands, easements, rights-of-way, and relocations provided by the project sponsor as LERR. Maintenance of the general navigation features including mitigation is 100 percent Federal.

208. Based on WRDA 1986, the cost sharing for the recommended plan is a 25 percent cash contribution paid during construction. Also, Section 101 requires the sponsor to pay an additional 10 percent of the construction costs that are cost shared, on completion of construction or over time with interest, up to 30 years. Credit against this 10 percent contribution is allowed for the value of lands, easements, rights-of-way, and relocations provided by the project sponsor as LERR.

209. Lands, Easements, Rights-of-Way, and Relocations, (LERR) are 100 percent Non-Federal. Operation and maintenance of the general navigation features with a 100 percent commercial vessel navigation project are a 100 percent Federal responsibility. The following table 22 summarizes the cost sharing percentages.

Table 21			
Cost Sharing Percentages			
Item	Federal Share(s)	Sponsor Share(s) ^{1/}	Total(s)
Initial Project Construction			
Comm'l Navigation	65%	35%	100%
Aids to Navigation	100%	0%	100%
Service Facilities	0%	100%	100%
LERRD	0%	100%	100%
Operation and Maintenance			
Comm'l Navigation	100%	0%	100%
Aids to Navigation	100%	0%	100%
Service Facilities	0%	100%	100%
Disposal Areas	100%	0%	100%

^{1/} The sponsor pays 10 percent of the construction costs (35%) that are cost shared, on completion of construction or over time with interest, up to 30 years. That 10 percent post-construction cost contribution is reduced by the credit amount for LERR.

210. The cost shared amount is derived from the total first cost of construction \$15,962,000 found in table 18. That cost does not include the navigation aids relocated by the USCG (which according to USCG letter dated 31 Oct 01 does not result in additional costs). The cost shared amount of \$13,975,000 on the NED 40-foot plan is determined as follows:

Total First Cost of NED Plan	\$ 15,962,000
Less: Navigation Aids (USCG)	\$ (0)
RE Land Certification (Sponsor)	\$ (13,000)
Berthing Area Dredging (Sponsor)	\$ (1,124,000)
Chevron Bulkhead Mods ¹⁷	\$ (850,000)
Mitigation (Sponsor)	\$ (0)
Cost Shared Amount	\$ 13,975,000

On the NED plan the allowable amounts for cost sharing are shown in table 23.

¹⁷ A 10 Jun 02 email message relating to the Chevron USA terminal operator indicates the bulkhead modifications are budgeted for 2004.

Table 22

PRELIMINARY COMBINED FEDERAL /NON-FEDERAL COST SHARING SUMMARY TABLE

RECOMMENDED NED PLAN 3A (40-Foot Project Depth)

Item	Total		Federal Share		Non-Federal Share					
	A + B + C		A		B+C		B		C	
	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount
NED Plan 3A 40-Foot Cost Sharing										
Construction Cost of NED Plan										
Commercial General Navigation Features (GNF)	100%	\$13,975,000	65%	\$9,084,000	35%	\$4,891,000	25%	\$3,494,000	10%	\$1,397,000
RE Land Certification (Sponsor)				\$13,000		(\$13,000)				(\$13,000)
Subtotal		\$13,975,000		\$9,097,000		\$4,878,000		\$3,494,000		\$1,384,000
Cost of Other Work										
RE Land Certification (Sponsor)	100%	\$13,000	0%	\$0	100%	\$13,000	0%	\$0	100%	\$13,000
Service Facilities Berth'g Area Dredg'g (Sponsor)	100%	\$1,124,000	0%	\$0	100%	\$1,124,000	100%	\$1,124,000	0%	\$0
Service Facilities Chevron USA Bulkhead Mod	100%	\$850,000	0%	\$0	100%	\$850,000	100%	\$850,000	0%	\$0
Aids to Navigation (USCG)	100%	\$0	100%	\$0	0%	\$0	0%	\$0	0%	\$0
Mitigation (Sponsor)	100%	\$0	65%	\$0	35%	\$0	35%	\$0	0%	\$0
Total		\$15,962,000		\$9,097,000		\$6,865,000		\$5,468,000		\$1,397,000

211. As shown in table 23 project costs are allocated to the commercial navigation project purpose. Federal participation in the cost of implementing the project proposal is limited to the Federal share of the cost of the NED plan. Based on October 2001 prices, the estimated cost of the general navigation features (GNF) of the NED plan is \$13,975,000. The cost of GNF includes channel dredging and dredged material disposal. Recent construction at the existing Bartram Island dredged material disposal facility has provided capacity for the new work dredging. Apportionment of the cost of the GNF is in accordance with Section 101 of the Water Resource Development Act (WRDA) of 1986, as amended by Section 201 of WRDA 1996.

212. The Federal and non-Federal shares of the GNF are estimated to be \$9,097,000 and \$4,878,000, respectively. The non-Federal portion includes a repayment of 10 percent of the cost to construct the GNF, less allowable credits for the values of lands, easements, rights-of-way and relocations (LERR) necessary for the Federal project. That amount is currently estimated at \$1,397,000, which may be paid with interest over a period not to exceed 30 years. The non-Federal interests would also be responsible for all the berthing areas and associated disposal area capacity. Total estimated costs for local service facilities are \$1,974,000 (\$1,124,000 + \$850,000). Total estimated costs for all features necessary to obtain the projected navigation benefits, including GNF, LERR, and local service facilities are estimated to be \$15,962,000. Of that amount \$9,097,000 would be Federal and \$6,865,000 would be non-Federal.

213. Equivalent annual benefits and costs, based on a discount rate of 6.125 percent and a 50-year period of economic evaluation, are estimated as \$1,995,000 and \$1,184,000, respectively. Equivalent annual net benefits amount to \$811,000. The benefit to cost ratio is 1.7 to 1.

SUMMARY OF COORDINATION

214. Public views and comments have been solicited at various points during the study process. Pertinent correspondence received to that coordination is in appendix C of the Environmental Assessment along with a discussion of the study coordination effort. Coordination of the reconnaissance and feasibility study alternatives began on July, 1994 with various public agencies and individuals. The following coordination was done for the Final E.I.S. dated September 1998 that included the current proposed project improvements.

215. A Notice of Intent (NOI) to prepare a draft of this EIS appeared in the Federal Register on 5 May 1997. In addition, the NOI was mailed to interested and affected parties by letter dated 13 May 1997. Notice of Availability of the Draft Environmental Impact Statement (DEIS) appeared in the Federal Register, volume 63, number 118 on June 19, 1998 through August 3, 1998. Letters received during the comment period with District responses appear in appendix F of the EIS or appendix C. A copy of the letter and NOI are in Appendix C to the September 1998 main report. A copy of the EIS is available on our web site at <http://www.saj.usace.army.mil/pd/envdocs/envdocsb.htm> and a copy of the July 1997 U.S. Fish and Wildlife Service Coordination Act Report (CAR) at <http://www.saj.usace.army.mil/pd/envdocs/JaxHbr/car.html>.

216. Coordination with the U.S. Fish and Wildlife Service by letter dated June 1, 2000 indicated that the November 1997 C.A.R. addressed the proposed navigation modifications and that a new C.A.R. would not be required for this General Reevaluation Report unless design or listed species information changed.

217. For the current General Reevaluation Report two additional scoping letters provided a request for reevaluation of 5.3 miles of the main channel from river miles 14.7 to 20. Public involvement continued with scoping letters dated April 26, 2000 and September 8, 2000. The April 26, 2000, scoping letter requested reevaluation from river mile 14.7 to 20 or 5.3 miles, which received consideration in the September 1998 Final EIS for Jacksonville Harbor. The September 8, 2000 letter requested review of river miles 14.7 to about 18.0 or 3.3 miles of the main channel. Those scoping letters with responses are included in the coordination appendix C of the Environmental Assessment. The Florida Department of Environmental Protection (FDEP) in their October 20, 2000 letter noted that the Corps applied for a Joint Coastal Permit (DEP File No. 0129277-001-JC) to deepen sections of Jacksonville Harbor to -40 feet. FDEP amended and renewed that Corps maintenance-dredging permit. Florida Fish and Wildlife Conservation Commission in their October 30, 2000 letter evaluated not only river miles 14.7 to 20 of the current study area, but also included from the entrance channel to river mile 20 of Jacksonville Harbor. That letter stated that their comments for reevaluation of the proposed deepening to a depth of -40 of the entire 20-mile section of the harbor main channel consisted of the same comments as their Manatee Impact Review dated March 9, 2000 and the Marine Turtle Impact Assessment dated December 27, 1999. The FDEP State Clearinghouse letter dated September 9, 2002 noted the above comments and described the project as consistent with the Florida Coastal Management Program based on information contained in the draft EA and the requirements of the Joint Coastal Permit (JCP) granted February 22, 2001 (Permit No. 0129277-001-JC) for the channel maintenance dredging and deepening project. The Northeast Florida Regional Planning Council found the proposed project consistent with its policies, plan and program.

CONCLUSIONS

218. Various measures received consideration to resolve navigation needs and problems on the existing Federal project. A combination of a widener with deepening of the main channel resulted in an economically and environmentally acceptable plan.

219. A reevaluation of segment 3A from the original September, 1998, feasibility study due to changed conditions resulted in a division of that segment into two separate segments 3A1 and 3A2. Increased petroleum-product tanker and container ship traffic has developed in those two segments. Evaluation of those segments included consideration of a channel widener, a turning basin, and main channel project depths of 39 and 40 feet. After a review of disposal areas from the September 1998 study, the existing upland confined disposal facility on the west end of Bartram Island remained as the recommended disposal site. A review of ship simulation testing of the widener and turning basin from the September 1998 feasibility study resulted in updated coordination with the harbor pilots. The harbor pilots confirmed that the configuration of the proposed widener will satisfy their concerns relating to the Chaseville Turn as stated

in their June 14, 2001 letter. The turning basin dropped out of the evaluation due to insufficient benefits. Further environmental and economic evaluation of those measures resulted in the National Economic Development (NED) plan.

220. The total first cost of the NED plan is estimated at \$15,962,000. The estimated average annual equivalent benefits and costs are \$1,995,000 and \$1,184,000 respectively. The benefit to cost ratio is 1.7 to 1. The NED plan consists of deepening and widening part of the existing Federal channel from river miles 14.7 to 20 or Cut 50 through Terminal Channel Station 65:00.

221. Based on the NED or Recommended Plan (figure 7), modification of the authorized project for navigation improvements at Jacksonville Harbor would include:

- Deepening the existing 38-foot main channel to a new project depth of 40 feet with existing channel widths from about Cut 50 through Terminal Channel Station 65:00 or about mile 14.7 to 20;
- In addition to the new 40-foot project depth, replacing the equivalent existing advance maintenance depths;
- Adding a 100 to 200-foot widener along the east side of the Chaseville Turn between miles 17 and 18 at a 40-foot project depth; and
- Placement of all dredged material in the existing upland confined disposal site on the west end of Bartram Island.

222. The Jacksonville Port Authority supports the above plan and will provide a letter of intent and preliminary financial plan for securing the non-Federal share of project costs, currently estimated at \$6,865,000 for the new work. The sponsor's financial plan will show sufficient funds available to provide 100 percent of their share of project costs before award of the contract for project construction. Construction will be completed under one contract. The sponsor will confirm that sufficient funds exist to satisfy their financial obligation for the project.

RECOMMENDATIONS

223. I recommend that the existing project for deep-draft navigation at Jacksonville Harbor be modified to provide for implementation of a Federal project for deeper draft commercial vessels, in accordance with the plan recommended herein, with such further modifications thereto as in the discretion of the Commander, HQUSACE, may be advisable; at a first cost to the United States presently estimated at \$9,097,000 with an additional annual operation, maintenance, repair, rehabilitation and replacement cost of \$104,000 to the United States.

224. These recommendations are made with the provision that the exact amount of the non-Federal contribution shall be determined by the Commander HQUSACE prior to project implementation, in accordance with the following required items of

cooperation to which the non-Federal sponsor (Jacksonville Port Authority) shall agree to perform prior to implementation:

(a) Enter into an agreement which provides, prior to construction, 25 percent of design costs;

(b) Provide, during construction, any additional funds needed to cover the non-Federal share of design costs;

(c) Provide, during the period of construction, a cash contribution equal to 25 percent of the costs of construction of the general navigation features (which include the construction of land-based and aquatic dredged material disposal facilities that are necessary for the disposal of dredged material required for project construction, operation, or maintenance and for which a contract for the facility's construction or improvement was not awarded on or before October 12, 1996);

(d) Pay with interest, over a period not to exceed 30 years following completion of the period of construction of the project, up to an additional 10 percent of the total cost of construction of general navigation features. The value of lands, easements, rights-of-way, and relocations provided by the non-Federal sponsor for the general navigation features, described below, may be credited toward this required payment. If the amount of credit exceeds 10 percent of the total cost of construction of the general navigation features, the non-Federal sponsor shall not be required to make any contribution under this paragraph, nor shall it be entitled to any refund for the value of lands, easements, rights-of-way, and relocations in excess of 10 percent of the total cost of construction of the general navigation features;

(e) Provide all lands, easements, and rights-of-way, and perform or ensure the performance of all relocations determined by the Federal Government to be necessary for the construction, operation, maintenance, repair, replacement, and rehabilitation of the general navigation features (including all lands, easements, and rights-of-way, and relocations necessary for dredged material disposal facilities);

(f) Provide, operate, maintain, repair, replace, and rehabilitate, at its own expense, the local service facilities (Blount Island Marine Terminal, Ed Austin Terminal, and Talleyrand Terminal); in a manner compatible with the project's authorized purposes and in accordance with applicable Federal and State laws and regulations and any specific directions prescribed by the Federal Government;

(g) Accomplish all removals determined necessary by the Federal Government other than those removals specifically assigned to the Federal Government;

(h) Grant the Federal Government a right to enter, at reasonable times and in a reasonable manner, upon property that the non-Federal sponsor owns or controls for access to the general navigation features for the purpose of inspection, and, if necessary, for the purpose of operating, maintaining, repairing, replacing, and rehabilitating the general navigation features;

(i) Hold and save the United States free from all damages arising from the construction, operation, maintenance, repair, replacement, and rehabilitation of the

project, any betterments, and the local service facilities, except for damages due to the fault or negligence of the United States or its contractors;

(j) Keep, and maintain books, records, documents, and other evidence pertaining to costs and expenses incurred pursuant to the project, for a minimum of 3 years after completion of the accounting for which such books, records, documents, and other evidence is required, to the extent and in such detail as will properly reflect total cost of construction of the general navigation features, and in accordance with the standards for financial management systems set forth in the Uniform Administrative Requirements for Grants and Cooperative Agreements to State and local governments at 32 CFR, Section 33.20;

(k) Perform, or cause to be performed, any investigations for hazardous substances as are determined necessary to identify the existence and extent of any hazardous substances regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. 9601-9675, that may exist in, on, or under lands, easements, or rights-of-way that the Federal Government determines to be necessary for the construction, operation, maintenance, repair, replacement, or rehabilitation of the general navigation features. However, for lands that the Government determines to be subject to the navigation servitude, only the Government shall perform such investigation unless the Federal Government provides the non-Federal sponsor with prior specific written direction, in which case the non-Federal sponsor shall perform such investigations in accordance with such written direction;

(l) Assume complete financial responsibility, as between the Federal Government and the non-Federal sponsor, for all necessary cleanup and response costs of any CERCLA regulated materials located in, on, or under lands, easements, or rights-of-way that the Federal Government determines to be necessary for the construction, operation, maintenance, repair, replacement, and rehabilitation of the general navigation features;

(m) To the maximum extent practicable, perform its obligations in a manner that will not cause liability to arise under CERCLA;

(n) Comply with the applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646, as amended by Title IV of the Surface Transportation and Uniform Relocation Assistance Act of 1987, and the Uniform Regulations contained in 49 CFR Part 24, in acquiring lands, easements, and rights-of-way, required for construction, operation, maintenance, repair, replacement, and rehabilitation of the general navigation features, and inform all affected persons of applicable benefits, policies, and procedures in connection with said act;

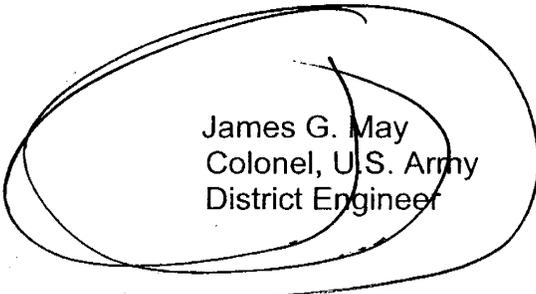
(o) Comply with all applicable Federal and State laws and regulations, including, but not limited to, Section 601 of the Civil Rights Act of 1964, Public Law 88-352 (42 U.S.C. 2000d), and Department of Defense Directive 5500.11 issued pursuant thereto, as well as Army Regulation 600-7, entitled "Nondiscrimination on the Basis of Handicap in Programs and Activities Assisted or Conducted by the Department of the Army", and the application of and compliance with the Davis-Bacon Act, Contract Work Hours and Safety Standards Act and Copeland Anti-Kickback Act;

(p) Provide a cash contribution equal to the non-Federal cost share of the project's total historic preservation mitigation and data recovery costs attributable to commercial navigation that are in excess of 1 percent of the total amount authorized to be appropriated for commercial navigation; and

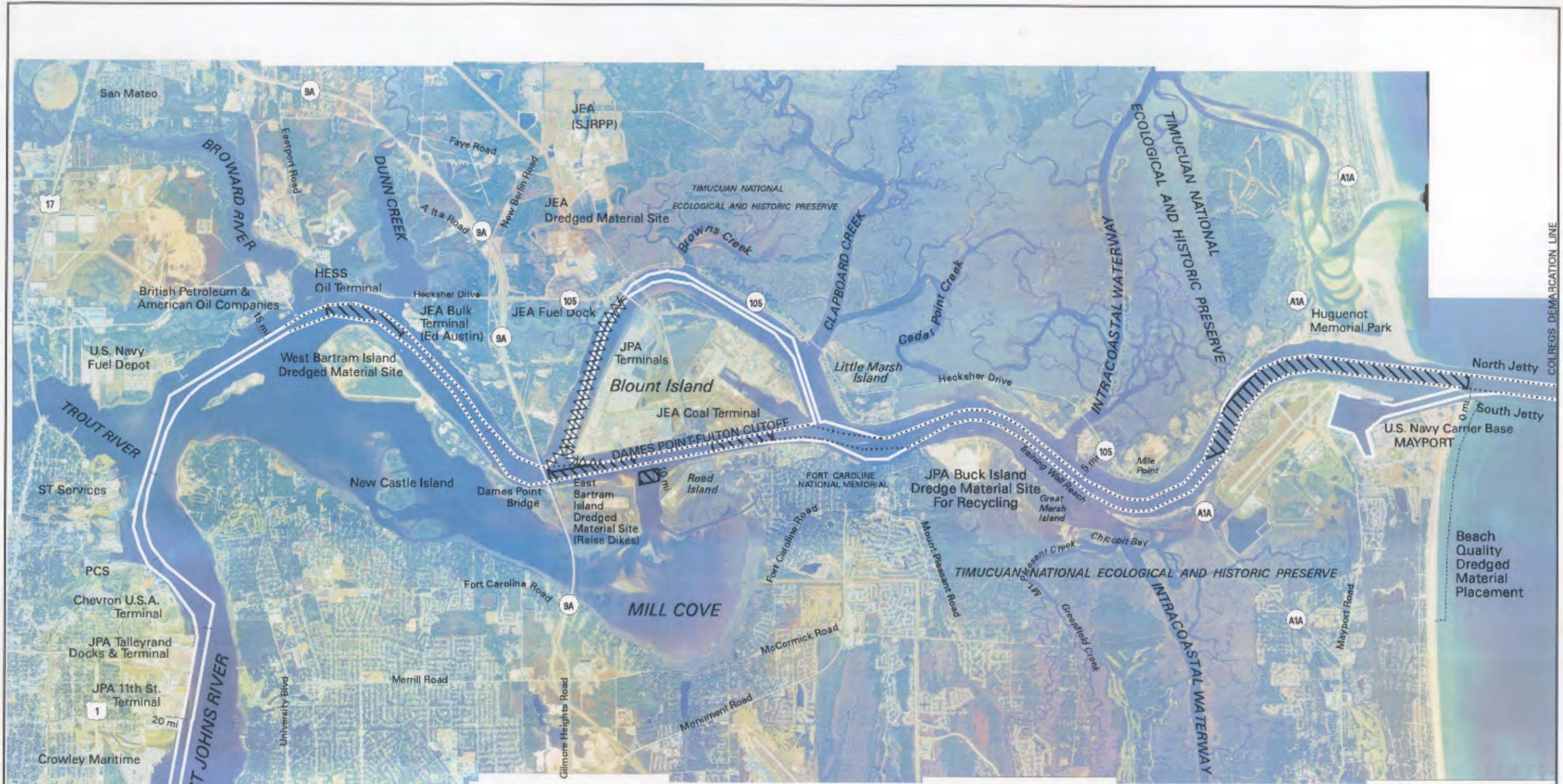
(q) Do not use Federal funds to meet the non-Federal sponsor's share of total project costs unless the Federal granting agency verifies in writing that the expenditure of such funds is expressly authorized by statute.

225. The non-Federal sponsor furnishes the above assurances after the project has been authorized for construction by execution of a Project Cooperation Agreement with the United States Government. A summary of the Federal and non-Federal cost sharing amounts is shown in table 22.

226. The recommendations contained herein reflect the information available at this time and current Departmental policies governing formulation of individual projects. They do not reflect program and budgeting priorities inherent in the formulation of a national Civil Works construction program nor the perspective of higher review levels within the Executive Branch. Consequently, the recommendations may be modified before proposals are made for authorization and implementation finding. However, prior to transmittal to the Congress, the non-Federal Sponsor, the State, interested Federal agencies, and other parties will be advised of any changes and will be afforded the opportunity to comment further.



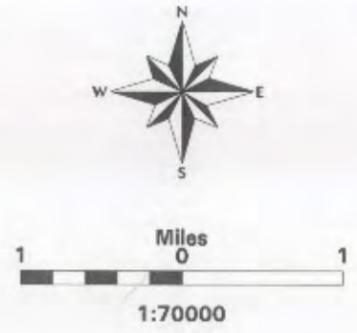
James G. May
Colonel, U.S. Army
District Engineer



Photography flown 12/93 - 1/94.

LEGEND

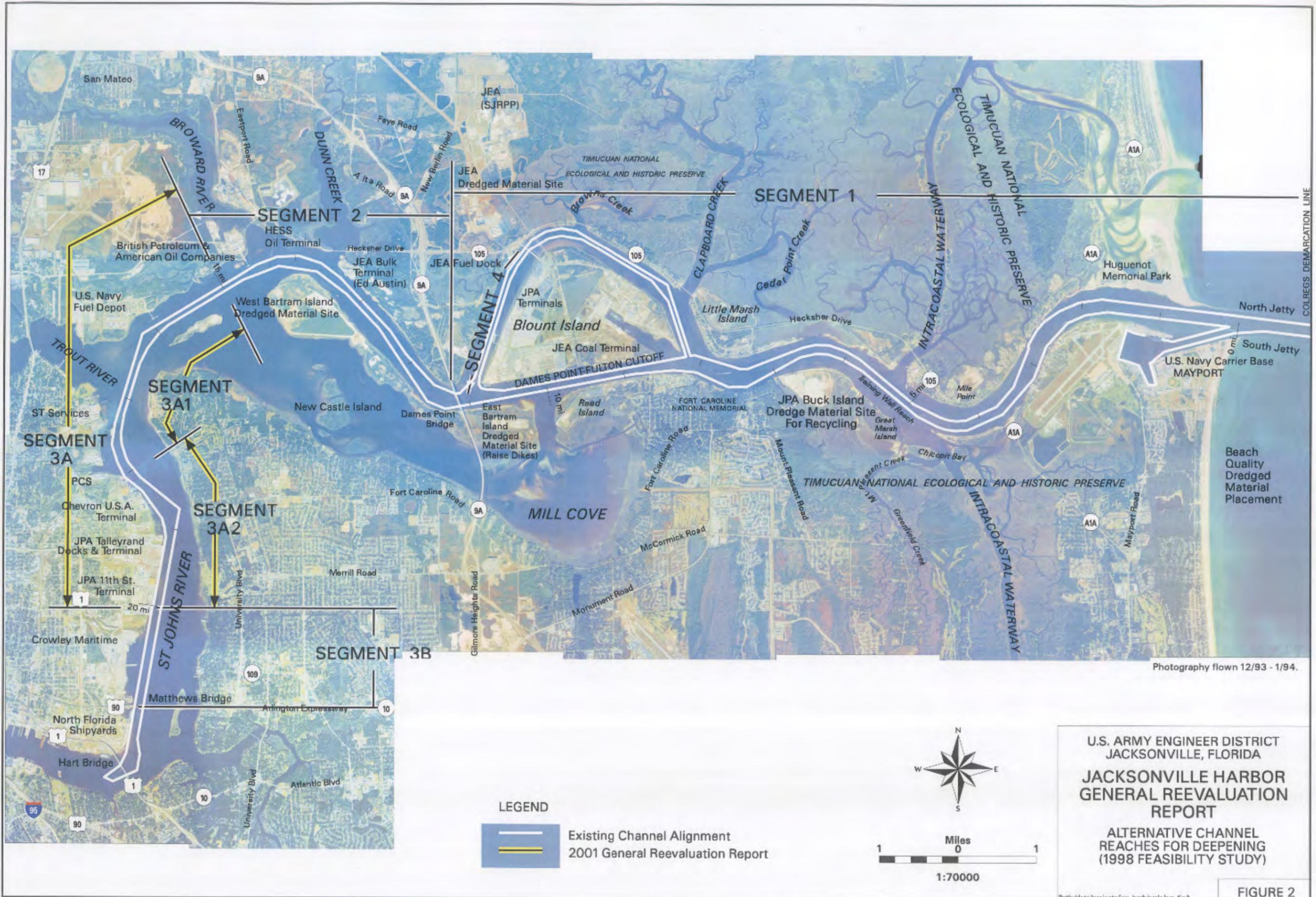
-  Existing Channel Alignment
-  Plan A3 Advance Maintenance Zones
-  Main Channel A3 Alignment for Deepening to 40-foot Project Depth
-  West Blount Island Channel A3 Alignment for Deepening to 38-foot Project Depth



U.S. ARMY ENGINEER DISTRICT
 JACKSONVILLE, FLORIDA
**JACKSONVILLE HARBOR
 GENERAL REEVALUATION
 REPORT**
 WRDA 1999
 RECOMMENDED PLAN
 ALTERNATIVE PLAN A3
 (SPONSOR'S PREFERRED PLAN)

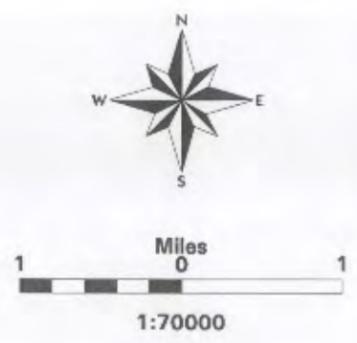
FIGURE 1

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Photography flown 12/93 - 1/94.

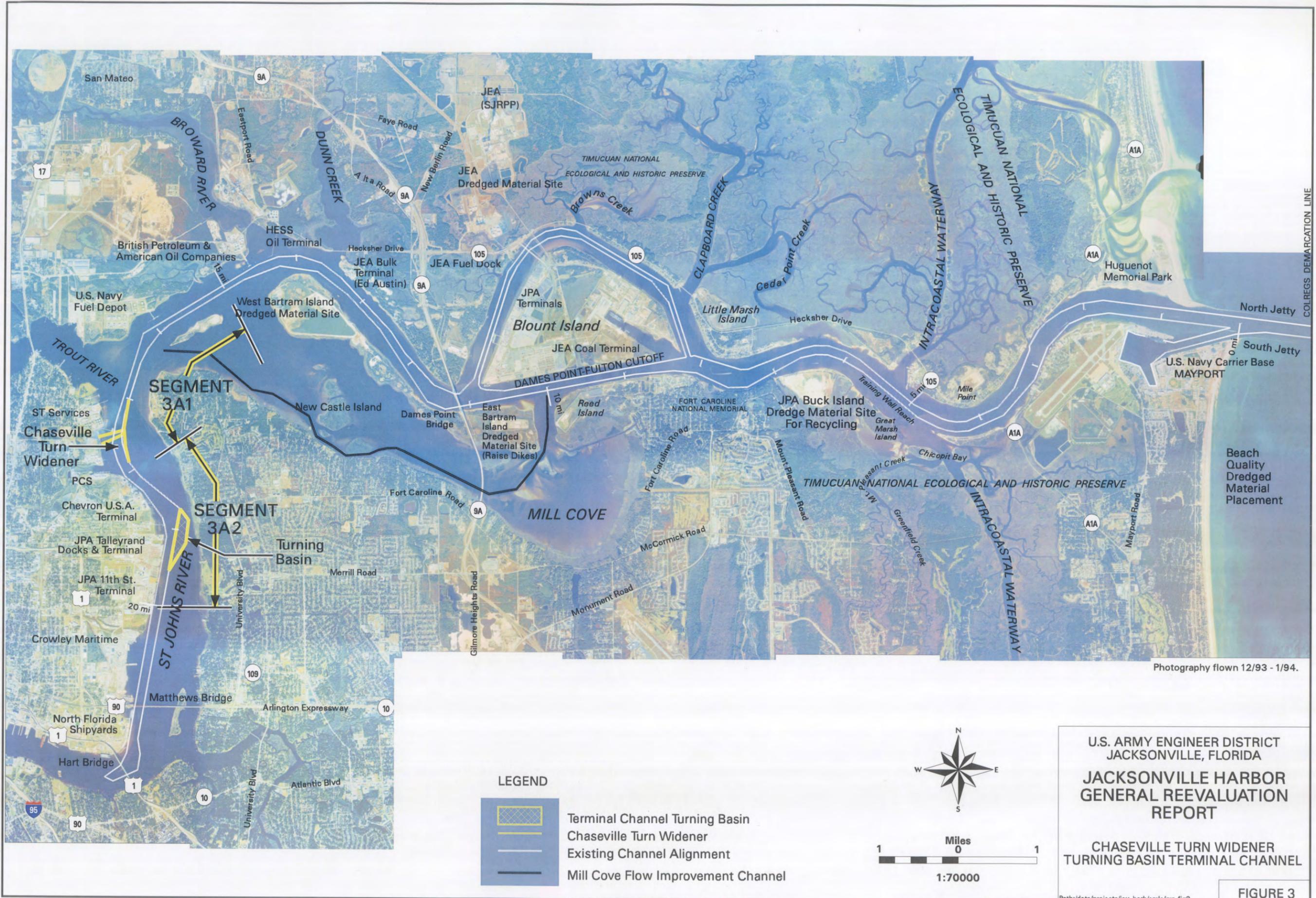
LEGEND
 Existing Channel Alignment
 2001 General Reevaluation Report



U.S. ARMY ENGINEER DISTRICT
 JACKSONVILLE, FLORIDA
**JACKSONVILLE HARBOR
 GENERAL REEVALUATION
 REPORT**
 ALTERNATIVE CHANNEL
 REACHES FOR DEEPENING
 (1998 FEASIBILITY STUDY)

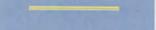
FIGURE 2

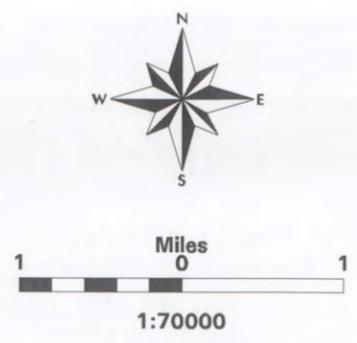
Path:\data\projects\jax_harb\maps\lrr_fig2



Photography flown 12/93 - 1/94.

LEGEND

-  Terminal Channel Turning Basin
-  Chaseville Turn Widener
-  Existing Channel Alignment
-  Mill Cove Flow Improvement Channel

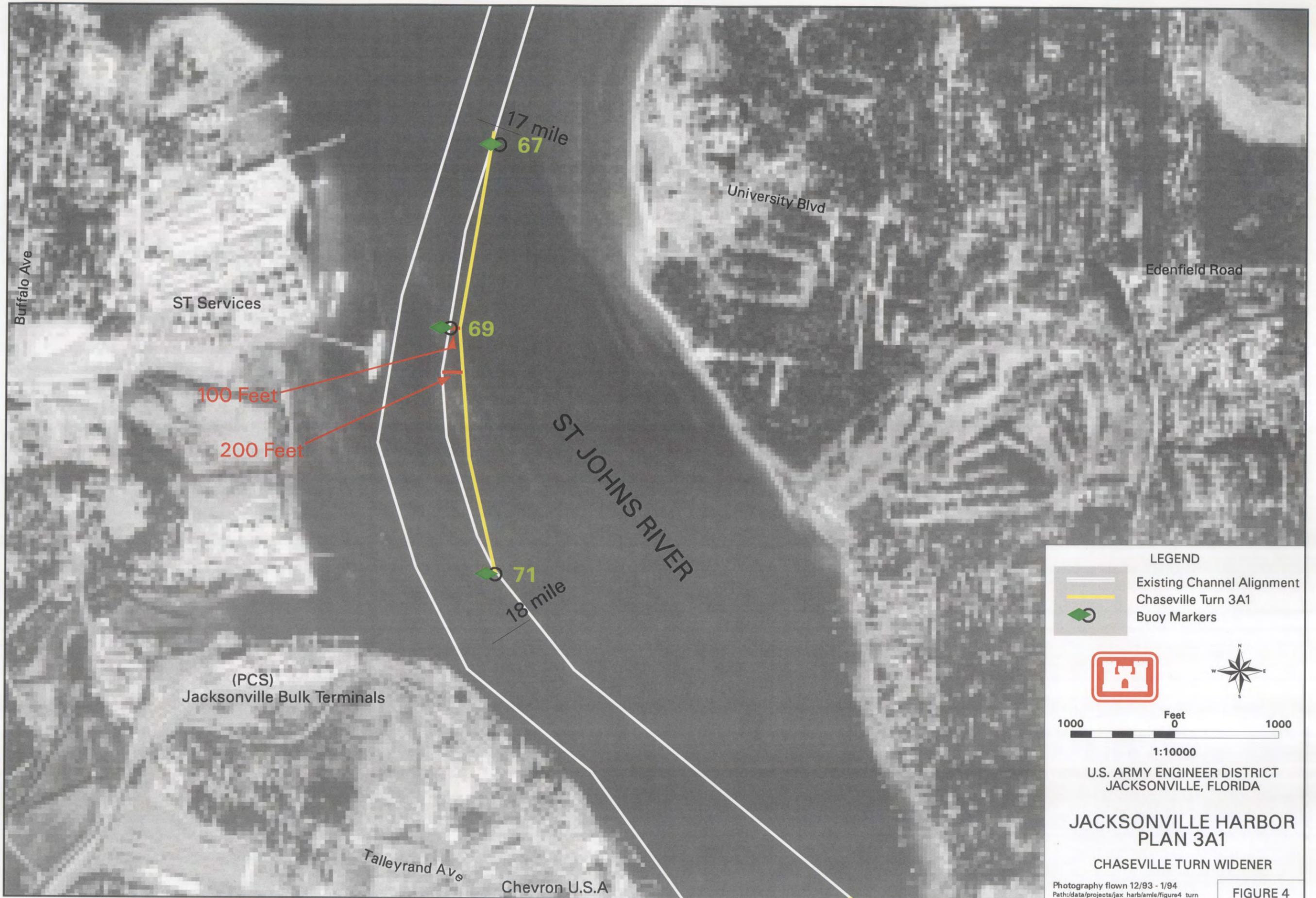


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U.S. ARMY ENGINEER DISTRICT
 JACKSONVILLE, FLORIDA
**JACKSONVILLE HARBOR
 GENERAL REEVALUATION
 REPORT**
 CHASEVILLE TURN WIDENER
 TURNING BASIN TERMINAL CHANNEL

FIGURE 3

Path:\data\projects\jax_harb\amls\grr_fig3



LEGEND

-  Existing Channel Alignment
-  Chaseville Turn 3A1
-  Buoy Markers



1:10000

U.S. ARMY ENGINEER DISTRICT
JACKSONVILLE, FLORIDA

JACKSONVILLE HARBOR
PLAN 3A1

CHASEVILLE TURN WIDENER

Photography flown 12/93 - 1/94
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FIGURE 4



LEGEND

-  Existing Channel Alignment
-  Turning Basin 3A2



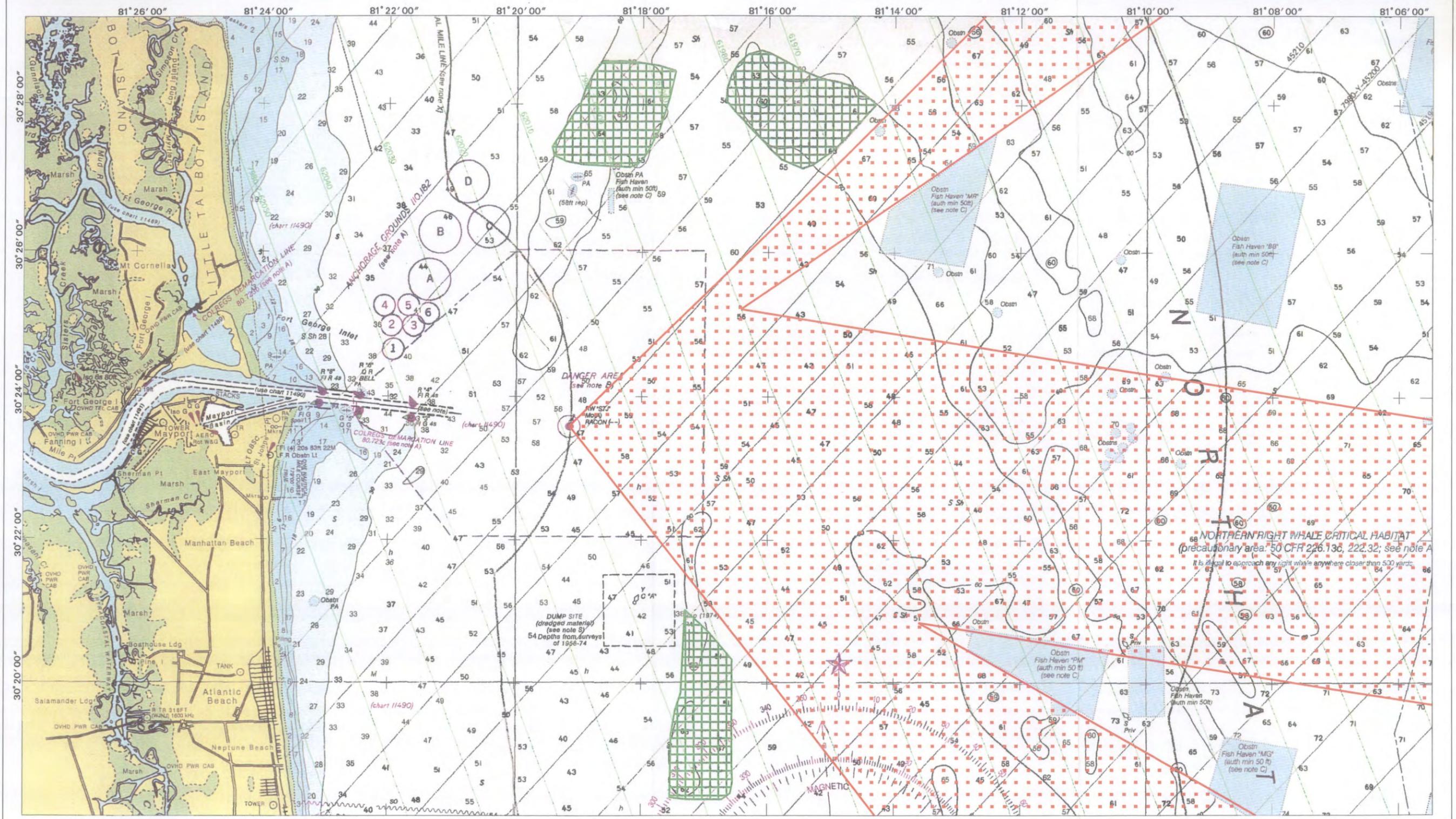
U.S. ARMY ENGINEER DISTRICT
JACKSONVILLE, FLORIDA

**JACKSONVILLE HARBOR
PLAN 3A2**

TERMINAL CHANNEL TURNING BASIN

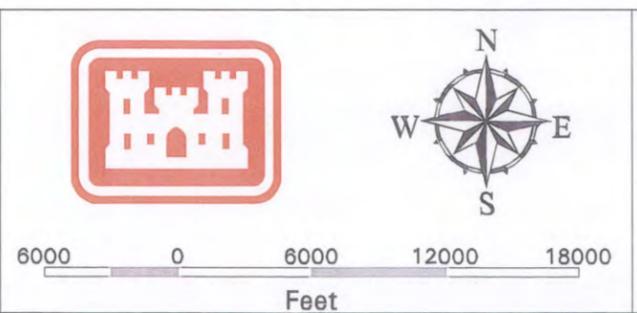
Photography flown 12/93 - 1/94
Path:\data\projects\jax_harb\amle\figure5_turn

FIGURE 5



Legend	
Ship (Sea) Lanes	
Approximate Boundaries of Proposed Reef Sites	

Note on background image:
 Scanned from NOAA Nautical Navigation Chart.
 Chart number 11488; 21st Edition; 9 May 1998
 Chart name "Amelia Island to St. Augustine"

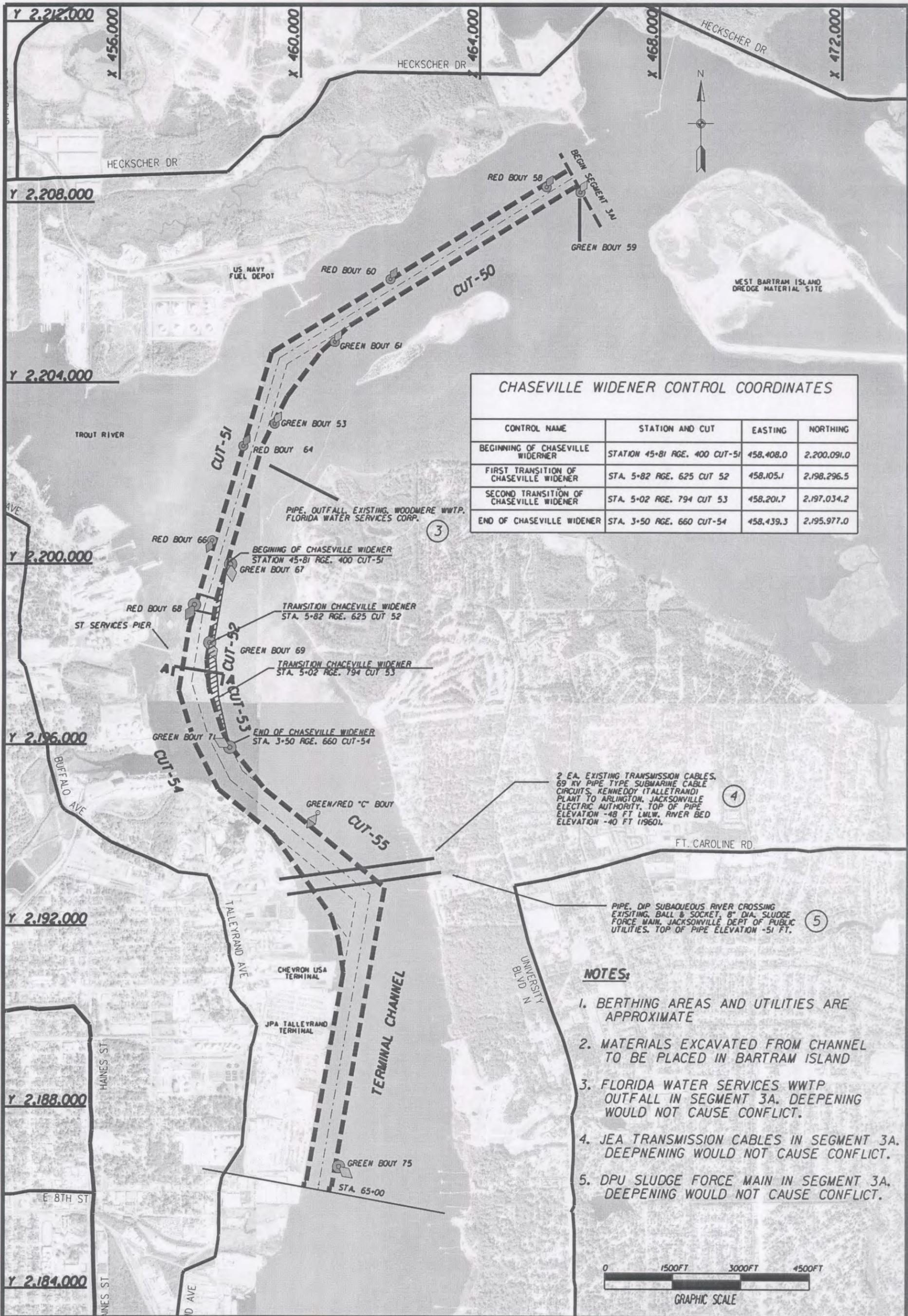


U.S. Army Corps of Engineers, Jacksonville District

Jacksonville Harbor General Reevaluation Report

Proposed Artificial Reef Sites
 (1998 FEASIBILITY STUDY)

Figure 6



CHASEVILLE WIDENER CONTROL COORDINATES

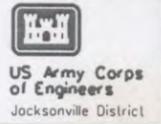
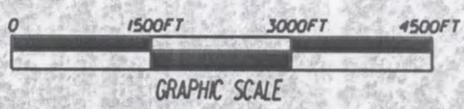
CONTROL NAME	STATION AND CUT	EASTING	NORTHING
BEGINNING OF CHASEVILLE WIDENER	STATION 45+81 RGE. 400 CUT-51	458,408.0	2,200,091.0
FIRST TRANSITION OF CHASEVILLE WIDENER	STA. 5+82 RGE. 625 CUT 52	458,105.1	2,198,296.5
SECOND TRANSITION OF CHASEVILLE WIDENER	STA. 5+02 RGE. 794 CUT 53	458,201.7	2,197,034.2
END OF CHASEVILLE WIDENER	STA. 3+50 RGE. 660 CUT-54	458,439.3	2,195,977.0

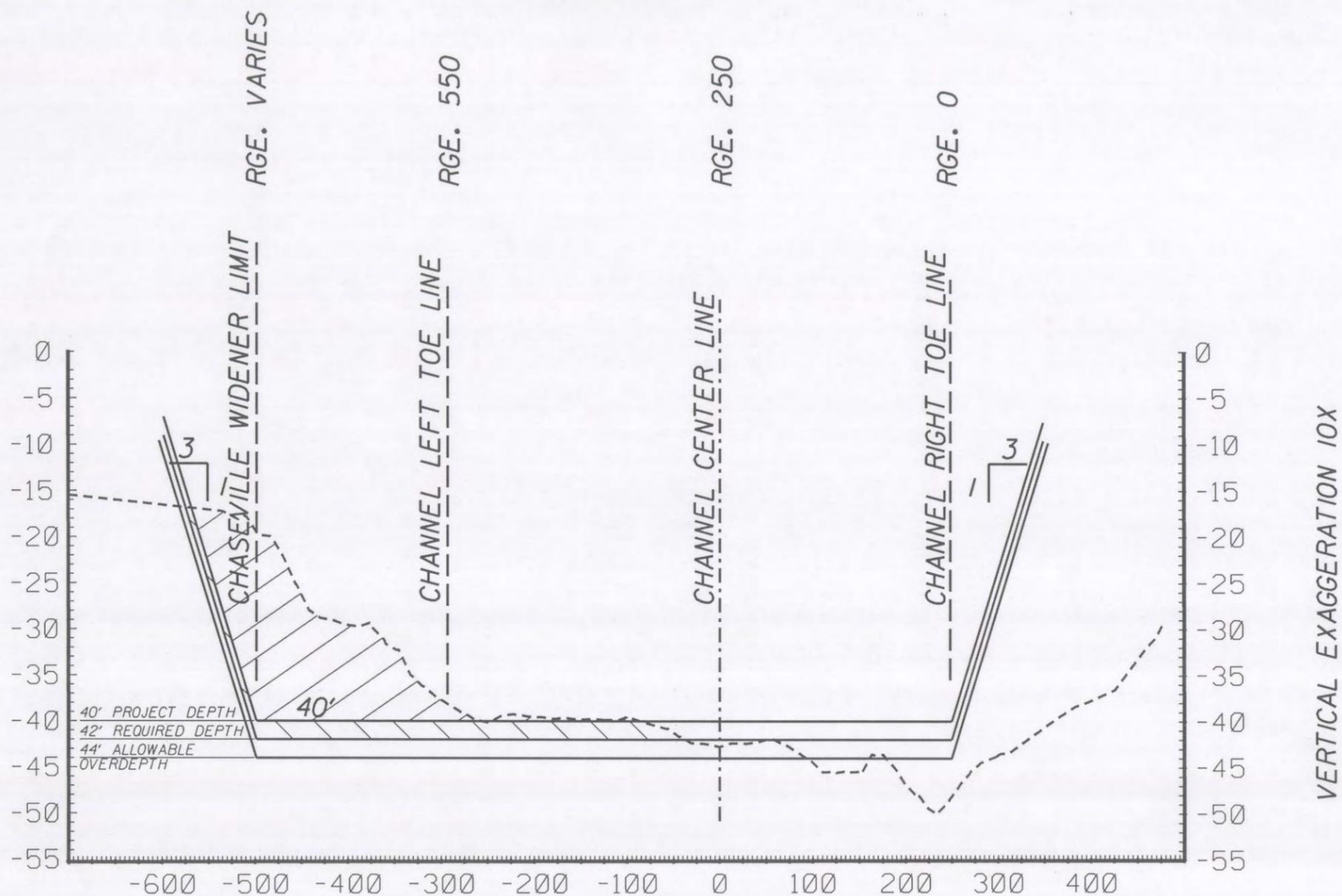
2 EA. EXISTING TRANSMISSION CABLES, 69 KV PIPE TYPE SUBMARINE CABLE CIRCUITS, KENNEDY (TALLEYRAND) PLANT TO ARLINGTON, JACKSONVILLE ELECTRIC AUTHORITY. TOP OF PIPE ELEVATION -48 FT LMLW, RIVER BED ELEVATION -40 FT (1960).

