U.S. District Court
Middle District of Florida

DEFENDANT'S EXHIBIT

Exhibit Number: 1

Case Number: 3:17-cv-398-J-34MCR

St. Johns Riverkeeper

v.

U.S. Army Corps of Engineers

Date Identified: 1/4/18

Date Admitted: 1/4/18

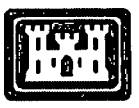
January 2018

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT

REVIEW OF RECENT STORM EVENTS AND FLOODING

JACKSONVILLE HARBOR NAVIGATION PROJECT

DUVAL COUNTY, FLORIDA



U.S. Army Corps
of Engineers
JACKSONVILLE
DISTRICT

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
701 SAN MARCO BOULEVARD
JACKSONVILLE, FLORIDA 32207-0019

FINDING OF NO SIGNIFICANT IMPACT

DUVAL COUNTY, FLORIDA
REVIEW OF RECENT STORM EVENTS AND FLOODING
JACKSONVILLE HARBOR NAVIGATION PROJECT
SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

The U.S. Army Corps of Engineers, Jacksonville District (USACE), has conducted an environmental assessment in accordance with the National Environmental Policy Act of 1969, as amended. The Corps has considered the recent storm events and flooding in the vicinity of the Jacksonville Harbor Navigation Project following the 2017 nor'easter and Hurricane Irma. It was determined that these events do not constitute significant new circumstances or information relevant to environmental concerns and bearing on the project or its impacts.

Since the Final Integrated General Reevaluation Report II and Supplemental Environmental Impact Statement, Duval County, Florida, Jacksonville Harbor Navigation Study dated April 2014 was completed, the Florida Department of Environmental Protection has issued State permit (No. 0129277-017-BI; effective date July 29, 2016 and expiration date July 29, 2026) for the Jacksonville Harbor Navigation Project. This permit constitutes water quality certification pursuant to the Section 401 of the Clean Water Act, 33 U.S.C. § 1341, and concurrence with USACE's consistency determination pursuant to Section 307 of the Coastal Zone Management Act, 16 U.S.C. §1456.

Pursuant to section 7 of the Endangered Species Act of 1973, as amended, consultation with the U.S. Fish and Wildlife Service was completed on November 15, 2013, and with the National Marine Fisheries Service on February 6, 2014. All terms and conditions resulting from this consultation shall be implemented in order to avoid or minimize take of endangered species.

Pursuant to section 106 of the National Historic Preservation Act of 1966, as amended, consultation with the Florida State Historic Preservation Officer and the appropriate federally recognized tribes was completed on October 23, 2013. The Corps has determined that the proposed action poses no effect to historic properties listed or eligible for listing in the National Register of Historic places.

Public review of the Draft Supplemental Environmental Assessment and Proposed Finding of No Significant Impact was completed on December 30, 2017. All comments submitted during the public comment period have been addressed as appropriate.

All applicable laws, executive orders, regulations, and local government plans were considered. Based on these reports, the reviews by other Federal, State and local agencies, Tribes, input of the public, and the review by my staff, it is my determination that the recommended plan has been adequately evaluated within the Final Integrated General Reevaluation Report II and Supplemental Environmental Impact Statement, Duval County, Florida, Jacksonville Harbor Navigation Study dated April 2014 and this Supplemental Environmental Assessment; therefore, preparation of an additional Environmental Impact Statement is not required.

Date: 3 JAN 2018

Jason A. Kirk
Colonel, U.S. Army
District Commander

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT REVIEW OF RECENT STORM EVENTS AND FLOODING JACKSONVILLE HARBOR NAVIGATION PROJECT DUVAL COUNTY, FLORIDA

TABLE OF CONTENTS

LIST OF FIGURES

APPENDICES

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT REVIEW OF RECENT STORM EVENTS AND FLOODING JACKSONVILLE HARBOR NAVIGATION PROJECT DUVAL COUNTY, FLORIDA

1 PROJECT PURPOSE AND NEED

1.1 INTRODUCTION

The U.S. Army Corps of Engineers, Jacksonville District (USACE), is implementing improvements to the Federally authorized navigation channel at Jacksonville Harbor, Duval County, Florida. A detailed description of this project can be found in the *Final Integrated General Reevaluation Report II and Supplemental Environmental Impact Statement (GRR/SEIS), Duval County, Florida, Jacksonville Harbor Navigation Study* (April 2014). In summary, the 2014 GRR/SEIS recommended deepening the Federally authorized navigation channel to 47 feet from the entrance channel to approximately River Mile 13, two areas of widening at the Training Wall Reach and St. Johns Bluff Reach, and two new Turning Basins at Blount Island and Brills Cut (**Figure 1**).

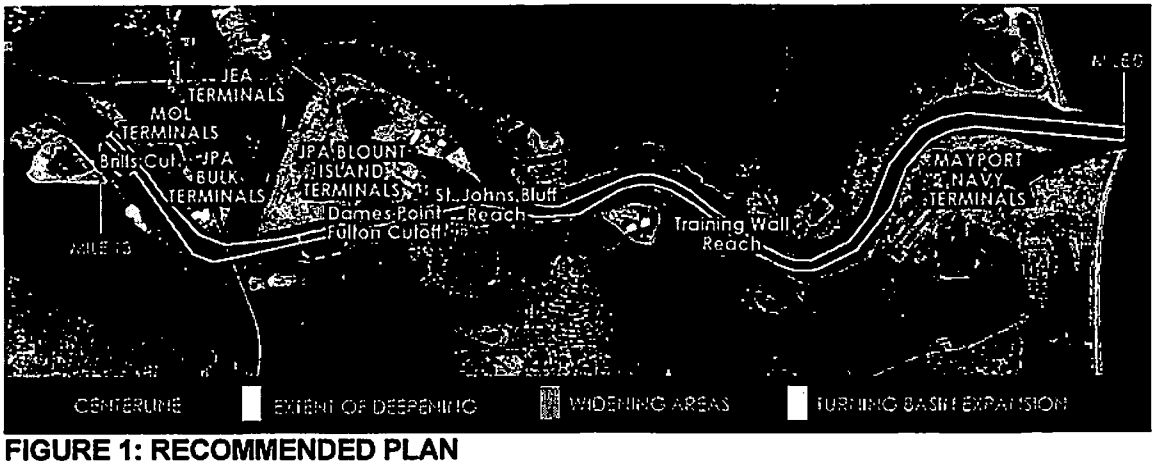


FIGURE 1: RECOMMENDED PLAN

1.2 PROJECT AUTHORITY

Study of harbor improvements was authorized in a resolution from the Committee on Public Works and Transportation, U.S. House of Representatives, dated February 5, 1992. The initial resulting feasibility study recommended modifications from the entrance channel to River Mile 14.7, including deepening from 38 feet to 40 feet. A Feasibility Report and Environmental Impact Statement were completed in September 1998. Deepening of that segment was authorized in the 1999 Water Resources Development Act, and the Director of Civil Works signed the Record of Decision on October 15, 2002. Construction was completed in 2003.

A General Reevaluation Report and Environmental Assessment recommended deepening the harbor from River Mile 14.7 to River Mile 20 from 38 feet to 40 feet. The Environmental Assessment resulted in a Finding of No Significant Impact which was signed on October 15, 2002. Deepening of that segment was authorized in the Energy and Water Appropriations Act of 2006 and construction was completed in 2010.

To follow through with the intent of the original 1992 study authorization, USACE pursued further study. The Feasibility and Cost Sharing Agreement for the 2014 GRR/SEIS was signed July 1, 2005 and amended June 15, 2006. The 2014 GRR/SEIS for the Jacksonville Harbor Navigation Project was completed in April 2014. Congress authorized construction of the Jacksonville Harbor Navigation Project as described in the 2014 GRR/SEIS in Section 7002(1) of the Water Resources Reform and Development Act of 2014, and the Assistant Secretary of the Army (Civil Works) signed the Record of Decision on April 8, 2015.