PIPE, DIP SUBAQUEOUS RIVER CROSSING EXISTING, BALL & SOCKET, 8" DIA. SLUDGE FORCE MAIN, JACKSONVILLE DEPT OF PUBLIC UTILITIES, TOP OF PIPE ELEVATION -51 FT.

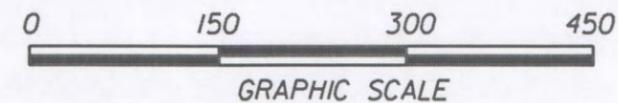
NOTES:

1. BERTHING AREAS AND UTILITIES ARE APPROXIMATE
2. MATERIALS EXCAVATED FROM CHANNEL TO BE PLACED IN BARTRAM ISLAND
3. FLORIDA WATER SERVICES WWTP OUTFALL IN SEGMENT 3A. DEEPENING WOULD NOT CAUSE CONFLICT.
4. JEA TRANSMISSION CABLES IN SEGMENT 3A. DEEPENING WOULD NOT CAUSE CONFLICT.
5. DPU SLUDGE FORCE MAIN IN SEGMENT 3A. DEEPENING WOULD NOT CAUSE CONFLICT.





CROSS SECTION A-A @ STA. 12+11 CUT 52



VERTICAL EXAGGERATION 10X



DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

File name:	Designed by:	Scale:
Reference files:	Dwn by:	Plot date:
	Chk by:	Plot scale:
	Dated:	

JACKSONVILLE HARBOR, FLORIDA
GENERAL REEVALUATION REPORT
SELECTED PLAN - 40-FOOT PROJECT
CUT 50 THROUGH TERMINAL CHANNEL STA 65+00
TYPICAL CROSS SECTION - CHASEVILLE TURNING BASIN

FIGURE
8

OCTOBER 2002

**JACKSONVILLE HARBOR GRR
DUVAL COUNTY, FLORIDA**

ENVIRONMENTAL ASSESSMENT



**US Army Corps
of Engineers**
Jacksonville District
South Atlantic Division



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

REPLY TO
ATTENTION OF

JACKSONVILLE HARBOR GRR
DUVAL COUNTY, FLORIDA
FINDING OF NO SIGNIFICANT IMPACT (FONSI)

I have reviewed the planning document and the Environmental Assessment (EA) for the proposed action. This Finding incorporates by reference all discussion and conclusions contained in the Environmental Assessment enclosed hereto. Based on information analyzed in the EA, reflecting pertinent information obtained from agencies having jurisdiction by law and/or special expertise, I conclude that the proposed action will not significantly impact the quality of the human environment and does not require an Environmental Impact Statement. Reasons for this conclusion are in summary:

1. There would be no significant impact on threatened or endangered species.
2. State water quality standards would be met.
3. Measures to eliminate, reduce or avoid potential adverse impacts to fish and wildlife resources would be implemented during project construction.
4. The proposed navigation improvements would assist in the continued functional capability of the Federal navigation project at Jacksonville Harbor and would protect human resources in that area.
5. Pending completion of coordination with the State Historic Preservation Officer the project will be in compliance with appropriate historic preservation laws.

In consideration of the information summarized, I find that the proposed action will not significantly affect the human environment and does not require an Environmental Impact Statement.

15 OCT 02

Date

James G. May
Colonel, U.S. Army
District Engineer

ENVIRONMENTAL ASSESSMENT
JACKSONVILLE HARBOR GRR
DUVAL COUNTY, FLORIDA

1.0. Project Purpose: The purpose of the proposed action is to provide increased safety, efficiency and lower costs for navigation, while protecting the environment in Jacksonville Harbor. Existing port facilities are not easily accessible to some larger ships, which must await favorable tidal conditions, because of depth limitations in parts of the channel, and other large ships that can only use the channel if they are "light-loaded", also because of depth limitations. Local interests have requested that the harbor channels be deepened to provide for existing and projected movement of bulk petroleum products at greater drafts, thereby reducing transportation costs. In addition, local interests and harbor pilots have requested consideration of channel wideners at key locations where turning and/or passing is required, to improve vessel handling and maneuvering and to ensure safety of navigation while in the harbor.

1.1. Authorization The Jacksonville Harbor Deepening Study was authorized by a resolution from the Committee on Public Works and Transportation, U.S. House of Representatives, dated February 5, 1992, which states:

"Resolved by the Committee on Public Works and Transportation of the United States House of Representatives, That the Board of Engineers for Rivers and Harbors, is requested to review the report of the Chief of Engineers on Jacksonville Harbor, Florida, published as House Document 214, Eighty-ninth Congress, First Session, and other pertinent reports, to determine whether modifications of the recommendations contained therein are advisable at the present time, in the interest of navigation and other purposes."

1.2. Congress added funding in the appropriations for Fiscal Year 1993 to initiate the study. Authorization of the Final Feasibility Report and Environmental Impact Statement authorization in the Water Resources Development Act (WRDA) of 1999 and receipt of Preconstruction Engineering and Design (PED) funds enabled the continuation of the study process to determine the feasibility of extending the 40-foot project depth from mile 14.7 to mile 20. Review of the GRR approach with South Atlantic Division occurred in July 2000.

1.3. Introduction The Jacksonville Port Authority (JPA) requested the U.S. Army Corps of Engineers (Corps), Jacksonville District, to reevaluate the feasibility of extending the recently authorized, figure 1, 40-foot depth for the main channel of Jacksonville Harbor. The area of study extends from river about mile 14.7 to 20 identified as the previous study segment 3A, which extends to mile 20 as shown on figure 2. The Water Resources Development Act (WRDA) of 1999 authorized deepening of the main channel from a project depth of 38 to 40 feet from the

entrance channel to about mile 14.7 shown on figure 1 as the recommended plan.

1.4. Prior Study Economic Analysis. During the earlier study segment 3A was not economically justified and was dropped from further consideration. Since that time conditions have changed concerning petroleum bulk movements in that segment as well as changes in ownership and expansion of petroleum terminals. A new container ship company has also initiated service to the JPA Talleyrand docks and terminal. A reevaluation of benefits has resulted in new information.

1.5. Prior Study Alternatives. In the prior study which lead to the 40-foot main channel authorization in WRDA of 1999, three different plans A, B, and C received consideration at depths of 39 to 45 feet. For this reevaluation only project depths of 39 – 40 feet received consideration using the recommended plan A3 from the previous study and the existing channel width. Plan A3 as shown in figure 1 follows the existing channel alignment, but decreases the bottom width of the existing channel. The newly authorized channel bottom widths of plan A3 vary from 375 feet to 950 feet or reduce existing main channel bottom widths from 25 to 350 feet, which currently range from 400 to 1,200 feet. In addition to the narrower bottom width of plan A3, widening features between river miles 14.7 and 20, shown in figure 3, were initially considered, but later eliminated from further consideration due to benefit and cost considerations.

1.6. Preferred Plan 3A. At the present time the preferred plan is an extension of the previously authorized plan shown on figure 1 from mile 14.7 to about mile 20, but with the existing instead of a narrowed bottom width. Project depths extend from an existing depth of 38 feet to a new 40-foot project depth over the 5.3 mile segment. A turn widener is added at the Chaseville Turn as shown in figures 3 and 4. Placement of all dredged material from the deepening is planned for the West Bartram Island confined upland disposal area shown in figure 1. Rock material could also go to the Mile Point shoreline or one of the proposed artificial reef locations shown in figure 6 and identified in the earlier study. The ODMDS would only be used if the above sites cannot be used.

1.7. Blasting Considerations. It has been determined that blasting would not be required in order to implement the preferred plan.

1.8. Advance Maintenance Considerations. Advance maintenance considerations include sediment traps or advanced maintenance zones within the existing channel bottom widths over the preferred plan from about mile 14.7 to 20.

1.9. Related Environmental Documents. All the plan alternatives and disposal options listed above received consideration in the Final Environmental Impact Statement (EIS) dated September 1998 for Navigation Channel Improvements, Jacksonville Harbor. A copy of the EIS is available on our web site at

<http://www.saj.usace.army.mil/pd/envdocs/envdocsb.htm>. A copy of the USFWS Coordination Act Report (CAR) dated July 1997 is also available at <http://www.saj.usace.army.mil/pd/envdocs/JaxHbr/car.html>

2.0. Alternatives. Four alternatives, Plans 3A1 and 3A2 at a 39-foot and 40-foot project depth received consideration as outlined below.

2.1. Plan 3A1 involves extending the previously authorized plan shown on Figure 1 from mile 14.7 to about mile 18 as shown in figures 2 and 3. Plan 3A1 uses the existing bottom width of the 38-foot project. A widener is added at the Chaseville Turn or the eastside of the channel from Cuts 51 – 54 as shown in figures 3 and 4.

2.2. Plan 3A1 (39-foot Project Depth). All material would be taken to Bartram Island, Mile Point Shoreline, the ODMDS or to an artificial reef site.

2.3. Plan 3A1 (40-foot Project Depth). All material would be taken to Bartram Island, Mile Point Shoreline, the ODMDS or an artificial reef site.

2.4 Plan 3A2 extends from about river mile 18 to 20. Plan 3A2 also uses the existing bottom width of the 38-foot project. A turning basin is added at the north end of Terminal Channel as shown in figures 3 and 5.

2.5 Plan 3A2 (39-foot Project Depth). All material would be taken to Bartram Island, Mile Point Shoreline, the ODMDS or an artificial reef site.

2.6 Plan 3A2 (40-foot Project Depth) All material would be taken to Bartram Island, Mile Point Shoreline, the ODMDS or an artificial reef site.

2.7. Plan 3A (Plan 3A = 3A1 + 3A2 or Preferred Plan at a 40-foot Project Depth). At the present time, the preferred plan is Plan 3A, which combines elements of plans 3A1 and 3A2. That plan calls for dredging of the existing main channel from mile 14.7 to about mile 20 or Cut 50 to Terminal Channel Station 65+00. The plan includes a widener at the Chaseville Turn. Project depth would be to 40'. About 1,533,000 cubic yards (cy) of material will be removed from the 5.3 mile segment along with 5000 cy from the S.T. Services berthing area, 43,000 cy from the U.S. Navy Fuel Depot, 39,000 cy from the Chevron Oil Terminal, and 38,000 from JPA Talleyrand. Total estimated quantities include approximately 1,658,000 cy. This plan does not require blasting. The dredged material would be disposed of at the existing upland confined disposal facility (DA-Q1) located on the west end of Bartram Island. If for any reason the primary disposal site was not available other disposal sites could be used. Rock material dredged from the main channel could be placed along Mile Point shoreline or offshore as artificial reef material. Rock and non-rock material could also be placed on an existing upland disposal area on the east end of Bartram Island. Replacement of the existing advance maintenance template would be excavated from within the

existing channel. Material dredged from the advanced maintenance zones would be placed in the existing west Bartram Island upland disposal site. The Ocean Dredged Material Disposal Site (ODMDS) would only be used if the above methods are not suitable.

2.8. Berthing and Access Channels. Berthing and access channels to the S.T. Services, the U.S. Navy Fuel Depot, Chevron Oil Terminal, and the JPA Talleyrand Terminal docks would be deepened to the corresponding 40-foot project depth plus 2 feet allowable overdepth.

- a. S.T. Services Berths – 5,000 cubic yards (Plan 3A1)
- b. U.S. Navy Fuel Depot – 43,000 cubic yards (Plan 3A1)
- c. Chevron Oil Terminal – 39,000 cubic yards (Plan 3A2)
- d. JPA Talleyrand Terminal – 38,000 cubic yards (Plan 3A2)

2.9. Disposal Sites. Material dredged during this project would be placed in the existing upland confined disposal facility (D/A-Q1) on the west end of Bartram Island (figure 2), the primary disposal site. If for some reason that site is unavailable, other potential disposal sites include the east end of Bartram Island, one of the proposed artificial reef sites shown on Figure 4 or the Mile Point shoreline. The ODMDS would be used only if the other sites were not available.

2.10. Bartram Island. Bartram Island is owned by the Jacksonville Port Authority. The Port Authority raised the west end dikes or disposal area 1 (D/A-Q1) 10 feet in 1998 to enlarge the island by increasing its capacity to hold dredged material by an additional 6.5 million cubic yards.

2.11. Artificial Reef Sites. One of the three potential artificial reef sites shown on Figure 6 could be selected and permitted to receive rock material if the primary disposal site is not available.

2.12. Ocean Dredged Material Disposal Site (ODMDS). The ODMDS is the current EPA-approved site. Sediment testing (Appendix D of the Final EIS entitled Final Report for Jacksonville Harbor – 1997 Evaluation of Dredged Material for Ocean Disposal) indicates that the material from the proposed project area is generally acceptable for offshore disposal.

3.0. Existing Conditions. Residential, industrial and commercial properties increase in frequency along this segment. Numerous commercial and Federal ship cargo terminals are located in this area as well. The primary proposed upland disposal area, Bartram Island, is located in the area. Principle habitats in the area are similar to those found nearer the mouth of the river with filled and man-altered sites increased greatly.

3.1. Near the southern end of the project, in the vicinity of the Arlington and Trout Rivers, north of the Mathews Bridge, the river is bordered by extensive

residential, commercial and industrial development, filled wetlands, altered uplands and a spoil island with only small remnant patches of salt marshes and mud flats.

3.2. Bartram Island. Bartram (Quarantine) Island appears on survey maps of the Jacksonville Harbor area as early as 1895 apparently as a result of dredged material placement. Placement of dredged material in subsequent years behind the Dames Point Training Wall further modified Bartram Island. As a result of its continued use for dredged material placement, Bartram Island has been heavily impacted. Some of the island's original vegetative cover remains, mainly in the form of fringing smooth cordgrass, along with black needle rush, glasswort, saltwort salt grass salt marsh bulrush, sea ox-eye, groundsel and marsh elder. Much of the island is typified, however, by early successional plants as a result of disposal activities. A shallow open-water impoundment created by disposal activities occupies the far western section of the island. The section east of the Dames Point Bridge also has several wet depressions supporting willow and wax myrtle. Grasses and other herbaceous vegetation occurs on the dike slopes. Other vegetation occurring sparsely on the island includes black cherry, sumac, southern red cedar, slash and longleaf pine, oaks and cabbage palm.

3.3. The mosaic of various successional species is of benefit to resident and migratory birds, including roosting herons and egrets. Although no wading bird rookeries were observed, a number of least terns were observed on bare sand within the large diked area east of the Dames Point Bridge, by U.S. Fish and Wildlife Service personnel during their June 1996 visit. However, more recent data indicates that this site may not be suitable for ground nesting species like least terns. A pre-construction bird survey was conducted to assess potential nesting activity in August 2001 prior to the proposed raising of the dikes at the disposal site. The bird monitor reported that the prevalence of raccoon tracks implies that this area would be subject to high depredation rates, and thus would be substandard nesting habitat for any ground-nesting bird. Also, the monitor stated that extensive invasive vegetation has limited ground-nesting opportunities. This finding coincides with earlier reports, i.e. the 1998 Migratory Bird Monitoring reports. The salt marsh and shallow water impoundment support fish, reptiles, including the diamond-back terrapin, many species of shore and wading birds, and marsh specialists such as the marsh wren and clapper rail.

With or without the proposed deepening of segment 3A between river miles 14.7 and 20, Bartram Island will continue to receive placement of dredge material not suitable for construction fill or beach placement in the existing confined disposal facilities on the east and west ends of the island. Authorization of the 40-foot project from the entrance channel to river mile 14.7 in the Water Resources Development Act (WRDA) of 1999 included raising the existing dikes of one segment of the confined disposal area on the east end of Bartram Island. The Jacksonville Port Authority (JPA) recently raised the dikes on the west confined disposal facility (CDF) 10 feet to an elevation of 28.5 feet in August 1999. That

modification provided an additional 6.5 million cubic yards of capacity for the upland confined disposal facility on the west end of Bartram Island.

3.4 The District Migratory Bird Protection Policy would continue to require bird monitoring when the disposal facility is used with or without the proposed deepening of segment 3A. Frequent use of Bartram Island for placement of dredge material and predators including raccoons indicate this area will not be subject to windows for bird nesting.

4.0. Environmental Impacts. Of the segments within the project's footprint, adjacent human activities have had the most significant impact on the western segment. Although physical changes in bottom substrate are likely to be greatest in this segment, the FWS has stated that the overall impacts would be less significant than in the other segments because of the probability of the western segment having lower biological diversity.

4.1. Bartram Island. Impacts resulting from use of Bartram Island for disposal of material from this portion of the project are expected to be minimal because of previous disposal activities in this area and the disturbed nature of the site.

4.2. Water Quality. A State Water Certificate would be obtained prior to construction and State water quality standards would be met during construction. The project would cause temporary increases in turbidity where dredging is taking place and at the beach disposal site. The State of Florida water quality regulations require that water quality standards not be violated during dredging operations. The standards state that turbidity outside the mixing zone shall not exceed 29 NTU's above background. Various protective measures and monitoring programs would be conducted during construction to ensure compliance with State water quality standards. Should turbidity exceed State water quality standards during construction as determined by monitoring, the contractor would be required to cease operations until conditions return to normal.

4.3 Salinity Changes. Salinity changes due to the proposed 40-foot project depth channel deepening received evaluation using hydrodynamic modeling. The model described in paragraph B.4. of Engineering Appendix A compared the present 38-foot project depth channel to the proposed 40-foot project depth channel. The hydrodynamic model indicated that deepening will have little or marginal effect on the salinity of the river. Also, the model indicates that the area with the most significant changes were found at Back River where the surface discharge was -0.79 ppt and the bottom difference was -1.00 ppt. Land use along this portion of the channel consists of industry and other commercial uses.

4.4. Hazardous, Toxic and Radioactive Wastes (HTRW). A HTRW survey of potential upland disposal sites found no signs of potential HTRW contamination. Recent surveys conducted from February 7 –12, 2000, for offshore placement of maintenance material indicated contaminated sediment in the river bottom along

the edge of the turn widener connecting Cut-55 to Terminal Channel. Contaminated sediment (PAH's) first appeared in a report dated March 21, 2000, provided by PPB Environmental Laboratories, Inc. for an evaluation of offshore disposal of maintenance material. The Jacksonville Port Authority and the Jacksonville Electric Authority plan to remove the contaminated sediment with or without a deepening project.

4.5. Cultural Resources. To determine if potentially significant historic properties are located in the project area, archival research and field investigations have been conducted for the proposed channel improvements and for dredged material disposal areas that may be constructed for this project. Archival research and a remote sensing survey have been conducted for proposed channel realignment and turning basin construction. The Chaseville Turn Widener contains one target and the Terminal Channel Turning Basin (not part of the preferred or selected plan) contains nine targets identified during the remote sensing survey generated magnetic and/or sonar characteristics that compare favorably with those associated with previously identified submerged historic properties (Tubby 1997). These targets may represent resources eligible for inclusion in the National Register of Historic Places. Consultation with the Florida SHPO (1998)(Project File No. 980852) recommended diver identification and evaluation of any targets that are in project areas. This additional identification and evaluation will occur during the next phase of the project planning. If any of the targets are determined eligible for listing on the National Register of Historic Places mitigation measures will be developed in consultation with the SHPO.

4.6. Several disposal alternatives have been reviewed and evaluated to determine if historic properties may be present in the area of impact, including the existing and primary disposal areas at Bartram Island. Rock and dredged material removed from the channel could be placed in an artificial reef site, along the Mile Point shoreline or the Ocean Dredged Material Disposal Site. The Jacksonville District determined that significant historic properties are not likely to be located on any of these existing disposal areas.

4.7. Reports resulting from upland and underwater archeological investigations have been prepared under contract to the Corps and have been coordinated with the SHPO, according to the guidelines established in 36 CFR Part 800 and Section 106 of the National Historic Preservation Act, as amended. The SHPO concurred with the Jacksonville District's determination that potentially significant historic properties will not be affected by the current authorized WRDA 1999 project plan.

4.8. The recommended plan includes advanced maintenance dredging of all channel segments. Each of these segments has been previously dredged and is not likely to contain significant historic properties.

4.9. Threatened and Endangered Species. The Corps and FWS have identified the manatee, bald eagle, piping plover, wood stork, red-cockaded woodpecker, Eastern indigo snake and loggerhead sea turtle as species under the jurisdiction of the FWS as possibly occurring in the project area. In addition, the Corps and NMFS have identified the finback, humpback, sei, sperm and right whales, green, hawksbill, Kemp's ridley, leatherback and loggerhead sea turtles, and shortnose sturgeon as possibly occurring in the project area. In addition, the NMFS has identified a marine seagrass, Johnson's seagrass, proposed for listing as threatened, as possibly occurring in the project area. In their Coordination Act Report dated 23 July 1997

(<http://www.saj.usace.army.mil/pd/envdocs/JaxHbr/car.html>) the FWS concluded that if the Corps follows the proposed measures listed by the FWS there would be no adverse impacts to listed species. If a hopper dredge is used, we would comply with the requirements of the Regional Biological Opinion (revised September 25, 1997) with respect to sea turtles and Right Whales. Standard manatee protection measures would be incorporated into project specifications. The proposed action will not affect species under the jurisdiction of the NMFS.

4.10 Air Quality. The short-term impacts from dredge emissions and other construction equipment associated with the project would not significantly impact air quality. No air quality permits would be required for this project. Duval County is designated as an attainment area for Federal air quality standards under the Clean Air Act. Because the project is located within an attainment area, EPA's General Conformity Rule to implement Section 176(c) of the Clean Air Act does not apply and a conformity determination is not required.

4.11. Recreation. Recreational activities on the river will not be adversely affected by construction activities. During dredging, the construction equipment will be located in one place and recreational boaters and fishermen can avoid the area during this time. As there is no recreational activity on Bartram Island, there will be no impacts.

4.12. Aesthetics. Consideration of visual resources within the project study area is required by the National Environmental Policy Act of 1969 (NEPA) PL 91-190, as amended. Aesthetic resources are defined in ER 1105-2-50 as "those natural and cultural features of the environment which elicit...a pleasurable response" in the observer, most notably from the predominant visual sense. Consequently, aesthetic resources are (commonly referred to as) visual resources, features which can potentially be seen. An assessment of the proposed project features follows.

4.13. The Jacksonville Port Authority has raised the containment dikes at Bartram Island approximately 10 feet in elevation above the existing height. Although these disposal sites will be used for material from the deepening project, the dike raising is proposed prior to that activity and they will be used for placement of maintenance material. The proposed dike elevation increase was constructed from the inside of the existing dikes. The raised dikes will remain the

same viewing distance from their surroundings. Although the raised dikes will be able to hold more dredged material the existing views of the island are not anticipated to change. The vegetative buffer at Bartram Island was not impacted by the dike construction. The existing aesthetic resources of the immediate vicinity are not anticipated to be adversely affected.

4.14. The presence of construction equipment on the river will be unsightly during the construction period. It will be removed upon completion of work and there will be no long-term or lasting impact.

4.15. The assessment was conducted in compliance with the National Environmental Policy Act of 1969, as amended, and in compliance with Corps guidance (ER 200-2-2: ER 1105-2-100).

5.0. Coordination. The following coordination was done for the Final E.I.S. dated September 1998 that included the current proposed project improvements. A Notice of Intent (NOI) to prepare a draft of this EIS appeared in the Federal Register on 5 May 1997. In addition, the NOI was mailed to interested and affected parties by letter dated 13 May 1997. A copy of the letter and NOI are in Appendix C to the September 1998 main report. A copy of the EIS is available on our web site at <http://www.saj.usace.army.mil/pd/envdocs/envdocsb.htm>. A copy of the USFWS Coordination Act Report (CAR) dated July 1997 is also available at <http://www.saj.usace.army.mil/pd/envdocs/JaxHbr/car.html>.

5.1. Public involvement in the proposed action was initiated with a scoping letter dated 24 August 1993. Coordination was initiated with the U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS) under Section 7 of the Endangered Species Act on 24 August 1993 and 23 April 1996, respectively. The proposed action was coordinated with the FWS under the Fish and Wildlife Coordination Act on 19 October 1993 for the Reconnaissance Phase of the study and again for the Feasibility Phase of the study. The Final C.A.R. was received 30 November 1997 (copy in Appendix C of the Main Report). The Feasibility Report and Draft EIS was coordinated with appropriated Federal, State, and local agencies and other interested parties, including the Fish and Wildlife Service, National Marine Fisheries Service, U.S. E.P.A., Florida State Clearinghouse and the State Historic Preservation Officer.

5.2. Coordination with the U.S.F.W.S by telephone in April 2000 indicates that the November 1997 C.A.R. adequately addressed the proposed navigation modifications and that a new C.A.R. would not be required. The U.S.F.W.S. coordination letter, dated June 1, 2000, confirmed that opinion (see Appendix C).

5.3. For the current General Reevaluation Report two additional scoping letters provided a request for reevaluation of 5.3 miles of the main channel from river miles 14.7 to 20. Public involvement continued with scoping letters dated September 8, 2000 and April 26, 2000. The September 8, 2000 letter requested

review of river miles 14.7 to about 18.0 or 3.3 miles of the main channel. The April 26, 2000, scoping letter extended the request for reevaluation from river mile 14.7 to 20, which received consideration in the September 1998 Final EIS for Jacksonville Harbor. Those scoping letters with responses are included in the coordination appendix C of the main report. The Florida Department of Environmental Protection (FDEP) in their October 20, 2000 letter noted that the Corps applied for a Joint Coastal Permit (DEP File No. 0129277-001-JC) to deepen sections of Jacksonville Harbor to -40 feet. FDEP amended and renewed that Corps maintenance-dredging permit. Florida Fish and Wildlife Conservation Commission in their October 30, 2000 letter evaluated not only river miles 14.7 to 20 of the current study area, but also included from the entrance channel to river mile 20 of Jacksonville Harbor. That letter stated that their comments for reevaluation of the proposed deepening to a depth of -40 of the entire 20-mile section of the harbor main channel consisted of the same comments as their Manatee Impact Review dated March 9, 2000 and the Marine Turtle Impact Assessment dated December 27, 1999. The Florida State Clearinghouse of the Department of Community Affairs letter dated October 30, 2000 noted the above comments and described the project, at this stage, as consistent with the Florida Coastal Management Program. The State's continued concurrence with the proposed project will be based, in part, on the adequate resolution of the issues identified during the current and future reviews. The Northeast Florida Regional Planning Council found the proposed project consistent with its policies, plan and program. The draft EA was coordinated with appropriate agencies, local industries, and environmental groups through a Notice of Availability dated July 9, 2002. Comments on the draft EA are included in Appendix C, Pertinent Correspondence.

5.4. Florida Fish and Wildlife Conservation Commission in their March 9, 2000, letter expressed concern over potential collisions of commercial ship traffic with North Atlantic right whales in offshore areas located within important calving and nursery areas for that endangered species (see Appendix C). In response to that concern, the economic analysis used primarily the existing fleet of vessels currently transiting Jacksonville Harbor. Transportation savings to those vessels would occur with deepening of the existing harbor, which allows the existing fleet to load deeper. As larger ships are introduced, those vessels would replace the existing fleet so the actual number of vessels would not increase over time. The vessel calls or transits through Jacksonville would decrease over time.

5.5. Florida Fish and Wildlife Conservation Commission in their February 21, 2001, letter expressed concern on the proposed manatee protection measures (see Appendix C). In response to this concern, no blasting would be performed for this project. It is also highly unlikely that a clamshell dredge would be used, and the cost analysis was performed using a hydraulic rock-cutter head dredge. However, if it became necessary to use a clamshell dredge a dedicated manatee observer would be required. The proposed action would comply with the

Biological Opinion of the U.S.F.W.S. pursuant to Section 7 of the Endangered Species Act.

5.6. By letters of May 17, 2000, and October 5, 2000, in response to prior coordination letters, the NMFS concurred that there would be no adverse effect to Essential Fish Habitat. The NMFS letter dated August 6, 2002, concluded that no long-term and/or significant adverse impacts to high quality aquatic habitats, including Essential Fish Habitat, are anticipated.

5.7. The draft EA was coordinated with appropriate agencies, local industries, environmental groups, and other entities by letter dated July 9, 2002. Comments on the draft EA are included in Appendix C.

6.0. Environmental Commitments.

In their 23 July 1997 Fish and Wildlife Coordination Act Report (<http://www.saj.usace.army.mil/pd/envdocs/JaxHbr/car.html>) the FWS listed several Reasonable and Prudent Measures to protect listed species. The U.S. Army Corps of Engineers and contractors commit to avoiding, minimizing or mitigating for adverse effects during construction activities by including those measures in the contract specifications. Except for whales and sea turtles, there are no listed species under the jurisdiction of the NMFS that would be affected by the project. If a hopper dredge is used, its operation would be subject to the requirements of the Regional Biological Opinion concerning these species (revision dated September 25, 1997) from the NMFS. Low-pressure sodium (LPS) lighting was recommended but not required as stated in correspondence from the FWS dated February 17 and March 10, 1998. It is highly unlikely that a clamshell dredge would be used for any portion of this project and the cost analysis was performed using hydraulic rock-cutter head dredge. However, if it became necessary to use a clamshell dredge a dedicated manatee observer would be required.

APPENDIX A
JACKSONVILLE HARBOR GRR
SECTION 404 (b) EVALUATION REPORT

APPENDIX A
SECTION 404(b) EVALUATION REPORT
JACKSONVILLE HARBOR GRR
DUVAL COUNTY, FLORIDA

I. Project Description.

a. Project Location. The site of the proposed work is Jacksonville Harbor, in Duval County, on the northeast coast of Florida.

General Project Description. At the present time the preferred plan is an extension of the previously authorized Plan from mile 14.7 to about mile 20. Project depths extend from an existing depth of 38 feet to a new 40-foot depth over the 5.3 mile segment. A turn widener is added at the Chaseville Turn. Placement of all dredged material from the deepening is planned for the West Bartram Island confined upland disposal area. Rock material could also go to the Mile Point shoreline or one of the proposed artificial reef sites located off of the mouth of the St. Johns River and identified in the earlier study. The ODMDS would only be used if the above sites cannot be used.

c. Authority and Purpose. The Jacksonville Harbor Deepening Study was authorized by a resolution from the Committee on Public Works and Transportation, U.S. House of Representatives, dates February 5, 1992, which states:

“Resolved by the Committee on Public Works and Transportation of the United States House of Representatives, that the Board of Engineers for Rivers and Harbors, is requested to review the report of the Chief of Engineers on Jacksonville Harbor, Florida, published as House Document 214, Eight-ninth Congress, First Session, and other pertinent reports, to determine whether modifications of the recommendations contained therein are advisable at the present time, in the interest of navigation and other purposes.”

The primary planning objective of the study is to provide increased navigational safety and efficiency and improved economic conditions while minimizing adverse environmental impacts to the surrounding area.

d. General Description of Dredged or Fill Material.

(1). General Characteristics of Material. The material to be dredged this portion of Jacksonville Harbor consists of various combinations of sand, shell, silt, clay and rock.

(2). Quantity of Material. Approximately 1,533,000 cubic yards of material will be removed from the 5.3 mile segment along with 5000 cy from the S.T. Services berthing area, 43,000 from the U.S. Navy Fuel Depot 39,000 from the Chevron Oil Terminal, and 38,000 from J.P.A. Talleyrand berthing areas for a total estimated quantity of 1,658,000 cy. This plan does not require blasting.

II. Factual Determinations.

a. Physical Substrate Determinations.

(1). Sediment Type. Sediments throughout this project reach vary from sand, sand/shell, silt, clay, rock and combinations of the various types depending upon the location

(2). Dredge / Fill Material Movement. Material placed in diked upland disposal areas would not move.

(3). Physical Effect on Benthos. Benthos in the river channel would be lost in the vicinity of dredging activities; however, these organisms are adapted to living in a constantly changing environment and should recover rapidly.

b. Water Circulation, Fluctuation and Salinity Determination.

(1). Water Column Effects. Dredging activities would cause temporary elevated turbidity, but will be within State standards. This part of the project is also a high-energy area caused by strong currents and tidal action, and subject to elevated turbidity levels. Any elevated turbidity levels associated with project activities would not be significant, nor would the project have any adverse impacts on salinity, water chemistry, clarity, color, taste, dissolved gas levels, nutrients or eutrophication.

(2). Current Patterns and Circulation. Current patterns and circulation will be unaffected by the proposed work.

(3). Normal Water Level Fluctuations and Salinity Gradients. The proposed action would not affect normal tidal fluctuations or salinity.

c. Suspended Particulate/Turbidity Determinations.

(1). Expected Changes in Suspended Particulates and Turbidity Levels in the Vicinity of the Disposal Site. Project activities would cause temporary increases in turbidity levels where dredging occurs. Upland disposal sites would be so configured so that return water meets State standards.

(2) Effects on the Chemical and Physical Properties of the Water Column.

(a). Light Penetration. Turbidity at the dredging site would be short-term and temporary. Florida State water quality standards for turbidity outside an allowable mixing zone (29 NTU above background) would not be exceeded.

(b). Dissolved Oxygen. Dissolved oxygen levels would not be altered by project activities at the dredging site because of tidal, wave and current activities at these sites.

(c). Toxic Metals, Organic, and Pathogens If material placed in upland sites contains such materials it would be retained at these sites. Material placed in the Ocean Dredged

Material Disposal Site (ODMDS) would be tested to meet the requirements of ocean disposal.

(d). Aesthetics. Some temporary impact on water clarity could be expected. Visual aesthetics at the upland disposal site would be somewhat reduced.

(3). Effects on Biota.

(a). Primary Productivity. Primary productivity is a function, to some degree, in the river. Because of the short-term nature of dredging operations in any one location and currents and tidal movements in the river, no overall effect on primary productivity is expected.

(b). Suspension/Filter Feeders. It is not expected that a short-term, temporary increase in turbidity would have more than a minimal impact on these organisms.

(c). Sight Feeders. No significant impacts on sight feeders are expected as most are highly mobile and able to avoid areas of disturbance.

d. Contaminant Determinations. If material placed in upland sites contains such materials it would be retained at these sites. Material placed in the Ocean Dredged Material Disposal Site (ODMDS) would be tested to meet the requirements of ocean disposal.

e. Aquatic Ecosystem and Organism Determinations.

(1). Effects on Plankton. No adverse impacts on autotrophic or heterotrophic organisms are expected.

(2). Effects on Benthos. There would be mortality of benthic organisms at the dredging sites. Recolonization of these organisms is expected to occur in rapid fashion, particularly during warm months. No long-term impacts are expected.

(3). Effects on Nekton. No adverse impacts to nektonic species are expected.

(4). Effects on Aquatic Food Web. No long-term adverse impact to any trophic group or level in the food web is expected.

(5). Effects on Special Aquatic Sites. Special aquatic sites (wetlands or vegetated shallows) would be largely unaffected. No hardground or coral reef communities exist in the project area.

(6). Threatened and Endangered Species. Observers will be at the dredging site at all times to insure that listed species are not affected by the work.

(7). Other Wildlife. With the selected plan, very little impact on wildlife is expected.

(8). Actions to Minimize Impacts. All practical safeguards would be taken during construction to preserve and enhance environmental, aesthetic, recreational, cultural and historical, and economic values in the project area.

f. Proposed Disposal Site Determinations.

(1). Mixing Zone Determinations. Florida State water quality standards for turbidity (29 NTU above background) outside an allowable mixing zone would not be exceeded.

(2). Determination of Compliance with Applicable Water Quality Standards. Construction activities would be monitored to ensure that State Water Quality Standards are met at all times during construction and Class III water quality standards would not be exceeded.

(3) Potential Effects on Human Use Characteristics. Any impacts would be minimal.

(a). Municipal and Private Water Supplies. No municipal or private water supply systems would be impacted by construction of the project.

(b). Recreational and Commercial Fisheries. Recreational and/or commercial fisheries would not be affected by the project except in the immediate vicinity of construction activities. Any impacts would be temporary and short-term.

(c) Water-Related Recreation. Water-related recreational activities would not be affected by the project except in the immediate vicinity of construction activities. Any impacts would be temporary and short-lived.

(d). Aesthetics. The presence of construction equipment at various locations during construction would be aesthetically displeasing. Upon completion of construction activities and subsequent removal of the equipment the project area would revert to pre-project conditions.

(e). Parks, National and Historic Monuments, National Seashores, Wilderness Areas, Research Sites and Similar Preserves. No such sites will be affected by the proposed action.

g. Determination of Cumulative Effects on the Aquatic Ecosystem. There would be no cumulative impacts that result in a significant impairment of water quality of the existing ecosystem as a result of dredging or disposal activities.

h. Determination of Secondary Effects on the Aquatic Ecosystem. There would be no long-term secondary effects from dredging or disposal activities.

III. Findings of Compliance or Non-compliance with the Restrictions on Discharge.

- a. No significant adaptations of the guidelines were made relative to this evaluation.
- b. No practicable alternative exists which meets the study objectives that do not involve discharge of fill into waters of the United States.
- c. After consideration of disposal site dilution and dispersion, the determination was made that the discharge of fill materials would not cause or contribute to, violations of any applicable State water quality standards for Class III waters. Discharge operations would not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.
- d. Disposal operations would not jeopardize the continued existence of any species listed as Threatened or Endangered or result in the likelihood of destruction or adverse modification of any critical habitat as specified under the Endangered Species Act of 1973, as amended.
- e. The placement of dredged material would not result in significant adverse impacts to human health and welfare, including municipal and/or private water supplies, recreational and commercial fisheries, plankton, fish, shellfish, wildlife and special aquatic sites. The life stages of aquatic and other wildlife species would not be adversely affected. Significant adverse impacts to aquatic ecosystem diversity, productivity and stability, and recreational, aesthetic and economic values would not occur.
- f. On the basis of these guidelines, the proposed actions are specified as complying with the requirements of the guidelines.

APPENDIX B
JACKSONVILLE HARBOR GRR
FLORIDA COASTAL ZONE CONSISTENCY PROGRAM
FEDERAL CONSISTENCY EVALUATION PROCEDURE

APPENDIX B
JACKSONVILLE HARBOR GRR
FLORIDA COASTAL ZONE CONSISTENCY PROGRAM
FEDERAL CONSISTENCY EVALUATION PROCEDURE

1. Chapter 161, Beach and Shore Preservation : The intent of the coastal construction permit program established by this chapter is to regulate construction projects located seaward of the line of mean high water and which might have an effect on natural shoreline processes.

Consistency Statement: The purpose of the proposed action is to improve the navigation channel at Jacksonville Harbor, Florida. It is intended to deepen and slightly narrow the navigation channel, resulting in transportation savings for deep draft commercial ships in the process. Information would be submitted to the State in compliance with this chapter.

2. Chapters 186 and 187, State and Regional Planning : These chapters establish the State Comprehensive Plan which sets goals that articulate a strategic vision of the State's future. It's purpose is to define in a broad sense, goals and policies that provide decision-makers with directions for the future and long-range guidance for orderly social, economic and physical growth.

Consistency Statement: The work has been coordinated with the State without objection.

3. Chapter 252, Disaster Preparation, Response and Mitigation: This chapter creates a State Emergency Management Agency, with authority to provide for the common defense; to protect the public peace, health and safety; and to protect the lives and property of the people of Florida.

Consistency Statement: Deepening of the navigation channel would enhance the safety of deep draft commercial ships. Therefore, this work would be consistent with the efforts of the Division of Emergency Management.

4. Chapter 253, State Lands: This chapter governs the management of submerged State lands and resources within State lands. This includes archeological and historic resources, water resources, fish and wildlife resources, beaches and dunes, submerged grass beds and other benthic communities, swamps, marshes and other wetlands, mineral resources, unique natural features, submerged lands, spoil islands and artificial reefs.

Consistency Statement: Channel deepening, maintenance dredging, shoreline stabilization, jetty construction, and use of local disposal areas have been previously performed. The use of these State lands has previously approved by the State. The proposed activity has been coordinated with the State and appropriate State permits would be obtained prior to construction. The proposed action would comply with the intent of this chapter.

5. Chapters 253, 259, 260 and 375, Land Acquisition: This chapter authorizes the State to acquire land and protect environmentally sensitive areas.

Consistency Statement: As the property is already in public ownership, these chapters do not apply.

6. Chapter 258, State Parks and Aquatic Preserves: This chapter authorizes the State to manage State parks and preserves. Consistency with this chapter would include consideration of projects that would directly or indirectly adversely impact park property, natural resources, park programs or management operations.

Consistency Statement: All reasonable and prudent measures would be taken to ensure that the proposed action does not adversely impact State Parks or aquatic preserves, and would be consistent with the intent of this chapter.

7. Chapter 267, Historic Preservation: This chapter establishes the procedures for implementing the Florida Historic Resources Act responsibilities.

Consistency Statement: Archival research and field investigations have been completed for channel deepening, realignment, and for development of new disposal areas. The project has been analyzed to determine possible effects on historic properties and coordinated with the State Historic Preservation Officer (SHPO) to ensure that the proposed work would be consistent with the goals of this chapter.

8. Chapter 288, Economic Development and Tourism: This chapter directs the State to provide guidance and promotion of beneficial development through the encouragement of economic diversification and promotion of tourism.

Consistency Statement: Deepening and stabilization of the Jacksonville Harbor navigation channel would provide increased safety, efficiency and lower costs for navigation, while protecting the environment. Existing port facilities are not easily accessible to some larger vessels because of depth limitations in parts of the channel, and other large ships can only use the channel if they are “light-loaded”, also because of depth limitations. In addition, local interests and harbor, pilots have requested consideration of channel wideners at certain locations where passing or turning is required, to improve vessel handling and maneuvering and to ensure safety of navigation while in the harbor. Implementation of these items would all enhance the economic viability of the port.

9. Chapters 334 and 339, Public Transportation: This chapter authorizes the planning and development of a safe and efficient public transportation system.

Consistency Statement: The proposed action would not adversely affect public transportation.

10. Chapter 370, Living Saltwater Resources: This chapter directs the State to preserve, manage and protect the marine, crustacean, shell and anadromous fishery resources in State waters; to protect and enhance the marine and estuarine environment; to regulate fishermen and vessels of the State engaged in the taking of such resources within or outside of State waters; to issue licenses for the taking and processing of fisheries products; to secure and maintain statistical

records of the catch of each such species; and to conduct scientific, economic and other studies and research.

Consistency Statement: Navigation channel deepening and widening, and shoreline stabilization would not adversely affect such activities and is consistent with the goals of this chapter.

11. Chapter 372, Living Land and Freshwater Resources: This chapter establishes the Game and Freshwater Fish Commission and directs it to manage freshwater aquatic life and wild animal life and their habitat to perpetuate a diversity of species with densities and distributions which provide sustained ecological, recreational, scientific, educational, aesthetic and economic benefits.

Consistency Statement: The only upland habitat that would be affected due to construction activities would be existing upland disposal sites that have previously been used. Therefore, the proposed action will comply with the goals of this chapter.

12. Chapter 373, Water Resources: This chapter provides the authority to regulate the withdrawal, diversion, storage and consumption of water.

Consistency Statement: This work does not involve water resources as described in this chapter.

13. Chapter 376, Pollutant Spill Prevention and Control: This chapter regulates the transfer, storage, and transportation of pollutants and the cleanup of pollutant discharges.

Consistency Statement: This work does not involve the transportation or discharge of pollutants. Conditions would be placed in the contract for the handling of inadvertent spills of pollutants such as vehicle fuels. The proposed action would comply with this chapter.

14. Chapter 377, Oil and Gas Exploration and Production: This chapter authorizes the regulation of all phases of exploration, drilling and production of oil, gas and other petroleum products.

Consistency Statement: The proposed action does not involve the exploration, drilling or production of oil, gas or other petroleum products and this chapter, therefore, does not apply.

15. Chapter 380, Environmental Land and Water Management: This chapter establishes criteria and procedures to assure that local land development decisions consider the regional impact of large scale development.

Consistency Statement: The proposed action has been coordinated with the local regional planning council. The work would conform to the goals of this chapter.

16. Chapter 388, Arthropod Control: This chapter provides for a comprehensive approach for abatement and/or suppression of mosquitoes and other arthropod pests within the state.

Consistency Statement: The proposed action would be consistent with the goals of this chapter.

17. Chapter 403, Environmental Control: This chapter authorizes the regulation of pollution of the air and waters by the State by the Department of Environmental Protection.

Consistency Statement: Appropriate State permits would be obtained for the project which would be consistent with the goals of this chapter.

18. Chapter 582, Soil and Water Conservation: This chapter establishes policy for the conservation of State soils and water through the Department of Agriculture. Land use policies would be evaluated in terms of their tendency to cause or contribute to soil erosion or to conserve, develop and utilize soil and water resources both on-site and on adjoining properties affected by the work. Particular attention would be given to work on or near agricultural lands.

Consistency Statement: The proposed work is not being done near agricultural lands; therefore, this chapter does not apply.

APPENDIX C

CORRESPONDENCE



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

REPLY TO
ATTENTION OF

Planning Division
Environmental Branch

SEP 08 2000

TO WHOM IT MAY CONCERN:

The U.S. Army Corps of Engineers (Corps), Jacksonville District is proposing to deepen the Jacksonville Harbor navigation channel Jacksonville, Duval County, Florida (Figure 1). Enclosed for your review and comment is a Draft Finding Of No Significant Impact (FONSI) and Environmental Assessment.

The Jacksonville Port Authority requested the Corps to reevaluate the feasibility of extending the recently authorized 40-foot depth for the main channel of Jacksonville Harbor. The Water Resources Development Act (WRDA) of 1999 authorized deepening of the main channel from a project depth of 38 to 40 feet from the entrance channel to about mile 14.7 or near the west end of Bartram Island shown in figure 1.

During the earlier 1998 study which lead to the WRDA 1999 authorization, the proposed extension for channel deepening shown in figure 1 was not economically justified and was dropped from further consideration. Since that time conditions have changed concerning petroleum bulk movements in that segment as well as changes in ownership and expansion of petroleum terminals. Additional commercial navigation benefits have resulted from those changes.

The Corps welcomes your views, comments and any information about resources, study objectives and important features within the described study area as well as any other suggestions. Letters of comment or inquiry should be addressed to the letterhead address to the attention of Mr. James C. Duck, Chief, Planning Division, and received by this office within 30 days of the date of this letter.

Sincerely,

A handwritten signature in black ink that reads "James C. Duck".

James C. Duck
Chief, Planning Division

Enclosure



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

REPLY TO
ATTENTION OF

April 26, 2000

Planning Division
Environmental Branch

To Whom It May Concern:

The Jacksonville Port Authority requested the U.S. Army Corps of Engineers (Corps), Jacksonville District, to reevaluate the feasibility of extending the recently authorized, figure 1, 40-foot depth for the main channel of Jacksonville Harbor. The area of study extends from river mile 14.7 to 20 identified in the previous study as segment 3A shown on figure 2. The Water Resources Development Act (WRDA) of 1999 authorized deepening of the main channel from a project depth of 38 to 40 feet from the entrance channel to about mile 14.7 shown on figure 1 as the recommended plan.

During the earlier study segment, 3A was not economically justified and was dropped from further consideration. Since that time conditions have changed concerning petroleum bulk movements in that segment as well as changes in ownership and expansion of petroleum terminals. A reevaluation of benefits is in progress based on new information.

In the prior study which lead to the 40-foot main channel authorization in WRDA of 1999, three different plans A, B, and C received consideration at depths of 39 to 45 feet. Testing of those three plans occurred at the U.S. Army Engineer Waterways Experiment Station (WES) ship simulator. For this reevaluation only project depths of 39 – 40 feet will receive consideration using primarily the recommended plan A3 from the previous study. Plan A3, as shown in figure 1, follows the existing channel alignment, but decreases the bottom width of the existing channel. The newly authorized channel bottom widths of plan A3 vary from 375 feet to 950 feet or reduce existing main channel bottom widths from 25 to 350 feet, which currently range from 400 to 1,200 feet. In addition to the narrower bottom width of plan A3, widening and turning basin features between river miles 14.7 and 20, shown in plan C figure 3, will also be considered.

For advanced maintenance considerations, sediment traps or advanced maintenance zones within the existing channel bottom widths will receive analysis over the study area from mile 14.7 to 20. Placement of non-rock dredged material from the deepening is planned for the West Bartram Island confined upland disposal area shown in figure 1. Rock material will go to one of the proposed artificial reef locations shown in figure 4 and identified in the earlier study.

All the plan alternatives and disposal options listed above received consideration in the Final Environmental Impact Statement (EIS) dated September 1998 for

Navigation Channel Improvements, Jacksonville Harbor. A copy of the EIS is available on our web site at <http://www.saj.usace.army.mil/envdocsB>.

If the review of alternatives results in a plan similar to the prior study, blasting will not be required. Every attempt would be made to avoid blasting, but if necessary, a blasting plan would be designed to eliminate or minimize adverse impacts.

The Corps welcomes your views, comments, suggestions, and any information about resources, study objectives, and important features within the described study area. Letters of comment or inquiry should be addressed to the letterhead address to the attention of Planning Division, Environmental Coordination Section and received by this office within 30 days of the date of this letter.

Sincerely,

A handwritten signature in black ink, appearing to read "James C. Duck".

James C. Duck
Chief, Planning Division

Enclosure



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

Southeast Regional Office
9721 Executive Center Drive North
St. Petersburg, FL 33702
(727) 570-5312; FAX (727) 570-5517

OCT 10 2000 F/SER3:EGH

Mr. James C. Duck
Chief, Planning Division
Army Corps of Engineers, Jacksonville District
P.O. Box 4970
Jacksonville, FL 32232-0019

Dear Mr. Duck:

This responds to your September 8, 2000 letter and request for our review of the Draft Finding of No Significant Impact (FONSI) and Environmental Assessment (EA) of the proposed U.S. Army Corps of Engineers (USACE) deepening of the Jacksonville Harbor navigation channel, Jacksonville, Florida. In the preferred alternative, the area proposed to be deepened from 38 to 40 extends from about mile 14.7 to about mile 18. About 789,000 cubic yards (cy) of material will be removed from the 3.3 mile segment along with 38,000 cy from existing ship berthing areas. No blasting is planned.

Our comments, pursuant to section 7 of the Endangered Species Act (ESA), address the potential adverse effects of the preferred alternative on endangered or threatened species (Kemp's ridley, green, loggerhead, hawksbill, and leatherback sea turtles; shortnose sturgeon; humpback and right whales) under National Marine Fisheries Service (NMFS) purview from the potential use of a hopper dredge. NMFS has previously determined that use of pipeline or clam shell type dredges is unlikely to adversely affect the above-listed species.

The potential exists for collisions between hopper dredges and migrating humpback or right whales which travel in nearshore waters. Ship strikes are one of the primary human-caused sources of mortality for endangered right and humpback whales. The potential for take of sea turtles by hopper dredges is well documented. Hopper dredges routinely take sea turtles during maintenance dredging activities in Federal navigation channels on the Atlantic Seaboard and the Gulf of Mexico. As well, hopper dredges have been known to entrain and lethally take sturgeon.

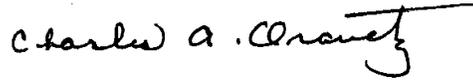
Paragraph 6.0 of the EA (Environmental Commitments) states that if a hopper dredge is used in the deepening project, its operation would be subject to the requirements and incidental take limitations of the September 25, 1997 NMFS Regional Biological Opinion (RBO) to the USACE South Atlantic Division on hopper dredging of southeast U.S. channels and borrow areas. Given this commitment by USACE and after reviewing the EA, NMFS does not foresee any additional impacts of the dredging that have not already been considered and previously addressed in the RBO.



This concludes consultation responsibilities under section 7 of the ESA. Consultation should be reinitiated if new information reveals impacts of the identified activity that may affect listed species or their critical habitat, a new species is listed, the identified activity is subsequently modified or critical habitat determined that may be affected by the identified activity.

We appreciate the opportunity to comment on this project and work with the USACE to ensure the protection of threatened and endangered species under NMFS purview, and to help the USACE fulfill its mandate under the ESA. Please contact Mr. Eric Hawk at 727/570-5312 if you have any questions or if we may be of assistance. Our Habitat Conservation Division at 850/234-5061 can provide Essential Fish Habitat consultation information, recommendations, and guidelines and on how the USACE can avoid or minimize potential adverse impacts of the project on NMFS trust resources and essential fish habitat.

Sincerely,



for

Joseph E. Powers, Ph.D.
Acting Regional Administrator

cc: F/SER4 - A. Mager
F/PR3 - D. Brewer
o:\section7\informal\jax-hbr1.jax
File: 1514-22 f.1. Jacksonville Harbor, FL



STATE OF FLORIDA
DEPARTMENT OF COMMUNITY AFFAIRS

"Dedicated to making Florida a better place to call home"

JEB BUSH
Governor

STEVEN M. SEIBERT
Secretary

October 19, 2000

Mr. James C. Duck, Chief
Department Of The Army
Jacksonville District Corps of Engineers
Post Office Box 4970
Jacksonville, Florida 32232-0019

Attn: Planning Division, Environmental Coordination Section

RE: Department of the Army - District Corps of Engineers - Jacksonville Port
Authority Request to Reevaluate Feasibility of Extending the
Recently-Authorized 40-Foot Depth for the Main Channel of Jacksonville Harbor
- Duval County, Florida
SAI: FL199806150279CR2

Dear Mr. Duck:

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 above-referenced project.

The Department of Environmental Protection (DEP) offers comments from its Bureau of Beaches and Coastal Systems. Please refer to the enclosed DEP comments.

The Florida Fish and Wildlife Conservation Commission (FWC) notes that it has provided comments to the Department of Environmental Protection regarding a permit for this project and that those comments and concerns remain applicable. Please refer to the enclosed FWC comments.

The Department of State (DOS) indicates that the applicant is required to conduct a cultural resources survey to identify any significant archaeological and/or historic sites which

2555 SHUMARD OAK BOULEVARD • TALLAHASSEE, FLORIDA 32399-2100
Phone: 850.488.8466/Suncom 278.8466 FAX: 850.921.0781/Suncom 291.0781
Internet address: <http://www.dca.state.fl.us>

Mr. James C. Duck
October 19, 2000
Page Two

may be located within the project area and to provide the results of the survey to the DOS for review. The applicant is also required to consult with the DOS regarding avoidance or mitigation of any impacts to sites identified in the survey. Please refer to the enclosed DOS comments.

The St. Johns River Water Management District (SJRWMD) notes that its comments regarding the draft environmental impact statement raised substantially the same issue concerning the impacts of increased upstream intrusion of salt water, and it appears that these issues were not addressed in the final environmental impact statement. For more specific information reading these comments, the applicant should contact the SJRWMD's Palatka Headquarters. Please refer to the enclosed SJRWMD comments.

Based on the information contained in the above-referenced scoping document and the enclosed comments provided by our reviewing agencies, the state has determined that the above-referenced project is consistent with the Florida Coastal Management Program.

Thank you for the opportunity to review this notice. If you have any questions regarding this letter, please contact Ms. Cherie Trainor, Clearinghouse Coordinator, at (850) 414-5495.

Sincerely,

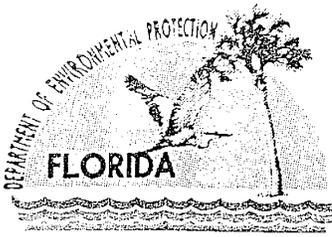


for Ralph Cantral, Executive Director
Florida Coastal Management Program

RC/cc

Enclosures

cc: Lindy Broz, Department of Environmental Protection
Bradley Hartman, Florida Fish and Wildlife Conservation Commission
Janet Snyder Matthews, Department of State
B. Kraig McLane, St. Johns River Water Management District



Department of Environmental Protection

Jeb Bush
Governor

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

David B. Struhs
Secretary

May 18, 2000

Ms. Cherie Trainor
State Clearinghouse
Department of Community Affairs
2555 Shumard Oak Boulevard
Tallahassee, Florida 32399-2100

RE: USACOE/Re-evaluating Feasibility of Extending the 40ft. Depth for the
Main Channel, Jacksonville Harbor, Duval County
SAI: FL199806150279CR2

Dear Ms. Trainor:

The Florida Department of Environmental Protection (FDEP) has completed its review of the above referenced feasibility study. Based upon the information submitted, the proposed feasibility study appears to be consistent with the Department's statutory authorities in the Florida Coastal Management Program. Please note the following comments from the Bureau of Beaches and Coastal Systems.

The USACOE has applied to the DEP Office of Beaches and Coastal Systems for a Joint Coastal Permit (DEP File No. 0129277-001-JC), per Chapter 161 and Part IV of Chapter 373, F.S., to deepen sections of the Jacksonville Harbor Channel to -40 ft. The USACOE's original JCP application to renew their Jacksonville Harbor Maintenance Dredging permit was recently amended to include the proposed deepening work.

We have no objection to the proposed project provided that the USACOE consult with the U.S. Fish & Wildlife Service and the Florida Fish & Wildlife Conservation Commission, Bureau of Protected Species Management, to address the possibility of adverse impacts to manatees from blasting to remove channel bedrock. In addition, the USACOE should consult with the FFWCC, Division of Marine Fisheries, regarding the establishment and construction of offshore artificial reefs.

Ms. Cherie Trainor

SAI ~~FL2000042602166~~ FL1998DL150279CR2

Page 2

We appreciate the opportunity to provide comments on the proposed project. If I may be of further assistance, please contact me at (850) 487-2231. Thank you.

Sincerely,

A handwritten signature in cursive script that reads "Lindy Broz". The signature is written in black ink and is positioned above the printed name.

Lindy Broz

Office of Legislative and Governmental
Affairs

/lbm

CC: Roxane Dow, Beaches and Coastal Systems



FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

JAMES L. "JAMIE" ADAMS, JR.
Bushnell

BARBARA C. BARSH
Jacksonville

QUINTON L. HEDGEPEETH, DDS
Miami

H.A. "HERKY" HUFFMAN
Deltora

DAVID K. MEEHAN
St. Petersburg

JULIE K. MORRIS
Sarasota

TONY MOSS
Miami

EDWIN P. ROBERTS, DC
Pensacola

JOHN D. ROOD
Jacksonville

ALLAN L. EGBERT, Ph.D., Executive Director
VICTOR J. HELLER, Assistant Executive Director

BUREAU OF PROTECTED SPECIES MANAGEN
DAVID W. ARNOLD, C

May 12, 2000

Ms. Cherie Trainor, Director
Florida State Clearinghouse
2555 Shumard Oak Blvd.
Tallahassee, Florida 32399-2100

MAY 16

Re: SAI#199806150279CR2;
USACOE -Jacksonville Harbor Reevaluation of
Feasibility of Main Channel Extension
Duval County

Dear Ms. Trainor:

The Office of Environmental Services of the Florida Fish and Wildlife Conservation Commission has reviewed the referenced project, and offers the following comments.

This project involves dredging the main channel of the St. Johns River from the entrance channel upstream 20 miles to the Mathews Bridge. We have provided comments, dated December 27, 1999 and March 9, 2000, to the Department of Environmental Protection on a permit for this project. Under that permit application, the project area included the entrance channel upstream 14 miles on the St. Johns River. The Jacksonville Port Authority now requests that the project be reevaluated to include a 20-mile stretch of the harbor main channel. Based on a review of the information provided in this submittal, our comments and concerns have not changed. Attached please find copies of our earlier correspondence. If you have any questions regarding these comments, please contact me or Ms. Carol A. Knox at (850) 922-4330.

Sincerely,

Bradley J. Hartman, Director
Office of Environmental Services

BJH/CAK
ENV 7-2/1/3/2

cc: U.S. Army Corps of Engineers, Jacksonville
USFWS-Jacksonville

C:\DATA\DOC\DUVAL\Jax Harbour sai.doc

RECEIVED
MAY 18 2000
State of Florida Clearinghouse

COUNTY: Duval

DATE: 04/26/2000

COMMENTS DUE-2 WKS: 05/10/2000

CLEARANCE DUE DATE: 06/09/2000

Message:

SAI#: FL199806150279CR

STATE AGENCIES

WATER MANAGEMENT DISTRICTS

OPB POLICY UNITS

Community Affairs
 Environmental Protection
 Fish & Wildlife Conserv. Comm
 X OTTED
 State
 Transportation

St. Johns River WMD

Environmental Policy/C & ED

State of Florida Clearinghouse

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.
- 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 - District Corps of Engineers - Jacksonville Port Authority Request to Reevaluate Feasibility of Extending the Recently-Authorized 40-Foot Depth for the Main Channel of Jacksonville Harbor - Duval County, Florida.

To: Florida State Clearinghouse
 Department of Community Affairs
 2555 Shumard Oak Boulevard
 Tallahassee, FL 32399-2100
 (850) 922-5438 (SC 292-5438)
 (850) 414-0479 (FAX)

EO. 12372/NEPA

- No Comment
- Comments Attached
- Not Applicable

Federal Consistency

- No Comment/Consistent
- Consistent/Comments Attached
- Inconsistent/Comments Attached
- Not Applicable

From:

Division/Bureau: EOG / OTTED

Date:

May 17, 2000

DIVISIONS OF FLORIDA DEPARTMENT OF STATE
Office of the Secretary
Office of International Relations
Division of Elections
Division of Corporations
Division of Cultural Affairs
Division of Historical Resources
Division of Library and Information Services
Division of Licensing
Division of Administrative Services



MEMBER OF THE FLORIDA CABINET
State Board of Education
Trustees of the Internal Improvement Trust Fund
Administration Commission
Florida Land and Water Adjudicatory Commission
Siting Board
Division of Bond Finance
Department of Revenue
Department of Law Enforcement
Department of Highway Safety and Motor Vehicles
Department of Veterans Affairs

FLORIDA DEPARTMENT OF STATE
Katherine Harris
Secretary of State
DIVISION OF HISTORICAL RESOURCES

Ms. Cheri Trainor
Department of Community Affairs
2555 Shumard Oak Blvd.
Tallahassee, Florida 32399-2100

May 19, 2000

RE: DHR No. 2000-03235 (Ref: 2000-00630)
SAI #: FL199806150279CR2
Applicant: U.S. Army Corps of Engineers, Jacksonville District
Project: *Re-evaluation of Feasibility for Deepening of Jacksonville Harbor Channel*

State of Florida Clearinghouse
MAY 19 2000

Dear Ms. Trainor:

In accordance with the procedures contained in 36 C.F.R., Part 800 ("Protection of Historic Properties"), Florida's Coastal Zone Management Act, and implementing state regulations, we have reviewed the referenced projects for possible impact to historic properties listed, or eligible for listing, in the *National Register of Historic Places*, or otherwise of historical, architectural or archaeological value.

We have reviewed the information submitted by your office for the above referenced property and proposed project. A review of the Florida Master Sites Files indicates that there has not been a systematic archaeological survey of submerged cultural resources conducted for the areas of the St. Johns River in the area of potential effect (APE) for the proposed project. Because of the rich maritime history of the Jacksonville Harbor and the Upper St. Johns River, it is the opinion of this office that a systematic survey be conducted for the entire length of the proposed project.

This survey should utilize modern remote sensing technology to include magnetometer data, side-scan sonar data, and depth recorded capabilities. The remote sensing data should be real-time correlated with DGPS positioning data. The survey should be directed by an accredited nautical archaeologist with experience in the operation of remote sensing instrumentation and specific knowledge of maritime history. All anomalies determined to indicate a potential significant cultural resource should be ground-truthed by divers with specific training in underwater archaeological techniques. Results of this survey should be submitted to our office for final review prior to initiating bottom disturbing dredging activities.

Ms. Cheri Trainor
May 18, 2000
Page 2

If you have any questions concerning our comments, please contact Brian Yates, Historic Sites Specialist, at (850) 487-2333 or 1-800-847-7278. Your interest in protecting Florida's historic properties is appreciated.

Sincerely,

A handwritten signature in black ink that reads "Janet Snyder Matthews". The signature is written in a cursive style with a large initial "J".

Janet Snyder Matthews, Ph.D., Director
Division of Historical Resources
State Historic Preservation Officer

JSM/Yby

xc: Jasmin Raffington, Florida Department of Community Affairs
Keith Mille, DEP Office of Beaches and Coastal Systems



Florida Department of Transportation

JEB BUSH
GOVERNOR

605 Suwannee Street
Tallahassee, Florida 32399-0450

THOMAS F. BARRY, JR.
SECRETARY

May 9, 2000

Cherie Trainor
Florida State Clearinghouse
Department of Community Affairs
2555 Shumard Oak Boulevard
Tallahassee, Florida, 32399-2100

RECEIVED
MAY 11 2000

State of Florida Clearinghouse

Re: *Reevaluation of Feasibility to Extend the Recently Authorized 40-Foot Depth for Main Channel of Jacksonville Harbor / SAI # FL199806150279CR2*

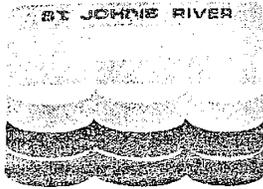
Dear Ms. Trainor:

The Department has reviewed the subject application and has no comments.

Sincerely,


Larry B. Phillips
Intermodal Specialist/Seaport

cc: Aage Schroder
Lorenzo Alexander
Sandra Whitmire
File



**WATER
MANAGEMENT
DISTRICT**

POST OFFICE BOX 1429 PALATKA, FLORIDA 32178-1
 TELEPHONE 904-329-4500 1-800-451-7106 SUNCOM 904-860-4500
 TDD 904-329-4450 TDD SUNCOM 860-4450
 FAX (Executive) 329-4125 (Legal) 329-4485 (Permitting) 329-4315 (Administration/Finance) 329

SERVICE CENTERS

618 E. South Street Orlando, Florida 32801 407-897-4300 1-877-228-1658 FAX 407-897-4354 TDD 407-897-5960	7775 Baymeadows Way Suite 102 Jacksonville, Florida 32256 904-730-6270 1-800-852-1563 FAX 904-730-6267 TDD 904-448-7900	PERMITTING: 305 East Drive Melbourne, Florida 32904 407-984-4940 1-800-295-3264 FAX 407-722-5357 TDD 407-722-5368	OPERATIONS: 2133 N. Wickham Road Melbourne, Florida 32935 407-752-3100 TDD 407-752-3102
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May 30, 2000

Ms. Cherie Trainor
Florida State Clearinghouse
Department of Community Affairs
2555 Shumard Oak Blvd.
Tallahassee, FL 32399-2100

Re: SAI #: FL199806150279CR2 OPP #: 1639
Name of Project: USACE - Jacksonville Port Authority Request to Reevaluate Feasibility of Extending the Recently Authorized 40 Foot Depth for the Main Channel of Jacksonville Harbor - Duval County, Florida.

Dear Ms. Trainor:

Selected staff of the St. Johns River Water Management District (SJRWMD) have reviewed the above referenced project and offer the following comments regarding the District's areas of responsibility which include water quality, water supply, flood protection, and natural systems.

The following comments are based on staff review of both the materials submitted for segment 3A and the on-line Final Environmental Impact Statement (FEIS) for this proposed project.

Staff could not find any mention in the FEIS abstract or summary of potential impacts to natural resources due to the potential for increased salinity or salt water intrusion upstream. Salt water intrusion is a very serious issue for natural resources (particularly wetland vegetation) and should be considered as a potential impact of the proposed dredging. Staff also suggests that the effect of the dredging on private wells in the surficial aquifer close to the river be considered.

It should be noted that our comments (copy enclosed) on the Draft EIS (FL9806150279C) for this project, dated July 27, 1998, raised substantially the same issue concerning the impacts of increased upstream intrusion of salt water. It appears that these issues were not addressed in the FEIS.

For more specific information concerning these comments, the applicant should contact John Burns, Environmental Scientist, (904) 329-4392, at SJRWMD's Palatka Headquarters.

Please disregard our "no comment" submission dated May 14, 2000 and use this letter as our comments.

Sincerely,

A handwritten signature in black ink, appearing to read 'Kraig McLane', with a long horizontal stroke extending to the right.

B. Kraig McLane, AICP, Acting Director
Office of Policy and Planning

JB/BV/REG

c: J. Burns

CW Vance

COUNTY: Duval

DATE: 04/26/2000

COMMENTS DUE-2 WKS: 05/10/2000

CLEARANCE DUE DATE: 06/09/2000

Message:

SAI#: FL199806150279CF

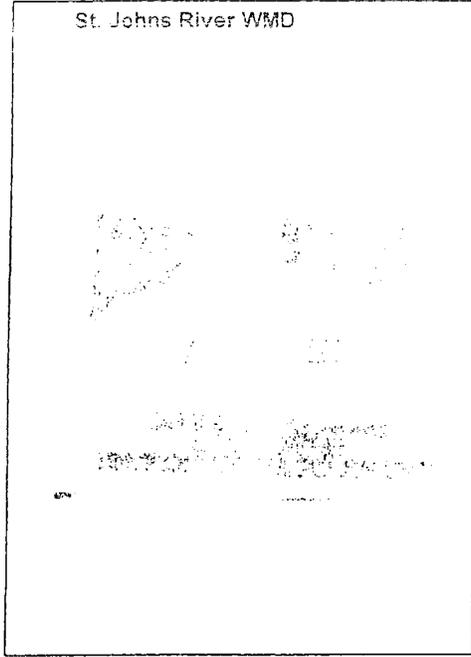
STATE AGENCIES

WATER MANAGEMENT DISTRICTS

OPB POLICY UNITS

Community Affairs
 Environmental Protection
 Fish & Wildlife Conserv. Comm
 OTTED
 State
 Transportation

St. Johns River WMD



X Environmental Policy/C & ED

RECEIVED
 MAY 3 2000
 State of Florida Clearinghouse

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 - District Corps of Engineers - Jacksonville Port Authority Request to Reevaluate Feasibility of Extending the Recently-Authorized 40-Foot Depth for the Main Channel of Jacksonville Harbor - Duval County, Florida.

To: Florida State Clearinghouse
 Department of Community Affairs
 2555 Shumard Oak Boulevard
 Tallahassee, FL 32399-2100
 (850) 922-5438 (SC 292-5438)
 (850) 414-0479 (FAX)

EO. 12372/NEPA

Federal Consistency

- No Comment
- Comments Attached
- Not Applicable

- No Comment/Consistent
- Consistent/Comments Attached
- Inconsistent/Comments Attached
- Not Applicable

From:

Division/Bureau: OPB / Environmental Policy

Date: 5-1-00



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

Southeast Regional Office
9721 Executive Center Drive North
St. Petersburg, Florida 33702

October 5, 2000

Mr. James C. Duck, Chief
Planning Division, Environmental Branch
Department of the Army, Corps of Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019

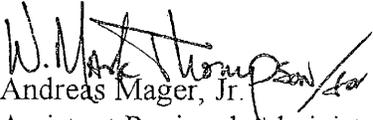
Dear Mr. Duck:

The National Marine Fisheries Service (NMFS) has reviewed the Draft Finding of No Significant Impact (FONSI) and Environmental Assessment (EA) dated September 8, 2000, for the deepening of the Jacksonville Harbor Navigation Channel, St. Johns River, Duval County, Florida, which addresses the environmental impacts associated with the project. The Water Resources Development Act of 1999 authorized deepening of the main channel from a project depth of 38 to 40 feet from the entrance channel to about mile 14.7 or near the west end of Bartram Island.

The Jacksonville Port Authority requested that the Corps of Engineers reevaluate the feasibility of extending the recently authorized 40-foot depth for the main channel of Jacksonville Harbor to include river mile 14.7 to mile 18. The new 3.3 mile segment is considered the preferred plan 3A1. Spoil material from the dredging will be placed on an upland disposal area and rock material from the dredging will be placed within one of the artificial reef locations. The Ocean Dredged Material Disposal Site would only be used if the above sites cannot be used. This plan does not require blasting.

The FONSI and the EA provides adequate information to assess the environmental issues. We concur with the preferred plan 3A1. Therefore, the NMFS has no comments to provide at this time. If we can be of further assistance, please contact Jennifer Robinson of our Panama City Office at (850) 234-5061.

Sincerely,


Andreas Mager, Jr.
Assistant Regional Administrator
Habitat Conservation Division



CC:

EPA,ATL

FWS,JAX

DEP,JAX

FFWFC,TALL

F/SER4



STATE OF FLORIDA
DEPARTMENT OF COMMUNITY AFFAIRS

"Dedicated to making Florida a better place to call home"

JEB BUSH
Governor

STEVEN M. SEIBERT
Secretary

October 30, 2000

Mr. James C. Duck
Department of the Army
Jacksonville District Corps of Engineers
Post Office Box 4970
Jacksonville, Florida 32232-0019

RE: Department of the Army - District Corps of Engineers - Scoping Notice - Proposal to Deepen the Jacksonville Harbor Navigation Channel - Jacksonville, Duval County, Florida
SAI: FL200009180645C (SAI # FL199806150279CR3)

Dear Mr. Duck:

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 above-referenced project.

The Department of Environmental Protection (DEP) has submitted comments from its Bureau of Beaches and Coastal Systems regarding permitting issues. Please refer to the enclosed DEP comments.

The Florida Fish and Wildlife Conservation Commission (FWC) has enclosed copies of its earlier correspondence and notes that its comments and concerns regarding this project have not changed. Please refer to the enclosed FWC comments and attachments.

Based on the information contained in the above-referenced scoping notice and the enclosed comments provided by our reviewing agencies, the state has determined that, at this stage, the above-referenced project is consistent with the Florida Coastal Management Program (FCMP). All subsequent environmental documents prepared for this project must be reviewed to

2555 SHUMARD OAK BOULEVARD • TALLAHASSEE, FLORIDA 32399-2100
Phone: 850.488.8466/Suncom 278.8466 FAX: 850.921.0781/Suncom 291.0781
Internet address: <http://www.dca.state.fl.us>

Mr. James C. Duck
October 30, 2000
Page Two

determine the project's continued consistency with the FCMP. 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.

In addition, comments received from the Northeast Florida Regional Planning Council, finding the proposal to be consistent with its policies, plan and program, are enclosed for your review and consideration.

Thank you for the opportunity to review the scoping notice. If you have any questions regarding this letter, please contact Ms. Cherie Trainor, Clearinghouse Coordinator, at (850) 414-5495.

Sincerely,

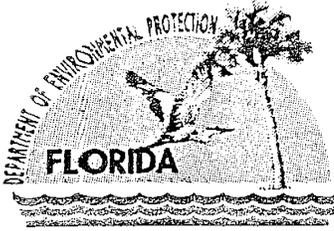
A handwritten signature in black ink, appearing to read "R. Cantral", written in a cursive style.

Ralph Cantral, Executive Director
Florida Coastal Management Program

RC/cc

Enclosures

cc: Lindy Broz, Department of Environmental Protection
Bradley Hartman, Fish and Wildlife Conservation Commission
Ashley Payne, Northeast Florida Regional Planning Council



Department of Environmental Protection

Jeb Bush
Governor

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

David B. Struhs
Secretary

October 20, 2000

Ms. Cherie Trainor
State Clearinghouse
Department of Community Affairs
2555 Shumard Oak Boulevard
Tallahassee, Florida 32399-2100

RE: USACOE/Scoping Notice for Proposal to Deepen the Jacksonville Harbor Navigation
Channel, Duval County
SAI: FL199806150279CR3

Dear Ms. Trainor:

The Florida Department of Environmental Protection (FDEP) has completed its review of the above referenced Scoping Notice. Please note the following comments from the Bureau of Beaches and Coastal Systems.

The USACOE has applied to the DEP Office of Beaches and Coastal Systems for a Joint Coastal Permit (DEP File No. 0129277-001-JC), per Chapter 161 and Part IV of Chapter 373, F.S., to deepen sections of the Jacksonville Harbor Channel to -40 ft. The USACOE's original JCP application to renew their Jacksonville Harbor Maintenance Dredging permit was recently amended to include the proposed deepening work.

We appreciate the opportunity to provide comments on the proposed project. If I may be of further assistance, please contact me at (850) 487-2231. Thank you.

Sincerely,

Lindy Broz
Legislative and Governmental Affairs

/lbm

CC: Roxane Dow, Beaches and Coastal Systems

RECEIVED
OCT 28 2000

State of Florida Clearinghouse

FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION



JAMES L. "JAMIE" ADAMS, JR.
Bushnell

BARBARA C. BASH
Jacksonville

QUINTON L. HEDGEPETH, DDS
Miami

H.A. "HERKY" HUFFMAN
Deltona

DAVID K. MERRIAN
St. Petersburg

JULIE K. MORRIS
Sarasota

TONY MOSS
Miami

EDWIN P. ROBERTS, DC
Pensacola

JOHN D. FLOOD
Jacksonville

ALLAN L. EGBERT, Ph.D., Executive Director
VICTOR J. HELLER, Assistant Executive Director

October 30, 2000

OFFICE OF ENVIRONMENTAL SERVICES
BRADLEY J. HARTMAN, DIRECTOR
(850)480-6161 TDD (850)488-9542
FAX (850)922-5679

Ms. Cherie Trainor, Director
Florida State Clearinghouse
2555 Shumard Oak Blvd.
Tallahassee, Florida 32399-2100

Re: SAI #200009180645C, USACOE
-Proposal to Deepen the Jacksonville
Harbor Navigation Channel, Duval
County

Dear Ms. Trainor:

The Office of Environmental Services of the Florida Fish and Wildlife Conservation Commission has reviewed the referenced project, and offers the following comments.

This project involves dredging the main channel of the St. Johns River from the entrance channel upstream 20 miles to the Mathews Bridge, to a depth of 40 feet. We have provided comments, dated December 27, 1999 and March 9, 2000, to the Department of Environmental Protection on a permit for this project. We also reiterated these comments for SAI #199806150279CR2 in a letter dated May 12, 2000. Under the permit application, the project area included the entrance channel upstream 14 miles on the St. Johns River. The SAI involved the same proposal. The Jacksonville Port Authority now requests that the project be reevaluated to include a 20-mile stretch of the harbor main channel, with channel deepening to 40 feet throughout the entire extent of the project. Based on a review of the information provided in this submittal, our comments and concerns have not changed. Attached please find copies of our earlier correspondence. If you have any questions regarding these comments, please contact me or Ms. Carol A. Knox at (850) 922-4330.

Sincerely,

Bradley J. Hartman, Director
Office of Environmental Services

BJH/CAK

ENV 7-2

Enclosures

cc: U.S. Army Corps of Engineers, Jacksonville
USFWS-Jacksonville

19980645-2.wpd



FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

JAMES L. "JAMIE" ADAMS, JR.
Bushnell

BARBARA C. BARSII
Jacksonville

QUINTON L. HEDGEPEHL, DDS
Miami

H.A. "HERKY" HUFFMAN
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DAVID K. MEEHAN
St. Petersburg

JULIE K. MORRIS
Sarasota

TONY MOSS
Miami

EDWIN P. ROBERTS, DC
Pensacola

JOHN D. ROOD
Jacksonville

ALLAN L. ECHERT, Ph.D., Executive Director
VICTOR J. HILLER, Assistant Executive Director

BUREAU OF PROTECTED SPECIES MANAGEMENT
DAVID W. ARNOLD, CHIEF

May 12, 2000

Ms. Cherie Trainor, Director
Florida State Clearinghouse
2555 Shumard Oak Blvd.
Tallahassee, Florida 32399-2100

Re: SAJ#199806150279CR2;
USACOE -Jacksonville Harbor Reevaluation of
Feasibility of Main Channel Extension
Duval County

Dear Ms. Trainor:

The Office of Environmental Services of the Florida Fish and Wildlife Conservation Commission has reviewed the referenced project, and offers the following comments.

This project involves dredging the main channel of the St. Johns River from the entrance channel upstream 20 miles to the Mathews Bridge. We have provided comments, dated December 27, 1999 and March 9, 2000, to the Department of Environmental Protection on a permit for this project. Under that permit application, the project area included the entrance channel upstream 14 miles on the St. Johns River. The Jacksonville Port Authority now requests that the project be reevaluated to include a 20-mile stretch of the harbor main channel. Based on a review of the information provided in this submittal, our comments and concerns have not changed. Attached please find copies of our earlier correspondence. If you have any questions regarding these comments, please contact me or Ms. Carol A. Knox at (850) 922-4330.

Sincerely,

Bradley J. Hartman, Director
Office of Environmental Services

BJH/CAK

ENV 7-2447372 1-3-2

cc: U.S. Army Corps of Engineers, Jacksonville
USFWS-Jacksonville

CADATAM00CDUVALJax Harbour sai.doc



FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

JAMES L. "JAMIE" ADAMS, JR.
Borheim

BARBARA C. BARSII
Jacksonville

QUINTON L. HEDGEPETEL, DDS
Miami

H.A. "HERKY" HUFFMAN
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DAVID K. NEWMAN
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JULIE K. MORRIS
Sarasota

TONY MUSS
Miami

EDWIN P. ROBERTS, DC
Panama City

JOHN D. ROOD
Jacksonville

ALLAN L. EGBERT, Ph.D., Executive Director
VICTOR J. HELLER, Assistant Executive Director

OFFICE OF ENVIRONMENTAL SERVICE
BRADLEY J. MARTINIAN, DIRECTOR
(850)482-6661 TDD (850)482-9554
FAX (850)922-567

March 9, 2000

Ms. Lauren Milligan
Office of Beaches and Coastal Systems
Department of Environmental Protection
Mail Station 300
3900 Commonwealth Blvd.
Tallahassee, Florida 32399-3000

Re: Manatee Impact Review;
File No.: 162769409;
Project: Jacksonville Harbor
Deepening;
Applicant: Army Corps of
Engineers;
Duval Co.

Dear Ms. Milligan:

The Bureau of Protected Species Management in the Office of Environmental Services of the Florida Fish and Wildlife Conservation Commission has reviewed this application, and provides the following comments regarding manatees and right whales.

The applicant proposes to deepen the main ship channel of Jacksonville Harbor on the St. Johns River, from the inlet extending westward 14.7 miles inland. The project includes the West Blount Island channel and the removal of a side shoal at the east entrance to Mill Cove. The project will require the placement of approximately 3 million cubic yards of sand, shell, silt, clay and rock removed from the harbor. The rock material will be used for offshore artificial reef creation. The use of explosives in the dredging process is not anticipated, however a clamshell dredger will be used to conduct the rock removal.

Photo-identification studies of the North Atlantic right whale indicate a population that numbers about 300 animals. Forty-four right whale mortalities have been documented along the eastern seaboard since 1970, 19 (42%) of which have occurred in the Florida/Georgia region. Three of the 19 were attributed to vessel collisions, however the cause of death for many of the animals was not determined, therefore this number is a minimum estimate. No right whale carcasses were recovered from the Florida/Georgia calving ground in 1995. Five right whale carcasses were recovered from the same area during the 1996 calving season

(December - March), one of which was determined to be caused by a vessel collision. The 1997 and 1998 right whale calving seasons each resulted in one right whale mortality in the calving grounds, neither of which was attributed to vessel strikes. No right whale carcasses were observed or recovered from the Florida/Georgia calving ground during the 1999 right whale calving season. Seven percent of the population exhibit scars indicative of additional, non-lethal vessel interactions. The increase in regular ship traffic generated by these additional activities will increase risks of vessel collisions with right whales. The waters from Brunswick, GA to Jacksonville, FL contain the highest density of adult and juvenile right whales in the Southeastern U.S. (Krause et al., 1993), and were formally designated as critical habitat for right whales on June 3, 1994 by the National Marine Fisheries Service. These waters are used predominately as calving and nursery areas annually from December to March.

Manatee use of this area is documented by aerial survey, mortality and satellite telemetry data. During spring and fall manatees migrate through the area as they travel to and from warm water refuges in Brevard County and the St. Johns River. Between January 1974 and October 1999, 237 manatees have died in Duval County waters. Seventy-six of these deaths were a result of watercraft-related injuries. In July of 1999 watercraft cause manatee mortality was recovered in the St. Johns River on the north shore across from Mayport. The proposed project would increase the number of watercraft operating in the area and therefore contribute to the accumulation of risks to manatees from watercraft collisions.

If impacts to native habitat resources such as submerged aquatic vegetation are anticipated, we would like the opportunity to reevaluate the project with additional information concerning the loss of habitat expected. The following measures will satisfy the requirements of 373.414(1)(a) 2. Florida Statutes, if they are made conditions of the permit and no adverse impacts to habitat are expected:

1. The standard manatee construction conditions shall be followed for all in-water construction;
2. Blasting shall be prohibited.
3. No nighttime clamshell dredging shall occur.
4. At least one person designated as a manatee observer when in-water work is being performed. That person shall have experience in manatee observation, and be equipped with polarized sunglasses to aid in observation. The manatee observer must be on site during all in-water construction activities and will advise personnel to cease operation upon sighting a manatee within 50 feet of any in-water construction activity. Movement of a work barge, other associated vessels, or any in-water work shall be minimized after sunset,

March 9, 2000

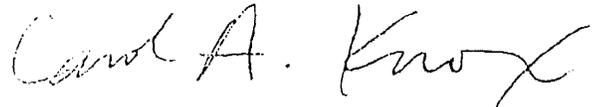
Page 3

when the possibility of spotting manatees is negligible.

5. From December 1 to March 31 all vessels should post a dedicated observer to spot right whales in the southeastern critical habitat area. The southeastern critical habitat area extends from 31°15'N to 30°15'N out 15 miles offshore and from 30°15'N to 28°00'N out 5 miles offshore. If a whale is seen, the vessel speed should be reduced (8 knots is suggested) and the vessel operator must stay 500 yards from the whale and take the necessary precautions to avoid the whale. Daily updates of whale sightings during this portion of the year are maintained by the St. Johns Bar Pilots Association available at (904) 246-6716 or on VHF marine channel 14. Any whale sightings shall be reported to the U.S. Coast Guard at (904) 247-7301; and;
6. From December 15 through February 15 vessels shall proceed at reduced speeds (suggested 8 knots) in the southeastern right whale critical habitat area.

The above-mentioned recommendations are considered necessary in order for this project to not significantly affect the conservation of wildlife. Please notify this office of the results of this manatee impact review by copy of the Intent to Issue or Deny, and the final agency action. Please do not hesitate to call me at (850) 922-4330 if you have any questions.

Sincerely,



Carol A. Knox, Environmental Specialist
Bureau of Protected Species Management
Office of Environmental Services

/CAK

ENV 7-2/1/2

cc: U.S. Army Corps of Engineers, Jacksonville
Cyndi Thomas, FWC Jacksonville Field Office

CEBDAFADOC\DUVA\Max Harbor.doc



Florida Fish and Wildlife Conservation Commission

Les L. "Junior" Adams, Jr.
Tallahassee

Barbara C. Barak
Jacksonville

Quinton L. Hedgepeth, DDS
Miami

H.A. "Herky" Huffman
Orlando

Thomas B. Kil
Lakeland

David K. Meehan
St. Petersburg

Julie K. Morris
Tallahassee

Tony Moss
Miami

Edwin P. Roberts, DC
Pensacola

John D. Roop
Jacksonville

ALLAN L. EGBERT, Ph.D., Executive Director
VICTOR J. HELLMER, Assistant Executive Director

BUREAU OF PROTECTED SPECIES MANAGEMENT
DAVID W. ARNOLD, Chief
620 South Meridian Street
Tallahassee, FL 32399-1
www.state.fl.us
(850)922-4
FAX (850)922-4

December 27, 1999

Ms. Lauren Milligan
Department of Environmental Protection
Office of Beaches and Coastal Systems
3900 Commonwealth Bldg. MS 300
Tallahassee, FL 32399

Dear Ms. Milligan: *Lauren*

RE: Marine Turtle Impact Assessment

Project Number: File No. 0129277-001-JC
Applicant Name: U.S. Army Corps of Engineers
Project Description: Maintenance Dredging
Project Location: Jacksonville Harbor/South Beach Placement Area, Duval County

The project is to dredge approximately 2 to 3 million cubic yards of shoal material from the Jacksonville Harbor Terminal Channel to the Entrance Channel to a depth of 30 to 42 feet with 2 feet of advanced maintenance dredging. Beach quality material will be placed in the South Beach Placement Area, which includes Mayport Naval Air Station, Hanna County Park, and Atlantic Beach. A modification has been submitted to also remove approximately 1.5 million cubic yards of beach compatible material from the upland disposal area on Buck Island for placement in the South Beach Disposal Area. As part of this latter component, the Corps is requesting proposals of new and innovative methods for excavating material to maximize the amount of material available for beach placement, field testing of *in situ* material, and other methods, such as mixing, to ensure no fines are placed on the beach.

In order to adequately review this project for potential impacts to marine turtles, please provide the following additional information.

1. What standards will be included in the Excavation and Quality Control Plan for ensuring that the beach material is suitable for marine turtle nesting? Our staff would be willing to assist in developing an appropriate sampling regime to be included in the Request for Proposals or review of the Plan. At a minimum, the following factors should be addressed in this plan:
 - A. A methodology for detecting lenses or layers of very fine (e.g., >10% fines) or very coarse (e.g., >10% grain size larger than 0.8 mm) material and layers of shell hash and for remediating these areas.
 - B. Grain sizes at depth and across the beach profile after beach placement.

Permit No. 0129277-001-JC
Jacksonville Harbor Maintenance Dredging
December 27, 1999
Page 2

- C. Marine turtle nesting patterns within the area receiving the fill and any correlations with physical characteristics of the fill material.
 - D. A plan for testing compaction, tilling, and escarpment removal for the filled area. Alternatives for assessing beach compaction other than cone penetrometer readings should be provided if possible.
2. Please provide any sediment information available (grain size distribution curves) for the material to be dredged from the Terminal and Entrance channel, as well as a location map for the core borings.
 3. The areas in the upland disposal site on Buck Island indicated by core borings #4, #5, #6, #8 and #10 appear to be either too fine or too coarse for beach placement. Please revise the project description to omit placement of this material on the nesting beach unless adequately addressed in the Excavation and Quality Control Plan referenced above.
 4. Please provide a copy of the most recent Section 7 consultation with the U.S. Fish and Wildlife Service for this project.

Thank you for the opportunity to review this project. Please call me at (850) 922-4330 if you have any questions or require additional information.

Sincerely,



Robbin N. Trindell, Ph.D.
Bureau of Protected Species Management

cc: Matt Miller, ACOE- Jax
Don Palmer, USFWS, Jax



Florida Department of Transportation

JEB BUSH
GOVERNOR

605 Suwannee Street
Tallahassee, Florida 32399-0450

THOMAS F. BARRY, JR.
SECRETARY

October 16, 2000

Cherie Trainor
Florida State Clearinghouse
Department of Community Affairs
2555 Shumard Oak Boulevard
Tallahassee, Florida, 32399-2100

Re: *Proposal to Deepen the Jacksonville Harbor Navigation Channel – Jacksonville,
Duval County, Florida.*
SAI # FL200009180645C

Dear Ms. Trainor:

The Department has reviewed the subject application and has no comments.

Sincerely,

Larry B. Phillips
Intermodal Specialist/Seaport Office

C: Aage Schroder, D-2
Sandra Whitmire
File

LP/

RECEIVED
OCT 17 2000

State of Florida Clearinghouse

COUNTY: Duval

Revised 9/22/00
(See # 1639)
#1754 ✓ 10/24

DATE: 09/18/2000

COMMENTS DUE DATE: 10/18/2000

CLEARANCE DUE DATE: 10/30/2000

SAI#: FL2000091806

Message:

STATE AGENCIES

WATER MANAGEMENT DISTRICTS

OPB POLICY UNITS

Community Affairs
Environmental Protection
Fish & Wildlife Conserv. Comm
State
Transportation

X St. Johns River WMD

Environmental Policy/C & ED

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 - District Corps of Engineers - Scoping Notice - Proposal to Deepen the Jacksonville Harbor Navigation Channel - Jacksonville, Duval County, Florida.

Draft FONSI & EA

To: Florida State Clearinghouse
Department of Community Affairs
2555 Shumard Oak Boulevard
Tallahassee, FL 32399-2100
(850) 922-5438 (SC 292-5438)
(850) 414-0479 (FAX)

EO. 12372/NEPA

Federal Consistency

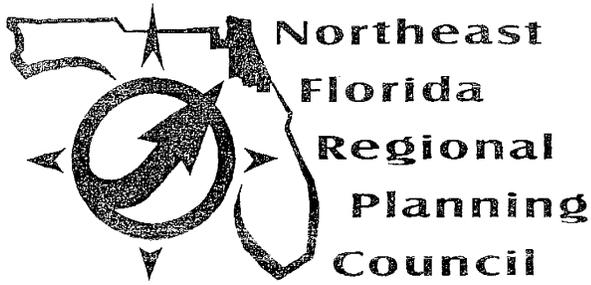
- No Comment
- Comments Attached
- Not Applicable

- No Comment/Consistent
- Consistent/Comments Attached
- Inconsistent/Comments Attached
- Not Applicable

From:

Division/Bureau: St. Johns River WMD / OAA

Date: 10/24/00



Bringing Communities Together

Baker • Clay • Duval • Flagler • Nassau • Putnam • St. Johns

Date: 10/6/00

Florida State Clearing House
Department of Community Affairs
2555 Shumard Oak Boulevard
Tallahassee, FL 32399-2100

SAI# FL200009180645C
NEFRPC# DV0029

Army Corp: Deepening The Jacksonville Harbor Navigation

Attn: Florida State Clearing House

The North East Florida Planning Council staff has reviewed the above Activity. A response sheet was sent out to the local affected and interested agencies. ✓ The Jacksonville Port Authority has endorsed this project. No other agency contacted responded to this program.

Based on the information contained in the Project Description, the endorsement by the Jacksonville Port Authority, and after review of the Comprehensive Regional Policy Plan goals and policies the staff finds the proposal to be "consistent" with the regional policy, as well as, the North East Florida Planning Council's policies, plans and programs.

This letter signifies that the North East Florida Planning Council staff has no objection to the above-cited Activity.

All the best,

Ashley T. Payne
Regional Planner,
North East Florida Regional Planning Council

RECEIVED
OCT 13 2000

State of Florida Clearinghouse



FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

JAMES L. "JAMIE" ADAMS, JR. BARBARA C. BARSH QUINTON L. HEDGEPEETH, DDS H.A. "HERKY" HUFFMAN
 Bushnell Jacksonville Miami Deltona

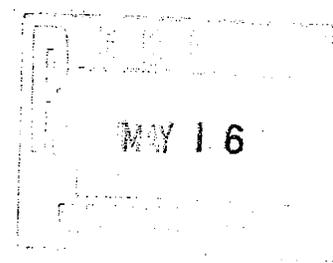
DAVID K. MEEHAN JULIE K. MORRIS TONY MOSS EDWIN P. ROBERTS, DC JOHN D. ROOD
 St. Petersburg Sarasota Miami Pensacola Jacksonville

ALLAN L. EGBERT, Ph.D., Executive Director
 VICTOR J. HELLER, Assistant Executive Director

BUREAU OF PROTECTED SPECIES MANAGEMENT
 DAVID W. ARNOLD, CI

Jeremy S
DF

May 12, 2000



Ms. Cherie Trainor, Director
 Florida State Clearinghouse
 2555 Shumard Oak Blvd.
 Tallahassee, Florida 32399-2100

Re: SAI#199806150279CR2;
 USACOE -Jacksonville Harbor Reevaluation of
 Feasibility of Main Channel Extension
 Duval County

Dear Ms. Trainor:

The Office of Environmental Services of the Florida Fish and Wildlife Conservation Commission has reviewed the referenced project, and offers the following comments.

This project involves dredging the main channel of the St. Johns River from the entrance channel upstream 20 miles to the Mathews Bridge. We have provided comments, dated December 27, 1999 and March 9, 2000, to the Department of Environmental Protection on a permit for this project. Under that permit application, the project area included the entrance channel upstream 14 miles on the St. Johns River. The Jacksonville Port Authority now requests that the project be reevaluated to include a 20-mile stretch of the harbor main channel. Based on a review of the information provided in this submittal, our comments and concerns have not changed. Attached please find copies of our earlier correspondence. If you have any questions regarding these comments, please contact me or Ms. Carol A. Knox at (850) 922-4330.

Sincerely,

Bradley J. Hartman, for

Bradley J. Hartman, Director
 Office of Environmental Services

BJH/CAK
 ENV 7-2/1/3/2

cc: U.S. Army Corps of Engineers, Jacksonville
 USFWS-Jacksonville



United States Department of the Interior

FISH AND WILDLIFE SERVICE

6620 Southpoint Drive South

Suite 310

Jacksonville, Florida 32216-0912

IN REPLY REFER TO:
FWS/R4/ES-JAFL

June 1, 2000

Mr. James C. Duck, Chief
Planning Division
Environmental Coordination Section
U.S. Army Corps of Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019

Re: Proposed Extension of Authorized Main Channel Deepening, St. Johns River,
Jacksonville Harbor, Duval County

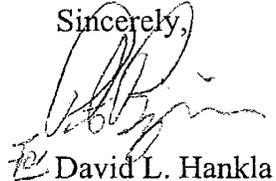
Dear Mr. Duck:

The Fish and Wildlife Service has reviewed your letter, dated March 24, 2000, concerning a request from the Jacksonville Port Authority (JPA) to re-evaluate the feasibility of extending, from river mile 14.7 to 20, the authorized channel deepening within the St. Johns River. The Water Resources Development Act of 1999 authorized deepening the main channel to 40 feet below mean low water between the harbor entrance and river mile 14.7. The JPA believes the proposed extension to river mile 20 is economically justified due to changes in petroleum bulk movements and in ownership and expansion of petroleum terminals. The authorized plan (A3) included some widening of the existing channel and turning basin, disposal of unconsolidated material on West Bartram Island, and disposal of rock material offshore within one of the proposed artificial reef locations. As part of the re-evaluation, the Corps will analyze sediment traps or advanced maintenance zones within the existing bottom channel widths.

In our section 7 consultation provided to you as part of our July 23, 1997 Fish and Wildlife Coordination Act report on the Jacksonville Harbor Navigation Study, we found that the project as proposed was not likely to adversely affect the Florida manatee, piping plover, wood stork, eastern indigo snake, or sea turtles. If the re-evaluation results in a plan similar to the current plan, our previous comments and findings would remain valid. However, reinitiation of consultation may be necessary if blasting becomes necessary or other modifications are made in the project design that would change the nature or extent of project-related effects to listed species; or if additional information becomes available on listed species.

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)-232-2580, ext. 112.

Sincerely,



David L. Hankla
Field Supervisor

cc: NPS, Jacksonville
NMFS, St. Petersburg
FFWCC, Tallahassee

S:Dvljhbr3AJM\acm



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

Southeast Regional Office
9721 Executive Center Drive North
St. Petersburg, Florida 33702

May 17, 2000

Mr. James C. Duck, Chief
Planning Division, Environmental Branch
Department of the Army, Corps of Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019

Dear Mr. Duck:

The National Marine Fisheries Service (NMFS) has reviewed your letter dated March 24, 2000, regarding the Draft Environmental Impact Statement for the Navigation Channel Improvements, Jacksonville Harbor (Project No. 9806-07), St. Johns River, Duval County, Florida. The Water Resources Development Act of 1999 authorized deepening of the main channel from a project depth of 38 to 40 feet from the entrance channel to about mile 14.7 as the recommended plan.

The Jacksonville Port Authority has requested that the Corps of Engineers reevaluate the feasibility of extending the recently authorized 40-foot depth for the main channel of Jacksonville Harbor to include segment 3A which extends from river mile 14.7 to 20. Spoil material from the dredging will be placed on an upland disposal area and rock material from the dredging will be placed within one of the artificial reef locations. If the review of alternatives to include segment 3 results in a plan similar to the prior study, blasting will not be required. However, if it is necessary, a blasting plan would be designed to eliminate or minimize adverse impacts.

In our previous letter, dated July 7, 1998, the NMFS concurred with the recommended action (Plan A3) since no vegetated or special aquatic sites would be filled or excavated. The NMFS has no objection to the inclusion of segment 3A into the navigation project; however, if this results in impacts to vegetated wetlands, the NMFS recommends that compensatory mitigation be provided. In addition, if blasting is required, the applicant should coordinate with the Protected Resources Division of the NMFS in St. Petersburg, Florida.

Sincerely,

Andreas Mager, Jr.
Assistant Regional Administrator
Habitat Conservation Division



cc:

EPA,ATL

FWS,JAX

DEP,JAX

GFWFC,TALL

F/SER4



AIRPORTS

- Jacksonville International
- Craig
- Herlong

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.