1.3 PROJECT LOCATION.

Jacksonville Harbor is located within Duval County, Florida and at the mouth of the St. Johns River where it empties into the Atlantic Ocean. The project provides access to deep draft vessel traffic using terminal facilities located in the City of Jacksonville, Florida as shown in **Figure 2.**

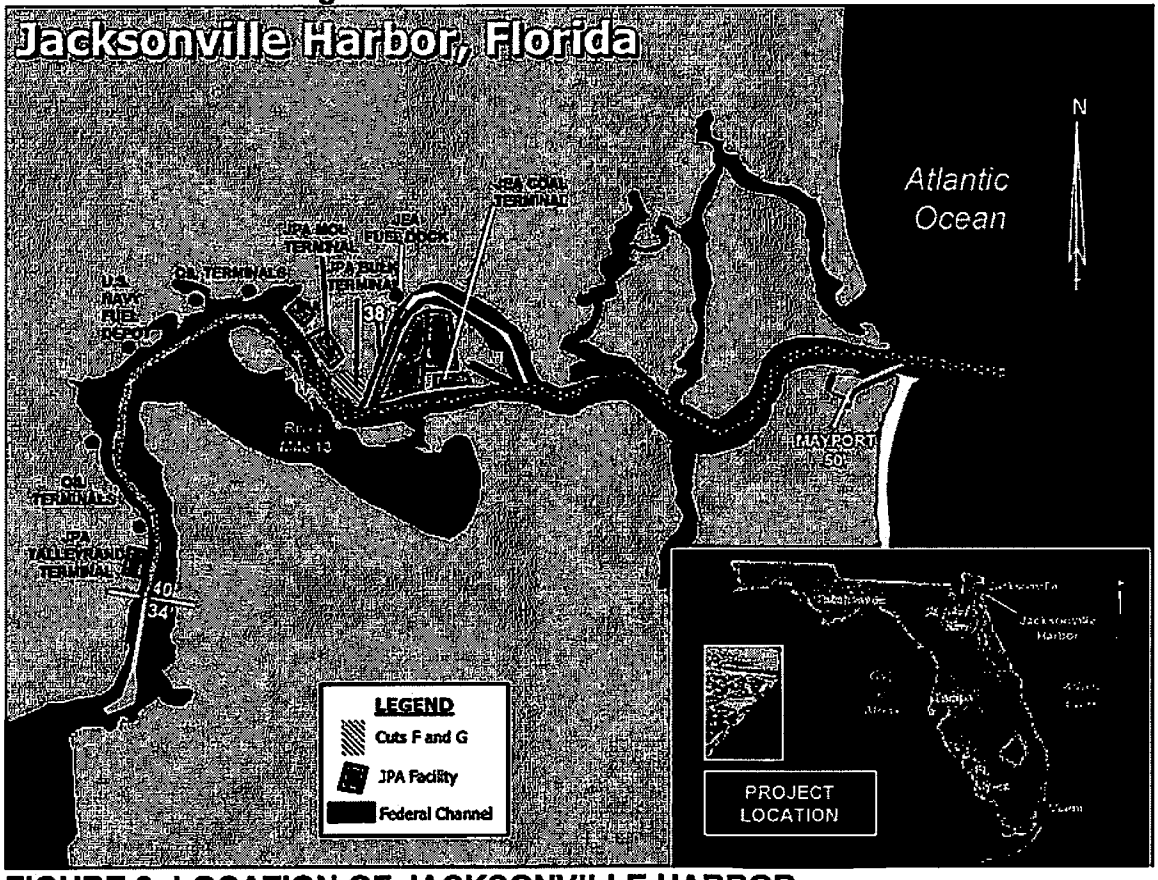


FIGURE 2: LOCATION OF JACKSONVILLE HARBOR

1.4 PROJECT NEED OR OPPORTUNITY.

The purpose of the 2014 GRR/SEIS was to evaluate Federal interest in alternative plans (including the no-action plan) for reducing transportation costs at Jacksonville Harbor and the effects of the alternatives on the natural system and human environment, including economic development effects. The study area generally encompassed the St. Johns River from its mouth at the Atlantic Ocean near Mayport, Florida to River Mile 20 in Jacksonville, Florida. The non-federal sponsor is the Jacksonville Port Authority. Port facilities and users within the study area include container and bulk shipping facilities at Blount Island, Dames Point, Talleyrand and several private terminal facilities including oil terminals and naval facilities. There is an opportunity to improve navigation at Jacksonville Harbor by reducing transportation costs for larger ships forecast to call at Jacksonville Harbor.

1.5 RELATED DOCUMENTS.

Information on prior studies and reports related to this project can be found in the 2014 GRR/SEIS. Please use the following link to access the 2014 GRR/SEIS (click on Duval County, scroll down to Jacksonville Harbor, Final Navigation Study):

http://www.saj.usace.army.mil/About/Divisions-Offices/Planning/Environmental-Branch/Environmental-Documents/

1.6 DECISIONS TO BE MADE.

This Supplemental Environmental Assessment (SEA) updates the 2014 GRR/SEIS, and specifically considers whether the recent flooding conditions in the vicinity of the Jacksonville Harbor Navigation Project following the 2017 nor'easter and Hurricane Irma constitute significant new circumstances or information relevant to environmental concerns and bearing on the project or its impacts.

1.7 SCOPING AND ISSUES.

1.7.1 ISSUES ELIMINATED FROM FURTHER ANALYSIS.

The following issues are adequately addressed in the 2014 GRR/SEIS, and no further analysis is required: (1) physical conditions other than flooding (i.e. geology and geomorphology, groundwater hydrology, tides and salinity, currents affecting navigation, shoreline erosion, sea level rise, water quality including salinity, American Heritage River status, dredged material management areas, land use, public lands adjacent to the proposed project construction area, coastal barrier resources, air quality, noise, hazardous, toxic, and radioactive waste, cultural resources, aesthetics); (2) biological conditions (i.e. threatened and endangered species, essential fish habitat, mammals, birds, amphibians and reptiles, macroinvertebrates including shellfish); (3) environmental justice; (4) energy requirements and conservation; (5) natural or depletable resources; (6) reuse and conservation potential; (7) urban quality; (8) solid waste; (9) scientific resources; (10) Native Americans; (11) drinking water; (12) irreversible and irretrievable commitment of resources; (13) unavoidable adverse environmental effects; (14) local short-term uses and maintenance /enhancement of long-term productivity; (15) indirect effects; (16) compatibility with federal, state, and local objectives; (17) conflicts and

controversy; (18) uncertain, unique, or unknown risks; (19) precedent and principle for future actions; (20) environmental commitments.

1.7.2. ISSUES FURTHER ADDRESSED.

With regard to environmental requirements, USACE is providing an update on Clean Water Act and Coastal Zone Management Act compliance and considering whether there are significant new circumstances or information relevant to environmental concerns and bearing on the project or its impacts triggering the requirement for a supplemental environmental impact statement. Additionally, USACE will further address cumulative impacts within this SEA.

1.8 PERMITS.

Since the 2014 GRR/SEIS was completed, the Florida Department of Environmental Protection has issued State permit (No. 0129277-017-BI; effective date July 29, 2016 and expiration date July 29, 2026) for the Jacksonville Harbor Navigation Project. This permit constitutes water quality certification pursuant to the Section 401 of the Clean Water Act, 33 U.S.C. § 1341, and concurrence with USACE's consistency determination pursuant to Section 307 of the Coastal Zone Management Act, 16 U.S.C. §1456.

2 ALTERNATIVES

The alternative formulation process for the Jacksonville Harbor Navigation Project, as well as potential effects, were described within the 2014 GRR/SEIS. In summary, the 2014 GRR/SEIS stated that the project was evaluated in segments (reaches). Evaluation segment 1 was originally from the entrance channel to approximately River Mile 14 (Dames Point), but was later reduced to approximately River Mile 13. Segments 2 and 3 include additional reaches between Dames Point and Talleyrand and the West Blount Island Channel.

Ship simulation modeling was conducted to determine changes in the project footprint required for the larger vessels to maneuver in the channel. The modeling was also used to identify navigation problems and measures required to improve navigation in the harbor. After initial evaluation and with concurrence of the non-federal sponsor, Segments 2 and 3 were eliminated because the majority of benefiting vessels primarily transit Segment 1. Multiple channel deepening and widening measures and turning basins were combined into alternative plans that extended through River Mile 13. The following alternative plans and combinations were evaluated:

- No action.
- Deepening Alternatives: Depths between 41 and 50 feet were evaluated.
- Widening Alternatives: Widening areas at the Training Wall Reach and St. Johns Bluff Reach were evaluated. Successful meeting in these areas was shown in ship simulation, in combination with deepening alternatives. A stand-alone widening alternative was also evaluated.
- Turning Basins: Turning Basins at Blount Island and Brills Cut were evaluated in combination with deepening and widening alternatives.
- Nonstructural Alternatives: Nonstructural measures considered included additional tug assists and the use of high tide conditions to allow deeper draft vessels to transit the harbor.

The authorized plan includes deepening the Federal channel to 47 feet from the entrance channel to approximately River Mile 13, two areas of widening at the Training Wall Reach and St. Johns Bluff Reach, and two new Turning Basins at Blount Island and Brills Cut (**Figure 1**). Additional information can be found in the 2014 GRR/SEIS.

3 AFFECTED ENVIRONMENT

This section summarizes general physical features of the St. Johns River as well as the river water flow or discharge, water levels, tides, influence of wind and atmospheric pressure, and hurricanes. The reader is encouraged to access the 2014 GRR/SEIS for additional information on the affected environment.