U.S. Army Corps of Engineers
Mr. Jerry Scarborough
December 12, 2000
Page 2

We offer our total support to the Corps to expedite this process.

Sincerely,

A handwritten signature in black ink, appearing to read 'Anthony F. Orsini', written in a cursive style.

Anthony F. Orsini, Director
Marine Engineering & Construction

Enclosure (1)

Copy: Rick Ferrin
 Rudolph Ramm
 T. Martin Fiorentino
 Ed Austin
 Mark Hulsey
 Linda Scherrer

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

Powell, Richard B SAJ

From: Scarborough, Jerry W SAJ
Sent: Tuesday, January 29, 2002 9:12 AM
To: Powell, Richard B SAJ
Subject: FW: Harbor Deepening - General Reevaluation Report

-----Original Message-----

From: Randy Murray [mailto:RANDYM@jaxport.com]
Sent: Tuesday, January 29, 2002 7:20 AM
To: Scarborough, Jerry W
Subject: Harbor Deepening - General Reevaluation Report

The Jacksonville Port Authority has reviewed the Draft document and has no comments.



AIRPORTS

- Jacksonville International
- Craig
- Merrill
- Cecil Field

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

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

Jerry Scarborough
March 30, 2001
Page 2

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.

Jerry Scarborough
March 30, 2001
Page 3

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

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

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		
Cc/Dept	C.O.E.		Co.	Jaxport		
Phone #			Phone #			
Fax #	232-1213		Fax #	630-3007		

JUN 04 2001

Planning Division
Coastal/Navigation Section

Captain J. Phillip Thomas
St. Johns Bar Pilot Association
4910 Ocean Street
Mayport, Florida 32233

Dear Captain Thomas:

The enclosed drawing contains the revised location of the proposed Chaseville Turn Widener as discussed during a meeting with Phillip Sylvester (EN-HI) and Richard Powell (PD-PN) in the Regulatory Division of our District office on May 17, 2001, and subsequent discussions with Mike Choate (EN-HI). The revised drawing shifts the location of buoy "69" approximately 100 feet east from the edge of the existing channel. The edge of the existing channel widener located south of buoy "69" is also shifted an additional 200 feet to the east and parallel to the existing widener. The revised widener extends from buoy "67" to "71".

This revised drawing provides a larger area of widening relative to the north end of the S.T. Services Terminal as well as the old Shell Oil Terminal than the one previously provided at our April 23, 2001, meeting at the Jacksonville Port Authority Talleyrand Office. The enclosed drawing also better represents the location of the widener tested with the ship simulator at the Engineer Research and Development Center in Vicksburg, Mississippi. That ship simulator testing of alternatives for improvements to Jacksonville Harbor occurred from May through December 1995.

Please let us know if the enclosed revision satisfies your navigation concerns relating to the Chaseville Turn. A response by June 15, 2001 will allow us to continue calculation of quantities and costs for the proposed widener as part of the plan formulation process. If you have any questions or need clarification on the above matter, contact Mr. Jerry Scarborough at 904-232-2042 or Phillip Sylvester at 904-232-1142.

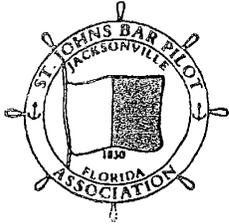
Sincerely,

Richard E. Bonner, P.E.
Deputy District Engineer
for Project Management

Enclosure

Copy Furnished (w/enclosure):

Anthony F. Orsini, Chief of Operations, Jacksonville Port Authority, 2831 Talleyrand Avenue,
Jacksonville, Florida 32206-3496



St. Johns Bar Pilot Association

PORT OF JACKSONVILLE
FLORIDA

4910 OCEAN STREET
MAYPORT, FLORIDA 32233
Telephone - 904-249-5631
FAX - 904/249-7523

June 14, 2001

Mr. Richard E. Bonner, P.E.
Planning Division
Coastal/Navigation Section
Jacksonville District Corps of Engineers
P. O. Box 4970
Jacksonville, Fl. 32232-0019

Dear Mr. Bonner,

I have received and reviewed the proposed Chaseville Turn Widener. This widener will enhance navigation and does satisfy my concerns relating to deeper-draft vessels transiting the Chaseville Turn.

Thank you for your cooperation in this project and please advise me when there is anything I can do to help.

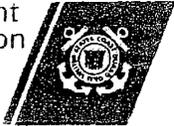
Sincerely,

J. P. Thomas, President

cc: Anthony Orsini

U.S. Department
of Transportation

United States
Coast Guard



Commander
Seventh Coast Guard District

909 S.E. 1st Avenue
Miami, FL 33130-3050
Staff Symbol: (oan)
Phone: (305) 415-6730
FAX: (305) 415-6757

16500
Serial #: 1905
31 Oct 01

Mr. James C. Duck
Chief, Planning Division
Jacksonville District Corps of Engineers
P.O. Box 4970
Jacksonville, FL 32232-0019

Dear Mr. Duck:

Thank you for your letter of August 9, 2001 regarding possible aid to navigation changes required as a result of your proposed modifications to Jacksonville Harbor.

After review of the proposed plans, 3A1 and 3A2, it has been determined that other than the relocation of several buoys no other aid to navigation changes appear to be necessary.

If you have any questions, please do not hesitate to call me at (305) 415-6730.

A handwritten signature in black ink, appearing to read "J.B. Embres".

J.B. EMBRES

Chief, Planning and Marine Information Section
Aids to Navigation Waterways Management Branch
Seventh Coast Guard District
By direction of the District Commander

CC: MSO Jacksonville, FL



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



REPLY TO
ATTENTION OF
Planning Division
Environmental Branch

JUL 09 2002

TO WHOM IT MAY CONCERN:

Enclosed for your review and comment is a Draft Navigation Study for Jacksonville Harbor, General Reevaluation Report and Environmental Assessment dated June 2002. This request proposes to deepen the Jacksonville Harbor navigation channel located in Jacksonville, Duval County, Florida (Figure 7) from about river mile 14.7 to mile 20 (Cut-50 through Terminal Channel Station 65+00).

The general reevaluation report examines an extension of the Water Resources Development Act (WRDA) of 1999, 40-foot project depth, from river mile 14.7 to mile 20. While that segment received consideration in the September 1998 feasibility study, sufficient benefits did not exist for deepening at that time. Since that time conditions have changed in that 5.3 mile segment concerning petroleum bulk movements and container ship traffic as well as changes in ownership and expansion of petroleum and container ship terminals. A reevaluation of benefits based on new information provided the impetus for this study.

Study results concluded that deepening the existing main Federal channel from a 38 to a 40-foot project depth from about river mile 14.7 to mile 20 (Cut 50 through Terminal Channel Station 65+00) with addition of a widener at the Chaseville Turn represents the National Economic Development (NED) plan of improvements. That group of improvements is identified as plan 3A, which consists of a combination of measures including the Chaseville Turn widener and deepening of main channel segments 3A1 and 3A2.

The Corps welcomes your views, comments and any information about resources, study objectives and important features within the described study

area as well as any other suggestions. Letters of comment or inquiry should be addressed to the letterhead address to the attention of Mr. James C. Duck, Chief, Planning Division, and received by this office within 30 days of the date of this letter.

Sincerely,


James C. Duck
Chief, Planning Division

FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION



QUINTON L. HEDGEPEETH, DDS
Miami

EDWIN P. ROBERTS, DC
Pensacola

RODNEY BARRETO
Miami

SANDRA T. KAUPE
Palm Beach

H.A. "HERKY" HUFFMAN
Enterprise

DAVID K. MEEHAN
St. Petersburg

JOHN D. ROOD
Jacksonville

KENNETH D. HADDAD, Executive Director
VICTOR J. HELLER, Assistant Executive Director

BRADLEY J. HARTMAN, DIRECTOR
OFFICE OF ENVIRONMENTAL SERVICE
(850)488-6661 TDD (850)488-954
FAX (850)922-567

August 26, 2002

Ms. Cindy Cranick
Clearinghouse Coordinator
Florida State Clearinghouse
Department of Environmental Protection
3900 Commonwealth Blvd., Mail Station 47
Tallahassee, Florida 32399-3000

Re: SAI #FL200207152419C,
Draft Navigation Study for
Jacksonville Harbor, St. Johns River,
Duval County

Dear Ms. Cranick:

The Office of Environmental Services of the Florida Fish and Wildlife Conservation Commission has reviewed the referenced project, and offers the following comments.

We commented previously on this proposal to the Department of Environmental Protection in a letter dated February 21, 2001, and those comments remain applicable.

If you have any questions regarding these comments, please contact me, or Ms. Carol Knox at (850)922-4330.

Sincerely,

Bradley J. Hartman
Bradley J. Hartman, Director
Office of Environmental Services

BJH/CAK
ENV 7-2-14/1
a:\sai2419c.doc
Enclosure

cc: U.S. Army Corps of Engineers, Jacksonville
USFWS-Jacksonville



United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, D.C. 20240

ER 02/634

JUL 16 2002

Mr. James C. Duck
Chief, Planning Division
Department of the Army
Jacksonville District Corps of Engineers
P.O. box 4970
Jacksonville, Florida 32232-0019

Dear Mr. Duck:

This is in regard to the request for the Department of the Interior's comments on the Draft Navigation Study for Jacksonville Harbor, General Reevaluation Report and Environmental Assessment, Duval County, Florida.

This is to inform you that the Department will have comments, but will be unable to reply within the allotted time. Please consider this letter as a request for an extension of time in which to comment.

Our comments should be available by August 26, 2002.

Sincerely,

Terence N. Martin, P.E.
Team Leader, Natural Resources
Management
Office of Environmental Policy
and Compliance



FLORIDA DEPARTMENT OF STATE
Sandra B. Mortham
Secretary of State
DIVISION OF HISTORICAL RESOURCES

April 16, 1998

Mr. John R. Hall
Regulatory Division, Permits Branch
Jacksonville District, Corps of Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019

In Reply Refer To:
Scott B. Edwards
Historic Sites Specialist
Project File No. 980852

RE: Cultural Resource Assessment Review Request
Submerged Historic Properties Survey, Jacksonville Harbor, Duval County, Florida
By Tidewater Atlantic Research, Inc., December 1997.

Dear Mr. Hall:

In accordance with the procedures contained in 36 C.F.R., Part 800 ("Protection of Historic Properties"), we have reviewed the results of the magnetometer and side scan sonar survey of the referenced project performed by Tidewater Atlantic Research, Inc., to be complete and sufficient.

We have reviewed the above referenced project and note that fifteen targets were identified during the course of the magnetometer and side scan sonar survey. Anomaly A-01 was identified as a non-historic material. Targets C-01, D-01, E-07, E-08 and MC2-1 were determined to be potentially significant and targets C-02, E-01, E-02, E-03, E-04, E-05, E-06, E-09 and MC7-1 were determined to be single ferrous objects but could possibly be associated with historic shipwrecks. Based on the results of the survey, one target (A-01) was determined to be non-historic and the remaining fourteen targets were determined to be potentially eligible for listing in the National Register. We concur with the determinations. Therefore, it is the opinion of this office that if the proposed channel modifications take place within the area of the 14 potentially significant targets and cannot be avoided, then diver investigations is recommended to assess the significance of the targets. The final results of the diver investigations would then need to be forwarded to this office for review. If you have any questions concerning our comments, please do not hesitate to contact us.

Sincerely,



George W. Percy, Director
Division of Historical Resources
and
State Historic Preservation Officer

GWP/Ese



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

Southeast Regional Office
9721 Executive Center Drive North
St. Petersburg, Florida 33702-2432

August 6, 2002

Colonel James G. May
District Engineer
Department of the Army
Jacksonville District Corps of Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019

Dear Colonel May:

The National Marine Fisheries Service (NOAA Fisheries) has reviewed the Draft Navigation Study for Jacksonville Harbor, General Reevaluation Report and Environmental Assessment dated June 2002. The Draft Navigation Study addresses the deepening of a 5.3-mile-long section of the Jacksonville Harbor navigation channel, in Duval County, Florida. According to the information provided, this segment of the river received consideration for deepening in the 1998 Feasibility Study, but this portion of the project lacked sufficient benefits at that time. The current report constitutes a reevaluation of benefits based on new information concerning bulk petroleum movements and container ship traffic. According to the document, no long-term and/or significant adverse impacts to high quality aquatic habitats, including Essential Fish Habitat, are anticipated.

Based on the information provided, NOAA Fisheries concurs with the overall determination you provide concerning anticipated impacts. Therefore, we have no additional comments or recommendations to provide at this time.

These comments do not satisfy your consultation responsibilities under Section 7 of the Endangered Species Act of 1973, as amended. If any activity(ies) "may affect" listed species and habitats under NOAA Fisheries purview, consultation should be initiated with our Protected Species Division at the letterhead address.

Please direct related questions or comments to the attention of Mr. George Getsinger, at our Jacksonville Office. He may be reached at 6620 Southpoint Drive South, Suite 310, Jacksonville, Florida 32216-0958, or at (904) 232-2580 ext. 121.

Sincerely,

Andreas Mager, Jr.
Assistant Regional Administrator
Habitat Conservation Division



cc:

EPA,ATL

FWS,JAX

DEP,JAX

FFWCC,TALL

F/SER4



United States Department of the Interior

OFFICE OF THE SECRETARY

OFFICE OF ENVIRONMENTAL POLICY AND COMPLIANCE

Richard B. Russell Federal Building

75 Spring Street, S.W.

Atlanta, Georgia 30303

ER 02/634

August 22, 2002

Mr. James C. Duck
Chief, Planning Division
Department of the Army
Jacksonville District Corps of Engineers
P.O. Box 4970
Jacksonville, FL 32232

RE: Draft Navigation Study for Jacksonville Harbor, General Reevaluation Report and Environmental Assessment, Duval County, FL

Dear Mr. Duck:

The Department of the Interior has reviewed the referenced document and we offer the following comments.

The recommendations and comments provided in the U.S. Fish and Wildlife Service 1997 Coordination Act Report, which included section 7 consultation, and their follow-up letter of June 1, 2000, respectively, remain valid. The FWS chief concern was to the manatee from potential blasting to deepen the channel cuts addressed in the report.

The General Reevaluation Report concluded that conventional dredging methods using hydraulic cutterhead suction equipment, could accomplish the task without the need for blasting. We concur with the findings and support its implementation.

If you have any questions concerning these comments, I can be reached at 404-331-4524.

Sincerely,

Gregory Hogue
Regional Environmental Officer

cc:
OEPC, WASO
FWS, R4



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8990

JUL 26 2002

District Engineer, Jacksonville
P.O. Box 4970
Jacksonville, FL 32232

Attn: Mr. James C. Duck
Chief, Planning Division

Subject: Environmental Assessment (EA) for Jacksonville Harbor (JH) Navigation Channel
Extension (Segment 3A), Duval County, FL (dtd June, 2002)

Dear Sir:

Pursuant to Section 309 of the Clean Air Act, EPA, Region 4 has reviewed the subject document, an evaluation of the environmental consequences of extending the JH facility from 38' to 40' along a 5.3 mile reach from mile 14.7 to about mile 20. The existing bottom width will be retained within this reach and a channel widener will be constructed at the Chaseville Turn. In total, this action would generate approximately 1.6 million cubic yards of rock and non-rock material. Annual maintenance would add to the existing 700,000 cubic yards of material generated. Excavated material will be apportioned to various disposal sites depending on its characteristics (rock, non-rock, silty clay fractions, etc.) and desired objective (off-shore reef). This segment of the channel became cost-effective after the new owners of the bulk petroleum terminals expanded their facilities and changed product movements. The JPA preferred plan does not anticipate the need to blast although relatively large amounts of rock will be excavated.

The US Fish and Wildlife Service did a thorough evaluation of the various disposal sites associated with the original JH project and made specific recommendations to reduce unavoidable impact(s) to aquatic resources. EPA strongly supports those recommendations with the exception of the 1:1 mitigation proposal for wetland losses which may become apparent as the project proceeds in design. Rather, we continue to advocate the process used by the Jacksonville District Regulatory Division; it requires a functional assessment of wetland impacts caused by projects subject to regulation under Section 404 of the Clean Water Act.

We have no substantive objections to the Jacksonville District's use of an EA as the evaluative model for this proposal rather than the more comprehensive environmental impact statement format. However, in the event that there are any additional upgrades to the JH channel careful consideration will have to be given to their cumulative impacts before a FONSI determination is made.

Thank you for the opportunity to comment. If we can be of further assistance in this matter, Dr. Gerald Miller (404-562-9616) will serve as initial point of contact.

Sincerely,

Heinz J. Mueller, Chief
Office of Environmental Assessment



Jeb Bush
Governor

Department of Environmental Protection

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard, MS 47
Tallahassee, Florida 32399-3000

David B. Struhs
Secretary

September 9, 2002

Mr. James C. Duck, Chief
Planning Division, Jacksonville District
U.S. Army Corps of Engineers
Post Office Box 4970
Jacksonville, Florida 32232-0019

RE: U.S. Department of the Army – Jacksonville District Corps of Engineers – Draft Navigation Study, General Reevaluation Report and Environmental Assessment – Proposal to Deepen the Jacksonville Harbor Navigation Channel – Duval County, Florida
SAI: FL200207152419C

Dear Mr. Duck:

The Florida State Clearinghouse, pursuant to 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 the review of the referenced draft General Reevaluation Report and Environmental Assessment (EA) for the proposed navigation improvements project.

The Department's (DEP) Bureau of Beaches and Wetland Resources indicates that state water quality certification in the form of a Joint Coastal Permit (JCP) was granted on February 22, 2001, for the channel maintenance dredging and deepening project. The potential environmental impacts of the project have been addressed in the permit, water quality certification and authorization to use sovereign submerged lands (Permit No. 0129277-001-JC), pursuant to Chapters 161, 253 and 373, *Florida Statutes*. Final agency action on the permit application constitutes the State of Florida's final consistency determination. For information on the JCP and permitting requirements, please contact Mr. Kent Edwards at (850) 487-4471, ext. 141.

The Florida Fish and Wildlife Conservation Commission (FWC) commented previously on the proposed project during the JCP review process and notes that those comments and recommendations remain applicable. Please see the attached FWC comment letter.

The St. Johns River Water Management District (SJRWMD) indicates that DEP is the primary permitting agency, but SJRWMD staff note that the draft EA has no discussion concerning the possible effect of increased salinity due to the channel dredging upon submerged aquatic vegetation (esp. *Vallisneria*) and shoreline vegetation (esp. Bald Cypress) upstream of the project area. It is recommended that a discussion of potential impacts to freshwater vegetation be included in the final EA. For more information on the SJRWMD's concerns

"More Protection, Less Process"

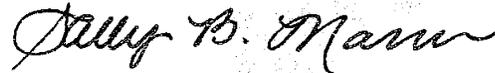
Mr. James C. Duck
September 9, 2002
Page 2

regarding these issues, please contact Mr. Dean Campbell, Technical Program Manager, Lower St. Johns River Basin, at (386) 329-4360.

Based on the information contained in the draft EA and the requirements stipulated in the JCP issued by the DEP, the state has determined that the referenced dredging project is consistent with the Florida Coastal Management Program.

Thank you for the opportunity to review this project. If you have any questions regarding this letter, please contact Ms. Lauren Milligan at (850) 922-5438.

Sincerely,



Sally B. Mann, Director
Office of Intergovernmental Programs

SBM/lm

Enclosures

cc: Kent Edwards, DEP, BBWR
Traci Wallace, FWC
Dick Galantowicz, SJRWMD

FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION



QUINTON L. HEDGEPEETH, DDS
Miami

EDWIN P. ROBERTS, DC
Pensacola

RODNEY BARRETO
Miami

SANDRA T. KAUPE
Palm Beach

H.A. "HERKY" HUFFMAN
Enterprise

DAVID K. MEEHAN
St. Petersburg

JOHN D. ROOD
Jacksonville

KENNETH D. HADDAD, Executive Director
VICTOR J. HELLER, Assistant Executive Director

BRADLEY J. HARTMAN, DIRECTOR
OFFICE OF ENVIRONMENTAL SERVICES
(850)488-6661 TDD (850)488-6661
FAX (850)922-4330

August 26, 2002

Ms. Cindy Cranick
Clearinghouse Coordinator
Florida State Clearinghouse
Department of Environmental Protection
3900 Commonwealth Blvd., Mail Station 47
Tallahassee, Florida 32399-3000

Re: SAI #FL200207152419C,
Draft Navigation Study for
Jacksonville Harbor, St. Johns River,
Duval County

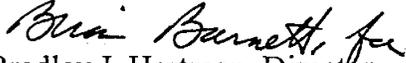
Dear Ms. Cranick:

The Office of Environmental Services of the Florida Fish and Wildlife Conservation Commission has reviewed the referenced project, and offers the following comments.

We commented previously on this proposal to the Department of Environmental Protection in a letter dated February 21, 2001, and those comments remain applicable.

If you have any questions regarding these comments, please contact me, or Ms. Carol Knox at (850)922-4330.

Sincerely,


Bradley J. Hartman, Director
Office of Environmental Services

BJH/CAK
ENV 7-2-14/1
a:\sai2419c.doc
Enclosure

cc: U.S. Army Corps of Engineers, Jacksonville
USFWS-Jacksonville

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SEP 04 2002

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FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION



ALLAN L. EGBERT, Ph.D., Executive Director
VICTOR J. HELLER, Assistant Executive Director

BARBARA C. BARSH
Jacksonville

QUINTON L. HEDGEPEETH, DDS
Miami

H.A. "HERKY" HUFFMAN
Deltona

DAVID K. MEEHAN
St. Petersburg

JULIE K. MORRIS
Sarasota

TONY MOSS
Miami

EDWIN P. ROBERTS, DC
Pensacola

JOHN D. ROOD
Jacksonville

OFFICE OF ENVIRONMENTAL SERVICES
BRADLEY J. HARTMAN, DBI
(850) 488-6661 TDD (850)
FAX (850)

February 21, 2001

Mr. Kent Edwards
Office of Beaches and Coastal Systems
Department of Environmental Protection
Mail Station 300
3900 Commonwealth Blvd.
Tallahassee, Florida 32399-3000

Re: Manatee Impact Review;
File No.: 162769409;
Projects: Jacksonville Harbor Dredging
Applicant: Army Corps of Engineers
Duval County
Revised

Dear Mr. Edwards:

The Office of Environmental Services in the Florida Fish and Wildlife Conservation Commission has reviewed recent information regarding this application, and provides the following comments. These revised comments apply only to the manatee conditions and do not change our previous recommendations for the protection of sea turtles and right whales. A copy of this letter will be sent to the U.S. Army Corps of Engineers (COE), Jacksonville District, in compliance with the Fish and Wildlife Coordination Act.

The applicant proposes to deepen the main ship channel of Jacksonville Harbor on the St. Johns River, from the inlet extending 20 miles inland. The project includes the West Blount Island channel and the removal of a side shoal at the east entrance to Mill Cove. The project will require the placement of approximately 3 million cubic yards of sand, shell, silt, clay and rock removed from the harbor. The rock material will be used for offshore artificial reef creation. The use of explosives in the dredging process is not anticipated, however a clamshell dredge will be used to conduct the rock removal portion of the project. This portion of the St. Johns River is an important migratory corridor for manatees in spring and fall and is also used throughout the summer months. Winter use of this portion of the river is limited.

We have provided comments previously on this project, dated March 9, May 12, and October 25, 2000 to the Department of Environmental Protection and to the State Clearinghouse.

Mr. Kent Edwards
February 21, 2001
Page 2

on this project. The project proposal has varied from including 14 miles to 20 miles of the Jacksonville Harbor channel located in the St. Johns River from the mouth to downtown Jacksonville. Earlier submittals indicate that hydraulic dredging was proposed, however, recent discussions with the FWS indicate that limited clamshell dredging will be required to remove rock pinnacles. We have consistently provided the same recommendations for the protection of manatees and right whales and until January of 2001 were not notified that the COE objected to any of the recommended conditions. Now that the state permit is about to be issued the COE has voiced objections.

In an effort to address the concerns of the COE we have discussed the project with the US Fish & Wildlife Service (FWS) regarding their previous recommendations from their Fish & Wildlife Coordination Act Report dated July 1997. In that report the FWS recommended the standard construction conditions and that the work be limited to the winter months. The FWS sent a letter on February 9, 2001, to the COE clarifying their recommendations on the project to allow year-round, 24 hour hydraulic dredging, daytime clam-shell dredging during the months of April through November and 24 hour clam-shell dredging during the months of December through March. All clamshell dredging will require the use of a dedicated observer. We concur with these recommendations.

Since that letter was written the COE has continued to discuss the nighttime limitation on clamshell dredging with the FWS. As a result of that discussion the FWS has suggested alternative conditions for the project: (1) that a hydraulic cutterhead suction dredge will be used as much as is practicable, (2) a dedicated manatee observer be used on the clam shell dredge (3) lighting will be used on the clam shell dredge to illuminate the water surface within 200 ft. of the project at night, (4) the clam shell operation shall be altered to gravity release only at the water surface after the observer has verified no manatees present within 50 ft. of the in-water work and (5) when practical no clam shell dredging shall occur between river mile markers 6 and 4 during the months of March through May and September through November .

We disagree with the FWS that adequate manatee observations can be conducted at night even with lighting. Manatee researchers have consistently stated that it is difficult, if not impossible to see manatees at night, even with lights (personal communication, FMRI). While still difficult, manatees can be observed during the day, particularly if the observer is in an elevated position. Waters of the St. Johns River are typically dark however, aerial observers have been able to visibly spot manatees in the St. Johns Rivers that were submerged 6-8 ft. below the water surface. Research staff have observed manatees during clam shell dredging operations and have reported that manatees can be attracted to the activity because of the dripping water that is produced when the dredge surfaces with a load of material. We believe if manatees can be attracted to clamshell operations there should be observers on board to guard against injury. Compliance with the standard conditions can only be accomplished if observers are effective, and we believe this can only be achieved during daylight hours.

Mr. Kent Edwards
February 21, 2001
Page 3

We have particular concern for the portion of the project located from river mile 15 through 20 (segment 3A). This area is located approximately from the western end of Exchange Island to one mile north of the Mathews Bridge. We believe manatees are at greater risk from the project in this location because the river narrows, the channel is located very close to shore, watercraft caused manatee mortality occurrence is high and aerial survey data indicates a higher density of manatees in this portion of the river. Dredging operations take up some portion of the waterway reducing the width available for usual boat traffic and manatee use and do involve a variety of vessels to support the operation. We think, at the very least, additional protection should be afforded in this section of the river.

We offer the following conditions as an alternative to our original manatee conditions. It is our recommendation that the following measures, if they are made conditions of the permit, will satisfy the requirements of 373.414(1)(a) 2, Florida Statutes:

1. The standard manatee construction conditions shall be followed for all in-water construction.
2. At least one person shall be designated as a manatee observer when in-water work is being performed. That person shall have experience in manatee observation, and be equipped with polarized sunglasses to aid in observation. The manatee observer must be on site during all in-water construction activities and will advise personnel to cease operation upon sighting a manatee within 50 feet of any in-water construction activity.
3. No nighttime clamshell dredging shall occur from river mile marker 15 through 20 (segment 3A), except during the months of December through March, when 24-hour clam shell dredging shall be permitted.
4. The permittee shall ensure that the contractor maintains a log detailing sightings, collisions, or injuries to manatees should they occur during the contract period. Following project completion, a report summarizing incidents and sightings shall be submitted to the Bureau of Protected Species Management, 620 South Meridian Street, Tallahassee, Florida 32399-1600;
5. Blasting shall be prohibited.

The above-mentioned recommendations are considered necessary in order for this project to not significantly affect the conservation of wildlife. Please notify this office of the results of this manatee impact review by copy of the Intent to Issue or Deny, and the final agency action.

Mr. Kent Edwards
February 21, 2001
Page 4

Thank you for the opportunity to provide comments. Please do not hesitate to call me at (850) 922-4330 if you have any questions.

Sincerely,


Bradley J. Hartman, Director
Office of Environmental Services

BJH/CAK

ENV 7-2-14/1

cc: U.S. Army Corps of Engineers, Jacksonville
Mr. John Milio, USFWS-Jacksonville

C:\DATA\DOC\DUVAL\Jax Harb final.doc



- email Governor Job Bush
- Gov. Bush's E-Newsletter

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User: Lauren Milligan, , ENVIRONMENTAL PROTECTION

Project Information

Project: FL200207152419C
Description: U.S. Department of the Army - Jacksonville District Corps of Engineers - Draft Navigation Study, General Reevaluation Report and Environmental Assessment - Proposal to Deepen the Jacksonville Harbor Navigation Channel - Jacksonville, Duval County, Florida.
Keywords: ACOE - Navigation Study/EA - Jax Harbor - Duval
Program:

Review Comments Page: **GO** [Previous](#) [Next](#) Page **7/10** [Previous](#) [Next](#)

Reviewer: ST. JOHNS RIVER WMD
Date: 08/12/2002
Description: FDEP is the primary permitting agency but SJRWMD staff noted that the draft EA has no discussion concerning the possible effect of increased salinity due to the channel dredging upon submerged aquatic vegetation (esp. Vallisneria) and shoreline vegetation (esp. Bald Cypress) upstream of the project area. It is recommended that a discussion of this possibility be included in the final EA. For more information on SJRWMD's concerns about these issues, the applicant should contact Dean Campbell, Technical program Manager, Lower Basin, at (386)329-4360.

Comment Type: Draft Final



- email Governor Jeb Bush
- Gov. Bush's E-Newsletter

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User: Lauren Milligan, , ENVIRONMENTAL PROTECTION

Project Information

Project: FL200207152419C
 Description: U.S. Department of the Army - Jacksonville District Corps of Engineers - Draft Navigation Study, General Reevaluation Report and Environmental Assessment - Proposal to Deepen the Jacksonville Harbor Navigation Channel - Jacksonville, Duval County, Florida.
 Keywords: ACOE - Navigation Study/EA - Jax Harbor - Duval
 Program:

Review Comments		Page: <input type="text"/> GO	Page 1/10		
Reviewer:	AGRICULTURE				
Date:	08/14/2002				
Description:	No Comment				
Comment Type:	<input type="radio"/> Draft <input checked="" type="radio"/> Final				

COUNTY: DUVAL

DATE: 7/15/2002

COMMENTS DUE DATE: 8/14/2002

Message:

CLEARANCE DUE DATE: 9/13/2002

SAI#: FL200207152419C

STATE AGENCIES

WATER MNGMNT. DISTRICTS

OPB POLICY UNITS

AGRICULTURE
 XCOMMUNITY AFFAIRS
 FISH and WILDLIFE COMMISSION
 STATE
 TRANSPORTATION
 ENVIRONMENTAL PROTECTION

ST. JOHNS RIVER WMD

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 JUL 23 2002
 RPM BSP
 PLAN PROCESSING TEAM

To: Florida State Clearinghouse
 AGENCY CONTACT AND COORDINATOR (SCH)
 2555 SHUMARD OAK BLVD
 TALLAHASSEE, FLORIDA 32399-2100
 (850) 414-6580 (SC 994-6580)
 (850) 414-0479

EO. 12372/NEPA

Federal Consistency

- No Comment
- Comment Attached
- Not Applicable

- No Comment/Consistent
- Consistent/Comments Attached
- Inconsistent/Comments Attached
- Not Applicable

From:

Division/Bureau: DCA/DCI
 Reviewer: [Signature]
 Date: 7/24/02

LM

COUNTY: DUVAL

DATE: 7/15/2002

COMMENTS DUE DATE: 8/14/2002

CLEARANCE DUE DATE: 9/13/2002

Message:

SAI#: FL200207152419C

STATE AGENCIES

WATER MNGMNT. DISTRICTS

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 FISH and WILDLIFE COMMISSION
 X STATE
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ST. JOHNS RIVER WMD
 00-3235 (SAI) NBY
 Request underwater survey
 00-7800 (SAI) NBY clears
 #4982

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 SAI-CORPS-EA
 2002-7281

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 (850) 414-0479

EO. 12372/NEPA

Federal Consistency

- No Comment
- Comment Attached
- Not Applicable

- No Comment/Consistent
- Consistent/Comments Attached
- Inconsistent/Comments Attached
- Not Applicable

From: Division of Historical Resources
 Division/Bureau: Bureau of Historic Preservation

Reviewer: SARAH JALVING Frederick P. Garbe

Date: 8/8/02 Deputy SHPO
8/8/02



LM

Florida Department of Transportation

JEB BUSH
GOVERNOR

605 Suwannee Street
Tallahassee, Florida 32399-0450
August 6, 2002

THOMAS F. BARRY, JR.
SECRETARY

Cindy Cranick
Clearinghouse Coordinator
Florida State Clearinghouse
Florida Department of Environmental Protection
3900 Commonwealth Boulevard, Mail Station 47
Tallahassee, Florida, 32399-3000

Re: Department of the Army – Jacksonville District Corps of Engineers – Draft
Navigation Study, General Reevaluation Report and Environmental Assessment.
Proposal to Deepen the Jacksonville Harbor Navigation Channel – Jacksonville,
Duval County.
SAI#: FL200207152419C

Dear Ms. Cranick:

The Department has reviewed the subject proposal and has no comments.

Sincerely,

Larry B. Phillips
Seaport Office/FDOT

C : Phil Worth, District 2
Roland C. Luster, District 2
Sandra Whitmire
File

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COUNTY: DUVAL

DATE: 7/15/2002

COMMENTS DUE DATE: 8/14/2002

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CLEARANCE DUE DATE: 9/13/2002

SAI#: FL200207152419C

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ST. JOHNS RIVER WMD

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To: Florida State Clearinghouse

EO. 12372/NEPA

Federal Consistency

AGENCY CONTACT AND COORDINATOR (SCH)

2555 SHUMARD OAK BLVD
 TALLAHASSEE, FLORIDA 32399-2100
 (850) 414-6580 (SC 994-6580)
 (850) 414-0479

- No Comment
- Comment Attached
- Not Applicable

- No Comment/Consistent
- Consistent/Comments Attached
- Inconsistent/Comments Attached
- Not Applicable

From:

Division/Bureau: Fla. Dept. of Transportation / Support Office
 Reviewer: Ray B. Hill
 Date: 8/6/02

COUNTY: DUVAL

UPM

DATE: 7/15/2002

COMMENTS DUE DATE: 8/14/2002

CLEARANCE DUE DATE: 9/13/2002

Message:

SAI#: FL200207152419C

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 COMMUNITY AFFAIRS
 FISH and WILDLIFE COMMISSION
 STATE
 TRANSPORTATION
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ST. JOHNS RIVER WMD

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 ENVIRONMENTAL POLICY UNIT

To: Florida State Clearinghouse
 AGENCY CONTACT AND COORDINATOR (SCH)
 2555 SHUMARD OAK BLVD
 TALLAHASSEE, FLORIDA 32399-2100
 (850) 414-6580 (SC 994-6580)
 (850) 414-0479

EO. 12372/NEPA

Federal Consistency

- No Comment
- Comment Attached
- Not Applicable

- No Comment/Consistent
- Consistent/Comments Attached
- Inconsistent/Comments Attached
- Not Applicable

From:

Division/Bureau: OPB. NRGG

Reviewer: M. James

Date: 8/6/02



Post Office Box 3005
2831 Talleyrand Avenue
Jacksonville, Florida 32206-0005
www.jaxport.com

(904) 630-3062

September 20, 2002

Mr. Jerry Scarborough, P.E.
Department of the Army
Corps of Engineers - Jacksonville District
Post Office Box 4970
Jacksonville, Florida 32232-0019

Re: Jacksonville Harbor -
General Reevaluation Report
and Environmental Assessment

Dear Mr. Scarborough:

We have reviewed your report on the above subject. We concur with this report and have no comments.

If we may be of further assistance, please advise.

Sincerely,

A handwritten signature in black ink that reads "Randy B. Murray". The signature is written in a cursive style with a long horizontal stroke extending to the right.

Randy B. Murray, P.E.
Director, Engineering & Construction

RBM:mw

cc: Frank Jones
Anthony F. Orsini

MAILING LIST - GENERAL

FEDERAL AGENCIES

Director
Office of Federal Activities
Environmental Protection Agency
401 M Street S.W.
Washington, D. C. 30034-2610 (5 cys)

Environmental Policy Section
U.S. Environmental Protection Agency
Region IV
Atlanta Federal Center
100 Alabama St., S.W.
Atlanta, Georgia 30303-3104 (2 cys)

Director
Office of Environmental Project Review
Department of the Interior
Room 4241
18th and C Streets, NW
Washington, D.C. 20240 (12 cys)

Executive Director
Advisory Council on Historic Preservation
The Old Post Office Building
1100 Pennsylvania Avenue N.W.
Washington, D.C. 20004-2590

National Marine Fisheries Service
Environmental Assessment Branch
3500 Delwood Beach Road
Panama City, Florida 32407-7499

National Marine Fisheries Service
Southeast Regional Office
9721 Executive Center Drive N
St. Petersburg, Florida 33702

National Marine Fisheries Service
Chief, Protected Species Branch
9721 Executive Center Drive N
St. Petersburg, Florida 33702

Mr. Tom Grahl
Acting Field Supervisor
U.S. Fish and Wildlife Service
P.O. Box 2676
Vero Beach, Florida 32961-2676

Mr. David Hankla
Field Supervisor
U.S. Fish and Wildlife Service
6620 Southpoint Drive S
Suite 310
Jacksonville, Florida 32217

Commander
Seventh Coast Guard District
909 SE 1st Avenue
Miami, Florida 33131-3050

Office of Environmental Assessment
U.S. Environmental Protection Agency
EPA Region IV
Attn: Gerald Miller
61 Forsyth Street
Atlanta, Georgia 30303-3104 (3 cys)

STATE AGENCIES

Florida State Clearinghouse
The Dept. of Community Affairs
2555 Shumard Oak Blvd.
Tallahassee, Florida 32399-2100 (16 cys)

St. Johns River Water Management District
P.O. Box 1429
Palatka, Fla. 32178-1428

w/boothby/maillist

OTHER AGENCIES AND ORGANIZATIONS

Florida Chapter, Sierra Club
927 Delores Drive
Tallahassee, Florida 32301-2929

Florida Wildlife Federation
P.O. Box 6870
Tallahassee, Florida 32314-6870

Florida Audubon Society
1101 Audubon Way
Maitland, Fla. 32751-5451

Isaac Walton League of America, Inc.
5314 Bay State Road
Palmetto, Fla 33561-9712

Wilderness Society
4203 Ponce DeLeon Blvd.
Coral Gables, Florida 33416

Mr. David Roach
F.I.N.D.
1314 Marcinski Rd.
Jupiter, Fl. 33477

Capt. Don Stratmann
Florida Marine Patrol
2510 Second Avenue N.
Jacksonville, Fl 32250

W/boothby/maillist

**MAILING LIST
JACKSONVILLE HARBOR GRR
(S.T. SERVICES)
11 June 2002**

Amerada Hess Corp.
Attn: Mr. Richard Hamilton
2617 Heckscher Drive
Jacksonville, Fla 32218

Amoco Oil Company
Attn: Mr. Jeryl E. Tuten
2054 Heckscher Drive
Jacksonville, Fl. 32218

Alton Packaging Corp.
P.O. Box 150
Jacksonville, Fl. 32201

American Transport Lines
815 Haines Street
P.O. Box 2110
Jacksonville, Fl. 32203

Chevron USA, Inc
Attn: Mr. Carl Watson
3117 Talleyrand Avenue
Jacksonville, Fl. 32206

Coastal Fuels, Inc.
Attn: Mr. Eduardo Palenzuela.
3529 Talleyrand Avenue
Jacksonville, Florida 32206

Cross State Towing Co.
Attn: Mr. Marvin Lane
5140 Arlington Road
Jacksonville, Fl. 32211

Crowley Maritime Corp.
9787 Regency Square Blvd.
Jacksonville, Fl. 32246

Crowley American Transport
Attn: Mr. David Homan
Marine Operations
P.O. Box 2110
Jacksonville, Fl. 32203

Dixie Towing Corp.
Attn: Mr. Robert Gibbs
110 Bryan Street
Jacksonville, Fl 32202

Eighth Street Terminal (Jaxport)
1751 Talleyrand Avenue
P.O. Box 3341
Jacksonville, Fl. 32206

Independent Terminal and Pipeline, Inc.
3721 Talleyrand Avenue
Jacksonville, Fl. 32206

Jacksonville Electric Authority
Attn: Paul T. Nielson, Jr.
21 West Church Street
Jacksonville, Fl. 32202-3139

Jacksonville Electric Authority
Attn: Robert C. Johns
21 West Church Street
Jacksonville, Fl. 32202-3139

Jaxport Talleyrand Docks & Terminal
Attn: Ms. Victoria Robas
P.O. Box 3005
Jacksonville, Fl. 32206

Jacksonville Docking Masters Association
Attn: Capt. Mason L. Flint
P.O. Box 11153
Jacksonville, Fl. 32239

JEA Kennedy Station
4215 Talleyrand Avenue
Jacksonville, Fl. 32206

Jaxport (Marketing)
Attn: James H. Robbins
Jacksonville Port Authority
2831 Talleyrand Avenue
Jacksonville, Fl. 32206

Jacksonville Chamber of Commerce
Attn: Ms. Sally Patch
3 Independence Drive
Jacksonville, Fl. 32202

Jacksonville Port Authority
Attn: Chief of Marine Engineering.
2831 Talleyrand Avenue
Jacksonville, Fl. 32206-3496

Jacksonville Bulk Terminal
Occidental Chemical Corp.
1301 Wigmore Street
Jacksonville, Fl. 32206

McAllister Towing of Florida, Inc.
Attn: Mr. Mike Ring
P.O. Box 11358
Jacksonville, Fl. 32239

Moran Towing of Florida, Inc.
Attn: Mr. Donald J. Peck
North Regency One, Suite 460
9485 Regency Square Blvd.
Jacksonville, Fl. 34225

Naval Supply Center - Fuel Directorate
Heckscher Drive- End of Somers Road
P.O. Box 26938
Jacksonville, Fl. 32266

Naval Fuel Depot
Attn: Mr. Robert Babick
FISC Jacksonville
Fuel Department- Code 700
888 Somers Road
Jacksonville, Fl. 32218-2600

St. Johns Bar Pilots Association
Attn: Mr. E. Bryson
4910 Ocean Street
Mayport, Fl. 32238

S.T. Services
Attn: Mr. John Roller
6531 Evergreen Avenue
Jacksonville, Fl. 32208

LeBoeuf, Lamb, Green, & McRae
Attn: Mr. Daniel D. Richardson
50 N. Laura Street, Suite 2800
Jacksonville, Fl. 32202

Southeast Toyota
Attn: Mr. Bob Moore
1751 Talleyrand Avenue
Jacksonville, Fl. 32206

Trailer Marine Transport Corp.
Attn: Mr. Alex Sweeny
P.O. Box 2110
Jacksonville, Fl. 32202

Trailer Bridge
Attn: Mr. Ed Morley, Suite 500
9550 Regency Square Blvd.
Jacksonville, FL 32225

Mr. Ernie Voisin
Docking Pilots Association
4242 Alesbury Dr.
Jacksonville, FL 32225

Mr. E. T. Hall, P.E.
Chief, Engineering Division
(Public Works) Room 901, City Hall
220 East Bay Street
Jacksonville, FL 32202

MR. TONY ORSINI
JACKSONVILLE PORT AUTHORITY
P.O. BOX 3005
2831 TALLYRAND AVENUE
JACKSONVILLE, FL 32206-0005

MR. RANDY MURRAY
JACKSONVILLE PORT AUTHORITY
P.O. BOX 3005
2831 TALLYRAND AVENUE
JACKSONVILLE, FL 32206-0005

NATIONAL PARK SERVICE
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**JACKSONVILLE HARBOR, FLORIDA
GENERAL REEVALUATION REPORT**

**APPENDIX A
ENGINEERING**

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ENGINEERING**

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Attachment A - U.S. Geological Survey Assessment Of The Interconnection Between The St. John's River And The Shallow Aquifer System, East-Central Duval County, FL

Attachment B - Core Boring Logs, Laboratory Reports and Geological Profiles

**JACKSONVILLE HARBOR, FLORIDA
APPENDIX A
ENGINEERING**

A. INTRODUCTION

1. General. This appendix presents the discussion of applicable design considerations and construction methods utilized to adequately address the project requirements and to establish a basis for the cost estimates. General requirements for real estate and operation and maintenance are also presented.

2. Recommended Plan. The recommended plan would include construction of a 40-foot project depth in segment 3A, Cut-50 through Terminal Channel (T.C.) STA 65+00 with a widener at the Chaseville Turn. A plan view of the recommended plan is shown on Plate A-1.

A discussion of the plan formulation involved in the selection of the recommended plan is presented in the main portion of this report. All soundings presented in this report are at Mean Lower Low Water.

B. HYDROLOGY AND HYDRAULICS

3. General. Water levels in the project area are affected primarily by tidal fluctuations in the Atlantic Ocean and by stormwater runoff carried by the St. Johns River. The project area is also subject to storm surges from hurricanes, tropical storms, and extra tropical storms from June through November. Surges from extratropical storms may affect the area during any time of the year.

4. Summary of Salinity Changes Due to 40 foot Channel. The hydrodynamics and salinity transport of both the present 38 feet deep channel (base) and the 40 feet deep channel (plan) were computed. The model used was RMA10-WES. RMA10-WES is a fully three dimensional model that is capable of computing coupled flow and transport. The model has been verified for use in the Lower St. Johns River and Estuary.

The time period modeled was from 60 – 71.2 days after 1 June 1995. This period was chosen because field data indicated higher salinity values in the river. In order to avoid model “spin-up” errors, only the period 64.25 – 71.2 days (approximately 13 tidal cycles) after 1 June 1995 were analyzed for differences due to the deeper channel. A total of eleven locations were analyzed for salinity and tidal variations. Salinity differences (base – plan) ranged between –1 ppt and +0.15, where negative indicates an increase due to the deeper channel and positive indicates a decrease. The most significant changes were found in Back River where the surface differences was –0.79

ppt and the bottom difference was -1.00 ppt. Upstream of the Acosta Bridge computed mean salinity differences were less than 0.2 ppt. In general, the magnitude of the mean salinity differences less than or equal to 1 ppt are well within the margin of error expected from a numerical model. This indicates that deepening the channel to 40 feet from 38 feet will have little or marginal effect on the salinity of the river. Tidal analysis also shows that there is insignificant change in the mean tidal elevations due to the deepening.

Mean Salinity Differences, (Base – Plan) for period 64.25 – 71.21 days after 1 June 1995		
Location	Surface Mean Salinity Difference, ppt	Bottom Mean Salinity Difference, ppt
Mayport	0.15	-0.30
Mile Point	0.09	-0.35
Buck Island	0.04	-0.51
Reed Island	-0.05	-0.42
Back River	-0.79	-1.00
Near Broward River	-0.25	-0.55
Near Trout River	-0.04	-0.67
Acosta Bridge	0.13	0.06
Buckman Bridge	0.01	0.01
Shands Bridge	0.00	0.00
Palatka	0.00	0.00

C. GEOTECHNICAL INVESTIGATIONS

5. General. The evaluation of the ground conditions is based on a number of core boring programs drilled over a 30-year period. Many of the core borings used are the core borings that were drilled for the deepening of the harbor in the 1970's. The majority of the historic core borings were drilled using a drive sampler. Some core borings were drilled using the standard splitspoon.

The historic core borings were often drilled deep enough to penetrate the materials that are to be dredged in the current deepening of the channel. The material shown on the core logs above the excavated depths achieved during previous dredging events will now be shoaling materials; but, the materials shown below the depths achieved by the previous excavation represents disturbed materials and/or virgin materials to be excavated. After dredge surveys (No. 00-250, 00-273, 00-277 and 01-021) were used for determining the quantity of excavation material for the cost estimate.

6. Local Geology. The topography in the project area consists of relic marine terraces of Pleistocene age. The trend of these terraces is approximately that of the present coastline. The height of the terraces to the south of the Saint Johns River range from approximately 30 to 50 feet above sea level; the highest point is about 85 feet near Fort Caroline National Monument. North of the river much of the area is covered by saltwater marshes with terrace heights rarely exceeding 30 feet.

Holocene and Pleistocene deposits of predominately sand and clayey sand with localized shell beds mantle the project area. These deposits are underlain by sand, shell, clay, and limestone of Pliocene to late Miocene age. Collectively, the Holocene to late Miocene age deposits form the surficial aquifer which has a thickness that ranges from 50 to 100 feet in the project area.

The Hawthorn Formation of middle Miocene age underlies the surficial aquifer throughout the project area, has a thickness ranging from 300 to 450 feet and consists mainly of clayey sand, clay and siliceous limestone with varying amounts of phosphate. The Hawthorn has an overall low permeability and functions as a confining bed that severely retards the movement of water between the surficial aquifer and the underlying Floridian Aquifer.

The Floridian Aquifer is the principal source of water in northeast Florida and throughout much of the state. Due to the hydraulic separation provided by the Hawthorn Formation, the proposed deepening of the St. Johns River will not affect the Floridian Aquifer for all practical purposes.

7. Surficial Aquifer. In 1981 an assessment, of the interconnection between the St. Johns River and the surficial aquifer in east-central Duval County was completed by the U.S. Geological Survey, this assessment, which is included as Attachment A of this report, concluded that the proposed dredging operations in Jacksonville Harbor were not expected to significantly alter the present hydrologic system. This document is U.S. Geological Survey Water -Resources Report 82-4109.

8. Previous Investigations. Attachment B contains core boring logs, lab analysis and geological profiles for Section 3A from previous investigations. Plate A-4 shows locations of core borings.

9. Recent Investigations. Six (6) exploratory core borings (CB-JH20001-1, 2, 3, 4, 5, & 10) were drilled in the study area in 2001. The borings were drilled to evaluate the geologic conditions for a proposed channel widener adjacent to Cut 52 and for a proposed turning basin east of the intersection of Cut 55 and the Terminal Channel Cut.

10. Project Materials. The project can be generally separated into rock and non-rock areas. A rock area is a reach of the channel where the virgin materials to be excavated will be predominately rock materials as shown on the core logs. A rock area can contain appreciable quantities of sediments. During the original deepening of the harbor, the majority of the rock was excavated using conventional dredging equipment.

At a number of locations, blasting was required to aid in the excavation of the rock. For estimating purposes, 50% of the excavation volume was calculated to be rock in areas of the channel reach where core borings indicated rock present.

A non-rock area is a reach of the channel where the virgin materials to be excavated will be predominately non-rock materials as indicated on the core logs. A non-rock area can and typically will contain some rock even if rock is not shown explicatively in core logs. For estimating purposes, 5% of the excavation volume could be rock in areas of the channel reach where core borings indicated no rock being present.

There exists in the project area, strong massive rock that would ordinarily need to be blasted for economical excavation. In the original deepening of the channel, blasting was required to remove this strong rock; but, after the rock was blasted, the subsequent excavation of the blasted rock typically exceeded -42 feet. Some pinnacles and limited areas of resistant rock are expected to be encounter.

11. Blasting Requirements. Blasting for the deepening project was not included in the cost estimate. It is anticipated that all of the required dredging grades can be achieved using conventional dredging equipment without the aid of blasting. The quantity of rock that will require dredging is limited because the original excavation and subsequent maintenance dredging operations often exceeded the required dredging grades. The vast majority of the rock excavated in the original deepening of the channel was excavated using conventional dredging equipment without blasting.

12. Excavation. With a proposed project depth of -40 feet MLLW, plus applicable overdepths, construction of the channel widener would involve excavation of unconsolidated materials. The unconsolidated materials and the soft to moderately hard rock could be excavated with a rock cutterhead hydraulic pipeline dredge.

The areas highlighted on Plate A-4 show where rock is deeper than elevation -45 feet mlw. This evaluation is based on rock probes taken for the deepening of the channel in the 1970's. The rock probes were taken on a 100-foot by 100-foot grid along the channel. The rock probes document that in these areas, there is no rock occurring above elevation -45 mlw.

D. DESIGN AND CONSTRUCTION

13. General. A project location map is shown on Plate A-1. The proposed project plan with the Chaseville widener is shown on Plates A-2 along with the West Bartram Island upland disposal area. A typical section of the Chaseville widener is provided on Plate A-3.

14. Channel Widener. The Chaseville channel widener would be constructed from approximately Station 45+81 Cut 51 to Station 3+50 Cut 54 in Section 3A1. The widener would be excavated to a project depth of 40 feet plus applicable overdepths. A cross section profile is shown on Plate A-3.

15. Berthing Areas. As an item of local cooperation, the Jacksonville Port Authority would be responsible for the dredging of the project berthing areas to provide the appropriate depths. A discussion of this topic is presented in the main report.

16. Side Slopes. For estimating purposes, the average side slope for the proposed excavation was determined to be 1 vertical on 3 horizontal (1V:3H).

17. Overdepths. An additional 2-foot of overdepth is included in the excavation quantities to allow for dredging inaccuracies.

18. Disposal Area. The existing West Bartram Island diked upland disposal area located on port property would be used for placement of all dredged material from both initial construction and future maintenance. A minimal cost for preparation of the disposal area is included in the project cost estimate.

19. Construction Procedure. For cost estimating purposes, it is anticipated that a 30" cutterhead pipeline dredge would be used for construction of the project channel and Chaseville widener.

E. RELOCATIONS

20. General. The project sponsor would be required to assume the costs of all relocations and alterations.

21. Utilities. Plate A-2 shows locations of utilities within Section 3A.

The Jacksonville Electric Authority owns transmission lines in a submarine crossing at Cut 53 in Segment 3A leading from its Kennedy plant at Talleyrand to Arlington. The crossing consists of two 69kV cables inside pipe conduits encased in extruded concrete with top of elevation at elevation -48 feet Local Mean Low Water (LMLW). If relocation

were required, JEA estimates that design and construction would cost \$2 million and take three years to complete.

The Jacksonville Department of Public Utilities owns an 8" ductile iron pipe sludge force main running under the river bed between downtown and Arlington in Segment 3A. The top-of-pipe elevation under the river is at -51.0 feet.

CECW-EP Memorandum, dated 30 August 1995, Subject: Standard Engineering Guidance for Setting Pipeline and Cable cover Requirements in Navigable Waters and Navigation Channels, provides guidance for setting pipeline and cable cover requirements. This memorandum states the following: "The minimum bottom cover for pipelines and cables shall be measured from the maximum depth of dredging. This depth is generally the authorized project depth, plus any over depth for advanced maintenance and the allowable dredging tolerance. The absolute minimum bottom cover for pipelines and cables shall be 48 inches in soil or 24 inches in compacted rock as established by the Office of Pipeline Safety (OPS), Department of Transportation and published in 49 CFR S 192.327 and 49 CFR S195.248. The District practice requires 6 feet (which includes allowances for advance maintenance and allowable overdepths) of cover in soil below the authorized project depth of the navigation channel. The JEA submarine transmission line at a depth of -48 feet meets or exceeds both the District and OPS requirements for pipeline and cable cover and as a result does not require relocation. Plans and specifications will also note that extreme caution will be exercised when dredging near the utility crossing.

Florida Water Services Corporation, formerly known as Southern States Utilities, owns effluent discharge pipes from the Woodmere wastewater treatment plant in Segments 3A. The outfall pipe appears to lie outside the federal project.

There are no known submarine crossing of local or long distance phone, cable television or drinking water lines as noted in the Jacksonville Harbor Feasibility Study dated September 1998

F. OPERATION AND MAINTENANCE

22. General. The Federal Government would be responsible for operation and maintenance of the navigation improvements proposed in this report upon completion of the construction contract. The Federal Government currently maintains the existing project. The contractor would be responsible for all maintenance during the construction contract.

23. Navigation Aids. The U.S. Coast Guard would be responsible for providing and maintaining navigation aids. Additional aids to navigation would not be required for this project.

G. QUANTITIES AND COST ESTIMATES

26. Summary of Costs. The estimates of first cost for construction of the recommended plan were prepared using M-CACES software and are presented in Table A -1. The estimate includes a narrative, a summary cost, and a detailed cost showing quantity, unit cost, and the amount for contingencies for each cost item. The costs of the non-construction features of the project are also included in the cost estimate.

The costs have been prepared for an effective date of October 2001.

ATTACHMENT A

**ASSESSMENT OF THE INTERCONNECTION BETWEEN THE ST. JOHN'S RIVER
AND THE SHALLOW AQUIFER SYSTEM, EAST-CENTRAL DUVAL COUNTY,
FLORIDA**

BY

THE U.S. GEOLOGICAL SURVEY

Conversion Factors

For those readers who may prefer to use International System (metric) units rather than inch-pound units, the conversion factors for terms used in this report are listed below:

<u>U.S. inch-pound unit</u>	<u>Multiply by</u>	<u>To Obtain Metric Unit</u>
inch (in)	25.40	millimeter (mm)
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
square mile (mi ²) (km ²)	2.590	square kilometer
foot squared per day (ft ² /d) (m ² /d)	0.0929	meter squared per day
gallon per minute (gal/min) (l/s)	0.06309	liter per second
million gallons per day (Mgal/d)	0.04381	cubic meter per second (m ³ /s)
cubic feet per second (ft ³ /s)	0.02832	cubic meter per second (m ³ /s)
degrees Fahrenheit	5/9 (F - 32)	degree Celsius (C)

National Geodetic Vertical Datum of 1929 (NGVD of 1929) - A geodetic datum derived from a general adjustment of first-order level nets of both the United States and Canada, formerly called "mean sea level". The datum was derived from the average sea level during many years at 26 tide stations along the Atlantic, Gulf of Mexico, and Pacific Coasts.

Abstract

The proposed deepening of the navigation channel in the St. Johns River to about 46 feet below National Geodetic Vertical Datum of 1929 will breach up to 10 feet of limestone along a 25 mile channel. The limestone is utilized as an aquifer in the Jacksonville area and supplies water to numerous domestic wells along the river.

The limestone, known as the shallow rock zone, ranges from 20 to 75 feet below NGVD of 1929 in the study area. In the navigation channel, depth to the top of the limestone ranges from 35 to 45 feet. Recent channel improvements to 39 feet, have already breached the limestone at several locations. Where penetration has not yet occurred, about 0 to 6 feet of undifferentiated sediments overlie the limestone. These sediments, consisting predominantly of sand, are too permeable to form an effective confining layer.

Water quality and hydrologic data indicate that an interconnection between the river and the limestone already exists at some locations. Where the limestone adjacent to the river is unconfined, under certain conditions saline water may move naturally through the sediments and into the limestone. If the limestone adjacent to the river is confined but is unconfined in the channel, saline water may move inland through the outcrop.

Chloride concentrations determined from 62 wells tapping the surficial aquifer generally range from 10 to 25 mg/L. However, water from test wells located less

than 260 feet from the river show chloride concentrations ranging from 480 to 6,600 mg/L.

The proposed dredging operations on the Jacksonville Harbor are not expected to significantly alter the present hydrologic system. Some encroachment of saline water could occur where the limestone is totally confined. However, the current position of the interface most likely represents conditions that will be present after future improvements.

Introduction

The City of Jacksonville is a major seaport which is utilized by commercial ships and the U.S. Navy. The city's harbor facilities are located up to 25 miles inland and access to the ocean is through a dredged navigation channel in the St. Johns River.

The history of the navigation channel, known as the Jacksonville Harbor, date back to 1852 when Congress appropriated funds for survey and experimental dredging at the mouth of the St. Johns River. Actual dredging of a 10 foot deep by 80 foot wide channel began in 1870. By 1910, the navigation channel was dredged to a depth of about 25 feet. The channel was deepened to

31 feet in 1918, and to 35 feet in 1952. Dredging of the present 39 foot channel began in 1970 and was completed in 1977.

The U.S. Army Corps of Engineers proposes to deepen the navigation channel from its present depth of 39 feet to 46 feet below NGVD of 1929 (roughly 38-45 feet below mean low water). The proposed dredging requires that an additional 2 feet be dredged when the rock is encountered and 2 feet more "allowable" for overrun. Therefore, the proposed dredging to 46 feet could be as much as 50 feet below datum. This dredging could penetrate up to 10 feet of limestone which is utilized as an aquifer in the Jacksonville area. This zone supplies water to numerous domestic wells along the river.

The U.S. Geological Survey, in cooperation with the U.S. Army Corps of Engineers, conducted an investigation to determine the effects of proposed deepening of the navigation on the surficial aquifer. A specific objective was to determine the interconnection between the shallow rock zone adjacent to the river and the rock in the river that is to be dredged. This report present the results of the one year investigation.

The report describes the hydrology of the surficial aquifer and the physical and chemical characteristics of the St. Johns River, shows the present location of the freshwater/saline interface in the area of investigation and assesses the effects of the proposed dredging on the surficial aquifer.

Previous Investigations

The hydrology of the surficial aquifer is included in numerous reports. Derragon (1955), Leve (1961,1966), and Leve and Goolsby (1969), briefly describe the surficial aquifer in northeast Florida. Cooke (1945), Vernon (1951), Puri and Vernon (1964), and Leve (1966) describe the geology of the area. Fairchild (1972) and Causey and Phelps (1978), describe the hydrogeology of the surficial aquifer in Duval County.

Anderson and Goolsby (1973), and investigations by the U.S. Army Corps of Engineers (1963, 1970, 1972a, 1972b) describe the physical and chemical characteristics of the St. Johns River. In addition, numerous studies have been conducted by the U.S. Army Corps of Engineers on navigational improvements for the Jacksonville Harbor.

Acknowledgments

The authors wish to express their appreciation to the following governmental agencies, firms, and individuals: the U.S. Army Corps of Engineers who drilled the test wells; Offshore Power Supply for granting permission to construct a tidal gauge on their property; the U.S. Park Service at Fort Caroline National Memorial, Alexander Breast and Lester Sanders for permission to drill observation wells on their property; the City of Jacksonville for granting permission to drill on city road right-of-ways and supplying benchmark data; Don Cain, Directory of the Physical Plant at Jacksonville University, for allowing the monitoring of wells on their property; the St. Johns Water

Management District, consultants, and well drillers who made available geologic logs; and to the numerous well owners who permitted the collections of water samples and water-level measurements from their well.

DESCRIPTION OF STUDY AREA

Location and Setting

The area of investigation is about 90 square miles in eastern Duval county, Florida. It includes the St. Johns River and adjacent areas from its mouth to approximately 25 miles upstream (fig. 1)

The relatively flat topography consists of a series of marine terraces formed during the Pleistocene when ocean levels were higher than at present. The terraces approximately parallel the coastline. South of the river, these terraces are generally 30 to 50 feet above NGVD of 1929, with the highest altitude being about 85 feet in the vicinity of Fort Caroline National Memorial.

North of the St. Johns River, altitudes rarely exceed 30 feet. Much of this area is covered by saltwater marshes.

The climate of the area is humid subtropical. The average annual temperature is 69.5 degrees F; July and August are the warmest months and January the coldest. Average annual rainfall is approximately 52 inches, two-thirds of which falls between June and October.

Surface drainage is primarily through the St. Johns River and its tributaries. Both the St. Johns River and its tributaries are tidal in their lower reaches in the area of investigation.

St. Johns River

The source of the St. Johns River is a marsh near Fort Pierce, Florida, about 312 miles from its mouth near Mayport. The river, which flows on a northward course to Jacksonville and then eastward to the ocean ranges in width from about 1250 feet at the Main Street Bridge to more than 2 miles at Mill Cove. A navigation channel in the river, between the ocean and Jacksonville, is presently 39 feet deep and 400 to 900 feet wide.

The St. Johns River drains about 9,430 square miles of the state of Florida and in its lower reaches is a tidal estuary. At the mouth of the river the tidal range averages 4.9 feet. The ocean tide generates a progressive tidal wave that moves up the river with gradually diminishing amplitude until the Main Street Bridge where the range averages 1.5 feet. Rising ocean tides force large amounts of water up the river and into storage. Most of this water subsequently flows back toward the ocean as the tide falls. These tidal flows average 87,000 cubic feet per second at Jacksonville, and peak flows exceeding 150,000 cubic feet are common (Anderson and Goolsby, 1973). Velocities range from zero at slack tide to three feet per second near peak high and low tides. The average tidal flows are more than seven times as large as the average net or freshwater flow.

Sea water moving upstream from the mouth of the St. Johns River mixes with the fresher river water to form a zone of transition. The chloride concentration in this zone varies from 19,000 mg/L (sea water) to that of fresh water. Between the City of Jacksonville and the ocean, the river shows some stratification between the sea water and the overlying river water. Maximum daily chloride concentrations in the river range from 2000 mg/L at the Main Street Bridge to 19,000 mg/L at Mayport 50% of the days. At Drummond Point, halfway between these two sites, daily maximum chloride concentrations exceeded 10,000 mg/L about 50% of the days and 15,000 mg/L 7% of the days. (Fig.2)

Hydrogeology

In the study area, all the sediments that overlie the Ocala Limestone of the Eocene age comprise the surficial aquifer. These sediments range in age from Miocene to Holocene. The deposits that lie above the Hawthorn Formation, of Miocene age, have not been given formal names, so they will be referred to by their geologic age. In ascending order the sediments that comprise the surficial aquifer are: the Hawthorn Formation, middle Miocene age, upper Miocene or Pliocene and Pleistocene and Holocene deposits.

The investigation deals with the upper 100 feet of surficial aquifer - sediments which lie above the Hawthorn Formation. The stratigraphic units making up the surficial aquifer in the study area are listed and described table 1.

Throughout the study area sediments of the Hawthorn Formation consist mainly of gray to olive-green clay, sandy clay, and sandy limestone containing abundant amounts of phosphatic sand, granules, and pebbles. This formation separates the surficial aquifer from the deeper Floridan aquifer and confines water in the Floridan aquifer under artesian pressure. The Formation ranges in thickness from about 300 to as much as 450 feet. In most places the upper surface of the Hawthorn is marked by the presence of phosphate rich sediments (Fairchild, 1972).

Overlying the Hawthorn Formation are the upper Miocene of Pliocene deposits which consist of sand, shell, clay, and limestone. The sediments generally can be distinguished from the Hawthorn Formation by their lack of phosphate and by their lighter colors. The limestone is most prevalent at the base of the deposits and together with sand and shell form a laterally extensive, continuous, relatively permeable zone which locally is as much as 40 feet thick. The limestone section is the major water-yielding zone in the surficial aquifer. Most shallow wells obtain water from this limestone section. Where the limestone is missing, water is obtained from the less permeable sand and shell beds.

Overlying the Miocene of Pliocene deposits are the undifferentiated sediments of Pleistocene and Holocene age. They consist primarily of sand and gray to green clayey sand that locally contains shell beds. The deposits are generally less than 50 feet in thickness in the study area.

The surficial aquifer in the study area consists of two water-bearing zones in formations of Holocene, Pleistocene and Pliocene or Miocene age. It ranges in thickness from less than 50 feet to about 100 feet and is underlain by the Hawthorn Formation. Closest to the surface is the water table zone, which is underlain by sediments of lower permeability. These beds are underlain by a water producing limestone known as the shallow rock zone (Fig. 3). This limestone is the major subject of this investigation.

Shallow Aquifer System

Water-Table Zone

Undifferentiated sediments of the Pleistocene and Holocene age blanket all of the study area. These sediments, which make up the water table zone, range in depth from land surface to about 50 feet. They consist primarily of medium to fine-grained unconsolidated quartz sand, and may contain thin green to gray sandy clay beds, which in places contain shell beds, particularly near the coast. The water table zone is unconfined.

Recharge to the water table zone is chiefly by the infiltration of rainwater, or water from lakes, streams, or marshes. Water is discharged from the zone by evapotranspiration, infiltration into the underlying formations where the water table is higher than the potentiometric surface of the lower zones, seepage into surface water areas and pumpage.

In areas not affected by the St. Johns or its tributaries, water from this zone is characterized by its low total dissolved solid content of less than 100mg/L and a hardness of generally less than 60mg/L as CaCO₃ (Leve and Goolsby, 1969). In some areas, the water contains more than 0.3 mg/L of iron. Except for iron, water generally meets the U.S. Environmental Protection Agency drinking water standards.

Chloride concentrations determined from 19 wells in the study area range from 10 to 25 mg/L (tables 3 and 4). However, 2 test wells drilled close to the river showed higher chloride concentrations. In wells 46 and 55, both located less than 100 feet from the St. Johns River, concentrations were 72 and 3,400 mg/L, respectively. Franks (1980), in a study conducted at the U.S. Naval Station near Mayport, reported values ranging from 46 to 5,200 mg/L.

Specific conductance, which is related to the mineral content of the water, increases with increases in dissolved solids content. As indicated in tables 3 and 4, the specific conductance ranged between 80 and 380 micromhos. An exception is well 55, which has a specific conductance of 10,000 micromhos. Well 55 is located 10 feet from the St. Johns River.

The water table zone provides water for lawn irrigation and domestic purposes. Yields generally range between 10 and 15 gal/min to small diameter wells, although some wells in relatively thick and permeable beach sands along the coast yield as much as 25 gpm (Leve, 1966). Transmissivities determined by

Ebasco Services Incorporated, at a location 1.5 miles north of Blount Island ranged from 22 to 55 ft²/d (written column, 1980).

Confining Bed

Below the water table zone, beds of lower permeability occur in most of the study area. These beds consist of fine-to-medium grained well sorted sand interbedded with layers of gray-green silty clay, clayey sand, and shell. Thicknesses of these beds vary within the study area, but generally range from 5 to 40 feet. These impermeable or semi-permeable beds confine water in the shallow rock zone where present. However, in some areas the impermeable beds are absent and the shallow rock zone is hydraulically connected to the water table zone.

Geologic data from 10 test wells drilled at 5 test sites show sediments of lower permeability occurring at test sites 1, 2, 4, and 5 (Fig 1). Thicknesses ranged from about 20 feet at test site 5 to about 35 feet at test sites 1 and 4. At test site 3, little clay is present in the sands that lie above the limestone. The shallow rock zone at this location appears to be hydraulically connected to the water table zone, and is unconfined.

Shallow Rock Zone

Underlying the beds of lower permeability is the principal shallow water-yielding zone, a permeable limestone bed ranging in thickness from 5 to 40 feet. The limestone ranges from 20 to 75 feet below NGVD of 1929 and is underlain by the impermeable sediments of the Hawthorn Formation. As indicated in figure 4, the limestone is deepest in the northwest and eastern part of the study area. At the test sites, the depth of the limestone ranges from about 28 feet at test site 5 to 51 feet at test site 1 (table 4). Along the coast and locally in the Arlington area, the limestone becomes discontinuous and grades into a medium-to-coarse grain sand and shell.

Figure 5 shows a generalized geologic section along the present navigation channel in the St. Johns River from Jacksonville University to the ocean. The approximate depth to the top of the limestone is based upon jet and core borings completed prior to 1972, before dredging to its present depth of 39 feet. As indicated in the illustration, the limestone generally ranges from 35 to 45 feet in depth, except near Mayport, where it deepens and become discontinuous. The top of the limestone, which is more variable than can be shown in the illustration, changes in depth as much as 6 or 7 feet within relatively short distances. Recent channel improvements on the Jacksonville Harbor have breached the limestone at several locations. Two areas where the breaching has been most extensive are the areas near Jacksonville University and north for about 3 miles, and about 1.75 miles east of Fort Caroline National Memorial for about ½ mile. Where the limestone has not yet been penetrated, undifferentiated sediments consisting mainly of sand with some clay and silt overlie the limestone. Thicknesses of these sediments range from 0 to 6 feet.

The shallow rock zone in the study area is recharged by downward leakage of water from the water table zone where the water table is above the potentiometric surface of the shallow rock zone, ground water inflow from adjacent areas, and rainfall.

Water from the shallow rock zone is discharged primarily by ground water outflow to adjacent areas and pumpage.

Hydrographs showing the relation of rainfall to water levels in wells 2 and 37 are shown in figure 6. High water levels generally occur after periods of heaviest rainfall, and lowest water levels occur after the drier periods. In both wells, the water levels rise only a short time after the rain begins. The rate of rise and decline of the water levels is determined by the hydraulic and geologic properties of the aquifer and the rate of recharge to or discharge from the same zone.

Ground water levels vary seasonally and generally are highest from June to October when rainfall is high and lowest from November to May when rainfall is low. Figure 7 shows the generalized potentiometric surface of the shallow rock zone for May, 1980. The potentiometric surface is an imaginary surface to which water from a confined zone will rise in tightly cased wells that penetrate the aquifer. The contours are based on water level measurements of 22 wells at the indicated locations.

In general, ground water moves from areas where the potentiometric surface is relatively high toward areas where the potentiometric surface is relatively low, normal to the contour lines. Figure 7 shows that ground water in the study area generally flows toward the St. Johns River and its tributaries.

Water from the shallow rock zone is primarily used for lawn irrigation, domestic purposes, and in heat exchange units in air conditioning and heating systems (table 2). Maximum yield for most parts of the county is between 30 and 100 gpm with yields as great as 200 gpm occurring in individual wells (Causey and Phelps, 1978).

Estimated transmissiveness for this zone range from 250ft²/d to 1,300ft²/d, assuming full artesian conditions. The estimated storage coefficient was 2×10^{-4} (Causey and Phelps, 1978).

Water from the shallow rock zone is generally of good quality except near the coast, brackish water marshes, and along parts of the St. Johns River. Although the water is usually hard, Fairchild (1972) and Causey and Phelps (1978) reported that concentrations of most chemical constituents generally do not exceed recommended limits of the U.S. Environmental Protection Agency (National Academy of Sciences and National Academy of Engineering, 1973). Iron concentrations are highly variable and in some areas exceed the 0.3 mg/L recommended limit.

Chloride concentrations determined from 48 wells in the shallow rock zone generally range from 10 to 25 mg/L (Tables 2 and 4). Exceptions are in areas where the potentiometric head is near sea level and in low lying areas adjacent to the St. Johns River. Several test sites along the river yielded water with high chloride concentrations. At well 61, located at test site 3, chloride concentrations as high as 6,600 mg/L were found. Well 57, located at test site 2, contained chloride

concentrations of 2,800 mg/L. At wells 53 and 54, located at test site 1, chloride concentrations ranged from 480 to 980 mg/L.

Appraisal of the Interconnections Between the River and the Shallow Rock Zone

Hydraulic Relationships

To determine the potentiometric head and the tidal effects on water levels of the shallow rock zone, test wells were drilled at 5 locations adjacent to the St. Johns River (fig. 1) At each test site, two wells were drilled into the limestone, one well located near the river's edge and the other spaced at least 250 feet inland. Continuous water-level recorders were installed on each well and on well 4, located about 1 mile north of Jacksonville University. Water-level records ranging from 1 to 25 days were collected during the months of May and June.

Figures 8 and 9 show hydrographs of wells at each test site. Water levels fluctuate in response to ocean tides. The fluctuations are caused by the pressure loading response to incoming and outgoing tides and/or by the movement of water from the river into the limestone..

The degree to which water levels respond to tides depends primarily on the physical properties of the limestone and the distance from the river. In test well 57, fifteen feet from the edge of the river, water levels fluctuated about 90 percent of the range of the river. In test well 58, three hundred feet inland from test well 57, fluctuations of less than 20 percent of the river stage occurred (fig 8). Water levels in wells 53 and 54 showed fluctuations of about 75 percent of the range of the river stage. Distance from the river is 10 and 260 feet, respectively. At well 67 (fig 9), located 15 feet from the river, water level fluctuations of only a few hundredths of a foot occurred. At this location, the limestone contains high percentages of clay and is not very permeable, and therefore does not respond to tidal fluctuations from the river.

Average water levels of wells tapping the shallow rock zone generally decrease towards the river and at the test sites average approximately 1.5 to 2 feet above the NGVD of 1929. At test sites 1, 2, 3, and 5 for selected time periods, however, estimated averages stages in the St. Johns River exceeded the average water level of test wells nearest the river. This local slope of water level gradients inland and away from the river indicates that the interface between the saline river water and fresh ground water is in the vicinity of the wells closest to the river. The chloride concentrations of these wells indicates the presence of this interface.

Under natural conditions, the saline water - fresh water interface may be located inland. If the limestone adjacent to the river is unconfined, saline water will move through the overlying permeable material and into the limestone until a hydraulic equilibrium has been reached. In confined conditions, saline water can move through the water table zone, but cannot enter the limestone due to the overlying confining bed. However,

if an interconnection exists between the river and the limestone in the river, saline water can move inland until an equilibrium is reached.

A generalized hydrogeologic section of test site 3 is shown in figure 10. Test wells indicate that the limestone adjacent to the river is unconfined. Water levels average about 1 foot above NGVD of 1929 in well 61 to about 1.8 feet in well 62. Under water-table conditions, the Ghyben-Herzberg principle can be used to determine the approximate depth to saline water - fresh water interface. The approximate depth to the saline water - fresh water interface is related to the height of the fresh water stands above sea level. This relationship can be expressed as follows: $z = [pf / (ps - pf)] hf$ where z is the depth to the saline water - fresh water interface below sea level, hf is the elevation of the water table above sea level, pf is the fresh water density, and ps is the saline water density.

For well 62, if $ps = 1.015 \text{ g/cm}^3$, and $pf = 1.000 \text{ g/cm}^3$, then $z = 67hf$. On June 3, 1980, water levels of the shallow rock zone ranged from about 1.7 to 2 feet above NGVD of 1929. Based on the Ghyben-Herzberg relation, the depth to the saline water - fresh water interface should range from about 115 to 135 feet below NGVD of 1929. However, the ocean tides and variations in recharge and discharge continually disturb the balance between the fresh water and river water and cause the interface to fluctuate. By these natural fluctuations, as well as diffusion of the river water, the sharp interface is destroyed, and a transition zone of brackish water is created.

A generalized hydrogeologic section of test site 1 is shown in figure 11. The limestone adjacent to the river is confined by beds of clay and clayey sand. Near the test site, the limestone in the channel varies from about 39 to 44 feet below NGVD of 1929 and may be breached in areas. Water levels for wells 53 and 54 at test site 1, averages about 1.5 to 2 feet above NGVD of 1929.

Under confined conditions, the Ghyben-Herzberg principle can also be used to calculate the approximate depth to the saline water - fresh water interface. For well 54, if $ps = 1.012$ and $pf = 1.001$, then $z = 91hf$. On May 26, 1980, water levels of the shallow rock zone ranged from about 0.5 to 2.7 feet above NGVD of 1929. The depth of the interface should range from about 26 to 246 feet below NGVD of 1929.

Water-Quality Relationships

Sixty-two wells were sampled to determine the water quality and present location of the saline water - fresh water interface in the surficial aquifer. Most wells sampled in the monitor network contained chloride concentrations of less than 25 mg/L (tables 2, 3, 40). However, in 14 wells less than 500 feet from the river, chloride concentrations were substantially higher.

Water from 4 wells that tap the water table zone had chloride concentrations greater than 71 mg/L (table 3). Chloride concentrations of 72 and 85 mg/L were determined in test well 46 and test well 56. Distance from the river's edge was 100 and 265 feet, respectively. A chloride concentration of 3,400 mg/L was

determined in test well 55, located ten feet from the river's edge. In test well 44, a chloride concentration of 71 mg/L was found. However, the source of chloride appears to be coming from a source other than the river.

Chemical analysis of the water from the shallow rock zone shows chloride concentrations above 45 mg/L in 13 wells. These wells, with the exceptions of test wells 33 and 58, are located less than 475 feet from the river's edge. Chloride concentrations range from 48 to 6,600 mg/L (tables 2, 4).

In water from wells 9 and 15 and test wells 64, 65, 67, and 68, chloride concentrations were less than 100 mg/L. In test wells 53, 54, 57, and 61, chloride concentrations ranged from 480 to 6,600 mg/L. Water analyzed from test well 61 contained the highest chloride concentrations in the monitor network (6,600 mg/L). Figure 12 shows the areas where chloride concentrations in the surficial aquifer exceed 70 mg/L.

During the study period, test wells 53, 54, 57, and 61 were sampled periodically to determine changes in chloride concentrations brought about by a possible shift in the position of the interface. All wells sampled with the exception of well 54 showed substantial decreases. Chloride concentrations in well 53, located ten feet from the edge of the river, ranged from 980 to 860 mg/L over a period of five months. In well 57, located about 15 feet from the edge of the river, chloride concentrations decreased from a high of 2,800 to 2,000 mg/L during the same period of time. In well 61, located 250 feet from the river's edge, chloride concentrations decreased from 6,600 to 5,600 mg/L.

Other sources of chloride water in the shallow rock zone include the downward infiltration of saline water from floods, marshes, and fill material. High tides generated by winds during a hurricane or a major storm could result in widespread flooding in low lying areas. Flood profiles of the St. Johns River show that the 25 year frequency flood could produce stages of about 4 feet above NGVD of 1929 at the Main Street Bridge and 5.5 feet at Mayport. Stages of 6 feet at the Main Street Bridge and 8.5 feet at Mayport could occur during the 100-year frequency flood (U.S. Department of Housing and Urban Development, 1977).

Much of the shoreline along the river has an altitude of less than ten feet and are prone to tidal flooding. Figure 13 shows the 100-year frequency flood map for the study area. As indicated on the map, the extent of flooding is greater on the northern side of the St. Johns River than on the southern side, due to lower land altitudes.

Sediments dredged from the river have been deposited on spoil islands, eroded areas along the shoreline, and, in the past, on low lying marsh areas. The water in these sediments, often containing significant chloride concentrations, are flushed by infiltrating rainwater, where the chloride may eventually infiltrate downward. The high chloride concentration at well 58 may be the result of the downward percolation of saline water from fill material into the underlying shallow rock zone.

Water from well 58, which is about 56 feet deep and 325 feet from the St. Johns River, has chloride concentrations ranging

from 3,100 to 4,400 mg/L. Well 57, drilled at approximately the same depth, is 310 feet down gradient from well 58 and only ten feet from the river. Water samples from this well yield chloride concentrations ranging from 2,000 to 2,800 mg/L.

Possible Effects of Harbor Improvement

The proposed dredging operation in the navigation channel will breach the limestone at many locations. Much of the overlying material and limestone will be removed, thus improving the hydraulic connection between the limestone and the river. However, water quality and hydrologic data indicate that at some of the test sites and probably at other locations along the river, an interconnection between the river and the limestone may already exist.

At four test sites, the average stage in the river is higher than the average water level of test wells nearest the river. This local reversal in gradients has resulted in the inland advance of saline water. In unconfined conditions, saline water will move through the permeable sediments and into the limestone until a hydraulic equilibrium is reached. Where the limestone adjacent to the navigation channel is confined, the overlying impermeable sediments prevent infiltration into the limestone. However, previous channel improvements may have already breached the limestone or have at least removed most of the overlying "confining" materials, allowing saline water to move inland from the navigation channel.

At some locations, complete confinement of the limestone in the river and adjacent to the river may exist. Future breaching of this limestone could allow saline water to move inland where previously the water was fresh. However, the distance this interface would move inland would depend on the height of the river stage, the density differences between fresh ground water and saline river water, the physical properties of the limestone, and the potentiometric gradients.

The proposed dredging operation on the Jacksonville Harbor is not expected to significantly alter the present hydrologic system. It appears that an interconnection already exists between the river and the limestone along much of the channel. The interconnection is the result of saline water seeping into the limestone under natural conditions or from previous dredging improvements.

Summary and Conclusions

The proposed deepening of the Jacksonville Harbor to about 46 feet below NGVD of 1929 will breach up to 10 feet of limestone along a 25 mile channel. The limestone, which is utilized as an aquifer in the Jacksonville area, supplies water to numerous domestic wells along the river.

The limestone, known as the shallow rock zone, is 10 to 40 feet thick and generally ranges from 25 to 70 feet below NGVD of 1929. At the test sites, the depth to the limestone varies from about 28 feet at test site 5 to 51 feet at test site 1. Along the coast and locally in the Arlington area, the limestone

becomes discontinuous and grades into a medium-to-coarse grain sand and shell. The water is generally of good quality except in low lying areas along the St. Johns River, along the coast, and near brackish water marshes. Water from the zone is primarily used for lawn irrigation, domestic purposes, and heat exchange units in air conditioning and heating systems.

The top of the limestone in the navigation channel ranges from 35 to 45 feet below NGVD of 1929. At some locations, recent channel improvements to 39 feet have cut into limestone. Two areas where the breaching has been the most extensive are the areas near Jacksonville University and north for about 3 miles and 1.75 miles east of Fort Caroline National Memorial for about ½ mile. Where the limestone has not been penetrated, undifferentiated sediments, consisting predominantly of sand, overlie the limestone. Thicknesses of these sediments range from 0 to 6 feet and are generally too permeable to form an effective confining bed.

Water quality and hydrologic data indicate an interconnection between the river and the limestone already exists at some locations. At test sites 1,2,3, and 5, estimated average stages in the St. Johns River exceeded the average water levels of test wells nearest the river. The reversal in gradients has allowed saline water from the river to move inland. Where the limestone is unconfined, saline water can move through the sediments and into the limestone. Where the limestone adjacent to the river is confined, but the limestone in the channel has been breached, saline water could move through the limestone outcrop.

Chloride concentrations determined from 62 wells drilled into the surficial aquifer generally range from 10 to 25 mg/L. However, in test wells 53, 54, 55, 57, and 61, located less than 260 feet from the river, chloride concentrations ranged from 480 mg/L to 6,600 mg/L. In twelve other wells located less than 500 feet from the river, chloride concentrations ranged from 48 to 670 mg/L.

Based on hydrologic, geologic and chemical data collected during this investigation the proposed dredging operations on the Jacksonville Harbor is not expected to significantly alter the present hydrologic system. The current position of the interface most likely represents the conditions that will be present after future improvements. However, some encroachment of saline water could occur in areas where the limestone in the river is confined.

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TABLE A-1

PROJECT COST ESTIMATE

Table A-1

Jacksonville Hbr GRR Study
Recommended NED Plan
Construction Dredging
Channel Segments 3A1 and 3A2
Cuts 50 thru Terminal Channel

Designed By: Jacksonville District
Estimated By: CESAJ-EN-C

Prepared By: B. Blake

Preparation Date: 09/26/02
Effective Date of Pricing: 10/01/01

Sales Tax: 7.00%

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Planning Estimate for General Revaluation Report (GRR), including Profit and Contingency

Jacksonville Harbor, Duval County, Florida

Recommended NED Plan - MCACES Cost Estimate for Final Report

Reference Email message from CESAJ-PD-PN (R. Powell) 24 Sept 2002 requesting the MCACES cost estimate for the Recommended NED Plan to be included in the final report.

Scope of Work for the Recommended NED Plan (as per CESAJ-PD-PN above).

1. The U.S. Army Corps of Engineers, Jacksonville District and the Jacksonville Port Authority are considering an extension to the currently authorized deepening project to include.

Segment 3A1: Federal Channel Cut-50 through Cut-54, including a new channel widener located at south limit of Cuts 51 through 53 and Non-Federal Berthing Areas located on northwestern side of Cut-50 (U.S. Navy Fuel Depot) and western side of Cut-52 (ST Services).

Segment 3A2: Federal Channel Cut-55 through Terminal Channel and Non-Federal Port Berthing areas located on the western side of Terminal Channel (Chevron Oil Terminal and JPA Talleyrand Terminal).

2. The construction cost estimate for the project is based on the following.

Assume a rock cutter-head dredge will be used to break up and dredge the excavation material. Disposal will be into the existing project upland disposal area located at West Bartram Island (D/A-Q1).

Recommended NED Plan dredging quantities were computed by CESAJ-CO-OM (F. Woodward) and were previously provided to this office by CESAJ-PD-PN (R. Powell) on 6 Nov 2001. Quantities are based on after dredge surveys No. 00-250, 00-273, 00-277, and 01-021. On 7 Nov 2001 CESAJ-EN-DL (K. Jones) provided updated quantities tabulation sheet to further update rock and Non-rock percentages for plan alternatives 3A1 and 3A2. Following discussions with CESAJ-CO-OM (F. Woodward) whom computed the latest dredging quantities and CESAJ-EN-G (R. Ross) whom provided the latest dredging geological information, it was realized that the percentages of NON-ROCK and ROCK material previously provided needed to be further clarified.

The quantities of NON-ROCK and ROCK material to be used in the revised cost estimate are now based on the assumption that 50 percent is NON-ROCK and 50 percent ROCK material as indicated by R. Ross and in the Geotechnical Report for the study. The NON-ROCK material is now assumed to be compacted sand since there has been recent maintenance dredging within the subject plan reaches (3A1 and 3A2).

SEGMENT 3A1:

Dredging Zone	40'Project 44'(2'Req. + 2'Allow.) (cyds)
Cut-50	320,986
Cut-51	126,919
Cut-52	59,066
Cut-51/52 Widener	290,951
Cut-53	89,333
Cut-54	83,932
U.S. Navy Fuel Depot	43,090
ST-Services Berth	5,119
Total Segment 3A1:	1,019,396

SEGMENT 3A2:

Dredging Zone	40'Project 44'(2'Req. + 2'Allow.) (cyds)
Cut-55	256,294
Cut-TC	305,236
JPA Talleyrand Terminal Berths	37,963
Chevron Oil Terminal Berth - *	39,445
Total Segment 3A2:	638,938
Total Segments 3A1 and 3A2:	1,658,334

* - Will include new bulkhead construction by Chevron Oil who provided the construction cost that is included in the estimate under Associated General Items.

c. For the cost estimate use 10% for E&D and 8% for S&A, and an appropriate percentage for contingency. Use the real estate cost provided by CESAJ-RE via CESAJ-EN-DL email message dated 21 June 2000.

Estimate Assumptions:

1. The construction dredging of the channel segment zones will be accomplished using a 30-inch hydraulic cutter suction dredge, with a cutterhead capable of dredging soft rock where present. Dredged material will be pumped directly into the diked disposal area located at the western end of Bartram Island, Jacksonville Harbor, in the vicinity of Cut-49.

2. The construction dredging unit cost were computed using the Cost Engineering Dredge Estimating Program (CEDEP) in accordance with EI-01D010 and ER 1110-2-1302. The efficient work time (EWT%) and dredging production (gross cy/hr) used in CEDEP to compute the dredging unit costs were based on prior contracts using pipeline dredges on this project. The dredge material character used in CEDEP to compute the dredging unit costs was based on the geological analysis provided to this office by CESAJ-EN-G, which was based on all the existing core borings available on the project at the time.

The revised dredging quantities computed by CESAJ-CO-OM and provided by CESAJ-PD-PN, also included a revised quantity of NON-ROCK material for each Cut section. The remaining material type is considered to be ROCK in all the Cut section in the revised estimate.

The further revised dredging quantities provided by CESAJ-EN-DL and CESAJ-EN-G, included revised percentages of ROCK material for each Cut section. The remaining NON-ROCK material is assumed to be compacted sand in the revised estimate.

3. The computed construction dredging unit cost includes additional cost for cutter teeth replacement based on the percentages of rock per Cut as indicated by CESAJ-EN-G.

4. The computed construction dredging unit cost also includes additional monthly cost for turbidity monitoring.

The estimated construction times for the Recommended NED Plan are as follows.

40-Foot Project Depth:

Mobilization and Demobilization	= 1.00 months or 30 days
Dredging of Cut-50	= 1.76 months or 54 days
Dredging of Cut-51	= 0.71 months or 22 days
Dredging of Cut-52	= 0.32 months or 10 days
Dredging of Cut-51/52 Widener	= 0.73 months or 22 days
Dredging of Cut-53	= 0.39 months or 12 days
Dredging of Cut-54	= 0.47 months or 14 days
Dredging of ST-Services Berths	= 0.03 months or 1 days
Dredging of US Navy Fuel Depot	= 0.24 months or 7 days
Dredging of Cut-55	= 2.09 months or 64 days
Dredging of Terminal Channel	= 2.08 months or 63 days
Dredging of JaxPort Term. Berths	= 0.26 months or 8 days
Dredging of Chevron Oil Terminal	= 0.27 months or 8 days - *

Total Estimated Construction = 10.35 months or 315 days

* - It can be assumed that the construction of the new Chevron Oil Terminal bulkhead will occur prior to the dredging of the berth, concurrent with the dredging of the proceeding project areas. A separate construction time for the new bulkhead has not been provided to this office.

Non-Construction Summary:

1. Assumed 10 percent for Planning, Engineering, and Design as per CESAJ-EN-DL.
2. Assumed 8 percent for contract Supervision and Administration (S&A) as per CESAJ-EN-DL.
3. Used the real estate (lands & damages) cost provided by CESAJ-RE for subject project.

Contingency Summary:

15% Contingency for all dredging. Normal design variances are expected - normal contingency values used.

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No Detailed Estimate...

No Backup Reports...

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** PROJECT OWNER SUMMARY - Category **

	QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL COST	UNIT COST
03 40-Foot Project Depth						
03- A Construction Cost			12,199,069	1,702,360	13,901,429	
03- B Non-Construction Cost			2,057,000	3,500	2,060,500	
TOTAL 40-Foot Project Depth			14,256,069	1,705,860	15,961,929	

** PROJECT OWNER SUMMARY - Task **

		QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL COST	UNIT COST

03	40-Foot Project Depth						
03-	A Construction Cost						
03-	A/12 Navigation Ports & Harbors						
03-	A/12.02 Harbors						
03-	A/12.02.01 Mobil, Demobil & Prep Work						
03-	A/12.02.01/01 Dredging, Mobil & Demobil			780,183	117,027	897,210	

	TOTAL Mobil, Demobil & Prep Work			780,183	117,027	897,210	
03-	A/12.02.16 Pipeline Dredging - Segment 3A1						
03-	A/12.02.16/01 Excavation & Disposal, Cut-50	320986.00	CY	1,701,226	255,184	1,956,410	6.10
03-	A/12.02.16/02 Excavation & Disposal, Cut-51	126919.00	CY	728,515	109,277	837,792	6.60
03-	A/12.02.16/03 Excavation & Disposal, Cut-52	59066.00	CY	333,723	50,058	383,781	6.50
03-	A/12.02.16/04 Excavation & Disposal, Cut-53	89333.00	CY	366,265	54,940	421,205	4.72
03-	A/12.02.16/05 Excavation & Disposal, Cut-54	83932.00	CY	517,021	77,553	594,574	7.08
03-	A/12.02.16/06 New Cut-51/52 Widener	290951.00	CY	820,482	123,072	943,554	3.24
03-	A/12.02.16/07 US Navy Fuel Depot Berth	43090.00	CY	247,337	37,100	284,437	6.60
03-	A/12.02.16/08 ST-Services Berthing Area	5119.00	CY	27,131	4,070	31,200	6.10

	TOTAL Pipeline Dredging - Segment 3A1	1019396	CY	4,741,699	711,255	5,452,954	5.35
03-	A/12.02.96 Pipeline Dredging - Segment 3A2						
03-	A/12.02.96/01 Excavation & Disposal, Cut-55	256294.00	CY	2,352,779	352,917	2,705,696	10.56
03-	A/12.02.96/02 Excavation & Disposal, Cut T.C.	305236.00	CY	2,771,543	415,731	3,187,274	10.44
03-	A/12.02.96/04 Talleyrand Terminal Port Berths	37963.00	CY	344,704	51,706	396,410	10.44
03-	A/12.02.96/06 Chevron Oil Terminal Berth	39445.00	CY	358,161	53,724	411,885	10.44

	TOTAL Pipeline Dredging - Segment 3A2	638938.00	CY	5,827,186	874,078	6,701,264	10.49
03-	A/12.02.99 Associated General Items						
03-	A/12.02.99/01 Chevron Oil New Bulkhead Const.			850,000	0	850,000	

	TOTAL Associated General Items			850,000	0	850,000	
	TOTAL Harbors			12,199,069	1,702,360	13,901,429	

	TOTAL Navigation Ports & Harbors			12,199,069	1,702,360	13,901,429	

	TOTAL Construction Cost			12,199,069	1,702,360	13,901,429	

** PROJECT OWNER SUMMARY - Task **

	QUANTITY	UOM	CONTRACT	CONTINGN	TOTAL COST	UNIT COST

03- B Non-Construction Cost						
03- B/01 Lands and Damages						
03- B/01. 1 Lands and Damages						
03- B/01. 1. 1 Lands and Damages			14,000	3,500	17,500	
			-----	-----	-----	
TOTAL Lands and Damages			14,000	3,500	17,500	
			-----	-----	-----	
TOTAL Lands and Damages			14,000	3,500	17,500	
			-----	-----	-----	
03- B/30 Planning, Engineering and Design						
03- B/30.01 Planning, Engineering and Design						
03- B/30.01. 1 Planning, Engineering and Design			1,135,000	0	1,135,000	
			-----	-----	-----	
TOTAL Planning, Engineering and Design			1,135,000	0	1,135,000	
			-----	-----	-----	
TOTAL Planning, Engineering and Design			1,135,000	0	1,135,000	
			-----	-----	-----	
03- B/31 Construction Management (S&I)						
03- B/31. 1 Construction Management (S&I)						
03- B/31. 1. 1 Construction Management (S&I)			908,000	0	908,000	
			-----	-----	-----	
TOTAL Construction Management (S&I)			908,000	0	908,000	
			-----	-----	-----	
TOTAL Construction Management (S&I)			908,000	0	908,000	
			-----	-----	-----	
TOTAL Non-Construction Cost			2,057,000	3,500	2,060,500	
			-----	-----	-----	
TOTAL 40-Foot Project Depth			14,256,069	1,705,860	15,961,929	

Thu 26 Sep 2002

U.S. Army Corps of Engineers

TIME 07:47:50

Eff. Date 10/01/01

PROJECT JHF210: Jacksonville Hbr GRR Study - Recommended NED Plan

ERROR REPORT

ERROR PAGE 1

No errors detected...