The St Johns River flows south to north and is about 300 miles long. The total elevation drop from the headwaters to the Atlantic Ocean is less than 30 feet (ft) with an average slope of about one inch per mile (National Ocean Service [NOS], 1998). Most of the river is relatively shallow but the most downstream 26 miles has an average depth of about 30 ft (Morris, 1995) due to the Jacksonville Harbor Navigation Project. The Lower St Johns River (LSJR) includes the relatively narrow (2,000 ft average width) and deep portion, which is oriented East to West, from the inlet to downtown Jacksonville (River Mile 25) and the relatively wide (2 mile average width) and shallow (10 ft average depth) portion, which is oriented South to North, from downtown Jacksonville to Palatka (River Mile 75). The difference in cross sectional area of the wide portion of the river, which is three times larger, and the narrow (1,200 ft wide) portion at downtown Jacksonville results in a restriction of downstream flow which is particularly evident during more extreme events such as storm surge, high rainfall runoff and high persistent wind from the south. The main navigation channel is about 23 miles long and extends from the river mouth to near downtown Jacksonville. Existing project depths in the navigation channel include 34 ft mean lower low water (MLLW) between the Talleyrand Terminal and downtown, 40 ft MLLW from River Mile 0 to 20, and 42 ft MLLW seaward of River Mile 0. The Jacksonville Harbor Navigation Project deepening project underway includes deepening to a project depth of 47 ft MLLW from River Mile 0 to 13.

The total drainage area for the St Johns River is about 9,340 square miles and the long-term daily average freshwater discharge is estimated to be about 6,000 to 8,000 cubic feet per second (cfs) at the river mouth (Morris, 1995). The total discharge, which includes tidal flow, is normally greater than 50,000 cfs and can exceed about 200,000 cfs (NOS, 1998; Sucsy and Morris, 2002). Smaller rivers, creeks and tributaries feed into the St Johns River, increasing the river flow, and affecting the tidal signal. Tidal influences affect the river more than 100 miles upriver. The total flow in the river is about 80 to 90% tide induced or tidal flow. The remaining 10 to 20% is attributed to wind, freshwater inflow from tributaries, direct rainfall and point sources such as treatment plants. River flow is seasonal, following the seasonal rainfall patterns, with higher flows occurring in the late summer to early fall and lower flows occurring in the winter. The average annual non-tidal discharge at the river mouth is about 15,000 cfs (National Oceanic Atmospheric Administration [NOAA], 1995).

Water levels in the LSJR are primarily dependent on ocean tide. Ocean tide is primarily an astronomical tide, which is dependent on the gravitational attraction of the Sun and Moon on the Earth, and a meteorological tide, which is due to winds over the ocean and

LSJR, atmospheric pressure changes, and regional ocean circulation. Astronomic tides are accurately predicted and occur on a periodic time scale. Astronomic tides in the LSJR are semidiurnal (12 hour period) with about 6 hours between each high and low tide. As astronomic tides propagate up river the tidal energy is dissipated, tidal ranges are reduced and tide phases are shifted so that high tide at the mouth of the river occurs 3 hours earlier than high tide at downtown Jacksonville. Tide ranges vary on a 12-hour scale, a 2-week scale (spring and neap tides), and an annual scale. The annual scale includes the highest tide during the year, colloquially referred to as the "King Tide", which occurs in October. Meteorological tides are water level variation that occur over a time period of 24 hours or more and are not as periodic or predictable as astronomic tides.

Wind and atmospheric pressure associated with frontal passages and extratropical storm events or nor'easters, from September to April, can cause subtidal water level fluctuations which are significant compared to the normal tide. The more significant of these meteorological events cause an additional 1 ft of water surface elevation above the astronomical tide and flow reversals in the LSJR.

Wind and atmospheric pressure associated with tropical storm events, from June to November, such as tropical depression or storms can cause additional water surface elevation above the astronomical tide similar to extratropical events. In the more extreme case, hurricanes can cause extreme water levels up to 5 ft above the astronomical tide. As of September 2017, there are three examples of major hurricanes, Dora, Matthew and Irma that have caused extreme water levels in the LSJR.

Hurricane Dora

Hurricane Dora was the first major hurricane to make landfall in northeast Florida from the Atlantic Ocean in 80 years when it hit St. Augustine, Florida on September 10, 1964. Hurricane Dora was a Category 2 hurricane with maximum sustained winds of 125 miles per hour (mph), 8 inches of rainfall and storm tides of 5 to 8 ft (Bacopoulos et. al. 2011). The U.S. Weather Bureau (1964) reported that the highest tide at Daytona Beach was 7 ft and 10 ft at Fernandina Beach. The path of Hurricane Dora, once it made landfall, resulted in local winds from the southeast and south along the wide portion of the river that created a local surge effect along the northwest bank of the river in the Riverside area. Within the LSJR the observed storm tide (maximum water level elevation measured by a water level gage, ranged from 4.3 ft at Mayport (value is suspect due to values at other locations), 5.5 ft at the Fuller Warren Bridge in downtown and 5.5 ft at Naval Air Station Jacksonville (**Table 1**).

Hurricane Matthew

After forming on September 28, 2016 as a tropical storm, Hurricane Matthew quickly reached hurricane strength and intensified to a Category 5 storm with winds of 160 mph on September 30, 2016. As Hurricane Matthew approached the Northeast Florida coast in a northward track on October 7, 2016, it slowly weakened from a Category 5 to a

Category 3 storm. Maximum wind speed at the Mayport gage reached 53 mph at 4 pm Eastern Daylight Time on October 7, 2016. The path of Hurricane Matthew placed the center of the hurricane to the east of the LSJR. This resulted in local winds from the north along the wide portion of the river which in turn resulted in a local surge effect on the southern end of the wide portion of the river. Within the LSJR, the observed storm tide (maximum water level elevation measured by a water level gage), ranged from 5.22 ft at Mayport, 4.18 ft at the Dames Point Bridge, 2.76 ft at the Southbank (Main St. Br.) in downtown, 3.44 ft at the Buckman Bridge, 3.66 ft at Red Bay Point (Shands Br.) and 5.19 ft at Racy Point (**Table 1**).

Hurricane Irma

Hurricane Irma formed as a tropical storm on August 30, 2017 and rapidly intensified which allowed it to reach major hurricane status (Category 3 or higher) on August 31, 2017. Hurricane Irma is one of only five hurricanes that have reached maximum sustained wind speeds of 185 mph or greater and it maintained those winds for 37 hours, the longest on record. After landfalls in the Caribbean, Hurricane Irma made landfall in the Florida Keys and then near Marco Island in southwest Florida. Hurricane Irma crossed just east of Key West on September 10, 2017 with maximum sustained winds of 130 mph and a central pressure of 929 millibars. Hurricane Irma's eye followed a track along the Florida west coast and passed into Georgia east of Tallahassee, Florida. Even though the center of Hurricane Irma followed the west coast of Florida north, the large size of this hurricane, which stretched 400 miles across, caused tropical storm winds along the northeast Florida coast on September 10 and 11, 2017. Maximum wind speed at the Mayport gage was 61 mph on September 11, 2017.

Prior to the arrival of Hurricane Irma, a nor'easter caused about 0.5 ft increase in predicted water levels at the Mayport gage. Hurricane Irma's effects on the LSJR coincided with the spring tide and maximum storm tide at the Mayport gage was near high tide. It has been reported that Hurricane Irma also coincided with a "King Tide" event although the astronomical tide on September 11, 2017 was 2.48 ft while the highest astronomical tide of the month was 2.91 ft on September 18, 2017. Rainfall totals for Hurricane Irma in the LSJR area were 11 inches. Further south in the Upper and Middle St. Johns River area rainfall totals were approximately 14 inches. The path of Hurricane Irma placed the center of the hurricane to the west of the LSJR. The path of Hurricane Irma along with its large extent of tropical force winds resulted in persistent high winds from the south along the wide portion of the river causing a local surge in the north end of the wide portion of the river near downtown Jacksonville.

Within the LSJR, the maximum observed storm tide (maximum total water level elevation measured by a water level gage), ranged from 6.6 ft at the Jacksonville beach Pier, 5.6 ft at Mayport, 5.1 ft at the Dames Point Bridge, 5.6 ft at the Southbank (Main St. Br.) in downtown, and 5.6 ft the Buckman Bridge (**Table 1**).

TABLE 1. Comparison of observed water levels and High Water Marks for Hurricanes Irma, Matthew, and Dora (Elevation are referenced to North American Vertical Datum of 1988 [NAVD88] unless noted otherwise).

	Irma		Matthew	Dora	
Location	NOS (ft)	USGS (ft)	NOS (ft)	NOS (ft)	HWM (ft)
Jax Beach Pier	-	6.6	-	-	-
Mayport	5.6	-	5.22	4.3	-
ICW Atl Blvd.	-	5.4	-	-	-
Dames Pt.	5.1	-	4.18	-	-
Main St.	5.6	-	2.76	-	-
Acosta Br.	-	5.0	-	-	-
Fuller Warren Br.	-	-	-	-	5.5
San Marco (Childrens Way)	-	5.7	-	-	-
Lower Ortega R.	-	-	-	-	5.8
NAS Jacksonville	-	-	-	-	5.5
Buckman Br.	5.6		3.44	-	-
Red Bay Pt	-	-	3.66	-	-
Racy Pt.	-	-	5.19	-	-

4 ENVIRONMENTAL EFFECTS

This section includes an evaluation of how the authorized Jacksonville Harbor Navigation Project, in combination with storm surge and other climatic conditions, may affect flooding within the project area. The reader is encouraged to access the 2014 GRR/SEIS for additional information on potential environmental effects associated with the authorized project.

The 2014 GRR/SEIS, Engineering Appendix A, Attachment J, Hydrodynamic Modeling for Storm Surge and Sea Level Change, describes the hydrodynamic modeling methods used to evaluate the impact of the Jacksonville Harbor Navigation Project, in conjunction with sea level rise, on storm surge. The Advanced Circulation (ADCIRC)+Simulating Waves Nearshore (SWAN) (Dietrich et al., 2011) storm surge hydrodynamic modeling for the Jacksonville Harbor Navigation Project deepening was based on Federal Emergency Management Agency (FEMA) Georgia and Northeast Florida Coastal Storm Surge and Mapping Study (BakerAECOM, 2014). Portions of the Hydrodynamic Modeling for Storm Surge and Sea Level Change report are presented to relate the hydrodynamic modeling analysis done for the deepening project to historical tropical storms events which have resulted in extreme water levels in the LSJR.

The ADCIRC model physical domain (bathymetry and topography) representation allows the model to cover the Atlantic Ocean and Gulf of Mexico while focusing high horizontal resolution on the LSJR floodplain (Luettich and Westerink, 2006). SWAN calculates the wave heights which add to the storm surge and is tightly coupled with the ADCIRC model to operate on the same model domain or grid. SWAN is forced by winds, water levels, and currents passed from ADCIRC, where it computes a new water level (Dietrich et al, 2011). The model grid was developed based on an adaptation of a local grid of the LSJR and the FEMA Northeast Florida Georgia (NEFLGA) storm surge mesh (**Figure 3** and **Figure 4**). **Figure 3** shows the entire model domain which extends from the middle of the Atlantic Ocean to the eastern seaboard of the United States and includes the Caribbean Ocean and the Gulf of Mexico. **Figure 5** presents the mesh topography and bathymetry for the LSJR and associated floodplain. **Figure 4** shows a model domain that includes all topographic elevations within 25 to 30 miles of the Atlantic coast and includes a minimum elevation at the landward boundary of 10 m North American Vertical Datum of 1988 (NAVD88) and all elevations within the model domain. Therefore, the effective limit of the model's capability to model water surface elevations without any boundary interference due to tide, storm surge, sea level rise, or local wind effects is 10 meters (m; 32.8 ft), which is significantly higher than any simulated water surface elevations conducted with this model application which shows that there are no artificial boundaries within the flood plain of the LSJR. Since this application of ADCIRC+SWAN is a relatively large scale model it does not include features such as buildings and streets.