* * * END OF ERROR REPORT * * *

ATTACHMENT B

**CORE BORING LOGS, LABORATORY REPORTS AND GEOLOGICAL
PROFILES**

Hole No. CB-JH2001-1

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1
1. PROJECT Jacksonville Harbor Turning Basin	10. SIZE AND TYPE OF BIT 1-3/8" Splitspoon; 6" Fishtail		
2. LOCATION (Coordinates or Station) X=306,075 Y=2191,432	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLLW		
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Failings 1500		
4. HOLE NO. (As shown on drawing title and file number) CB-JH2001-1	13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 11 undisturbed:		
5. NAME OF DRILLER Pickett	14. TOTAL NUMBER OF CORE BOXES 1		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED	15. ELEVATION GROUND WATER Tidal		
7. THICKNESS OF BURDEN Ft.	16. DATE HOLE STARTED COMPLETED 8/30/01 8/30/01		
8. DEPTH DRILLED INTO ROCK Ft.	17. ELEVATION TOP OF HOLE -33.1 Ft.		
9. TOTAL DEPTH OF HOLE 18.0 Ft.	18. TOTAL CORE RECOVERY FOR BORING 67 %		
		19. SIGNATURE OF GEOLOGIST Carolyn Moores	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ .5
-33.1	0.0					-33.1	0
			Silt, some fine sand, calcareous, dark grayish brown. (ML)	0	0	Splitspoon	0
					23	Splitspoon	0
					67	Splitspoon	0
					87	Splitspoon	0
-38.6	5.5		Clay, firm, light gray (CL)				0
					67	Splitspoon	8
					57	Splitspoon	6
					67	Splitspoon	11
					80	Splitspoon	6
					100	Splitspoon	17
					100	Splitspoon	25
			15.0' to 18.0', little coarse sand and sand sized shell.				12
					100	Splitspoon	13
					100	Splitspoon	6
-51.1	18.0						16
			Core Log Edited by Bob Ross. Laboratory Analysis Core Boring locations and elevations determined using a differential GPS using monument STJ0-213 as the base station. 462,304 2,191,607			140# hammer with 30" drop used on a 2.0' splitspoon (1-3/8" I.D. x 2" O.D.). Soils are visually classified in accordance with the Unified Soils Classification System.	20

Hole No. CB-JH2001-2

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1
1. PROJECT Jacksonville Harbor Turning Basin	10. SIZE AND TYPE OF BIT 1-3/8" Splitspoon; 6" Fishtail		
2. LOCATION (Coordinates or Station) X=305,677 Y=2189,888	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLLW		
3. DRILLING AGENCY Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Failings 1500		
4. HOLE NO. (As shown on drawing title and file number) CB-JH2001-2	13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 2 undisturbed:		
5. NAME OF DRILLER Pickett	14. TOTAL NUMBER OF CORE BOXES 1		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED	15. ELEVATION GROUND WATER Tidal		
7. THICKNESS OF BURDEN Ft.	16. DATE HOLE STARTED COMPLETED 9/05/01 9/05/01		
8. DEPTH DRILLED INTO ROCK Ft.	17. ELEVATION TOP OF HOLE -36.4 Ft.		
9. TOTAL DEPTH OF HOLE 14.0 Ft.	18. TOTAL CORE RECOVERY FOR BORING 66 %		
	19. SIGNATURE OF GEOLOGIST James Arthur, Professional Geologist		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS / 5'
-36.4	0.0					-36.4	0
-36.9	.5		SAND, fine sand, calcareous, dark gray. (SM)	100	1	Splitspoon	50
-38.0	1.6		LIMESTONE, very hard, fossiliferous, moderately weathered, slightly pitted and vuggy, gray.	38		4" Diamond HP = 400 psi WR = 0% DT = 18 min.	2.5
-39.6	3.2		SAND, fine to medium sand, calcareous, creosote order, black. (SC)	13			
			LIMESTONE, moderately hard, highly weathered, fragmented, light gray.			-40.9	5
-41.6	5.2						
-42.2	5.8		SAND, medium to coarse calcareous sand, some fine to coarse limestone gravel fragment, creosote order, gray. (SM)	54		4" Diamond HP = 400 psi WR = 0% DT = 21 min.	7.5
			LIMESTONE, hard, fossiliferous, highly weathered, pitted, some small to large vugs, light gray.	8			
-44.4	8.0		CLAY, stiff, calcareous, olive gray. (CL)			-45.9	10
				100		4" Diamond HP = 350 psi WR = 0% DT = 7 min.	12.5
				0			
						-48.9	
				100	2	Splitspoon	10
-50.4	14.0					-50.4	21
							36
			Core Log Edited by Bob Ross. Laboratory Analysis Core Boring locations and elevations determined using a differential GPS using monument STJO-213 as the base station.			140# hammer with 30" drop used on a 2.0' splitspoon (1-3/8" I.D. x 2" O.D.). Soils are visually classified in accordance with the Unified Soils Classification System.	15
			461,906				17.5
			2,190,063				20
							22.5

Hole No. CB-JH2001-3

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1
	1. PROJECT Jacksonville Harbor Turning Basin	10. SIZE AND TYPE OF BIT 1-3/8" Splitspoon; 6" Fishtail	
2. LOCATION (Coordinates or Station) X=305,586 Y=2190,928	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLLW	12. MANUFACTURER'S DESIGNATION OF DRILL Failings 1500	
3. DRILLING AGENCY Savannah District	13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 5 undisturbed:	14. TOTAL NUMBER OF CORE BOXES 1	
4. HOLE NO. (As shown on drawing title and file number) CB-JH2001-3	15. ELEVATION GROUND WATER Tidal	16. DATE HOLE STARTED COMPLETED 9/05/01 9/05/01	
5. NAME OF DRILLER Pickett	17. ELEVATION TOP OF HOLE -40.9 Ft.	18. TOTAL CORE RECOVERY FOR BORING 72 %	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED	19. SIGNATURE OF GEOLOGIST James Arthur, Professional Geologist		
7. THICKNESS OF BURDEN Ft.			
8. DEPTH DRILLED INTO ROCK Ft.			
9. TOTAL DEPTH OF HOLE 10.4 Ft.			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/5'	
-40.9	0.0					-40.9	0	
			SAND, fine sand, clayey, trace of sand sized shell, dark olive gray. (SC)	50	1	Splitspoon	0	
							-43.9	0
					100	2	Splitspoon	0
							-45.4	0
					100	3	Splitspoon	0
						-46.9	0	
				100	4	Splitspoon	0	
						-48.4	0	
				50	5	Splitspoon	2	
							2	
							1	
							0	
							0	
-51.3	10.4					-51.3	0	
			Core Log Edited by Bob Ross. Laboratory Analysis Core Boring locations and elevations determined using a differential GPS using monument STJ0-213 as the base station.			140# hammer with 30" drop used on a 2.0' splitspoon. (1-3/8" I.D. x 2" O.D.). Soils are visually classified in accordance with the Unified Soils Classification System.	12.5	
			461,815				15	
			2,191,103				17.5	
							20	
							22.5	

Hole No.CB-JH2001-4

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 2
	1. PROJECT Jacksonville Harbor, Widener		10. SIZE AND TYPE OF BIT 1-3/8" Splitspoon; 6" Fishtail
2. LOCATION (Coordinates or Station) X=301,902 Y=2197,183		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLLW	
3. DRILLING AGENCY Savannah District		12. MANUFACTURER'S DESIGNATION OF DRILL Failings 1500	
4. HOLE NO. (As shown on drawing title and file number) CB-JH2001-4		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 12 undisturbed:	
6. NAME OF DRILLER Pickett		14. TOTAL NUMBER OF CORE BOXES 2	
8. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		15. ELEVATION GROUND WATER Tidal	
7. THICKNESS OF BURDEN Ft.		16. DATE HOLE STARTED COMPLETED 9/06/01 9/06/01	
8. DEPTH DRILLED INTO ROCK Ft.		17. ELEVATION TOP OF HOLE -20.1 Ft.	
9. TOTAL DEPTH OF HOLE 30.2 Ft.		18. TOTAL CORE RECOVERY FOR BORING 53 %	
19. SIGNATURE OF GEOLOGIST James Arthur, Professional Geologist			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/ft	
-20.1	0.0					-20.1	0	
			SAND, fine sand, dark gray. (SC)	0		Splitspoon	0	
							-21.6	0
								0
							-23.1	0
								0
								0
-24.6	4.5				67	1	Splitspoon	0
								0
								0
								0
								0
								0
			SAND, fine sand, trace clay, dark gray. (SM)	100	2	Splitspoon	2	
-26.1	6.0		Below 6.0', gray and brown.			-26.1	4	
							0	
							5	
							17	
-27.6	7.5		Below 7.5', brown.			-27.6	14	
							9	
							14	
							6	
							7	
-30.6	10.5					-30.6	9	
			SAND, fine sand, light gray. (SP)	27	6	Splitspoon	6	
							4	
							4	
							4	
			SAND, medium to coarse sand, some clay, trace fine gravel, light yellowish brown. (SM)	47	7	Splitspoon	2	
-33.6	13.5					-33.6	14	
							16	
							21	
							19	
-35.6	15.5		SAND, medium to coarse sand, trace fine to coarse gravel, light yellowish brown. (SC)	60	8	Splitspoon	9	
							8	
							7	
							10	
							16	
							16	
-38.1	18.0		GRAVEL, fine to coarse gravel limestone gravel, clayey, some sand, light yellowish brown. (GC)	0		Splitspoon	21	
							13	
							18	
							21	
							13	
-39.6	19.5		CLAY, some medium to coarse calcareous sand, trace fine limestone gravel, light brown and olive gray. (CL)	73	10	Splitspoon	23	
			Below 19.5', light olive gray, no sand or gravel.				14	
							11	
							13	
-41.1	21.0		Below 21.0', light gray, calcareous.			-41.1	11	
							13	
							55	
-42.6	22.5					-42.6		

(continued)

DRILLING LOG (Cont. Sheet)		ELEVATION TOP OF HOLE		SHEET 2 OF 2			
PROJECT			INSTALLATION				
Jacksonville Harbor, Widener			Jacksonville District				
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/5'
-42.6	22.5					-42.6	
			LIMESTONE, very hard, fossiliferous, moderately weathered, moderately to highly pitted, fragmented, light gray. Large amount of soft to very stiff fat clay, yellowish-brown.	100 RQD 0		4" Diamond HP = 400 psi WR = 0%	22.5
-45.2	25.1		1 inch seam of silt AT 25.1'			-44.3	25
-45.8	25.7		Low angle open joints @ 24.2', 24.3', 24.4', 24.8', 25.2', 25.5', & 25.7'.	38 RQD 13		4" Diamond HP = 450 WR = 0% DT = 6 min.	27.5
-47.7	27.6		Below 27.6' highly weathered, highly pitted and vuggy with small voids, very hard, fragmented from 27.6 to 27.9, light brownish gray.			-48.3	30
-49.1	29.0		Low angle open joints @ 27.6', 27.7', 27.9', 29.0', 29.4', 29.8', & 30.2'.	100 RQD 89		4" Diamond HP = 300 psi WR = 0% DT = 11 min.	
-50.3	30.2					-50.3	
			Core Log Edited by Bob Ross. Laboratory Analysis Core Boring locations and elevations determined using a differential GPS using monument STJO-213 as the base station.			140# hammer with 30" drop used on a 2.0' splitspoon (1-3/8" I.D. x 2" O.D.). Soils are visually classified in accordance with the Unified Soils Classification System.	32.5
			458,130				37.5
			2,197,358				40
							42.5
							45
							47.5
							50

Hole No. CB-JH2001-5

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1
1. PROJECT Jacksonville Harbor, Widener		10. SIZE AND TYPE OF BIT 1-3/8" Splitspoon; 6" Fishtail	
2. LOCATION (Coordinates or Station) X=301,870 Y=2198,000		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLLW	
3. DRILLING AGENCY Savannah District		12. MANUFACTURER'S DESIGNATION OF DRILL Failings 1500	
4. HOLE NO. (As shown on drawing title and file number) CB-JH2001-5		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 8 undisturbed:	
6. NAME OF DRILLER Pickett		14. TOTAL NUMBER OF CORE BOXES 1	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		16. ELEVATION GROUND WATER Tidal	
7. THICKNESS OF BURDEN Ft.		18. DATE HOLE STARTED COMPLETED 9/07/01 9/07/01	
8. DEPTH DRILLED INTO ROCK Ft.		17. ELEVATION TOP OF HOLE -31.7 Ft.	
9. TOTAL DEPTH OF HOLE 18.5 Ft.		18. TOTAL CORE RECOVERY FOR BORING 73 %	
		19. SIGNATURE OF GEOLOGIST James Arthur, Professional Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/5'
-31.7	0.0					-31.7	0
		[Dotted Pattern]	SAND, fine sand, gray. (SP)	27	1	Splitspoon	9
-33.2	1.5					-33.2	15
		[Dotted Pattern]	SAND, fine to medium sand, light brown, white, red. (SM)	67	2	Splitspoon	12
-34.7	3.0					-34.7	18
		[Dotted Pattern]	SAND, fine sand, some fine to coarse rounded gravel, olive gray. (SC)	53	3	Splitspoon	29
-36.2	4.5					-36.2	7
		[Diagonal Lines /]	CLAY, trace limestone gravel to gravelly, olive gray. (CH)	100	4	Splitspoon	6
-37.7	6.0					-37.7	6
		[Diagonal Lines /]	Gravelly from 4.5' to 5.0'. Below 6.0', partially indurated, trace limestone gravel.	33	6	Splitspoon	7
-39.2	7.5					-39.2	2
		[Diagonal Lines /]	Soft zone at 7.5'. Below 7.5', gravelly, some medium to coarse sand, light gray.	100	7	Splitspoon	9
-41.9	10.2					-41.9	4
		[Horizontal Lines]	LIMESTONE, hard, fossiliferous, moderately weathered, pitted and with small vugs, fragmented to 11.1', light brownish gray.	62	8	Splitspoon	12
-42.8	11.1					-42.8	14
		[Horizontal Lines]	From 11.1' to 12.2', very hard. LIMESTONE, soft to moderately hard, fossiliferous, fragmented, light brownish brown.	15		4" Diamond HP = 400 psi WR = 0% DT = 19 min.	22
-43.9	12.2					-43.9	50+
		[Horizontal Lines]				-46.7	10
-47.2	15.5					-47.2	12
		[Vertical Lines]	SILT, calcareous, some clay, light brownish gray. (ML)	26	9	4" Diamond HP = 400 WR = 0% DT = 5 min.	4
-50.2	18.5					-50.2	14
		[Vertical Lines]	Core Log Edited by Bob Ross. Laboratory Analysis Core Boring locations and elevations determined using a differential GPS using monument STJO-213 as the base station.			140# hammer with 30" drop used on a 2.0' splitspoon (1-3/8" I.D. x 2" O.D.). Soils are visually classified in accordance with the Unified Soils Classification System.	22
			458,099			2,198,175	22.5

Hole No. CB-JH2001-10

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1
1. PROJECT Jacksonville Harbor Turning Basin		10. SIZE AND TYPE OF BIT 1-3/8" Splitspoon; 5.5" Fishtail	
2. LOCATION (Coordinates of Station) X=301,480 Y=2198,467		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLLW	
3. DRILLING AGENCY Savannah District		12. MANUFACTURER'S DESIGNATION OF DRILL Failings 1500	
4. HOLE NO. (As shown on drawing title and file number) CB-JH2001-10		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 1 undisturbed:	
6. NAME OF DRILLER J. Pickett		14. TOTAL NUMBER OF CORE BOXES 1	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		16. ELEVATION GROUND WATER Tidal	
7. THICKNESS OF BURDEN Ft.		18. DATE HOLE STARTED COMPLETED 9/07/01 9/07/01	
8. DEPTH DRILLED INTO ROCK Ft.		17. ELEVATION TOP OF HOLE -43.9 Ft.	
9. TOTAL DEPTH OF HOLE 6.7 Ft.		18. TOTAL CORE RECOVERY FOR BORING 81 %	
		19. SIGNATURE OF GEOLOGIST Jim Arthur, Professional Geologist	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS	BLOWS/5'
-43.9	0.0					-43.9	0
-44.9	1.0		GRAVEL, fine to coarse limestone gravel, gray and light gray. (GC)	100	1	Splitspoon	14 50+
-47.9	4.0		LIMESTONE, hard to very hard, fossiliferous, highly weathered and pitted, slightly to moderately vuggy with small vugs, light gray.	33 RQD 27		4" Diamond HP = 400psi WR = 0% DT = 8 min.	2.5
-50.6	6.7		CLAY, stiff to very stiff, calcareous, olive gray to light gray. (CH)	100 RQD 0		4" Diamond HP = 400 psi WR = 0% DT = 6 min.	5
			<p>Core Log Edited by Bob Ross.</p> <p>Laboratory Analysis</p> <p>Core Boring locations and elevations determined using a differential GPS using monument STJ0-213 as the base station.</p> <p style="font-size: 24px; text-align: center;">457,709</p> <p style="font-size: 24px; text-align: center;">2,198,642</p>			<p>140# hammer with 30" drop used on a 2.0' splitspoon (1-3/8" I.D. x 2" O.D.).</p> <p>Soils are visually classified in accordance with the Unified Soils Classification System.</p>	7.5 10 12.5 15 17.5 20 22.5

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1
1. PROJECT JACKSONVILLE HARBOR, 38 ft. PROJECT		10. SIZE AND TYPE OF BIT See Remarks	
2. LOCATION (Coordinates or Station) X=309,135 Y=2208,105		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW (FEET)	
3. DRILLING AGENCY Corps of Engineers		12. MANUFACTURER'S DESIGNATION OF DRILL Sprague & Henwood	
4. HOLE NO. (As shown on drawing title and file number) CB-90		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0	
5. NAME OF DRILLER E. Hayes		14. TOTAL NUMBER OF CORE BOXES 1	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		15. ELEVATION GROUND WATER TIDAL	
7. THICKNESS OF BURDEN Ft.		16. DATE HOLE STARTED COMPLETED 2/4/71 2/4/71	
8. DEPTH DRILLED INTO ROCK 0 Ft.		17. ELEVATION TOP OF HOLE -36.0 Ft.	
9. TOTAL DEPTH OF HOLE 10.5 Ft.		18. TOTAL CORE RECOVERY FOR BORING 50 %	
		19. SIGNATURE OF GEOLOGIST D. Foster	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel	BLOWS/FT
-36.0	.0					-36.0	0
-37.6	1.6		SAND, fine to medium quartz, tan, gray (SP)	50	1	2" I.D. Spoon	2
			LIMESTONE, hard, sandy, dense, fossiliferous, massive, permeable, fractured, buff moderately hard -37.6 to -38.0 very hard, very fossiliferous -38.0 to -38.2	75		DIAMOND NX	28
						-43.0	2.5
				22		DIAMOND NX	7.5
-46.5	10.5					-46.5	10
			NOTES: 1. NX casing set to -39.6 2. While setting casing rock was encountered at elevation -36.0. This boring probably penetrates a vertical fracture or filled depression in the rock surface.			300# Hammer with 18" drop used on 2" I.D. Spoon	12.5
							15
							17.5
							20
							22.5

DRILLING LOG		DIVISION	INSTALLATION		SHEET 1 OF 1		
1. PROJECT Jacksonville Harbor, 38-ft. PROJECT		South Atlantic	Jacksonville District				
2. LOCATION (Coordinates or Station) X=307,783 Y=2207,278			10. SIZE AND TYPE OF BIT See Remarks				
3. DRILLING AGENCY Corps of Engineers			11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW (FEET)				
4. HOLE NO. (As shown on drawing title and file number) CB-87			12. MANUFACTURER'S DESIGNATION OF DRILL Sprague & Henwood 40-c				
5. NAME OF DRILLER E. Hayes			13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0				
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			14. TOTAL NUMBER OF CORE BOXES 1				
7. THICKNESS OF BURDEN Ft.			15. ELEVATION GROUND WATER TIDAL				
8. DEPTH DRILLED INTO ROCK 0 Ft.			16. DATE HOLE STARTED COMPLETED 1/21/71 1/21/71				
9. TOTAL DEPTH OF HOLE 14.2 Ft.			17. ELEVATION TOP OF HOLE -34.1 Ft.				
			18. TOTAL CORE RECOVERY FOR BORING 60 %				
			19. SIGNATURE OF GEOLOGIST D. Foster				
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel	BLOWS/FT
-34.1	0		SAND, fine to medium quartz, slightly clayey, green, tan (SP-SC)	100	1	2" I.D. SPOON	0 PUSHED ↓ 2.5 1 1
-38.3	4.2		LIMESTONE, hard, dense, porous, massive, slightly fossiliferous, well cemented, buff	50		DIAMOND NX	5 7.5
-39.1	5.0		moderately hard -38.3 to -39.1				
				40		DIAMOND NX	10 12.5
-47.3	13.2		moderately hard -47.3 to -48.3				
-48.3	14.2					300 # Hammer with 18" drop used on 2" I.D. Spoon	15 17.5 20 22.5

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District		SHEET 1 OF 1	
1. PROJECT Jacksonville Harbor--TERMINAL CUT				10. SIZE AND TYPE OF BIT See Remarks			
2. LOCATION (Coordinates or Station) X=308,668 Y=2207,527				11. DATUM FOR ELEVATION SHOWN (TBM or HSL) MLW (FEET)			
3. DRILLING AGENCY Corps of Engineers				12. MANUFACTURER'S DESIGNATION OF DRILL Sprague and Henwood			
4. HOLE NO. (As shown on drawing title and the number) CB-42-15				13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0			
5. NAME OF DRILLER C. Mason				14. TOTAL NUMBER OF CORE BOXES 1			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				15. ELEVATION GROUND WATER TIDAL			
7. THICKNESS OF BURDEN Ft.				16. DATE HOLE STARTED COMPLETED 5/2/60 5/2/60			
8. DEPTH DRILLED INTO ROCK 0 Ft.				17. ELEVATION TOP OF HOLE -36.4 Ft.			
9. TOTAL DEPTH OF HOLE 15.9 Ft.				18. TOTAL CORE RECOVERY FOR BORING 75 %			
				19. SIGNATURE OF GEOLOGIST K.R. Hess			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel	BLOWS/ ↓
-36.4	.0					-36.4	0
		SAND, quartz, medium, silty, cream (SM)					SETTLED
-38.4	2.0	LIMESTONE, moderately hard, weathered, sandy, chalky, many voids filled with sand and silt from -40.4 to -45.3, massive, hard streaks		58	1	2" I.D. Spoon	9
							7
							2
							5
							FELL
							2
							1
				61	2	2" I.D. Spoon	1
							6
							6
							11
							24
				90	3	2" I.D. Spoon	27
							32
							15
							38
-52.3	15.9					-52.3	
						300# Hammer with 18" drop used on 2" I.D. Spoon	17.5
							20
							22.5

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District		SHEET 1 OF 1
1. PROJECT JACKSONVILLE HARBOR MAINT DREDGING			10. SIZE AND TYPE OF BIT See Remarks		
2. LOCATION (Coordinates or Station) X=308,862 Y=2207,971			11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW		
3. DRILLING AGENCY Corps of Engineers			12. MANUFACTURER'S DESIGNATION OF DRILL Failing 1500		
4. HOLE NO. (As shown on drawing title and file number) CB-J91-12			13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0		
5. NAME OF DRILLER M. Whitson			14. TOTAL NUMBER OF CORE BOXES 1		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			15. ELEVATION GROUND WATER Tidal		
7. THICKNESS OF BURDEN 0 Ft.			16. DATE HOLE STARTED COMPLETED 7/22/91 7/22/91		
8. DEPTH DRILLED INTO ROCK 0 Ft.			17. ELEVATION TOP OF HOLE -37.9 Ft.		
9. TOTAL DEPTH OF HOLE 5.0 Ft.			18. TOTAL CORE RECOVERY FOR BORING 100% %		
			19. SIGNATURE OF GEOLOGIST R. Rios		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel	BLOWS/ft
-37.9	.0					-37.9	0
		[Pattern]	SAND, fine to medium grained, quartz, little silt, contains lenses of black sand up to 1/4", organic traces. Below elev. -40.9 some clay, dark gray to light gray to yellowish brown (SP-SC)	100	1	2" SAMPLER	5
-40.9	3.0						7
		[Pattern]					17
-42.9	5.0				2	-42.9	6
			Soils are field visually classified in accordance with the Unified Soils Classification System.			Note: 300# hammer with 18" drop used on 2" I.D. sampler # bls/ft. refers to the number of hammer blows required to advance a 2" sampler (2" I.D. x 2-1/2" O.D.) one foot. The sampler is 5' long and driven continuously 5' where possible.	5
							7.5
							10
							12.5
							15
							17.5
							20
							22.5

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District		SHEET 1 OF 1
1. PROJECT JACKSONVILLE HARBOR MAINT DREDGING			10. SIZE AND TYPE OF BIT See Remarks		
2. LOCATION (Coordinates or Station) X=303,665 Y=2203,830			11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW		
3. DRILLING AGENCY Corps of Engineers			12. MANUFACTURER'S DESIGNATION OF DRILL Failing 1500		
4. HOLE NO. (As shown on drawing title and file number) CB-J91-14			13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0		
5. NAME OF DRILLER M. Whitson			14. TOTAL NUMBER OF CORE BOXES 1		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			15. ELEVATION GROUND WATER Tidal		
7. THICKNESS OF BURDEN 0 Ft.			16. DATE HOLE STARTED COMPLETED 7/19/91 7/19/91		
8. DEPTH DRILLED INTO ROCK 0 Ft.			17. ELEVATION TOP OF HOLE -37.6 Ft.		
9. TOTAL DEPTH OF HOLE 8.0 Ft.			18. TOTAL CORE RECOVERY FOR BORING 100% %		
			19. SIGNATURE OF GEOLOGIST R. Rios		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel	BLOWS/ft
-37.6	.0					-37.6	0
		[Stippled Pattern]	SAND, fine to medium grained, quartz, light gray (SP)	100	1	2" SAMPLER	2 3 3 4 5
-42.6	5.0		SAND, medium grained, quartz, contains shell fragments			-42.6	5
-44.6	7.0		from -44.6' to -45.6' rock fragments, very light gray (SP)	100	2	2" SAMPLER	3 4
-45.6	8.0					-45.6	7.5
			Soils are field visually classified in accordance with the Unified Soils Classification System.			Note: 300# hammer with 18 in. drop used on 2 in. I.D. sampler # bls/ft. refers to the number of hammer blows required to advance a 2 in. sampler (2" I.D. x 2-1/2" O.D.) one foot. The sampler is 5 ft. long and driven continuously 5 ft. where possible.	10 12.5 15 17.5 20 22.5

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1
1. PROJECT JACKSONVILLE HARBOR, 38 ft. PROJECT	10. SIZE AND TYPE OF BIT See Remarks		
2. LOCATION (Coordinates or Station) X=302,229 Y=2201,132	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW (FEET)		
3. DRILLING AGENCY Corps of Engineers	12. MANUFACTURER'S DESIGNATION OF DRILL Sprague & Henwood		
4. HOLE NO. (As shown on drawing title and file number) CB-93	13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0		
5. NAME OF DRILLER E. Hayes	14. TOTAL NUMBER OF CORE BOXES 1		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED	15. ELEVATION GROUND WATER TIDAL		
7. THICKNESS OF BURDEN Ft.	16. DATE HOLE STARTED COMPLETED 2/11/71 2/11/71		
8. DEPTH DRILLED INTO ROCK 0 Ft.	17. ELEVATION TOP OF HOLE -35.5 Ft.		
9. TOTAL DEPTH OF HOLE 10.0 Ft.	18. TOTAL CORE RECOVERY FOR BORING 68 %		
	19. SIGNATURE OF GEOLOGIST D. Foster		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel	BLOWS/ft
-35.5	.0					-35.5	0
			SAND, fine to medium quartz, slightly silty, dark gray (SP-SM)				4
							SETTLED
-37.5	2.0		LIMESTONE, soft, (easily crumbled by fingers), slightly fossiliferous, poorly cemented, sample broken by spoon, layers and pockets of slightly silty to silty sand -37.5 to -40.5	35	1	2" I.D. Spoon	12
							3
							17
							5
							13
							21
				100	2	2" I.D. Spoon	24
							7.5
							21
							23
-45.5	10.0					-45.5	10
						300# Hammer with 18" drop used on 2" I.D. Spoon	
							12.5
							15
							17.5
							20
							22.5

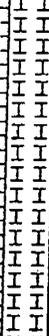
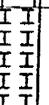
DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1
1. PROJECT JACKSONVILLE HARBOR, 38 ft. PROJECT		10. SIZE AND TYPE OF BIT See Remarks		
2. LOCATION (Coordinates or Station) X=301,547 Y=2197,646		11. DATUM FOR ELEVATION SHOWN (TBM or HSL) MLW (FEET)		
3. DRILLING AGENCY Corps of Engineers		12. MANUFACTURER'S DESIGNATION OF DRILL Sprague & Henwood		
4. HOLE NO. (As shown on drawing title and file number) CB-94		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0		
5. NAME OF DRILLER E. Hayes		14. TOTAL NUMBER OF CORE BOXES 1		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		15. ELEVATION GROUND WATER TIDAL		
7. THICKNESS OF BURDEN Ft.		16. DATE HOLE STARTED COMPLETED 2/17/71 2/17/71		
8. DEPTH DRILLED INTO ROCK 0 Ft.		17. ELEVATION TOP OF HOLE -37.3 Ft.		
9. TOTAL DEPTH OF HOLE 9.0 Ft.		18. TOTAL CORE RECOVERY FOR BORING 49 %		
		19. SIGNATURE OF GEOLOGIST D. Foster		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel	BLOWS/ ft
-37.3	.0					-37.3	0
		[Pattern]	SAND, fine to medium quartz, slightly silty, slightly clayey, black, brown, thin beds of moderately hard limestone throughout (SP-SM)		1		17
-40.3	3.0			40		2" I.D. Spoon	1
		[Pattern]	LIMESTONE, soft, with moderately hard beds, poorly cemented, fossiliferous, clay seams, solutioned, sandy (medium quartz), massive, dense, broken into gravel size fragments by spoon, tan.		2		6
		[Pattern]				-42.3	9
		[Pattern]	hard, impermeable, slightly fractured -44.3 to -45.0	75	3	2" I.D. Spoon	15
-44.3	7.0					-44.3	35
-45.0	7.7			40		DIAMOND NX	7.5
-46.3	9.0					-46.3	
						300# Hammer with 18" drop used on 2" I.D. Spoon	10
							12.5
							15
							17.5
							20
							22.5

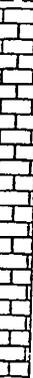
Hole No. CB-JHM96-7

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1
1. PROJECT Jacksonville Harbor Maintenance		10. SIZE AND TYPE OF BIT See Remarks	
2. LOCATION (Coordinates or Station) X=301,172 Y=2,197,126		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW (FEET)	
3. DRILLING AGENCY Savannah District		12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314	
4. HOLE NO. (As shown on drawing title and file number) CB-JHM96-7		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 2 undisturbed: 0	
5. NAME OF DRILLER Claude Robbins		14. TOTAL NUMBER OF CORE BOXES 1	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		15. ELEVATION GROUND WATER TIDAL	
7. THICKNESS OF BURDEN Ft.		16. DATE HOLE STARTED COMPLETED 2/10/96 2/10/96	
8. DEPTH DRILLED INTO ROCK 0 Ft.		17. ELEVATION TOP OF HOLE -36.4 Ft.	
9. TOTAL DEPTH OF HOLE 10.0 Ft.		18. TOTAL CORE RECOVERY FOR BORING 41 %	
		19. SIGNATURE OF Geologist Jim Arthur	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel	BLOWS/FT
-36.4	0					-36.4	0
		SAND, gray poorly graded fine quartz sand (SP)					2
				34	1D	3 inch sampler	4
							6
							7
							5
							6
							5
							7
							8
							14
							7.5
							10
							12.5
							15
						17.5	
						20	
						22.5	
-46.4	10.0		NOTE: Soils are field visually classified in accordance with the Unified Soils Classification System. Samples recovered using a 300# hammer with 30" drop used on a 3 inch diameter 5 foot long solid spoon SAMPLE LABORATORY ELEVATION CLASSIFICATION -36.4 to -41.4 SP Elevation based on "LIONS" monument			Casing set to elevation -36.7 feet	

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District		SHEET 1 OF 1		
1. PROJECT Jacksonville Harbor			10. SIZE AND TYPE OF BIT See Remarks				
2. LOCATION (Coordinates or Station) X=302,393 Y=2198,776			11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW (FEET)				
3. DRILLING AGENCY Corps of Engineers			12. MANUFACTURER'S DESIGNATION OF DRILL Sprague and Henwood				
4. HOLE NO. (As shown on drawing title and file number) CB-42-17			13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0				
5. NAME OF DRILLER J. King			14. TOTAL NUMBER OF CORE BOXES 1				
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			15. ELEVATION GROUND WATER TIDAL				
7. THICKNESS OF BURDEN Ft.			16. DATE HOLE STARTED COMPLETED 4/20/60 4/20/60				
8. DEPTH DRILLED INTO ROCK 0 Ft.			17. ELEVATION TOP OF HOLE -35.7 Ft.				
9. TOTAL DEPTH OF HOLE 14.3 Ft.			18. TOTAL CORE RECOVERY FOR BORING 40 %				
			19. SIGNATURE OF GEOLOGIST R. Kretschman				
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	NUMBER NUMBER	REMARKS Bit or Barrel	BLOWS/ Ft.
-35.7	.0					-35.7	0
-36.7	1.0		LIMESTONE, hard, dense, gray, sandy (quartz)				
			LIMESTONE, moderately hard, chalky, gray, sandy (quartz)	35	1	2" I.D. SPOON	2.5
						-40.7	5
						2" I.D. Spoon	5
-43.0	7.3					-43.0	20
			LIMESTONE, hard, gray, fossiliferous, sandy, porous, massive, dense	40		DIAMOND NX	7.5
-48.0	12.3					-48.0	10
			LIMESTONE, moderately hard, chalky, gray, sandy (quartz)	100		2" I.D. SPOON	12.5
-50.0	14.3					-50.0	25
						300# Hammer with 48" drop used on 2" I.D. Spoon	38
							15
							17.5
							20
							22.5

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1
1. PROJECT Jacksonville Harbor		10. SIZE AND TYPE OF BIT See Remarks		
2. LOCATION (Coordinates or Station) X=303,764 Y=2193,716		11. DATUM FOR ELEVATION SHOWN (TOP OF HSL) MLW (FEET)		
3. DRILLING AGENCY Corps of Engineers		12. MANUFACTURER'S DESIGNATION OF DRILL Sprague and Henwood		
4. HOLE NO. (As shown on drawing title and file number) CB-42-18		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0		
5. NAME OF DRILLER J. King		14. TOTAL NUMBER OF CORE BOXES 1		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		15. ELEVATION GROUND WATER TIDAL		
7. THICKNESS OF BURDEN Ft.		16. DATE HOLE STARTED COMPLETED 4/19/60 4/19/60		
8. DEPTH DRILLED INTO ROCK 0 Ft.		17. ELEVATION TOP OF HOLE -36.7 Ft.		
9. TOTAL DEPTH OF HOLE 13.3 Ft.		18. TOTAL CORE RECOVERY FOR BORING 80 %		
		19. SIGNATURE OF GEOLOGIST R. Kretchman		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	CORE NUMBER	REMARKS Bit or Barrel	BLOWS/ft
-36.7	.0					-36.7	0
			SAND, medium to fine, quartz, brown, silty (SP)		1		SETTLED
-39.7	3.0			100		2" I.D. SPOON	2.5
			LIMESTONE, moderately hard, chalky, sandy (quartz), slightly shelly		2		26
							27
							5
				100	3	2" I.D. Spoon	60
-43.5	6.8					-43.5	90
			LIMESTONE, hard, gray, fossiliferous, dense, massive, impermeable, sandy (quartz)			DIAMOND NX	7.5
				80			10
							12.5
-50.0	13.3			40		DIAMOND NX	12.5
						300# Hammer with 18" drop used on 2" I.D. Spoon	15
							17.5
							20
							22.5

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1			
1. PROJECT JACKSONVILLE HARBOR, 38 ft. PROJECT			10. SIZE AND TYPE OF BIT See Remarks				
2. LOCATION (Coordinates or District) X=305,001 Y=2192,097			11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW (FEET)				
3. DRILLING AGENCY Corps of Engineers			12. MANUFACTURER'S DESIGNATION OF DRILL Sprague & Henwood				
4. HOLE NO. (As shown on drawing title and file number) CB-97			13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0				
5. NAME OF DRILLER E. Hayes			14. TOTAL NUMBER OF CORE BOXES 1				
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			15. ELEVATION GROUND WATER TIDAL				
7. THICKNESS OF BURDEN Ft.			16. DATE HOLE STARTED COMPLETED 6/26/72 6/26/72				
8. DEPTH DRILLED INTO ROCK 0 Ft.			17. ELEVATION TOP OF HOLE -35.6 Ft.				
9. TOTAL DEPTH OF HOLE 10.0 Ft.			18. TOTAL CORE RECOVERY FOR BORING 30 %				
			19. SIGNATURE OF GEOLOGIST C. Dreves				
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel	BLOWS/ ft.
-35.6	.0		LIMESTONE, hard, gray, massive, dense, thin, beds of stiff clay (material broken up by sample spoon)	30		2" I.D. Spoon	75 83 96 90 63
							0 2.5 5
				30		2" I.D. Spoon	106 94 127 127 43
-45.6	10.0					300# Hammer with 15" drop used on 2" I.D. Spoon	10 12.5 15 17.5 20 22.5

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1
1. PROJECT JACKSONVILLE HARBOR MAINT DREDGING		10. SIZE AND TYPE OF BIT See Remarks	
2. LOCATION (Coordinates or Station) X=304,848 Y=2188,205		11. DATUM FOR ELEVATION SHOWN (TBM or HSL) MLW	
3. DRILLING AGENCY Corps of Engineers		12. MANUFACTURER'S DESIGNATION OF DRILL Failing 1500	
4. HOLE NO. (As shown on drawing title and file number) CB-J91-16		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0	
5. NAME OF DRILLER M. Whitson		14. TOTAL NUMBER OF CORE BOXES 1	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		15. ELEVATION GROUND WATER Tidal	
7. THICKNESS OF BURDEN 0 Ft.		16. DATE HOLE STARTED COMPLETED 7/16/91 7/16/91	
8. DEPTH DRILLED INTO ROCK 0 Ft.		17. ELEVATION TOP OF HOLE -37.1 Ft.	
9. TOTAL DEPTH OF HOLE 7.0 Ft.		18. TOTAL CORE RECOVERY FOR BORING 79% %	
19. SIGNATURE OF GEOLOGIST R. Rios			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel	BLOWS/ft
-37.1	.0					-37.1	0
			CLAY, soft, slight to medium plasticity, sandy (fine grained with SP quartz sand lenses up to 1/2"), little organics, black (CL)	60	1	2" SAMPLER	SETTLE 2.5
-42.1	5.0		SAND, fine grained, quartz, calcareous, clayey, black (SC)	75	2	2" SAMPLER	5 SETTLE
-44.1	7.0		Soils are field visually classified in accordance with the Unified Soils Classification System.			Note: 300# hammer with 18" drop used on 2" I.D. sampler # bls/ft. refers to the number of hammer blows required to advance a 2" sampler (2" I.D. x 2-1/2" O.D.) one foot. The sampler is 5' long and driven continuously 5' where possible.	7.5 10 12.5 15 17.5 20 22.5

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1	
1. PROJECT Jacksonville Harbor		South Atlantic	Jacksonville District		
2. LOCATION (Coordinates or Station) X=304,335 Y=2186,153			10. SIZE AND TYPE OF BIT See Remarks		
3. DRILLING AGENCY Corps of Engineers			11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW (FEET)		
4. HOLE NO. (As shown on drawing title and file number) CB-42-74			12. MANUFACTURER'S DESIGNATION OF DRILL Sprague and Henwood		
5. NAME OF DRILLER C. Mason			13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			14. TOTAL NUMBER OF CORE BOXES 1/4		
7. THICKNESS OF BURDEN Ft.			15. ELEVATION GROUND WATER TIDAL		
8. DEPTH DRILLED INTO ROCK 0 Ft.			16. DATE HOLE STARTED COMPLETED 2/02/67 2/02/67		
9. TOTAL DEPTH OF HOLE 15.0 Ft.			17. ELEVATION TOP OF HOLE -36.2 Ft.		
			18. TOTAL CORE RECOVERY FOR BORING 100 %		
			19. SIGNATURE OF GEOLOGIST J. Knox		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	CORE NUMBER	REMARKS Bit or Barrel	BLOWS/1'
-36.2	.0					-36.2	0
			SILT, organic, very soft, dark, gray, black, brown (OL)	100	1	2" I.D. SPOON	PUSHED
					2	-41.2	5
				100	3	2" I.D. SPOON	PUSHED
-43.5	7.3		SILT, soft, green, gray (ML)			-46.2	10
				100	4	2" I.D. SPOON	PUSHED
-51.2	15.0					-51.2	15
						300# Hammer with 18" drop used on 2" I.D. Spoon	17.5
							20
							22.5

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1
1. PROJECT JACKSONVILLE HARBOR MAINT DREDGING	10. SIZE AND TYPE OF BIT See Remarks		
2. LOCATION (Coordinates or Station) X=304,481 Y=2186,147	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW		
3. DRILLING AGENCY Corps of Engineers	12. MANUFACTURER'S DESIGNATION OF DRILL Failing 1500		
4. HOLE NO. (As shown on drawing title and file number) CB-J91-18	13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0		
5. NAME OF DRILLER M. Whitson	14. TOTAL NUMBER OF CORE BOXES 1		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED	15. ELEVATION GROUND WATER Tidal		
7. THICKNESS OF BURDEN 0 Ft.	16. DATE HOLE STARTED COMPLETED 7/16/91 7/16/91		
8. DEPTH DRILLED INTO ROCK 0 Ft.	17. ELEVATION TOP OF HOLE -34.0 Ft.		
9. TOTAL DEPTH OF HOLE 10.0 Ft.	18. TOTAL CORE RECOVERY FOR BORING 85% %		
	19. SIGNATURE OF GEOLOGIST R. Rios		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel	BLOWS/ft
-34.0	0					-34.0	
-34.2	0.2		PEAT, organic matter, wood pieces, black (Pt)				
			CLAY, very soft, medium plasticity, sandy, lenses of sand up to 1", black (CL)	70	1	2" SAMPLER	
							SETTLE
-39.0	5						
							SETTLE
-41.0	7.0		SAND, fine grained, quartz; clayey, black (SC)	100	2	2" SAMPLER	
-42.0	8.0		CLAY, medium plasticity, soft, traces of fine sand, gray (CL)		3		
-44.0	10.0						
			Soils are field visually classified in accordance with the Unified Soils Classification System.			Note: 300# hammer with 18" drop used on 2" I.D. sampler # bls/ft. refers to the number of hammer blows required to advance a 2" sampler (2" I.D. x 2-1/2" O.D.) one foot. The sampler is 5' long and driven continuously 5' where possible.	

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 1	
1. PROJECT Jacksonville Harbor		South Atlantic		Jacksonville District			
2. LOCATION (Coordinates of Station) X=303,586 Y=2182,551				10. SIZE AND TYPE OF BIT See Remarks			
3. DRILLING AGENCY Corps of Engineers				11. DATUM FOR ELEVATION SHOWN (TBM or MLL) MLW (FEET)			
4. HOLE NO. (As shown on drawing title and file number) CB-42-20				12. MANUFACTURER'S DESIGNATION OF DRILL Sprague and Henwood			
5. NAME OF DRILLER G. M. Lineberger				13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				14. TOTAL NUMBER OF CORE BOXES 1			
7. THICKNESS OF BURDEN Ft.				15. ELEVATION GROUND WATER TIDAL			
8. DEPTH DRILLED INTO ROCK 0 Ft.				16. DATE HOLE STARTED COMPLETED 4/12/60 4/12/60			
8. TOTAL DEPTH OF HOLE 15.3 Ft.				17. ELEVATION TOP OF HOLE -35.4 Ft.			
				18. TOTAL CORE RECOVERY FOR BORING 64 %			
				19. SIGNATURE OF GEOLOGIST R.B. McMullen			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	CORE NUMBER	REMARKS Bit or Barrel	BLOCKS /
-35.4	.0		SILT, organic, dark grayish black (OL)		1		0
-37.4	2.0		LIMESTONE, moderately hard, CLAY, silty, hard, light greenish gray (CL)	100	2	2" I.D. SPOON	10
-40.7	5.3		INDURATED CLAY, hard, light greenish gray, silty, alternating layers of soft material as above	37		DIAMOND NX	61
-45.7	10.3		CLAY, silty, dry, slightly sandy, light greenish gray	60	3	2" I.D. Spoon	23
-50.7	15.3					300# Hammer with 18" drop used on 2" I.D. Spoon	48

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District		SHEET 1 OF 1	
1. PROJECT JACKSONVILLE HARBOR MAINT DREDGING			10. SIZE AND TYPE OF BIT See Remarks			
2. LOCATION (Coordinates of Station) X=303,330 Y=2182,880			11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW			
3. DRILLING AGENCY Corps of Engineers			12. MANUFACTURER'S DESIGNATION OF DRILL Failing 1500			
4. HOLE NO. (As shown on drawing title and file number) CB-J91-20			13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0			
5. NAME OF DRILLER M. Whitson			14. TOTAL NUMBER OF CORE BOXES 1			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			15. ELEVATION GROUND WATER Tidal			
7. THICKNESS OF BURDEN 0 Ft.			16. DATE HOLE STARTED COMPLETED 7/15/91 7/15/91			
8. DEPTH DRILLED INTO ROCK 0 Ft.			17. ELEVATION TOP OF HOLE -33.1 F.L.			
9. TOTAL DEPTH OF HOLE 10.0 Ft.			18. TOTAL CORE RECOVERY FOR BORING 60% %			
			19. SIGNATURE OF GEOLOGIST R. Rios			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel	BLOCKS/ft
-33.1	.0					-33.1	
			CLAY, very soft, very fine sand, medium plasticity, organic matter, black (CL)	60	1	2" SAMPLER	0
			from -38.1 to -42.1 contains lenses of very fine sand, color change from black to dark greenish gray			-38.1	5
				60	2	2" SAMPLER	7.5
-42.1	9.0		CLAY, very soft, slight plasticity, silty, very fine sand, light gray (CL)		3		10
-43.1	10.0						
			Soils are field visually classified in accordance with the Unified Soils Classification System.			Note: 300# hammer with 18" drop used on 2" I.D. sampler	12.5
						# bls/ft. refers to the number of hammer blows required to advance a 2" sampler (2" I.D. x 2-1/2" O.D.) one foot. The sampler is 5' long and driven continuously 5' where possible.	15
							17.5
							20
							22.5

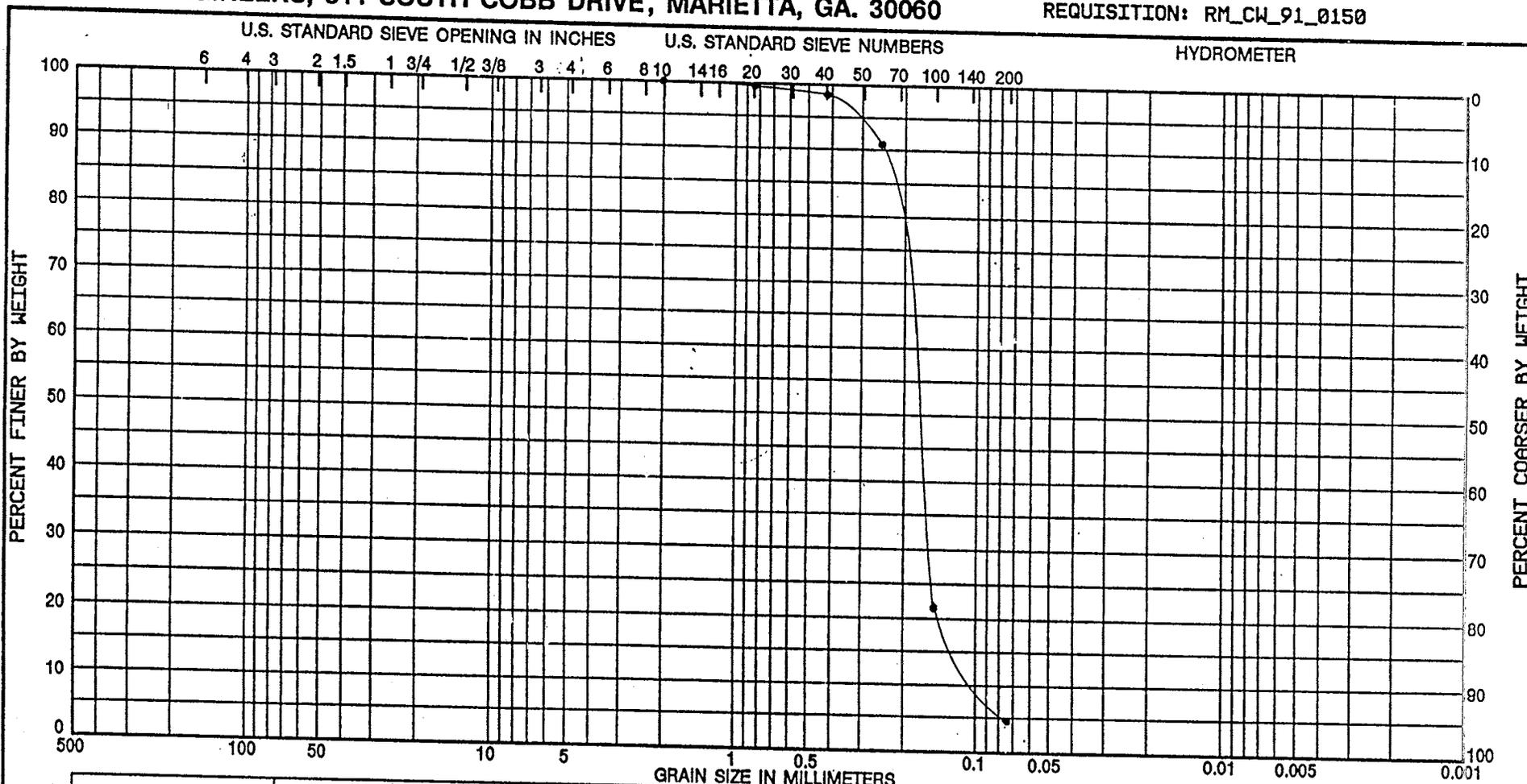
DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1
	1. PROJECT JACKSONVILLE HARBOR MAINT DREDGING	10. SIZE AND TYPE OF BIT See Remarks	
2. LOCATION (Coordinates or Station) X=303,636 Y=2181,482	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW	12. MANUFACTURER'S DESIGNATION OF DRILL Failing 1500	
3. DRILLING AGENCY Corps of Engineers	13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0	14. TOTAL NUMBER OF CORE BOXES 1	
4. HOLE NO. (As shown on drawing title and file number) CB-J91-22	15. ELEVATION GROUND WATER Tidal	16. DATE HOLE STARTED COMPLETED 7/10/91 7/10/91	
5. NAME OF DRILLER M. Whitson	17. ELEVATION TOP OF HOLE -17.6 Ft.	18. TOTAL CORE RECOVERY FOR BORING 70% %	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED	19. SIGNATURE OF GEOLOGIST R. Rios		
7. THICKNESS OF BURDEN 0 Ft.			
8. DEPTH DRILLED INTO ROCK 0 Ft.			
9. TOTAL DEPTH OF HOLE 17.0 Ft.			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel	BLOWS/ft
-17.6	.0		SAND, fine to medium, quartz, little silt, light gray to dark brown (SP)				0
			from -21.1 to -23.6 color change to dark brown and black, contains clay traces and traces of organic matter	70	1	2" SAMPLER	3 10 7 6
-22.6	5.0		SAND, very fine to fine grained, quartz, light gray (SP)				5
-24.6	7.0		SAND, fine, quartz, little silt, dark greenish gray (SM)	46	2	2" SAMPLER	4 3 5
-26.1	8.5		SAND, very fine, quartz, light gray (SP)		3		4
			from -28.6 to -30.6 sand, fine to coarse grained		4		4
-30.6	13.0		LIMESTONE, weathered, breakdown into silty sand	90		2" SAMPLER	5 7 9
-31.4	13.8		SAND, fine, quartz, clayey, dark brown (SC)		5		5
					6		9
-34.1	16.5		CLAY, medium to high plasticity, sandy, dark greenish gray (CH)	100	7	2" SAMPLER	3
-34.6	17.0				8		3
			Soils are field visually classified in accordance with the Unified Soils Classification System.			Note: 300# hammer with 18" drop used on 2" I.D. sampler	17.5 20 22.5

Hole No. CB-42-21

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1
1. PROJECT Jacksonville Harbor		10. SIZE AND TYPE OF BIT See Remarks	
2. LOCATION (Coordinates or Station) X=302,715 Y=2177,627		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW (FEET)	
3. DRILLING AGENCY Corps of Engineers		12. MANUFACTURER'S DESIGNATION OF DRILL Sprague and Henwood	
4. HOLE NO. (As shown on drawing title and file number) CB-42-21		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0	
5. NAME OF DRILLER G.M. Lineberger		14. TOTAL NUMBER OF CORE BOXES 1	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		15. ELEVATION GROUND WATER TIDAL	
7. THICKNESS OF BURDEN Ft.		16. DATE HOLE STARTED COMPLETED 4/14/60 4/14/60	
8. DEPTH DRILLED INTO ROCK 0 Ft.		17. ELEVATION TOP OF HOLE -36.1 Ft.	
8. TOTAL DEPTH OF HOLE 13.7 Ft.		18. TOTAL CORE RECOVERY FOR BORING 32 %	
19. SIGNATURE OF GEOLOGIST R. B. McMullen			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	CORE NUMBER	REMARKS Bit or Barrel	BLOWS/FT
-36.1	.0					-36.1	0
-37.1	1.0		SILT, very clayey, slightly sandy, few limestone fragments (ML)	80		2" I.D SPOON	SETTLED
			LIMESTONE, hard, clayey, very porous, shelly, light greenish gray, soft in streaks	36		DIAMOND NX	
				26		DIAMOND NX	
				17		DIAMOND NX	
-49.8	13.7					-49.8	
						300# Hammer with 18" drop used on 2" I.D. Spoon	



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Sample No.	Depth/Elev	Classification	Nat w%	LL	PL	PI	
1	-38.9/-40.9	Brown poorly graded sand (SP), with a trace of shell and mica.	-	-	-	-	Project JACKSONVILLE HARBOR
		Specific gravity = 2.68					Lab No. 73/4638
							Boring No. CB-J19-12

GRADATION CURVES

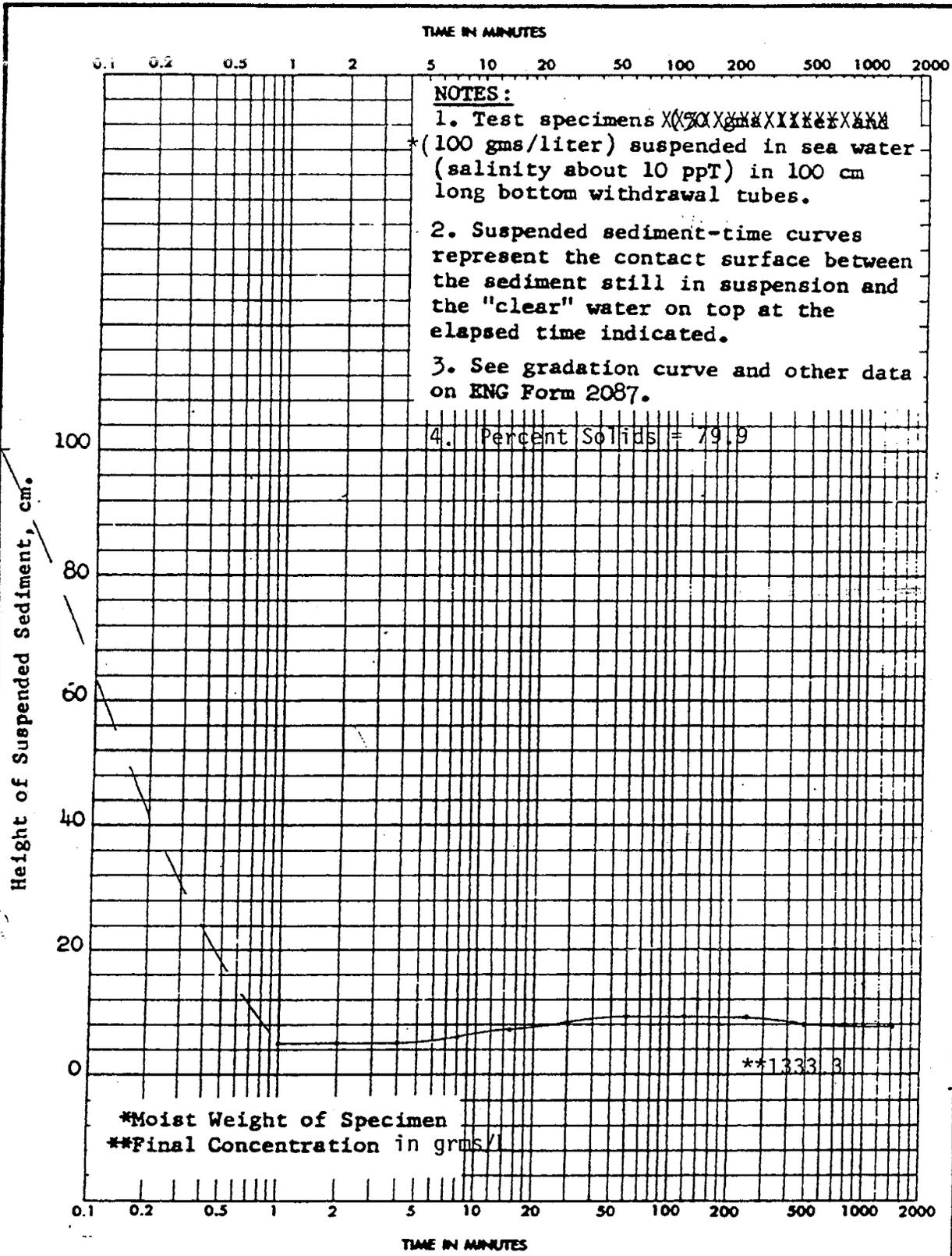
Date 10/02/91



See Sedimentation Rate Time Curve on SAD Form 3023.