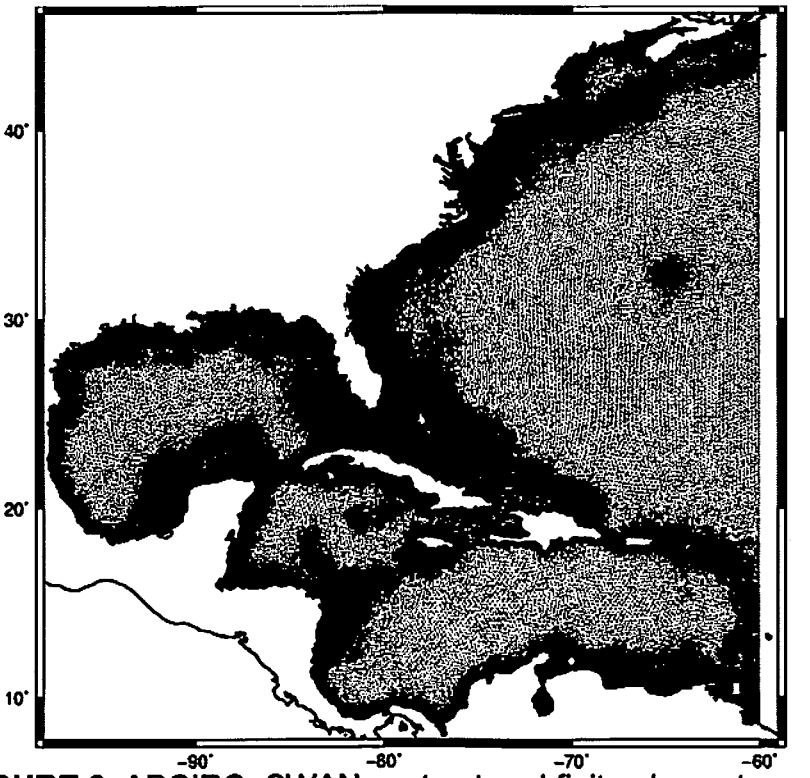


FIGURE 3. ADCIRC+SWAN unstructured finite element mesh

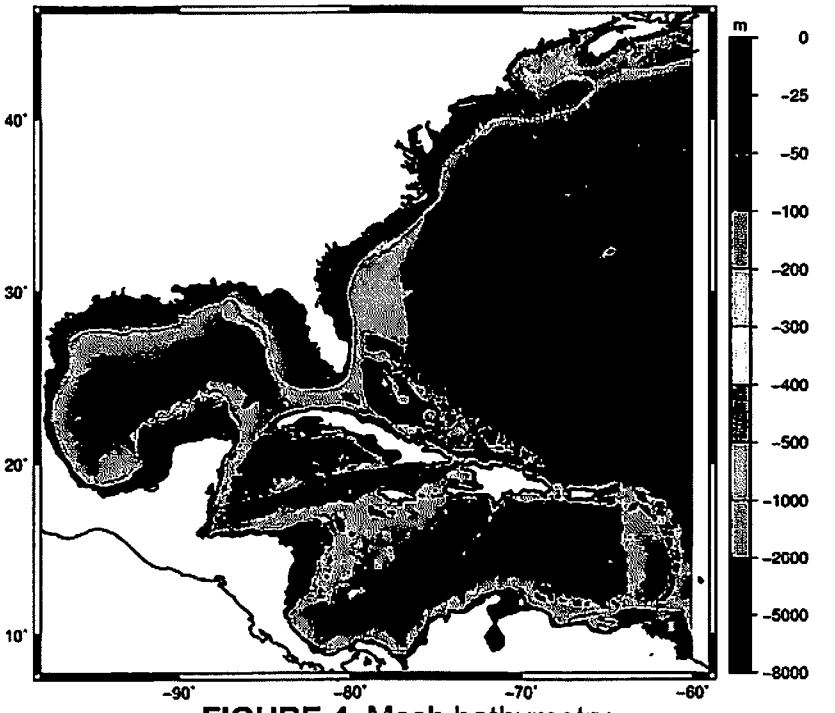


FIGURE 4. Mesh bathymetry

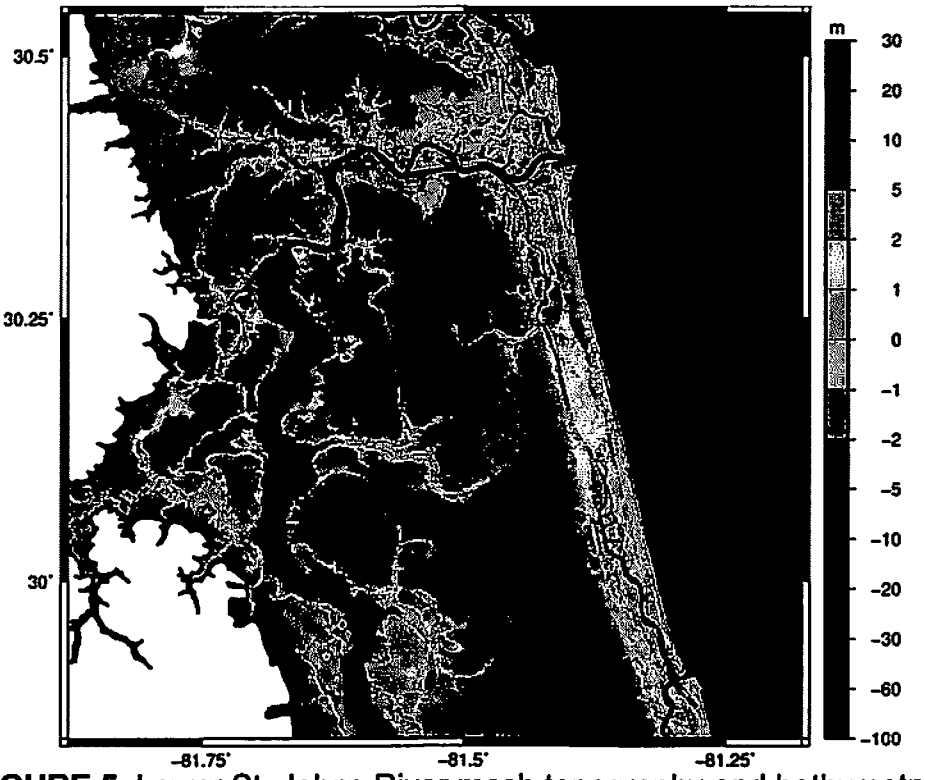


FIGURE 5. Lower St. Johns River mesh topography and bathymetry

All ADCIRC+SWAN model simulation and analysis for the Jacksonville Harbor Navigation Project were based on 50- and 100- year return period water level elevation in the offshore area near the mouth of the St. Johns River. All ADCIRC+SWAN simulations were also based on bathymetry and topographic elevations which represent conditions in the 2010 to 2012 period. The synthetic storm development focused on selecting forcing parameters within the ADCIRC+SWAN model that produce 50- and 100-yr water levels in the Jacksonville Harbor Navigation Project. Dean et al. (1991) provided the 50- and 100-yr water levels offshore of the project area. Dean et. al. (1991) developed the total storm tide values for various return periods along the shore in Duval County, Florida. The total storm tide estimates include the contributions of wind stress, barometric pressure, dynamic wave setup, and astronomical tide, but do not include flow from rainfall runoff. To develop the target 50- and 100-yr water levels, variations of the Hurricane Dora (1964) wind and pressure fields were applied to the model input wind and pressure fields. The focus of this modeling analysis was to evaluate probabilistic storm event water levels. These storm event water levels were developed using the wind and pressure fields from Hurricane Dora because it was the most representative event. The Hurricane Dora storm track was shifted northward by 2 miles which produced a maximum ADCIRC+SWAN model water level offshore of the Jacksonville Harbor entrance channel equal to 9.4 ft-NAVD, the 50-yr water level in the vicinity of the project area. To develop the 100-year water level of 12.0 ft NAVD88, within the ADCIRC+SWAN model, the Hurricane Dora track was shifted by 8 miles and the wind speeds were increased by a factor of 1.25.

The channel deepening primarily effects water levels in the LSJR due to ocean tide and storm surge. Variations in storm events related to rainfall and local wind within the river do not significantly change the with- and with-out project effect on water levels in the LSJR.

The USACE did not include rainfall runoff input in the ADCIRC Storm Surge model; however, the storm events which were used to evaluate the effect of channel deepening on storm surge exceed the observed elevation of flood elevations during Hurricane Irma. A simple approximation to estimate the water levels due to storm surge and rainfall runoff is to add the two components to get a total water level. This is expected to be accurate to 10 or 20 percent. The dynamics of the interaction between the storm surge and the additional volume of water in the river due to rainfall runoff can increase the peak water level by 10 or 20 percent. The location of this increase will depend on the timing between the rainfall runoff and the peak storm surge therefore the location of highest water levels will change location depending on the rainfall and surge characteristics of each storm event.

Even though the 2014 GRR/SEIS ADCIRC+SWAN did not include rainfall runoff, the storm surge modeling with 50- and 100- year storm events represent a worst case scenario, in that both of these synthetic storm events' water levels meet or exceed the maximum water levels observed in the LSJR for the historic major Hurricanes Dora, Matthew and Irma. **Table 2** shows the maximum water surface elevation for with- and without project condition for the 50-year storm event, which is most comparable to the historic storm events, and the 50 year projected sea level rise of 0.4 ft for four locations in the LSJR. When compared to the water level measurements and high water marks for Hurricanes Dora, Matthew and Irma which range from about 5 ft at Mayport versus a simulated value of 8 ft, 5 to 6.5 ft at Dames Point versus a simulated value of 6.57 ft, and 5.0 to 5.7 ft at San Marco versus a simulated value of 7.59 ft for the without project condition. The simulated impact of the project on storm surge increases the water levels to 8.15 ft, 6.86 ft and 7.65 ft at Mayport, Dames Point and San Marco, respectively, higher than any observed storm data. The Corps modeled events comparable to or more severe than Hurricane Irma. Accordingly, recent storm events and flooding in the vicinity of the Jacksonville Harbor Navigation Project do not constitute significant new circumstances or information relevant to environmental concerns bearing on the project or its impacts.

TABLE 2. ADCIRC Storm Surge Maximum Water Surface Elevation for Four Stations and Effect of Channel Deepening

	Mayport	Dames Pt	Trout River	San Marco
	(ft, NAVD88)	(ft, NAVD88)	(ft, NAVD88)	(ft, NAVD88)
S1-Without Project, 50-year Storm, 0.4'SLR	8.01	6.57	7.82	7.59
S3-With Project, 50-year Storm, 0.4'SLR	8.15	6.86	7.90	7.65
Difference S3-S1	0.14	0.29	0.08	0.06

4.1 CUMULATIVE EFFECTS

A cumulative effect is the additive or interactive effect on the environment that could result from the incremental effect of the alternatives when added to other past, present, or reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Interactive effects may be either countervailing (where the net adverse cumulative effect is less than the sum of individual effects) or synergistic (where the net adverse cumulative effect is greater than the sum of the individual effects). Cumulative effects can result from individually minor, but collectively significant, actions that take place over time. Accordingly, a cumulative effect analysis identifies and defines the scope of other actions and their interrelationship with the alternatives (or grouping of alternatives) if there is an overlap in space and time. Cumulative effects are most likely to occur when there is an overlapping geographic location and a coincident or sequential timing of events. As the environmental analysis required under the National Environmental Policy Act is forward-looking, the aggregate effect of past actions is analyzed to the extent relevant and useful in analyzing whether the reasonably foreseeable effects of the project may have a continuing, additive, and significant relationship to those effects.

Past, present, and future changes in the St. Johns River can be largely attributed to the following factors:

- Hydrologic alteration and manipulation of the river and its tributaries (such as dredging, filling, impoundment, shoreline hardening/stabilization, and construction of levees and artificial waterways)
- Changes in land use within the river's watershed (such as commercial/residential development, agriculture/forestry, surface and ground water withdrawal, runoff, and generation of domestic and industrial/commercial waste)
- Commercial and recreational activities on the water along with the

construction and operation of docks, marinas, berths, and other support facilities

- Measures taken to ameliorate the impacts of activities within the watershed (such as stormwater management, treatment of domestic and industrial/commercial waste, regulation of water use/withdrawal and regulation of boating, shipping, and construction on the water)
- Sea level rise

The cumulative effect analysis presented in this DSEA is consistent with guidance documents issued by Council on Environmental Quality (CEQ, *Considering Cumulative Effects Under the National Environmental Policy Act* (CEQ 1997), and USEPA, *Consideration Of Cumulative Impacts In USEPA Review of NEPA Documents*, (USEPA 1999c) as well as CEQ's additional *Guidance on the Consideration of Past Actions in Cumulative Effects Analysis* (CEQ 2005).

4.1.1 RELEVANT PAST AND PRESENT ACTIONS

The river channel has seen a number of water projects to improve the channel, beginning in 1899 with authorization of a channel 200 ft wide and 13 ft deep from Jacksonville to Palatka. Subsequent authorizations included navigation projects to Sanford, Lake Harney, and Lake Monroe. The first 20 miles of the Federal channel was deepened in 1965 to a depth of 38 ft with widths varying from 400 to 1,200 ft. By 1998, the Mayport Naval Station had a basin and channel depth of 42 ft. The Water Resources Development Act of 1999 authorized deepening the main channel from 38 to 40 ft from the entrance channel to about River Mile 14.7. The 2002 General Reevaluation Report and Environmental Assessment authorized the 40-foot project depth from River Mile 14.7 to River Mile 20. Since completion of that construction, the channel authorized depth has remained at 40 ft for the channel from the river mouth to River Mile 20. Mayport Naval Station obtained authorization and deepened their harbor and channel, including the entrance channel in the Atlantic Ocean to 50 ft deep. Construction was completed in 2012.

The most recent action is the redesign and reconstruction of the Mile Point area shorelines to improve navigation characteristics at the intersection of the Florida Atlantic Intracoastal Waterway and the main stem of the St. Johns River. Phase 1 of the Mile Point construction is anticipated to be completed in early 2018.

Since the initial studies and surveys of the St. Johns River in the late 1800's, the City of Jacksonville/Duval County has expanded outward from and along the river. From Mayport Naval Station on the south shore of the river mouth, development covers most of the south shore of the river for many miles. On the north river bank, residential development along the river levee extends almost to the river mouth, and merges with industrial developments on Blount Island and beyond. Urban development then dominates both sides of the river until about River Mile 40. Intermittent development and smaller towns beyond this point mix with natural forested wetlands and (further inland) pine flatwoods,

and row crop farming. Discharges associated with residential, commercial, and agricultural development have all influenced water quality in the river and river tributaries of the LSJR.

4.1.2 RELEVANT FUTURE ACTIONS

The USACE will continue to perform maintenance dredging of the navigation channel in addition to the authorized channel deepening. The upland disposal facilities are approaching capacity. If USACE desires upland disposal of the dredged material, the existing upland facilities for disposal will require renovation and disposal of dewatered material in the facilities and/or construction of new upland dredge material management areas. There is an approved, recently expanded Ocean Dredged Material Disposal Site for this project.

Further upland development may occur at the Mayport Naval Station as a result of "other ongoing development and/or recapitalization efforts" associated with a variety of planned or proposed actions that will involve the station in additional waterside activity. The Environmental Impact Statement for deepening of the naval station and harbor also indicates that future actions by the port may include an offshore undersea warfare training range starting about 50 nautical miles offshore, and sonar training based at Mayport Naval Station.

Renovation of existing port (public and private) terminals and construction of new terminals are likely consequences of larger ships calling at the ports. Along with the growth in port activity, the population growth of Jacksonville is likely to occur at least in part due to the increase in port activity and related private enterprise.

Regardless of the shipping and related commercial industrial development in the Jacksonville Harbor, the regional population will continue to grow. Additional development will include more wastewater treatment plants, stormwater runoff structures and discharges, residential and commercial wells, and residential and commercial septic systems for locations distant from a wastewater treatment system.

4.1.3 CUMULATIVE EFFECT ANALYSIS

For this DSEA, this cumulative effect analysis focuses on how the combination of past, present and future actions within the river and the watershed may affect storm surge and flooding. The 2014 GRR/SEIS, Engineering Appendix A, Attachment J, Hydrodynamic Modeling for Storm Surge and Sea Level Change, describes the hydrodynamic modeling methods used to evaluate the impact of the Jacksonville Harbor Navigation Project deepening, in conjunction with sea level rise, on storm surge. This modeling analysis indicates that the increase in storm surge water levels due to the project will decrease by less than 0.1 ft in the LSJR when sea level rises from 0.4 to 1.0 ft.

Future variability in rainfall due to potential future climate change may further contribute to storm related flooding conditions. Localized rainfall events in urbanized areas may further contribute to flooding due to local run off and stormwater containment concerns. As the City of Jacksonville continues to become more urbanized and natural areas converted to impervious surfaces, increased run off may be experienced during storm events in these urban areas which may exacerbate flooding related to storm surge.

In addition to potential changes from human activity, changing climactic and oceanic conditions may also alter the LSJR ecosystem in ways less predictable or foreseeable than man-made changes. Seasonal rainfall patterns exert significant influence over seasonal water quality conditions in the LSJR, and longer periods of extended low or high rainfall patterns cause greater long-term salinity ranges in the river. If climactic conditions undergo a permanent change, the LSJR could have a different flora and fauna simply due to long-term increases or decrease in annual rainfall or altered seasonal pattern of rainfall. Sea level rise is very likely to continue at its current rate, or that rate may increase. Sea level rise may have significant effects on the St. Johns River if for no other reason than the river basin is relatively flat and the river has a very low slope. A small increase in sea level has the potential to affect hydrology and hydrodynamics in a relatively large area of the LSJR.

5 LIST OF PREPARERS

5.1 PREPARERS

This SEA was prepared by Paul Stodola, Biologist, and Steven Bratos, Engineer, USACE-Jacksonville District. It was reviewed by USACE Jacksonville District supervisory chain of the Planning and Policy Division, Environmental Branch, Engineering Division, and Project Management.

6 PUBLIC INVOLVEMENT

6.1 SCOPING AND DRAFT SEA

Pursuant to the National Environmental Policy Act and USACE Regulation, a scoping letter dated November 30, 2017 was issued for this assessment (see scoping letter in Appendix A). Also, the DSEA and Proposed Finding of No Significant Impact (FONSI) were made available to interested agencies and stakeholders for their review and comment. A Notice of Availability (NOA) for the DSEA and Proposed FONSI was issued on December 14, 2017.

6.2 COMMENTS RECEIVED AND RESPONSE

Comments received in response to the scoping letter and NOA are summarized below. All pertinent comments letters or emails received can be found in Appendix A.

US Environmental Protection Agency Comment

COMMENT: The scoping letter states that the USACE will also be considering if the recent flooding conditions in the Jacksonville Harbor Navigation Project constitute significant new circumstances or information relevant to environmental concerns. The Jacksonville Harbor Navigation Project has an existing MPRSA Section 103 concurrence for ocean disposal which expires in December of 2018. If it is determined that there are "significant new circumstances or information" relating to environmental concerns, additional or confirmatory testing of sediment may be required in order to determine that the sediment associated with the Jacksonville Harbor Navigation Project remains suitable for ocean disposal.

RESPONSE: The USACE has considered the recent storm events and flooding in the vicinity of the Jacksonville Harbor Navigation Project following the 2017 nor'easter and Hurricane Irma. It was determined that these events do not constitute significant new circumstances or information relevant to environmental concerns and bearing on the project or its impacts.

Florida State Clearinghouse Comment

COMMENT: The Florida State Clearinghouse has received the above-referenced project and has forwarded it to the appropriate state agencies for review. Applicants should expect to receive their State Clearance Letter 30-60 days from the received date.

RESPONSE: The Florida State Clearinghouse email was received on December 28, 2017. The NOA stated that the public review period for the DSEA responses shall continue through December 30, 2017.

St. Johns Riverkeeper Comment

COMMENT: We request a 30-day extension for public comment period to allow citizens and the City of Jacksonville time to assess and discuss this critical issue. A sixteen day comment period over the holidays is simply inadequate. We also request a USACE public meeting with City of Jacksonville officials to discuss flood risks resulting from the deep dredge prior to completion of the DSEA.

RESPONSE: The USACE has prepared this SEA to aid in our compliance with NEPA even though an EIS is not necessary (see 40 CFR 1508.9(a) (2)). Despite the fact that regulations do not require a scoping process for preparation of an EA, the USACE decided to solicit public input with a scoping letter dated November 30, 2017 (see 40 CFR 1501.7 and 33 CFR 230.12). This decision was to "encourage and facilitate public involvement in decisions which affect the quality of the human environment" (see 40 CFR 1500.2(b)). USACE regulations at 33 CFR 230.11 do not require circulation of a draft EA and proposed FONSI in this instance as the NEPA analysis does not accompany a draft report; nevertheless, to increase the opportunity for public input, the USACE chose to make a draft EA and proposed FONSI available to the public for comment on December 14, 2017. USACE and Council on Environmental Quality regulations only require that "a notice of availability of the FONSI will be sent to concerned agencies, organizations and the interested public" (see 33 CFR 230.11 citing 40 CFR 1501.4(e) (1)). Consistent with the intent of NEPA, the USACE has made diligent efforts to involve the public (see 40 CFR 1506.6), going above and beyond regulatory requirements for an EA and FONSI.

COMMENT: Federal predictions do not portray the project's immediate impacts that must be dealt with on an annual basis by a portion of the City of Jacksonville, including waterfront development far removed from the area of river deepening.

By design and tradition the USACE analyses consider the effect of a project based upon a low-frequency, 50- or 100-year hurricane storm in the future – a storm that doesn't necessarily reflect the reality of today's frequent nuisance flooding conditions.

The federal modeling strategically avoids reliable prediction of present day high-frequency storm impacts in the downtown urban core and adjacent developed waterfronts of San Marco, Riverside and Ortega.

The USACE was required to:
1. Estimate the potential impacts of the proposed federal project on water levels within the St. Johns River
2. Determine if the potential impacts are significant enough to affect the flood hazard zones designated by FEMA.

Again, the Corps completely discounts or inadvertently misses the significance of the probability of high frequency flooding events in the City core due to continued deepening of the St. Johns River channel.

That is, the model fails to accurately predict the elevated river levels that consistently occur in the fall, during which nuisance flooding is observed and sensitivities to increased water levels are greatest.

Any increase in the severity of high frequency seasonal flooding in the San Marco, Riverside and Ortega areas (even if only a few inches) can be highly impactful to private and public properties and infrastructure, as well as physical access to residences and businesses alike.

RESPONSE: Impacts associated with lesser storm events than the USACE modeled are within the range of impacts the USACE considered to be associated with the project. The effects of the proposed project on storm surge are based on FEMA's Georgia Northeast Florida storm surge study methodology. The application of the ADCIRC+SWAN hydrodynamic and wind-wave models, refined for the Jacksonville Harbor Deepening evaluations, represents the best available estimate of storm surge changes that may occur due to the proposed project (See Attachment J Hydrodynamic Modeling for Storm Surge and Sea Level Change of Appendix A -Engineering). The USACE compared the without project condition to the 47' project with sea level rise and concluded the project could, with a 100-year event, increase storm surge 0.25 to 0.5 feet, and in several isolated areas up to 0.7 feet. The USACE was reasonable in its modeling to project potential project impacts, and there is no requirement that the USACE analyze every conceivable storm event in its NEPA analysis. Nevertheless, the USACE concludes, based upon engineering judgment, that the project could increase the maximum water levels associated with high frequency events of a smaller nature than those modeled by 12% or less based on the calculated impact to tide ranges. For example, if a storm event increased water levels at downtown Jacksonville by 1 foot above a normal tide level of 1 foot, the project could increase that water level by approximately 0.24 feet; however, many variables affect water levels at specific locations along the St. John's River.