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY,
 CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GEORGIA 30060

Reqn. No. RM-CW-91-0150
 Work Order No. 6474



TIME IN MINUTES

0.1 0.2 0.5 1 2 5 10 20 50 100 200 500 1000 2000

NOTES:

1. Test specimens ~~XXXXXX~~ (100 gms/liter) suspended in sea water (salinity about 10 ppt) in 100 cm long bottom withdrawal tubes.
2. Suspended sediment-time curves represent the contact surface between the sediment still in suspension and the "clear" water on top at the elapsed time indicated.
3. See gradation curve and other data on ENG Form 2087.
4. Percent Solids = 79.9

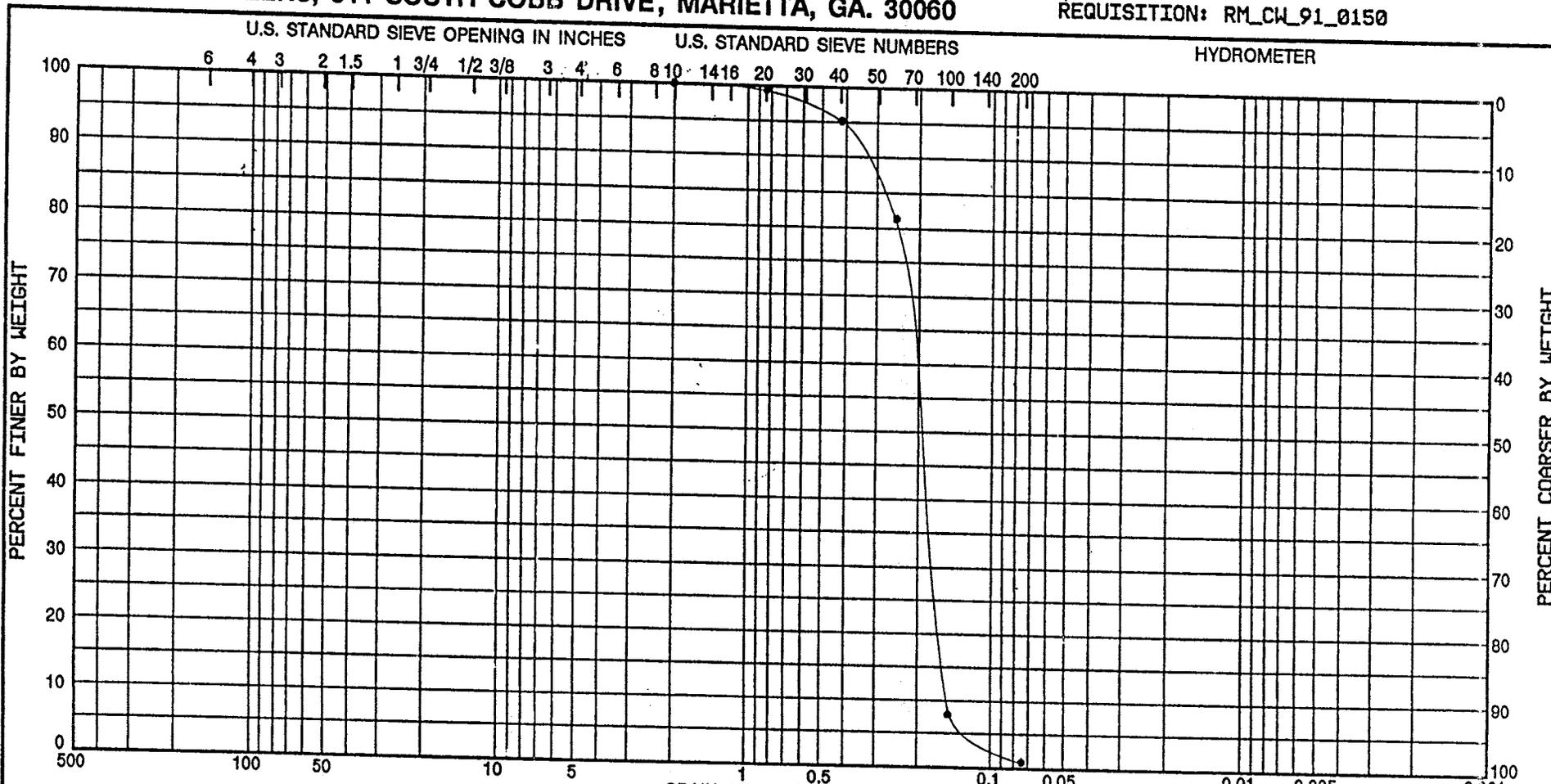
Height of Suspended Sediment, cm.

*Moist Weight of Specimen
 **Final Concentration in grms/l

0.1 0.2 0.5 1 2 5 10 20 50 100 200 500 1000 2000

TIME IN MINUTES

PROJECT Jacksonville Harbor			
AREA Lab No. 73/4638			
BORING NO. CB-J91-12	SAMPLE NO. 1	DEPTH EL -38.9/-40.9	DATE 8 Oct 91
SUSPENDED SEDIMENT-TIME CURVES			



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

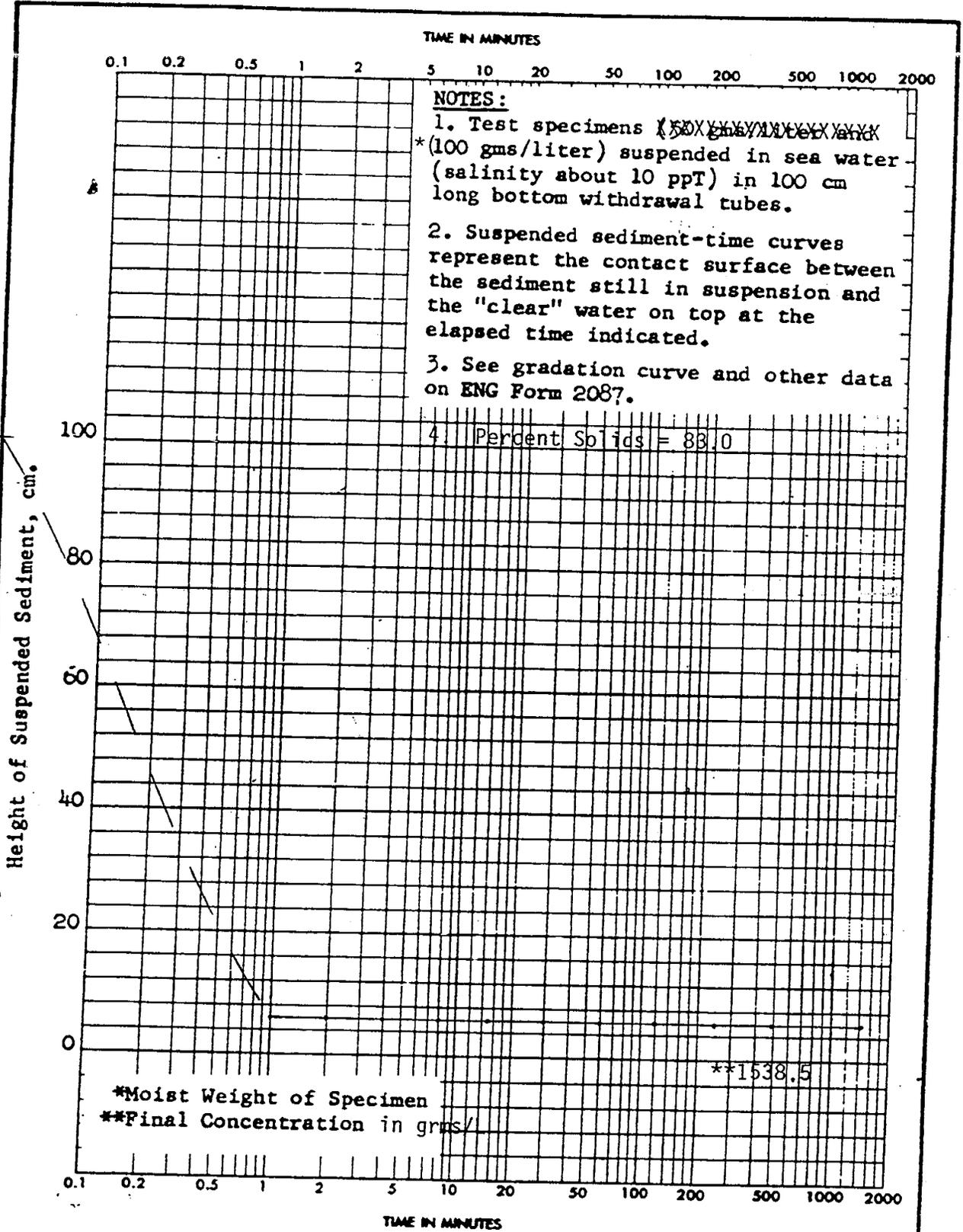
Sample No.	Depth/Elev	Classification	Nat w%	LL	PL	PI		
1	-38.6/40.6	Lt. brown poorly graded sand (SP), with a trace of mica, roots and shell. Specific gravity = 2.68	-	-	-	-	Project JACKSONVILLE HARBOR	
							Lab No. 73/4840	
							Boring No. CB-J91-14	
GRADATION CURVES							Date	10/02/91



See Sedimentation Rate Time Curve on SAD Form 3023.

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY,
 CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GEORGIA 30060

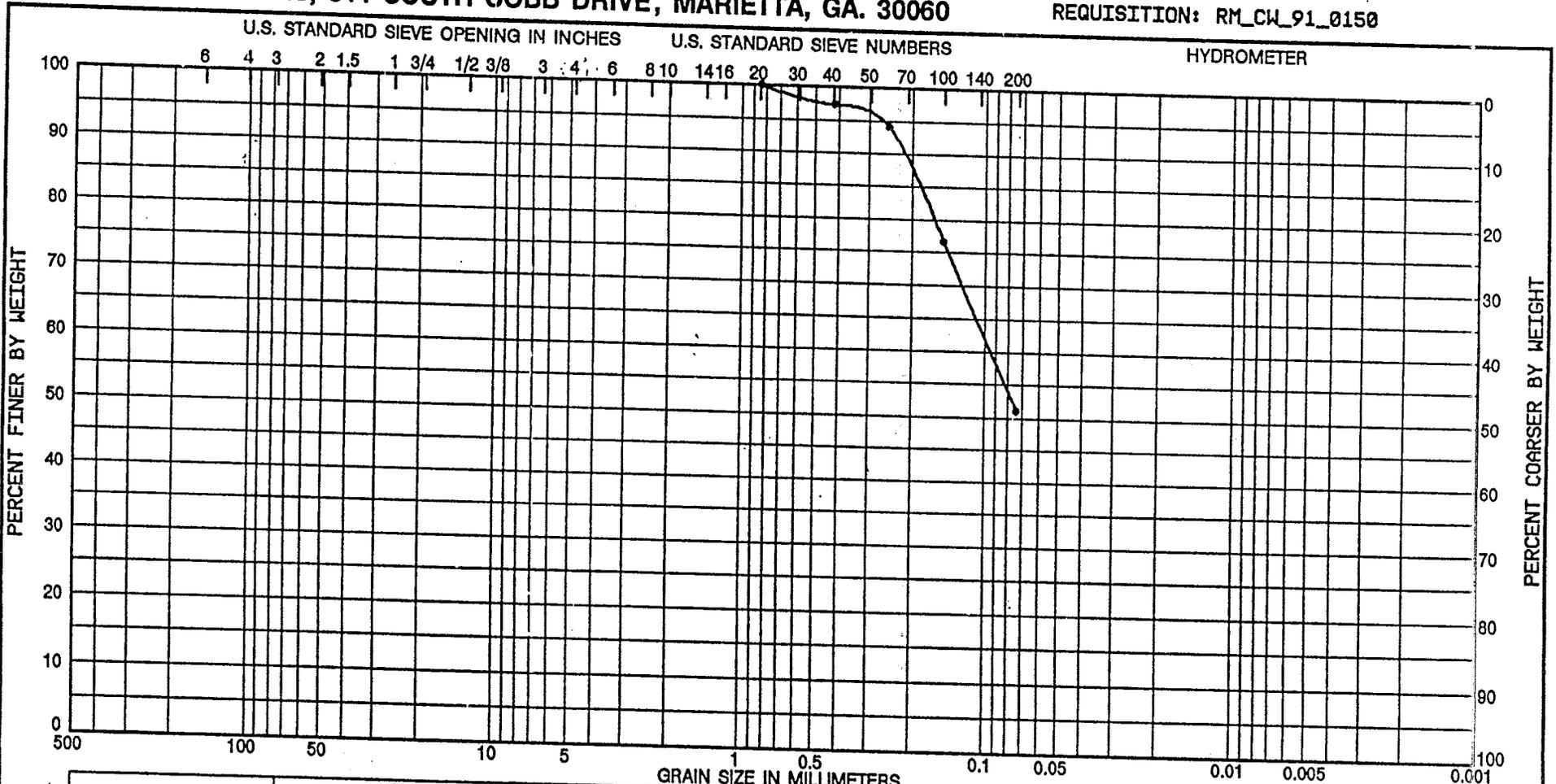
Reqn. No. RM-CW-91-0150
 Work Order No. 6474



PROJECT Jacksonville Harbor			
AREA Lab No. 73/4640			
BORING NO. CB-J91-14	SAMPLE NO. 1	EL. -38.6 / -40.6	DATE 8 Oct 91
SUSPENDED SEDIMENT-TIME CURVES			

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
 CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

WORK ORDER: 6474
 REQUISITION: RM_CW_91_0150



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Sample No.	Depth/Elev	Visual Classification	Nat w%	LL	PL	PI	
1	-38.1/-40.1	Dk. gray inorganic silt high LL (MH), sandy, slightly organic, with a trace of mica, shell and rusty metal fragments. Specific gravity = 2.49	-	-	-	-	Project JACKSONVILLE HARBOR
							Lab No. 73/4642
							Boring No. CB-J91-16
							Date 10/02/91

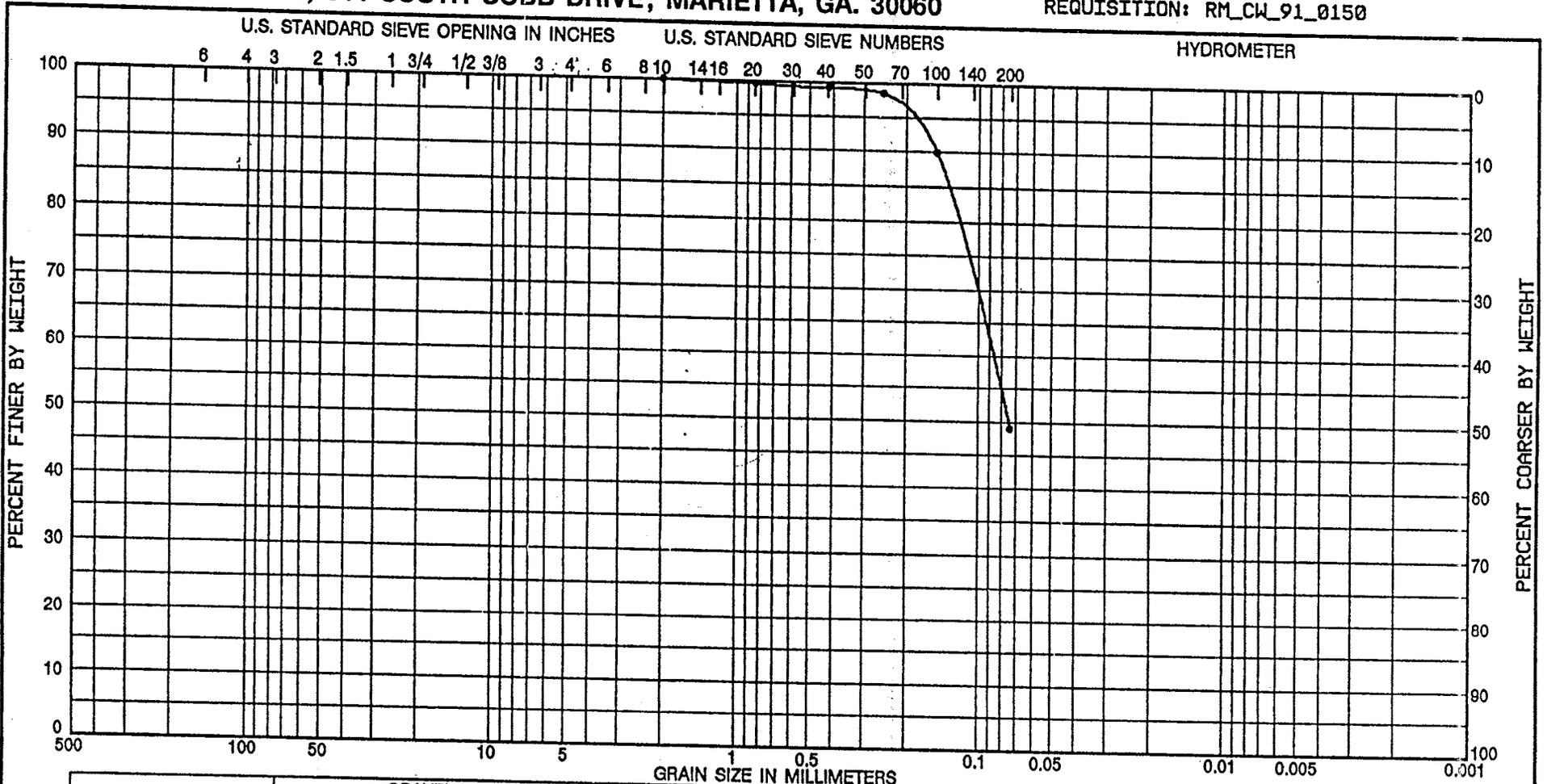
GRADATION CURVES



See Sedimentation Rate Time Curve on SAD Form 3023.

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
 CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

WORK ORDER: 6474
 REQUISITION: RM_CW_91_0150



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

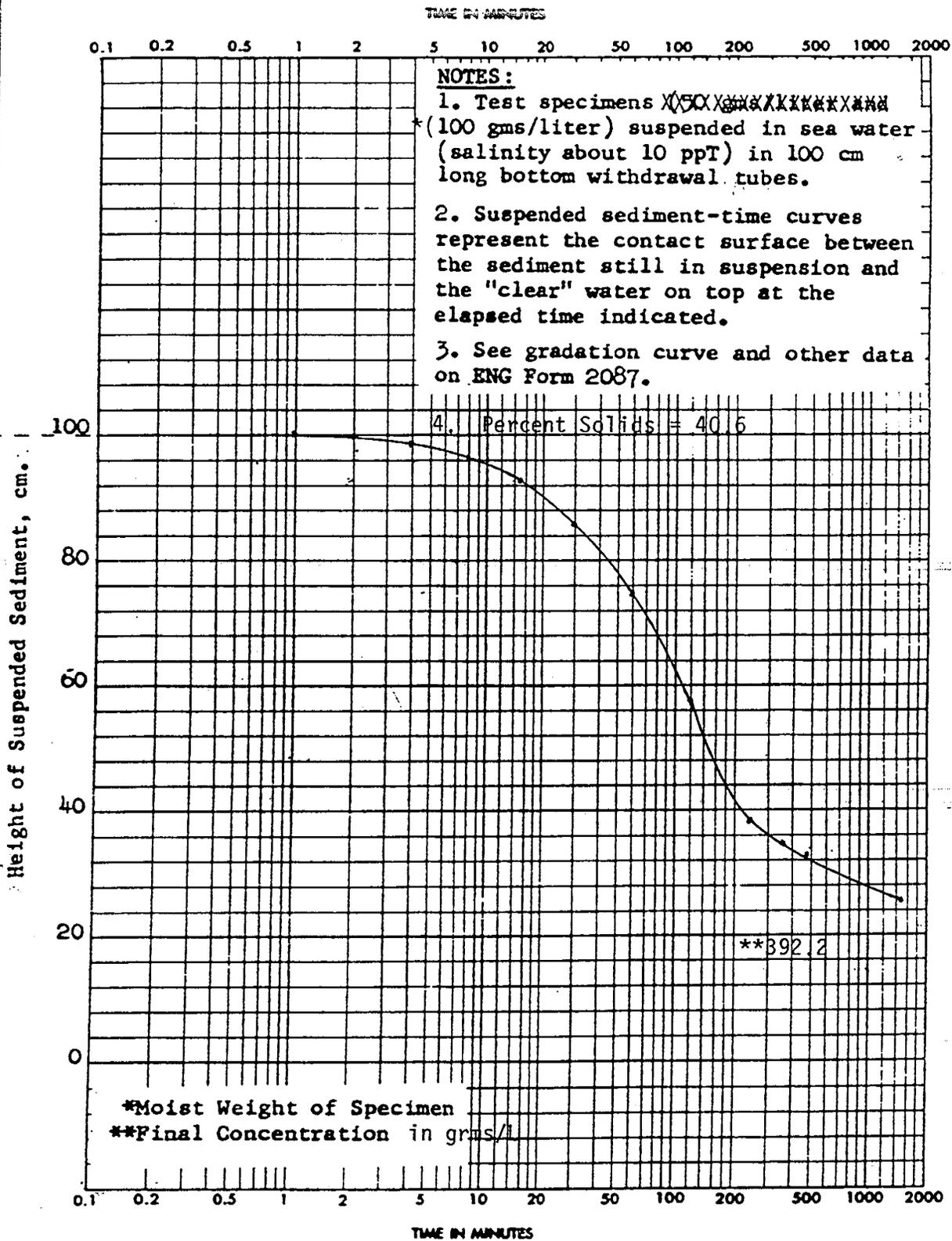
Sample No.	Depth/Elev	Visual	Classification	Nat w%	LL	PL	PI		
1	-33.1/-35.1	Dk. brown silty sand slightly organic, with a trace of mica and shell.	high LL (SM-H)	-	-	-	-	Project	JACKSONVILLE HARBOR
		Specific gravity = 2.54						Lab No.	73/4648
								Boring No.	CB-J91-20
GRADATION CURVES								Date	10/02/91



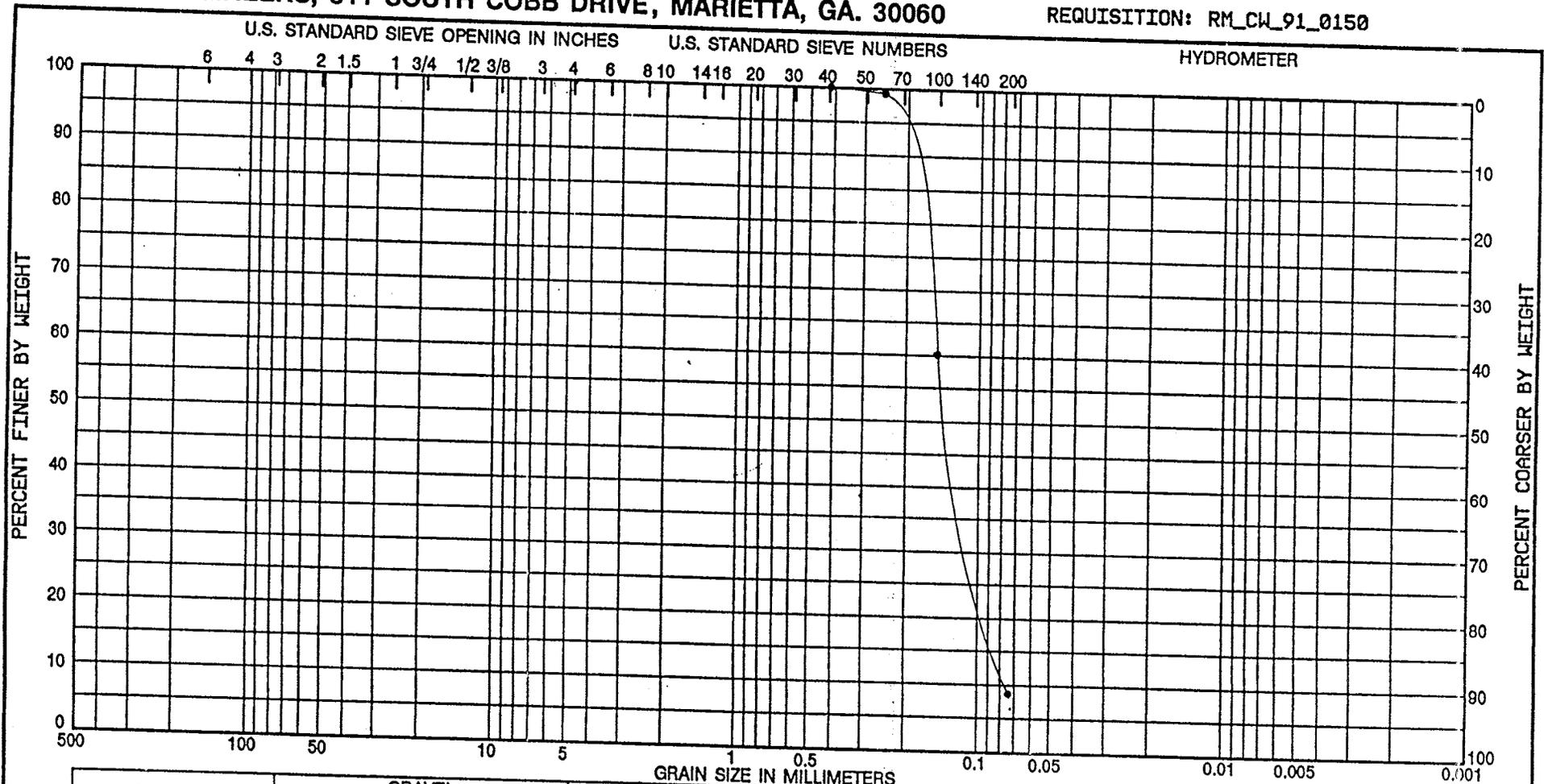
See Sedimentation Rate Time Curve on SAD Form 3023.

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY,
 CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GEORGIA 30060

Reqn. No. RM-CW-91-0150
 Work Order No. 6474



PROJECT Jacksonville Harbor			
AREA Lab No. 73/4646			
BORING NO. CB-J91-20	SAMPLE NO. 1	DEPTH EL -33.1/-35.1	DATE 8 Oct 91
SUSPENDED SEDIMENT-TIME CURVES			



Sample No.	Depth/Elev	Visual Classification	Nat w%	LL	PL	PI	GRAIN SIZE IN MILLIMETERS											
							COBBLES	GRAVEL COARSE FINE	SAND COARSE MEDIUM FINE	SILT OR CLAY								
1	-18.6/-20.8	Lt. tan poorly graded silty sand (SP-SM), with a trace of mica. Specific gravity = 2.68	-	-	-	-												
							Project JACKSONVILLE HARBOR											
							Lab No. 73/4848											
							Boring No. CB-J91-22											
							Date 10/02/91											

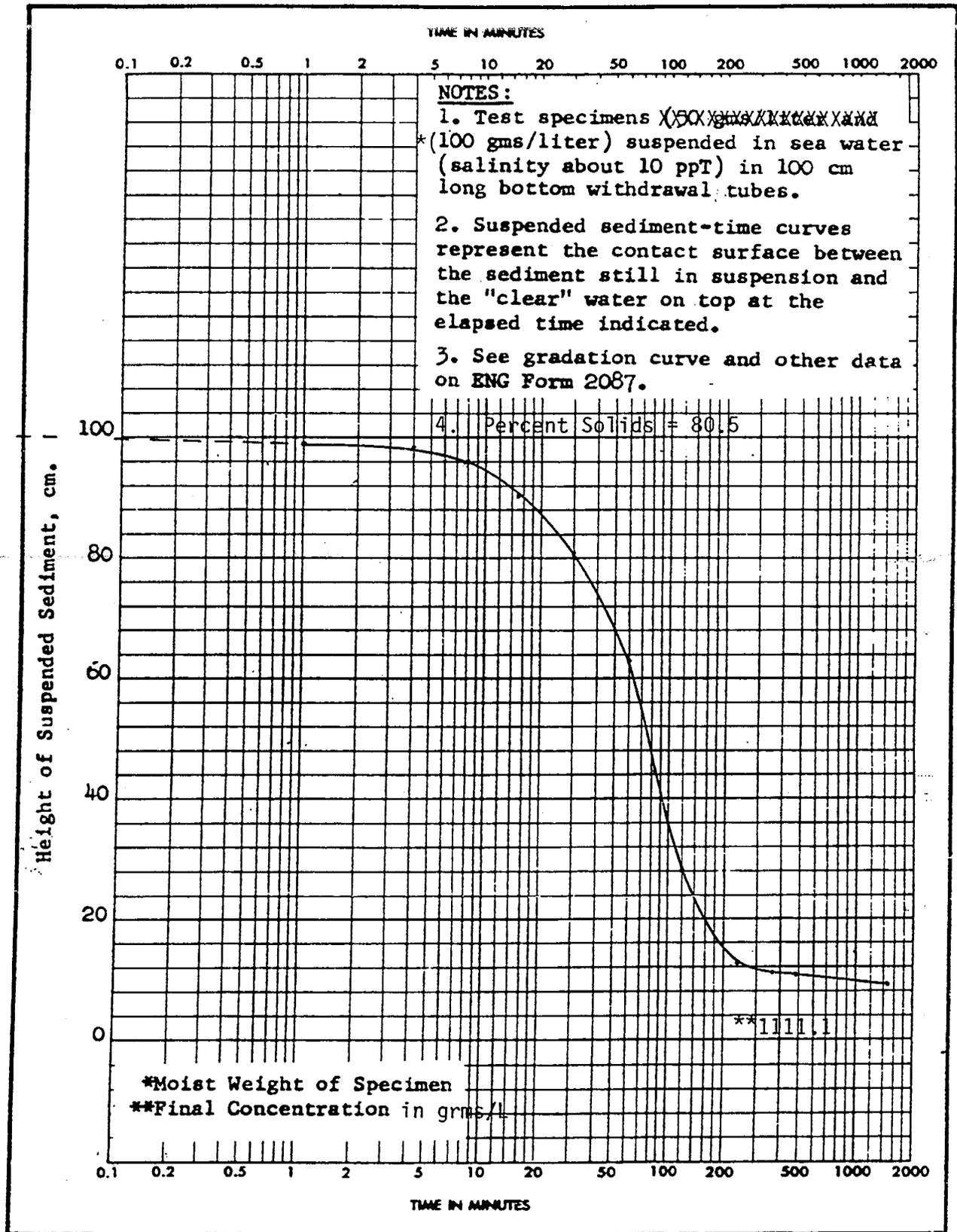
GRADATION CURVES



See Sedimentation Rate Time Curve on SAD Form 3023.

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY,
 CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GEORGIA 30060

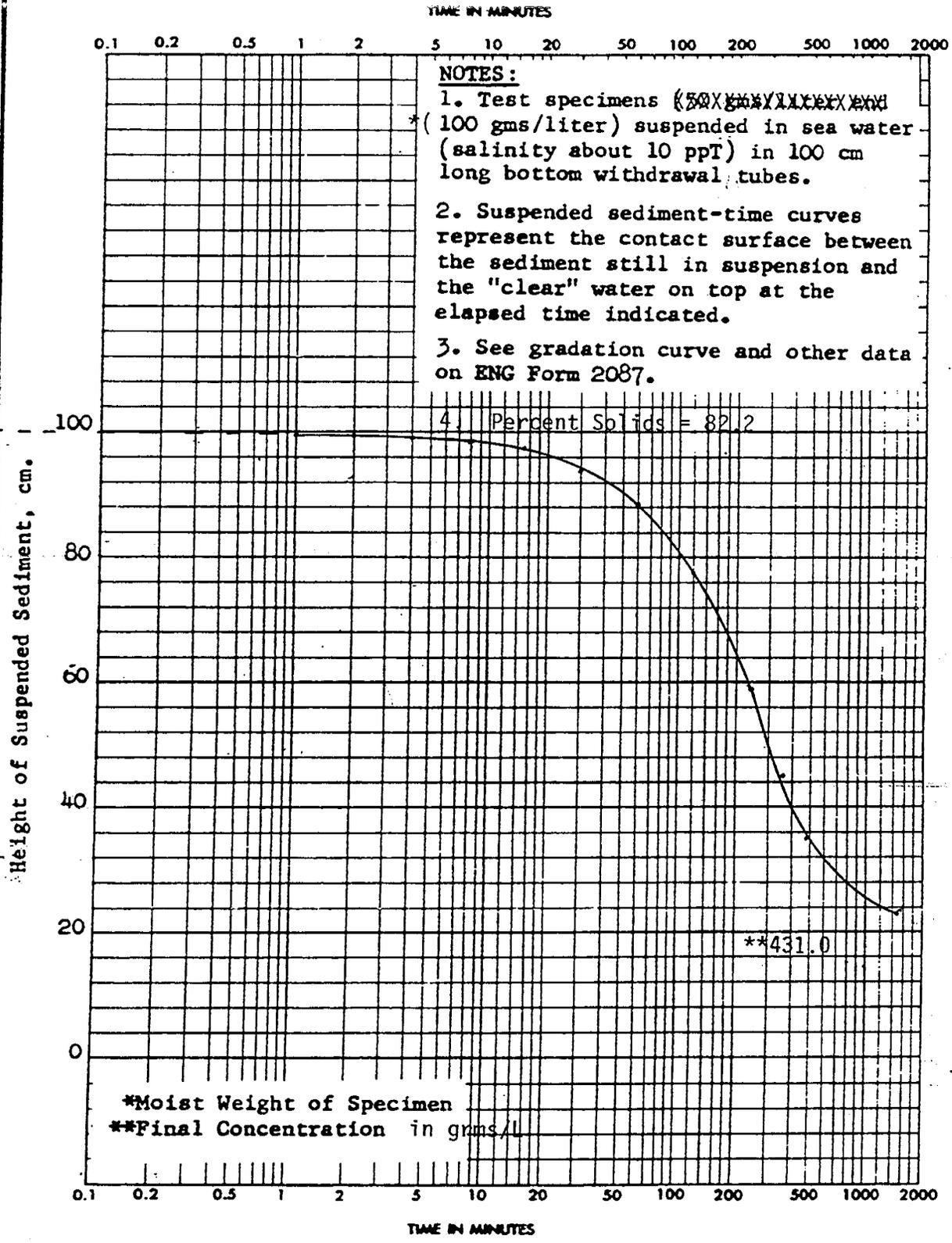
Requ. No. RM-CW-91-0150
 Work Order No. 6474



PROJECT Jacksonville Harbor			
AREA Lab No. 73/4648			
BORING NO. CB-J91-22	SAMPLE NO. 1	MARK EL -18.6/-20.6	DATE 8 Oct 91
SUSPENDED SEDIMENT-TIME CURVES			

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY,
 CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GEORGIA 30060

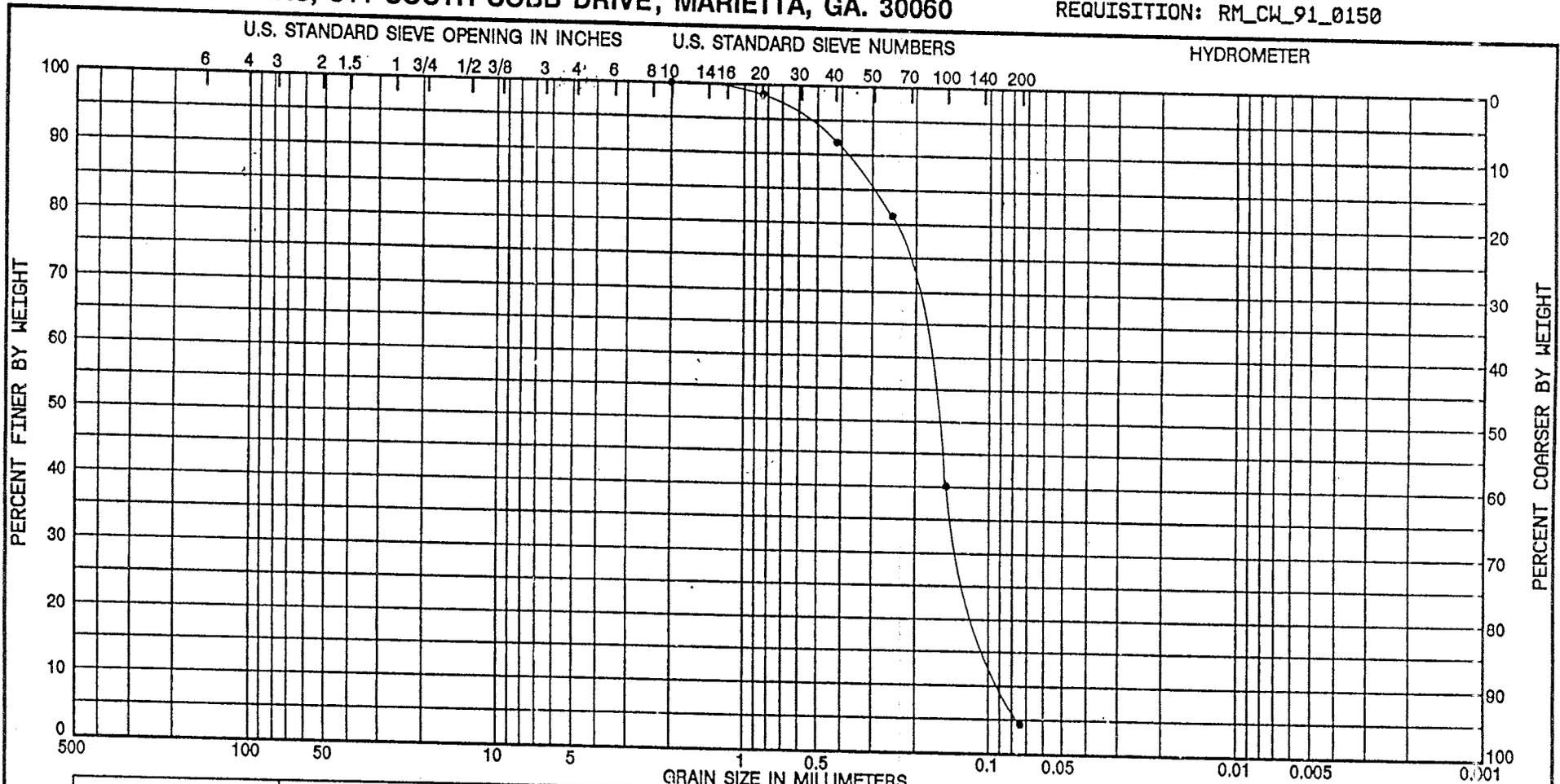
Reqn. No. RM-CW-91-0150
 Work Order No. 6474



PROJECT Jacksonville Harbor			
AREA Lab No. 73/4649			
BORING NO. CB-J91-22	SAMPLE NO. 2	DEPTH EL -24.6/-36.1	DATE 8 Oct 91
SUSPENDED SEDIMENT-TIME CURVES			

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
 CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

WORK ORDER: 6474
 REQUISITION: RM_CW_91_0150



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Sample No.	Depth/Elev	Classification	Nat w%	LL	PL	PI	Project
4	-37.6/-38.8	Lt. tan poorly graded sand (SP), with a trace of mica. Specific gravity = 2.70	-	-	-	-	JACKSONVILLE HARBOR
							Lab No. 73/4850
							Boring No. CB-J91-22
							Date 10/02/91

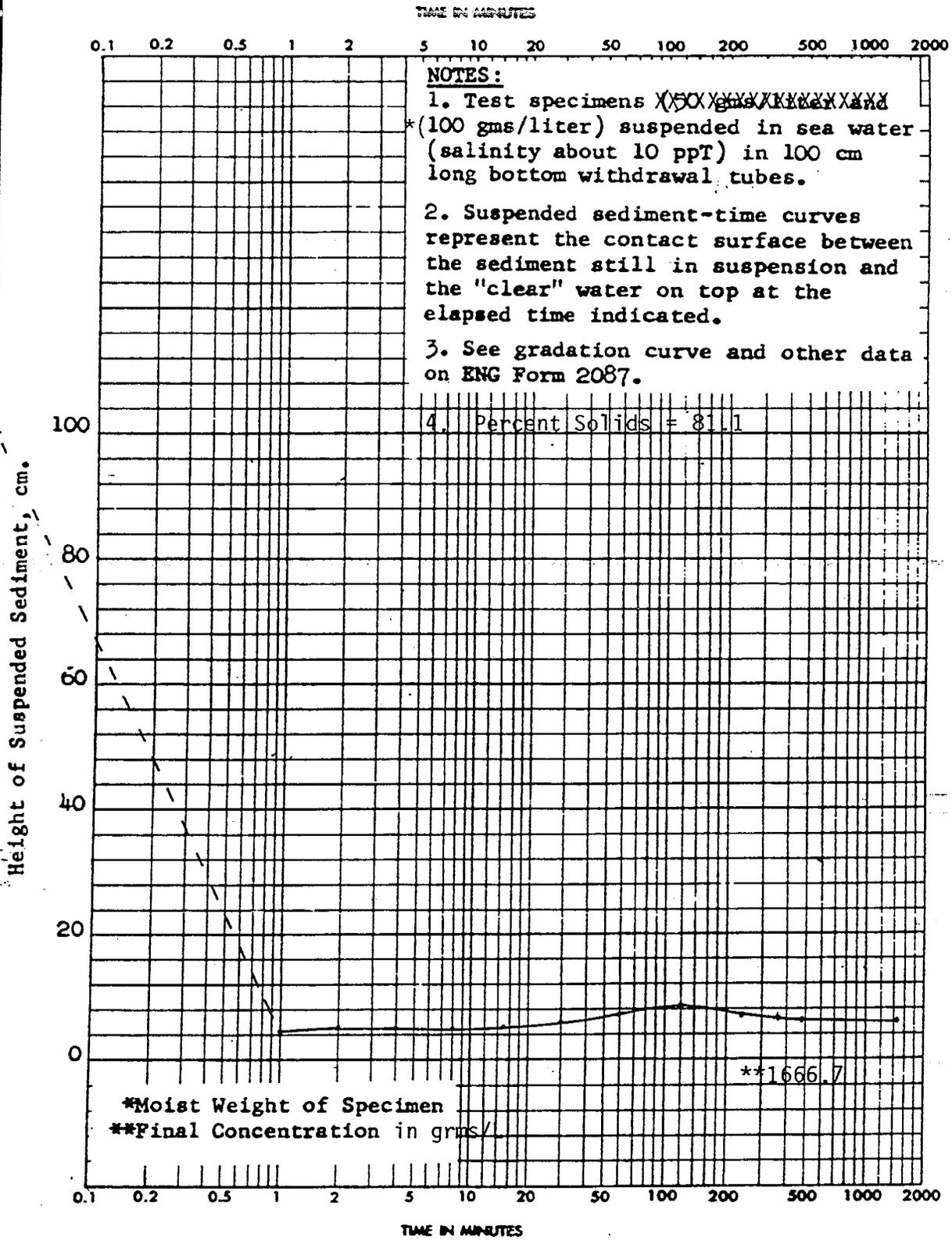
GRADATION CURVES



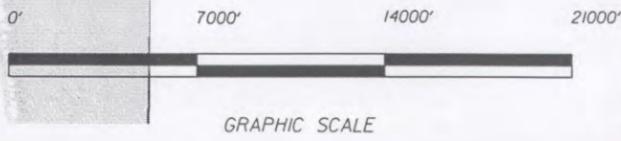
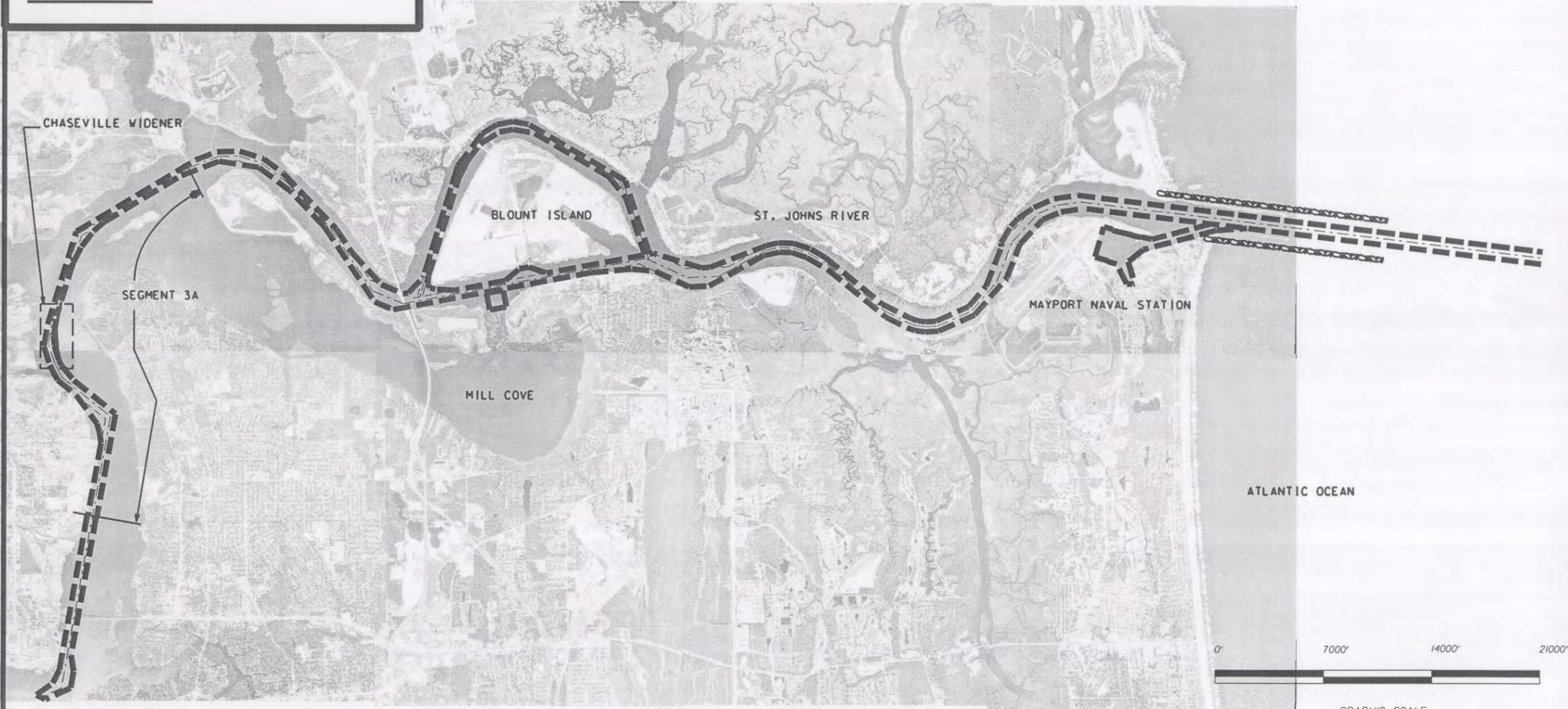
See Sedimentation Rate Time Curve on SAD Form 3023.

DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY,
 CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GEORGIA 30060

Reqn. No. RM-CW-91-0150
 Work Order No. 6474



PROJECT Jacksonville Harbor			
AREA Lab No. 73/4650			
BORING NO. CB-J91-22	SAMPLE NO. 4	DEPTH EL. -37.6/-38.6	DATE 8 Oct 91
SUSPENDED SEDIMENT-TIME CURVES			

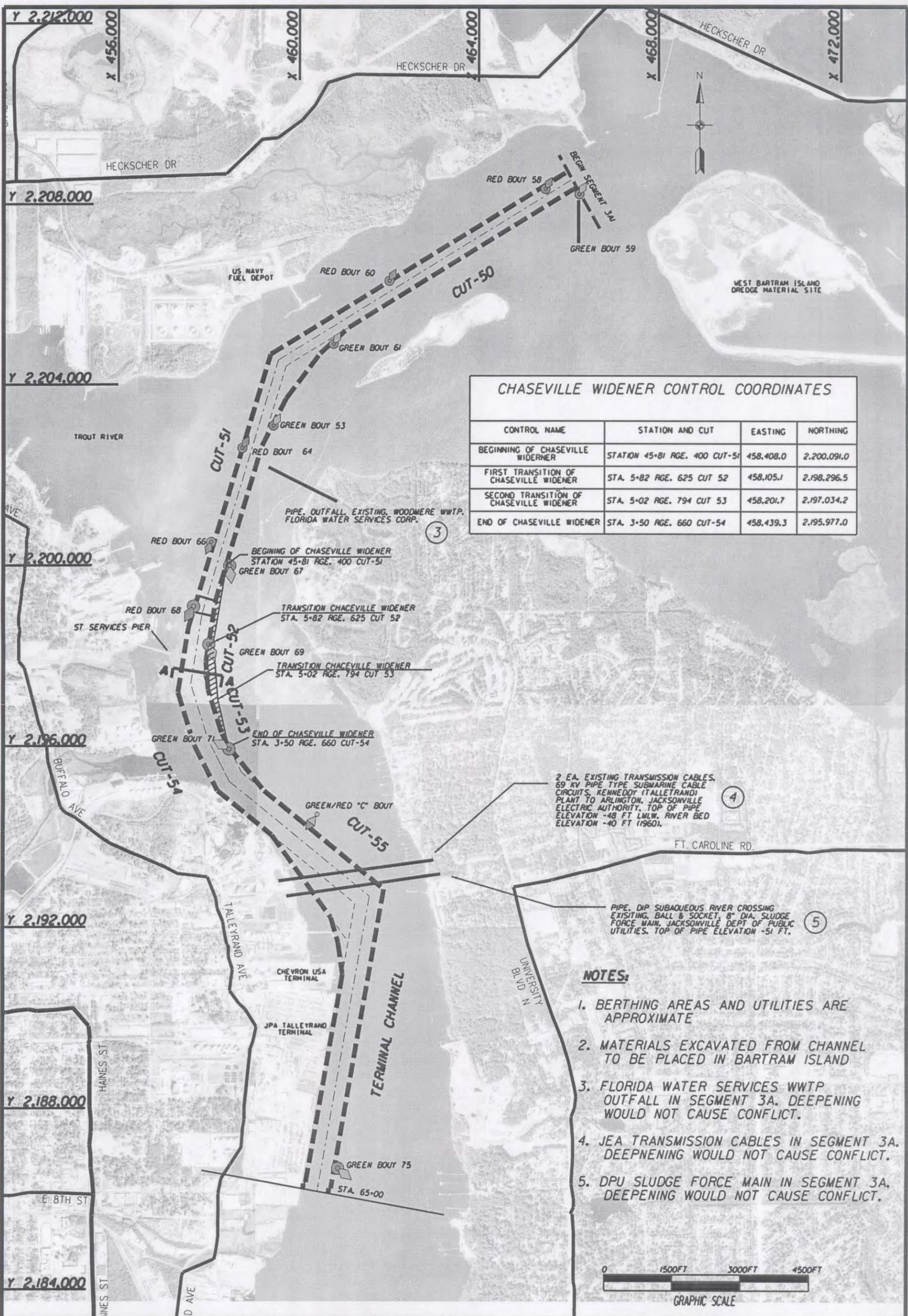


DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

File name:	Reference files:	Designed by:	Scale:
		Drawn by:	Plot date:
		Dated:	Plot scale:

JACKSONVILLE HARBOR, FLORIDA
GENERAL REEVALUATION REPORT
40-FOOT PROJECT
CUT 50 THROUGH TERMINAL CHANNEL STA 65-00
PROJECT LOCATION MAP

PLATE
A-1



CHASEVILLE WIDENER CONTROL COORDINATES

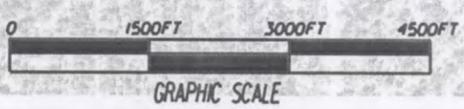
CONTROL NAME	STATION AND CUT	EASTING	NORTHING
BEGINNING OF CHASEVILLE WIDENER	STATION 45+81 RGE. 400 CUT-51	458,408.0	2,200,091.0
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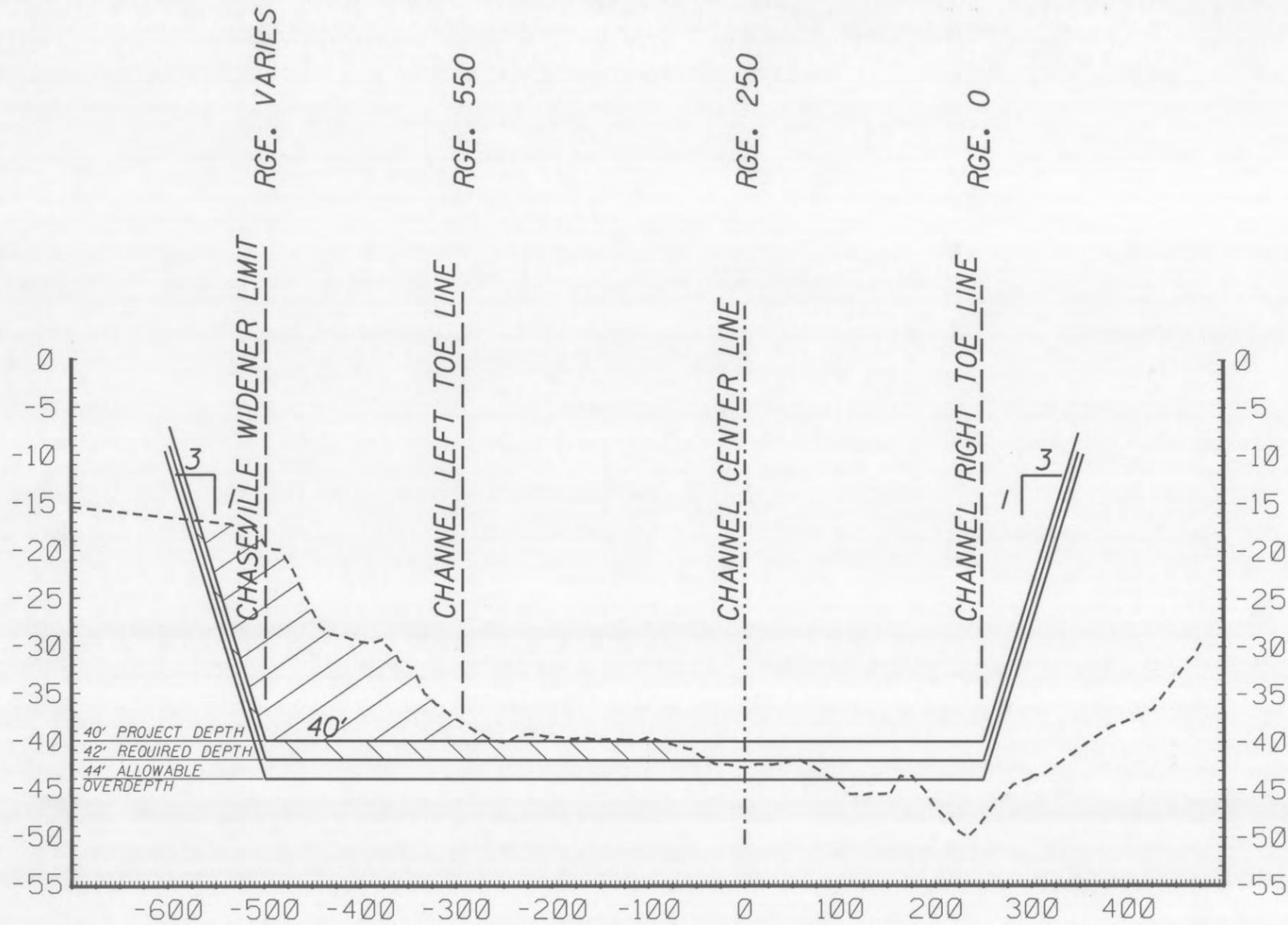
2 EA. EXISTING TRANSMISSION CABLES, 69 KV PIPE TYPE SUBMARINE CABLE CIRCUITS, KENNEDY (TALLETRAND) PLANT TO ARLINGTON, JACKSONVILLE ELECTRIC AUTHORITY, TOP OF PIPE ELEVATION -48 FT LMLW, RIVER BED ELEVATION -40 FT (1960).

PIPE, DIP SUBAQUEOUS RIVER CROSSING EXISTING, BALL & SOCKET, 8" DIA. SLUDGE FORCE MAIN, JACKSONVILLE DEPT OF PUBLIC UTILITIES, TOP OF PIPE ELEVATION -51 FT.

NOTES:

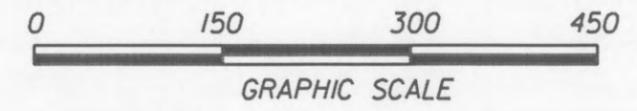
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3. FLORIDA WATER SERVICES WWTP OUTFALL IN SEGMENT 3A. DEEPENING WOULD NOT CAUSE CONFLICT.
4. JEA TRANSMISSION CABLES IN SEGMENT 3A. DEEPENING WOULD NOT CAUSE CONFLICT.
5. DPU SLUDGE FORCE MAIN IN SEGMENT 3A. DEEPENING WOULD NOT CAUSE CONFLICT.





VERTICAL EXAGGERATION 10X

CROSS SECTION A-A @ STA. 12+11 CUT 52



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JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

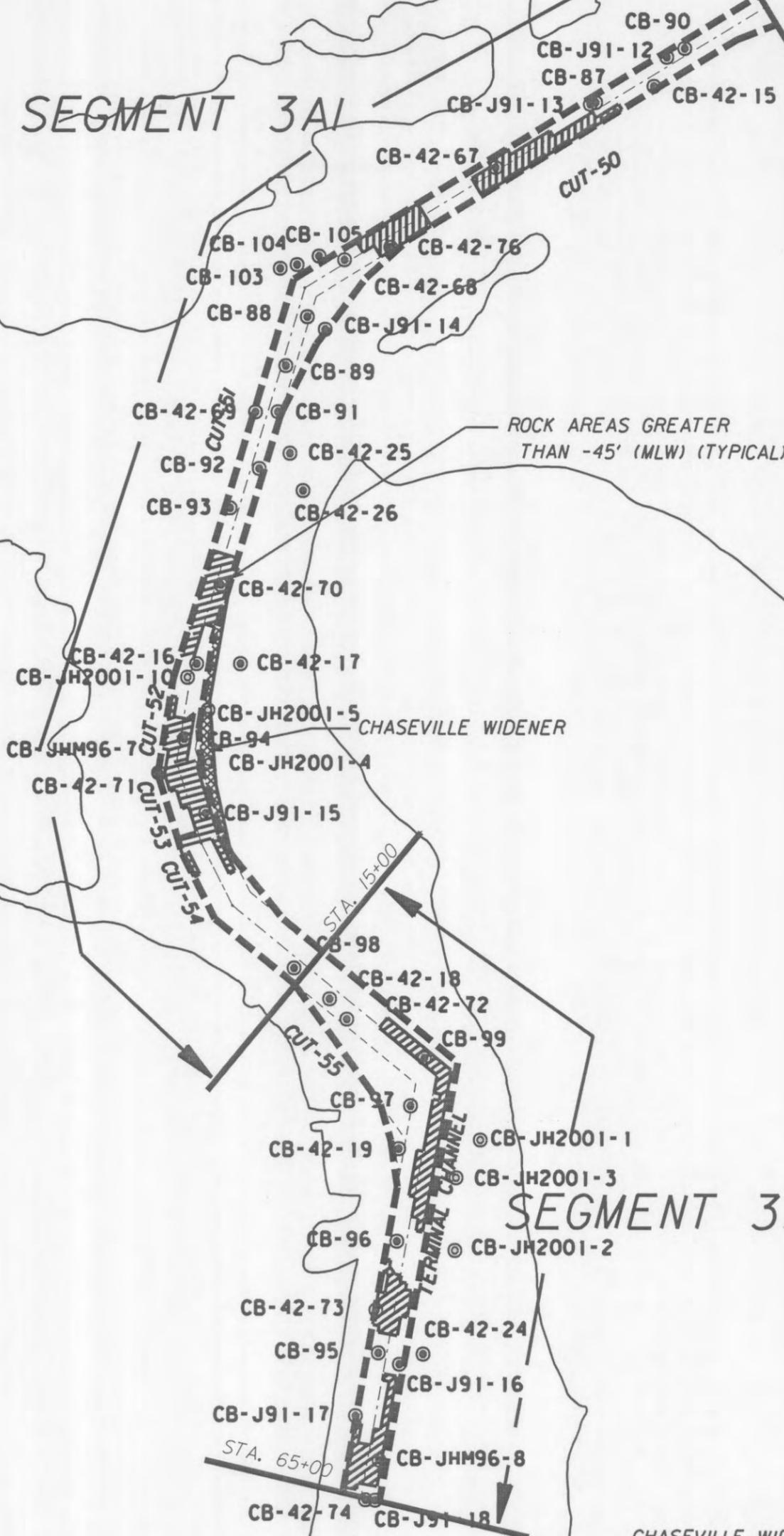
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Reference files:	Drawn by:	Plot date:
	Checked by:	Plot scale:
	Dated:	

JACKSONVILLE HARBOR, FLORIDA
GENERAL REEVALUATION REPORT
40-FOOT PROJECT
CUT 50 THROUGH TERMINAL CHANNEL STA 65+00
TYPICAL CROSS SECTION - CHASEVILLE TURNING BASIN

PLATE
A-3

SEGMENT 3A1

SEGMENT 3A2



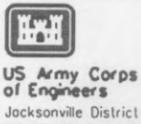
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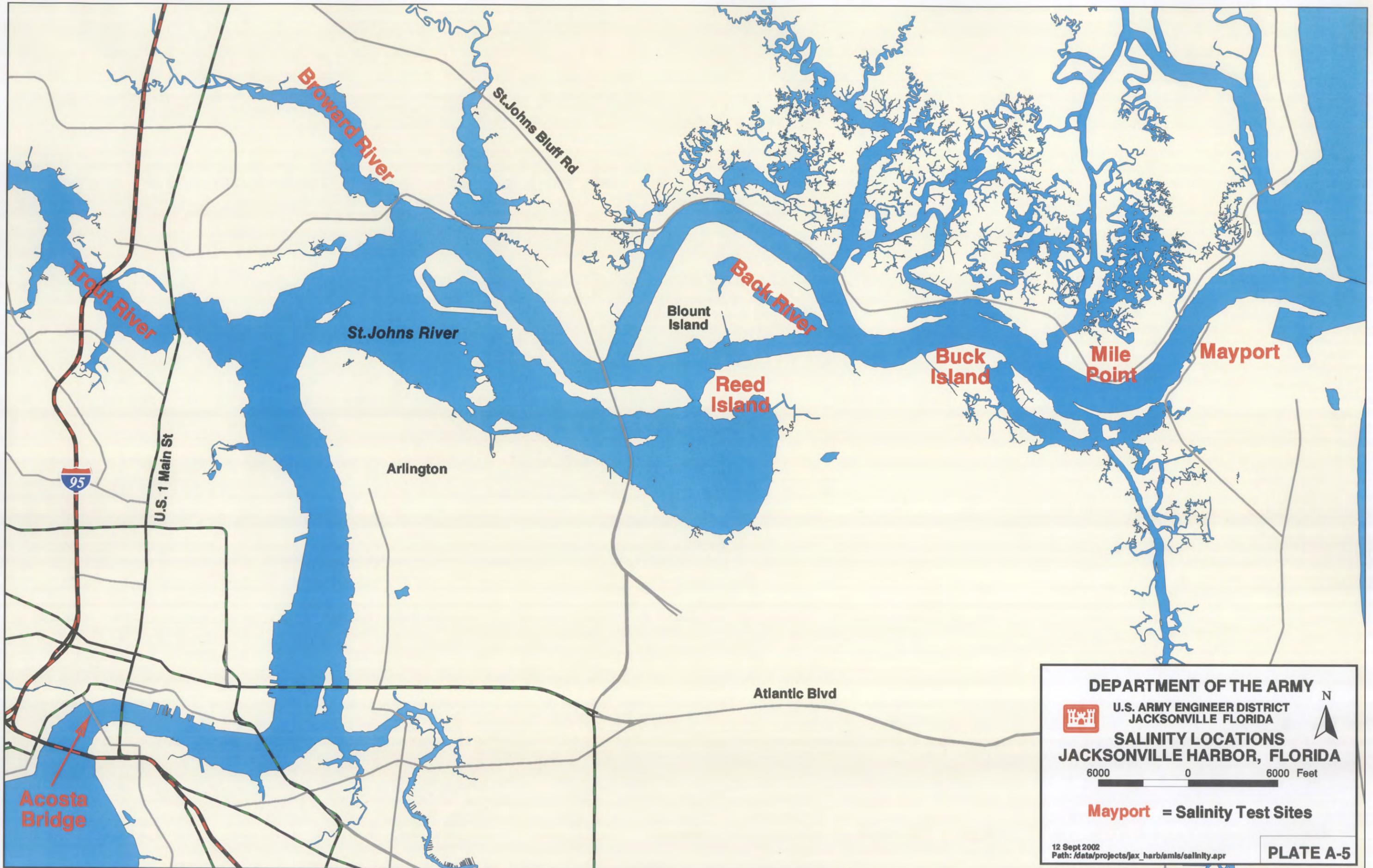
A-4
PLATE

JACKSONVILLE HARBOR, FLORIDA
GENERAL REEVALUTATION REPORT
40-FOOT PROJECT
CUT 50 THROUGH TERMINAL CHANNEL STA 65+00
GEOTECHNICAL - CORE BORINGS

File name:	Designed by:	Scale:
Reference files:	Dwn by:	Plot date:
	Ckd by:	Plot scale:
	Dated:	

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JACKSONVILLE, FLORIDA





DEPARTMENT OF THE ARMY
 U.S. ARMY ENGINEER DISTRICT
 JACKSONVILLE FLORIDA

**SALINITY LOCATIONS
 JACKSONVILLE HARBOR, FLORIDA**

6000 0 6000 Feet

Mayport = Salinity Test Sites

12 Sept 2002
 Path: /data/projects/jax_harb/amis/salinity.apr

PLATE A-5



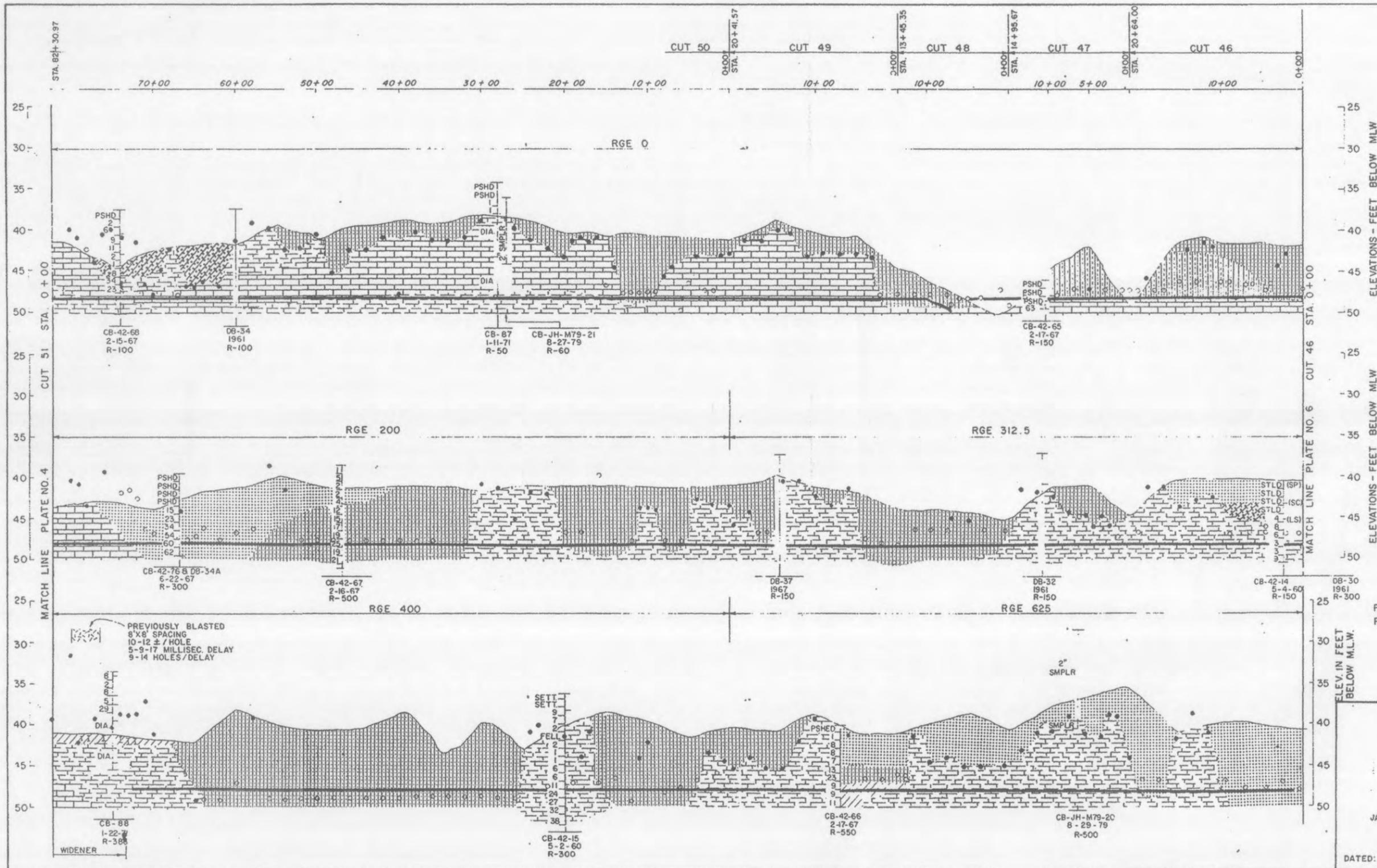
DEPARTMENT OF THE ARMY
 U.S. ARMY ENGINEER DISTRICT
 JACKSONVILLE FLORIDA
SALINITY LOCATIONS
JACKSONVILLE HARBOR, FLORIDA

6000 0 6000 12000 18000 24000 Feet

Mayport = Salinity Test Sites

12 Sept 2002
 Path: /data/projects/jax_harb/amis/salinity.apr

PLATE A-6

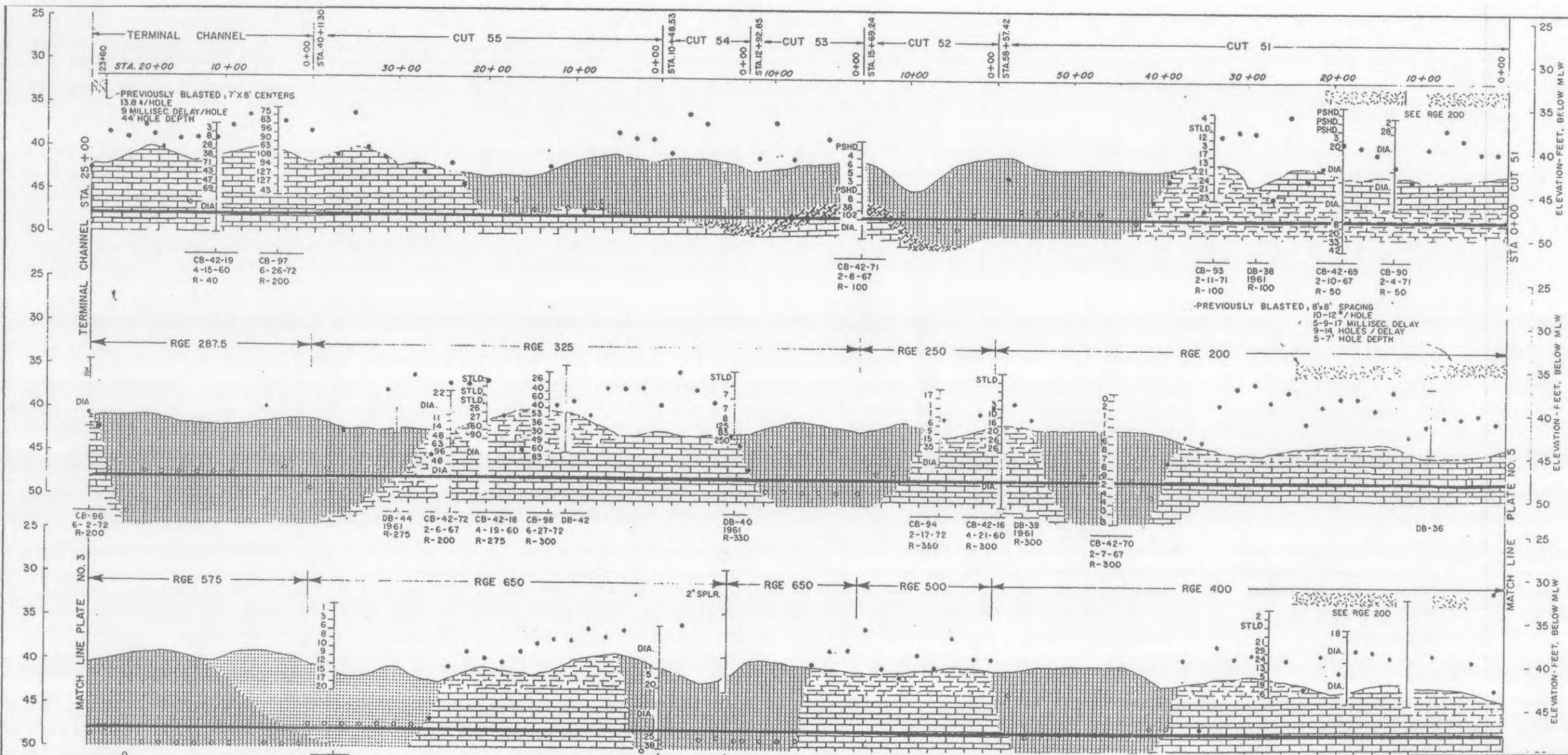


FOR NOTES & LEGEND SEE
PLATE NO. 1.

JACKSONVILLE HARBOR, FLORIDA
FEASIBILITY REPORT

GEOLOGIC PROFILES

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA



FOR NOTES & LEGEND
SEE PLATE NO. 1

JACKSONVILLE HARBOR, FLORIDA
FEASIBILITY REPORT

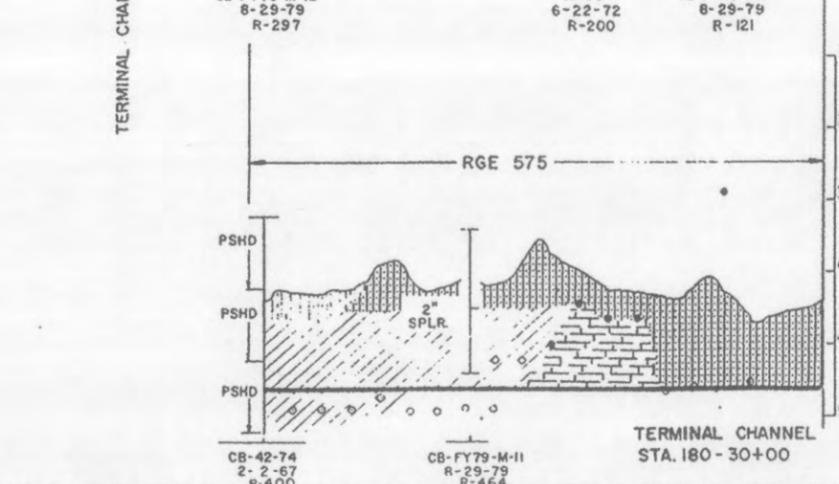
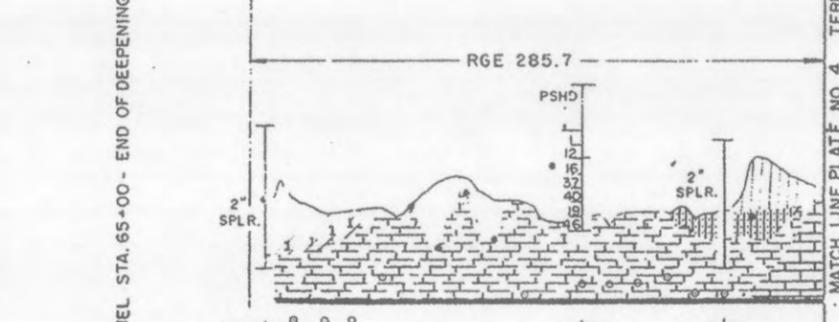
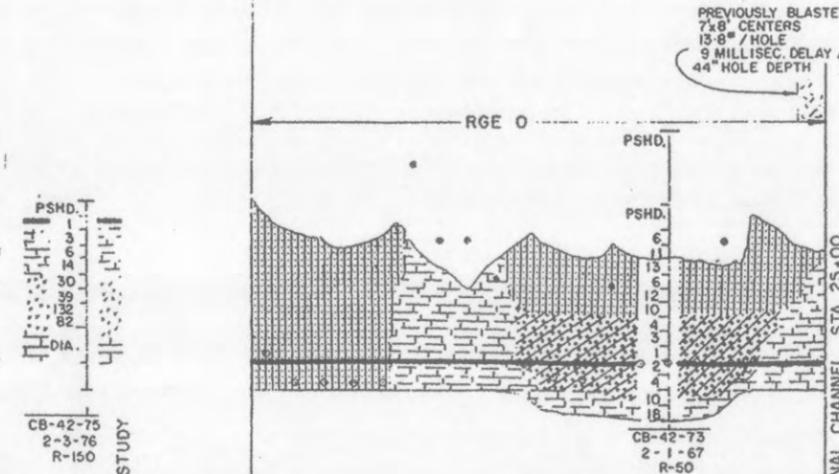
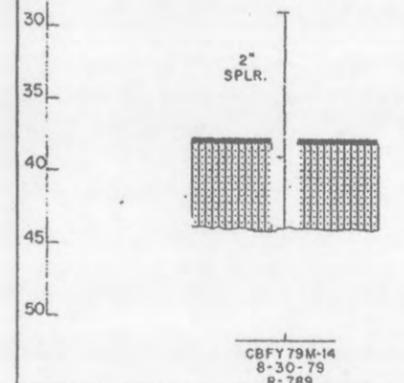
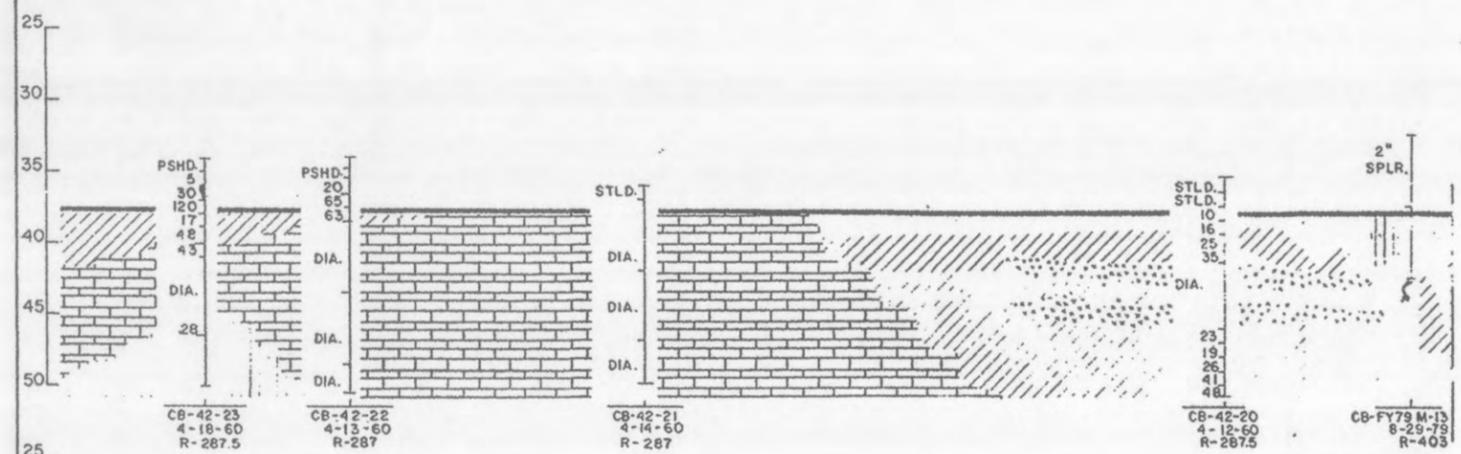
GEOLOGIC PROFILES

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

DATED: JAN. 1982 D.O. FILE NO. I-33,609

TERMINAL CHANNEL

180+0 170+0 160+0 150+0 140+0 130+0 120+0 110+0 100+0 90+0 80+0 70+0 60+0 50+0 40+0 30+0



TERMINAL CHANNEL STA. 65+00 - END OF DEEPENING STUDY

TERMINAL CHANNEL STA. 25+00
MATCH LINE PLATE NO. 4

FOR NOTES & LEGEND
SEE PLATE NO. 1

JACKSONVILLE HARBOR, FLORIDA
FEASIBILITY REPORT

GEOLOGIC PROFILES

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

DATED: JAN. 1962 D.O. FILE NO. I-33,809

PLATE 4-3

APPENDIX B

REAL ESTATE

APPENDIX B

REAL ESTATE APPENDIX

NAVIGATION IMPROVEMENTS FOR
JACKSONVILLE HARBOR, FLORIDA

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EXHIBITS

EXHIBIT A: REAL ESTATE MAP

APPENDIX B

JACKSONVILLE HARBOR NAVIGATION PROJECT

REAL ESTATE APPENDIX

1. STATEMENT OF PURPOSE

This Real Estate Appendix is being prepared to support the General Reevaluation Report for the Jacksonville Harbor Navigation Project. It is tentative in nature for planning purposes only and both the final real property acquisition lines and the real estate cost estimates may be subject to change even after approval of the General Reevaluation Report.

Previously, a real estate section was prepared for the September 1998 Jacksonville Harbor Final Feasibility Report and Environmental Impact Statement. The Final Feasibility Report and Environmental Impact Statement for this project was funded and initiated on August 5, 1994, submitted to South Atlantic Division September 25, 1998, and approved by HQUSACE with the signing of the Chief of Engineers on April 21, 1999. The project was authorized in the Water Resources Development Act (WRDA) of 1999.

2. AUTHORIZATION

Federal interest in navigation on the St. Johns River started as early as 1869. Interest in improving the St. Johns River from Jacksonville to the Atlantic Ocean for deep draft commercial vessels has been a continued effort since that time.

An Act of Congress approved March 2, 1945 provided for modification and maintenance of Jacksonville Harbor, Duval County, Florida in accordance with the project set forth in Senate Document 230, 78th Congress, 2nd Session, subject to conditions, among others, that local interest furnish free of cost to the United States all necessary lands required for the improvement as well as required for annual maintenance thereof when and as required.

The Jacksonville Port Authority (JPA), as Local Sponsor of the Jacksonville Harbor, Florida Navigation Project authorized by

the Rivers and Harbors Act of 27 October 1965, Public Law 89-298, under Resolution adopted 28 January 1966, has agreed to provide without cost to the United States all lands, easements, and rights-of-way required for construction and subsequent maintenance of the project required for initial and subsequent disposal of dredge material.

Two recent studies involved the consideration of navigation improvements in the vicinity of Blount Island. Both of these studies were under the authority of Section 107 of the 1960 River and Harbor Act, as amended. The reconnaissance study and report, dated December 1985, considered the Federal interest of widening the turn at the junction of the main ship channel in Jacksonville and the Blount Island west channel. The study results showed economic justification for the widening. Just prior to the report, Section 102 of Public Law 99-141, dated November 1, 1985, provided the authorization for widening of the turn in Jacksonville with the use of available operation and maintenance funds. Based on language in the Act, no further study was needed for authorization of the work. A second reconnaissance study and report, dated August 1989, considered the deepening of the channel on the west side of Blount Island. The study was favorable, but the Jacksonville Port Authority deferred further study pending the availability of funds.

The following resolution from the Committee on Public Works and Transportation, United States House of Representatives, dated February 5, 1992, provides the authority and funds for the Reconnaissance Report, Feasibility Study, and the General Reevaluation Report:

"Resolved by the Committee on Public Works and Transportation of the United States House of Representatives, that the Board of Engineers for Rivers and Harbors, is requested to review the report of the Chief of Engineers on Jacksonville Harbor, Florida, published as House Document 214, Eighty-Ninth Congress, First Session, and other pertinent reports, to determine whether modifications of the recommendations contained therein are advisable at the present time, in the interest of navigation and other purposes."

3. LOCAL SPONSOR'S AUTHORITY TO PARTICIPATE IN THE PROJECT

Jacksonville Port Authority (JPA), (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.

4. PROJECT LOCATION

The Jacksonville Harbor Federal navigation project is located in the City of Jacksonville, State of Florida. The City of Jacksonville is located in Duval County on the northeast coast of Florida. The downtown area of the City is located about 20 statute miles inland along the St. Johns River from the ocean. Jacksonville Harbor is the major deep-draft port for waterborne commerce in northeast Florida. About 125 statute miles to the north is Savannah Harbor and about 150 statute miles to the south is Canaveral Harbor.

5. PROJECT DESCRIPTION

The selected plan for the Jacksonville Harbor General Revaluation Report consists of a combination of alternatives 3A1 and 3A2.

3A1 consist of the deepening from mile 14.7 of the main channel to river mile 18 (Cuts 50 - 54). Plan includes a project depth of 40 feet plus 2 feet required and 2 feet of allowable overdepth over the existing channel width and includes the Chaseville Turn Widener.

3A2 consist of the deepening from mile 18 to 20 (Cut 55). Plan includes a project depth of 40 feet plus 2 feet required and 2 feet of allowable overdepth over the existing channel width.

No new upland disposal areas are required for the selected Plan. One or more of the following existing disposal areas will be used to contain material from the deepening:

a. Bartram Island (West end) - From about Mile 11 to Mile 21, the disposal area would be Bartram Island which is owned by JPA. The formation of the island is from dredged material taken out of the Jacksonville Harbor project over the years. The western end of the island has about 280 acres of upland that has a dike around it for the disposal of the material. In 1998 JPA raised the dikes 10 feet to increase capacity. Bartram Island is the primary disposal site.

b. Ocean Offshore Reef (Plan 3A1)- Rock from dredging of the main channel (14.7 to 18) will be placed in a permitted artificial reef approximately 5 to 20 miles offshore.

c. Ocean Dredged Material Disposal Site (ODMDS) - The current EPA approved Jacksonville Harbor ODMDS is located about five miles offshore from the entrance channel jetties. The ODMDS would be used only if the other sites are not available.

6. FEDERAL GOVERNMENT-OWNED LAND

Although JPA has granted the United States a Dredge Spoil Easement (Bartram Island) for a period of twenty-six years, ending July 1, 2016, navigation servitude applies for the life of the project.

7. SPONSOR-OWNED LAND

Bartram Island is owned by the JPA.

8. ATTITUDE OF OWNERS

JPA, as owner of the land affected by the project and as the local sponsor, fully supports the project. Property owners adjoining the St. Johns River object to the use of blasting to accomplish project purposes.

9. RELOCATION ASSISTANCE (PUBLIC LAW 91-646)

There are no persons or businesses that will need to be relocated due to project implementation.

10. RELOCATIONS (Utilities, Structures and Facilities, Cemeteries and Towns)

There are electric and sewer utilities in the project area which, if they have to be relocated, will be relocated at no cost to the Federal Government. Other than these utilities, there are no known other utilities, structures and facilities, cemeteries and towns to be affected as part of the project.

11. NON-FEDERAL OPERATION/MAINTENANCE RESPONSIBILITIES

The local sponsor shall provide and maintain, at its own expense, all project features other than those for general navigation, including dredged depths commensurate with those in related general navigation features in berthing areas and local access channels serving the general navigation features.

The local sponsor shall provide to the Federal Government all lands, easements, and rights-of-way, including dredged material disposal areas, and perform, or assure performance of, all alterations or relocations of facilities and utilities (except relocations or alterations of highway bridges and railroad bridges and approaches thereto), determined by the Federal Government to be necessary for maintenance of the project.

12. HAZARDOUS AND TOXIC WASTES (HTW)

For channel segment 3A1 no hazardous or toxic wastes have been identified within the project area.

For channel segment 3A2 surveys conducted from February 7 - 12, 2000, for offshore placement of maintenance material indicated contaminated sediment in the river bottom along the edge of the turn widner connecting Cut -55 to Terminal Channel. Contaminated sediment (PAH'S) first appeared in a report dated March 21, 2000, provided by PPB Environmental Laboratories, Inc. for an evaluation of offshore disposal of maintenance material. JPA plans to have the contaminated material removed.

13. RECREATIONAL RESOURCES

There are no separable recreational lands identified for the project.

14. CULTURAL RESOURCES

There are no known cultural resources that have been identified as being affected by the project. Three targets identified during the remote sensing survey generated magnetic and/or sonar characteristics that compare favorably with those associated with previously identified submerged historic properties (Tubby 1997). The Chaseville Turn Widener of alternative 3A1 contains one target, while the Terminal Channel Turning Basin contains the other two targets. During preparation of plans and specifications the diver investigations will further evaluate the targets.

15. OUTSTANDING RIGHTS

There are no known outstanding rights in the project area.

16. MINERALS

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

17. STANDING TIMBER AND VEGETATION COVER

There exist no timber or unusual vegetative cover in the project area.

18. MITIGATION

No mitigation has been identified as a part of the subject project.

19. SUMMARY OF PROJECT REAL ESTATE COST

The following is a summary of real estate costs for subject project.

Total Land and Damages	\$	0.00
Acquisition/Administrative Costs		
Federal:	\$	4,000.00
Non-Federal:	\$	10,000.00
Public Law 91-646 Payments	\$	0.00
Contingencies (25%)	\$	3,500.00
Total Estimated Project Real Estate Costs		\$17,500.00

20. REAL ESTATE ACQUISITION SCHEDULE

There is no acquisition schedule required for project construction. All required lands are available to the federal Government via navigational servitude.

21. TEMPORARY WORK AREA AND ACCESS EASEMENTS

Inasmuch as access can be obtained to the project site by water, present plans do not provide for temporary work area or access easements. In the event that either of these easements is determined to be necessary, it will be the responsibility of the Sponsor to certify their availability.

22. ESTATES TO BE ACQUIRED (AS REQUIRED)

There are no estates to be acquired for this project.

23. NAVIGATIONAL SERVITUDE

The government will be exercising navigational servitude in support of this project. Navigational servitude will apply for all dredging work, deepening within the channel, disposal on Bartram Island, and for ocean placement.

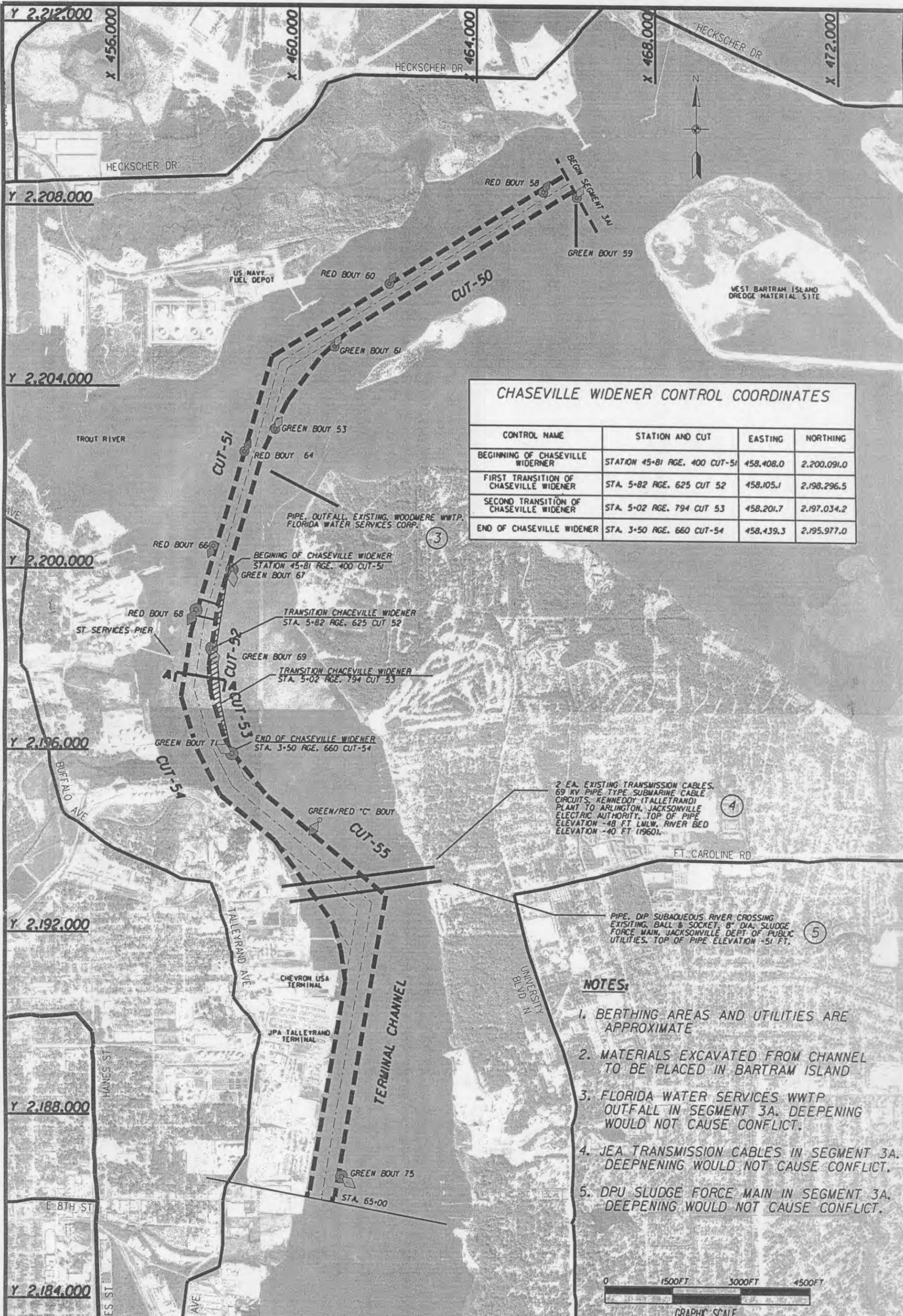
24. REAL ESTATE MILESTONES

The Project Cooperation Agreement is scheduled to be executed in February 2003. Final land certification of existing

JPA owned Bartram Island confined upland disposal area DA/Q1 is scheduled to be completed 120 days thereafter. The construction contract will be scheduled for advertisement in March 2003.

25. M-CACES

01	Lands & Damages	\$ 0
01AA	Project Planning	\$ 4,000
01B--	ACQUISITIONS	
01B20	BY LOCAL SPONSOR (LS)	\$ 10,000
01B40	REVIEW OF LS	
TOTAL REAL ESTATE COST EXCLUDING CONTINGENCY		\$ 14,000
REAL ESTATE CONTINGENCY (25% COST)		<u>\$ 3,500</u>
TOTAL PROJECT REAL ESTATE COST		\$ 17,500



CHASEVILLE WIDENER CONTROL COORDINATES

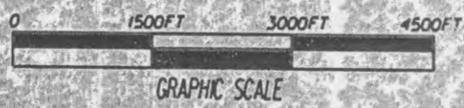
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APPENDIX C
PERTINENT CORRESPONDENCE

FOR PERTINENT CORRESPONDENCE SEE
APPENDIX C OF ENVIRONMENTAL ASSESSMENT