The USACE also considered sea level rise in conjunction with the project and concluded potential impacts of rising sea level include overtopping of waterside structures, increased shoreline erosion, and flooding of low lying areas (see GRR/SEIS at p. 139).

The proposed action is not anticipated to induce development of the floodplain or to otherwise adversely affect any floodplain, since no land use changes are expected to result from the project and USACE has not determined to, or proposed to, conduct, support, or allow an action to be located in a floodplain. The proposed action is in compliance with the requirements of Executive Order 11988.

REFERENCES

Bacopoulos, Peter & Bilskie, Matthew & C. Hagen, Scott & Bender, Christopher & Naimaster, Ashley. 2011. Florida's Intracoastal Waterway in a Storm Surge Setting: Longwave Physics and Mesh Resolution. Proceedings of the International Conference on Estuarine and Coastal Modeling.

BakerAECOM, (2014), Wave and Hydrodynamic Model Validation, Georgia and Northeast Florida Flood Insurance Study, Version 5.0, April 2014, Final Version

Dean, R.G., Chiu, T.Y., and Wang, S.Y. 1991. Combined Total Storm Tide Frequency Analysis for Duval County, Florida. Submitted to the Beach and Shores Resource Center, Institute of Science and Public Affairs, Florida State University, Tallahassee, FL.

Dietrich, J. C., Zijlema, M., Westerink, J. J., Holthuijsen, L. H., Dawson, C. N., Luettich, R. A., Stone, G. W. (2011). Modeling hurricane waves and storm surge using integrally coupled, scalable computations. Coastal Engineering, 58, 45-65.

Luettich, R. A., Westerink, J. J., & Scheffner, N. W. (1992). ADCIRC: An Advanced Three-Dimensional Circulation Model For Shelves, Coasts, and Estuaries, I: Theory and Methodology of ADCIRC-2DDI and ADCIRC-3DL: U.S. Army Corps of Engineers

Morris, F.W., 1995. Volume 3 of the Lower St. Johns River Basin Reconnaissance: Hydrodynamics and Salinity of Surface Water. Technical Publication SJ95-9. Palatka, Florida: St. Johns River Water Management District.

National Oceanic and Atmospheric Administration, 1985. National Estuarine Inventory, Data Atlas. Volume 1, Physical and Hydrologic Characteristics. National Ocean Service. Rockville, MD.

National Oceanic and Atmospheric Administration, 1998. Local Climatological Data: Annual Summary for Jacksonville, Florida. National Climatic Data Center, Asheville, NC.

National Oceanic and Atmospheric Administration Water Level and Meteorological Data Report, Hurricane Matthew (2017).

NOAA Tropical Depression QuickLook, Posted 00:00 September 12, 2017

Sucsy, P. and Morris, F. 2002. "Calibration of a Three-Dimensional Circulation and Mixing Model of Lower St. Johns River." (Memorandum draft). St. Johns River Water Management District, Palatka, FL.

USACE. 2014. Final Integrated General Reevaluation Report II and Supplemental Environmental Impact Statement, Duval County, Florida, Jacksonville Harbor Navigation

Study. Please use the following link to access this document (click on Duval County, scroll down to Jacksonville Harbor, Final Navigation Study).

http://www.saj.usace.army.mil/About/Divisions-Offices/Planning/Environmental-Branch/Environmental-Documents/

U.S. Weather Bureau. 1964. "Hurricane Dora: August 28 – September 16, 1964." *Preliminary Report with Advisories and Bulletins Issued*, U.S. Department of Commerce, Washington, DC.

APPENDIX A – PERTINENT CORRESPONDENCE

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
701 San Marco Boulevard
JACKSONVILLE, FLORIDA 32207-8175

REPLY TO ATTENTION OF

Planning and Policy Division
Environmental Branch

NOV 3 0 2017

TO WHOM IT MAY CONCERN

This scoping letter is being promulgated by the Jacksonville District, U.S. Army Corps of Engineers (Corps) in compliance with public coordination requirements of the National Environmental Policy Act (NEPA). The purpose of this correspondence is to formally initiate the scoping process as defined by 40 CFR 1501.7 for the proposed Jacksonville Harbor berthing area improvements, Duval County, Florida and to provide opportunity for comment.

The proposed work includes deepening the Blount Island Marine Terminal, Mitsui O.S.K. Lines, and the Dames Point berths (see attached location map). All of these berths are currently constructed to -40 feet plus 2 feet of depth, and would be deepened to -47 feet plus 2 feet of depth. Dredged material would be placed either in the approved Ocean Dredged Material Disposal Site or within Bartram Island.

Concurrent with preparation of NEPA documentation on the berthing area improvements, to further the purposes of NEPA, the Corps will also consider whether the recent flooding conditions in the vicinity of the Jacksonville Harbor Navigation Project following the 2017 nor'easter and Hurricane Irma constitute significant new circumstances or information relevant to environmental concerns and bearing on the Jacksonville Harbor Navigation Project or its impacts.

The Corps welcomes your views and comments. Your concerns will be appropriately considered and discussed in a NEPA assessment. Please send your comments or inquiries to Mr. Paul Stodola at the letterhead address or via email at paul.e.stodola@usace.army.mil within thirty (30) days of the date of this letter. Please let us know if you do not want to receive future notifications on this effort. If you wish to receive future notifications by email, then please respond to Mr. Stodola's email and request this service.

Sincerely,

Gina Paduano Ralph, Ph.D.
Chief, Environmental Branch

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
701 SAN MARCO BOULEVARD
JACKSONVILLE, FLORIDA 32207-0019

REPLY TO
ATTENTION OF

Planning and Policy Division
Environmental Branch

DEC 1 4 2017

TO WHOM IT MAY CONCERN:

Pursuant to the National Environmental Policy Act and U.S. Army Corps of Engineers (Corps) Regulation (33 CFR 230.11), this letter constitutes the Notice of Availability of the Draft Supplemental Environmental Assessment (DSEA) to Consider 2017 Flooding and Proposed Finding of No Significant Impact (FONSI) for the Jacksonville Harbor Navigation Project, Duval County, Florida. The DSEA relates to the Jacksonville Harbor Navigation Study General Reevaluation Report and Environmental Impact Statement dated April 2014 and evaluates the recent flooding conditions and storm surge in the vicinity of the project following the 2017 nor'easter and Hurricane Irma. The DSEA preliminarily concludes that these events do not constitute significant new circumstances or information relevant to environmental concerns and bearing on the Jacksonville Harbor Navigation Project or its effect to the human environment.

A copy of the DSEA and Proposed FONSI are available for your review at the following Jacksonville Public Libraries: Main at 303 North Laura Street, Highlands Branch at 1826 Dunn Avenue, Regency Square Branch at 9900 Regency Square Boulevard, and the Mandarin Branch at 3330 Kori Road. It is also available for your review online at the following website. Click on Duval County, then scroll down to Jacksonville Harbor DSEA or the Proposed FONSI.

http://www.saj.usace.army.mil/About/DivisionsOffices/Planning/EnvironmentalBranch/EnvironmentalDocuments.aspx

Please submit questions or comments on the DSEA and Proposed FONSI in writing to the letterhead address above or by email (Paul.E.Stodola@usace.army.mil) through December 30, 2017.

Sincerely,

Gina Paduano Ralph, Ph.D.
Chief, Environmental Branch

-----Original Message-----
From: Militscher, Chris [mailto:Militscher.Chris@epa.gov]
Sent: Thursday, December 21, 2017 12:38 PM
To: Stodola, Paul E CIV USARMY CESAJ (US) <Paul.E.Stodola@usace.army.mil>
Cc: Weiss, Lena <Weiss.Lena@epa.gov>; Higgins, Jamie <Higgins.Jamie@epa.gov>; Militscher, Chris <Militscher.Chris@epa.gov>
Subject: [EXTERNAL] Scoping Notice: Blount Island Marine Terminal

From: Christopher A. Militscher

Chief, NEPA Program Office

USEPA Region 4

To: Paul E. Stodola

Project Manager

USACE Jacksonville District

Mr. Stodola: The EPA has reviewed the scoping notice dated 11/30/17, on the above referenced project in accordance with its responsibilities under the National Environmental Policy Act (NEPA). We offer the following comments and recommendations for your consideration during the NEPA process:

1. One option for the placement of dredged material associated with the deepening of the Blount Island Marine Terminal, Mitsui O.S.K. Lines, and the Dames Point berths will be an Ocean Disposal Site. In order to determine the suitability of dredged material associated with this project for ocean

disposal, further evaluation is required under the Marine Protection, Research, and Sanctuaries Act Section 103 process. This will include the evaluation of sediment, physical, chemical, and biological testing reports, and a determination of compliance with the Ocean Dumping Regulations from the Army Corps of Engineers with concurrence from EPA. In order to ensure that the MPRSA process move as quickly and smoothly as possible, it is highly encouraged that coordination with EPA Region 4's Marine Regulatory Program occur as early in the project planning process as is feasible.

2. Additionally, the letter states that the Corps will also be considering if the recent flooding conditions in the Jacksonville Harbor Navigation Project constitute significant new circumstances or information relevant to environmental concerns. The Jacksonville Harbor Navigation Project has an existing MPRSA Section 103 concurrence for ocean disposal which expires in December of 2018. If it is determined that there are "significant new circumstances or information" relating to environmental concerns, additional or confirmatory testing of sediment may be required in order to determine that the sediment associated with the Harbor Navigation Project remains suitable for ocean disposal.

Please provide 2 copies of the NEPA document when it becomes available (or an electronic copy or CD) to EPA Region 4's NEPA Program Office, at 61 Forsyth Street, SW, Atlanta, GA, 30303. Ms. Jamie Higgins will be the NEPA Program Office's principle reviewer for the USACE's NEPA document. Thank you for the opportunity to provide comments on the proposed project, and please feel free to contact me at 404-562-9512 if you have any questions.

-----Original Message-----
From: State Clearinghouse [mailto:State.Clearinghouse@dep.state.fl.us]
Sent: Thursday, December 28, 2017 3:51 PM
To: Stodola, Paul E CIV USARMY CESAJ (US) <Paul.E.Stodola@usace.army.mil>
Subject: [EXTERNAL] SAI# FL201712228222C

To: Paul E. Stodola

Re: Florida State Clearinghouse Project Review

Project SAI#: FL201712228222C

Date Received: 12/18/17

Project Description: DEPARTMENT OF THE ARMY, JACKSONVILLE DISTRICT CORPS OF ENGINEERS - DRAFT SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT REVIEW OF RECENT STORM EVENTS AND FLOODING JACKSONVILLE HARBOR NAVIGATION PROJECT DUVAL COUNTY, FLORIDA.

The Florida State Clearinghouse has received the above-referenced project and has forwarded it to the appropriate state agencies for review. Please refer to the State Application Identifier (SAI) number in all correspondence with the Florida State Clearinghouse regarding this project. Applicants should expect to receive their State Clearance Letter 30-60 days from the received date. Additional information can be found at Blockedhttp://dep.state.fl.us/secretary/oip/state_clearinghouse/manual2.htm <Blockedhttp://dep.state.fl.us/secretary/oip/state_clearinghouse/manual2.htm> .

Please submit all future project applications and correspondence by email to state.clearinghouse@dep.state.fl.us <mailto:state.clearinghouse@dep.state.fl.us>. If your submittal is too large to send via email or if you need other assistance, contact Chris Stahl at (850) 717-9076.

<Blockedhttp://survey.dep.state.fl.us/?refemail=State.Clearinghouse@dep.state.fl.us>

ST. JOHNS RIVERKEEPER®

December 29, 2017

U.S. Corps of Engineers – Jacksonville District
ATTN: Paul Stodola
701 San Marco Boulevard
Jacksonville, Florida 32207-8175

TO: Paul Stodola
U.S. Corps of Engineers – Jacksonville District

FROM: Lisa Rinaman
St. Johns Riverkeeper

RE: **Inadequacy of December 2017 Draft Supplemental Environmental Assessment – Review of Recent Storm Events and Flooding**

On behalf of our members, St. Johns Riverkeeper (SJRK) submits the following comments regarding the *December 2017 Draft Supplemental Environmental Assessment – Review of Recent Storm Events and Flooding (DSEA)* released on December 14, 2017.

SJRK has continually voiced opposition to the proposed Jacksonville Harbor Channel Deepening Project due to faulty, incomplete information and analyses presented by the U.S. Army Corps of Engineers (USACE) regarding environmental, as well as economic impacts. The Corps has also failed to provide a beneficial mitigation plan to offset harm to the St. Johns, its tributaries and adjacent properties.

Following Hurricane Irma, it is paramount that any increase in future flood damage potentially resulting from the proposed deepening project must be fully understood by the Corps, the City of Jacksonville leadership and the general public. Of specific interest is the probable increase in nuisance flooding which will occur in the downtown, San Marco, Riverside and Ortega neighborhoods due to a predicted increase in the elevation of tidal waters – after the deep dredge.

The Army Corps DSEA fails to acknowledge or consider relatively irrefutable adverse consequences that will occur on a high frequency (i.e. annual) basis. In contrast, the federal predictions of project "impact" have been limited to scenarios associated with low frequency (i.e. 50 and 100 year) storm events in combination with a 50 to 100 year horizon of sea level rise. **Although of scientific value, these federal predictions do not portray the project's immediate impacts that must be dealt with on an annual basis by a portion of the City of Jacksonville, including waterfront development far removed from the area of river deepening.**

Hurricane Irma well demonstrated the extreme vulnerability to flood damage that exists along the riverfront within downtown, as well as the San Marco, Riverside and Ortega waterfront areas of Jacksonville. The latter occurred as a combination of hurricane related storm surge, rainfall, preceding super-elevated river water level conditions, saturated uplands, and a significant duration wind field originating from southerly sectors (blowing directly up the river).

Of specific interest is the fact that the 2017 resultant historical water levels recorded in the downtown urban core, San Marco, Riverside and Ortega were not the result of a statistical "50 or 100-Year Storm" as addressed by the USACE study. Actually, measured sustained wind speeds at the Jacksonville Naval Air Station on the St. Johns River never even reached hurricane force during Hurricane Irma.

Adding to the cumulative water levels experienced were the seasonal astronomical tides which during each hurricane season are predictably the highest of the year. For example, in September, October and November of 2017, the highest monthly astronomical tide levels predicted were .35 ft., .45 ft., and .5 feet above the elevation of mean high water, respectively, at the Acosta Bridge tidal station. These water levels combined with nor'easter effects which cause additional super-elevation of the upper reaches of the St. Johns River in the fall months, typically cause annual nuisance flooding in the San Marco, Riverside and Ortega riverfront areas – in the complete absence of the added effects of any tropical or extra-tropical storm events. A major contributory factor to nuisance flood events is the inability of the developed uplands to drain when the river is "high". **Accordingly, the assessment of risks of the proposed deep dredge to businesses and homeowners should be considered to be a "game of inches" – due to the present day vulnerability of downtown neighborhoods.** Any additional water level increases during those May–November months when water levels are already higher than average can cause significant property damage and loss of physical access to both businesses and residences. **To-date this type of impact analysis has not been presented to either COJ elected officials or the general public.**

In contrast, the types of USACE analyses associated with deep dredge effects avoid addressing high-frequency, "baseline" type impacts that consider today's existing conditions. That is, **by design and tradition the USACE analyses consider the effect of a project based upon a low-frequency, 50- or 100-year hurricane storm in the future – a storm that doesn't necessarily reflect the reality of today's frequent nuisance flooding conditions.** Hence, the numerical simulation and accounting for the above described documented hydrological effects argues for a significantly different analysis than the type of storm surge modeling performed to predict 50- and 100-year water levels associated with the Jacksonville harbor deepening project, and in particular where those analyses seek to likewise factor into their predictions 50 years-worth of sea level rise.

The federal predictions are based upon numerical models for the simulation of open coast surge based upon techniques similar to those utilized for purposes of the federal flood insurance mapping of low frequency events. For example, predicted 50- and 100- year open coast surge levels were propagated from the ocean – through the project area – up the St. Johns River for purposes of providing water level hydrographs throughout the "Jacksonville Harbor Vicinity," which by definition extended through downtown Jacksonville and beyond. Various calibrations of the federal model were attempted based upon simulations of Hurricanes Frances and Dora. The latter was the historical hurricane of record for Duval County which occurred in 1964. Hurricane Dora entered the State of

Florida in the vicinity of St. Augustine and South Ponte Vedra Beach. Accordingly, its trajectory bore little resemblance to Hurricane Irma which generally moved up the western center of the State as it impacted Duval County.

The prescribed numerical modeling approach employed by the USACE for purposes of evaluating pre- and post-channel deepening water elevations within the area of channel deepening are in all probability realistic for that limited area of interest – only. Conversely, what the federal modeling strategically avoids is the reliable prediction of present day high-frequency storm impacts in the downtown urban core and adjacent developed waterfronts of San Marco, Riverside and Ortega – in combination with increases in tide range which are acknowledged to result from the proposed channel deepening. As noted above, the timing of these high frequency storms, tides and accompanying nuisance flooding – such as during annual nor'easter events – are synonymous with each annual hurricane season.

Executive Order EO11988, Floodplain Management requires federal agencies to avoid to the extent possible the long and short-term adverse impacts associated with the occupancy and modification of floodplains. To comply with EO11988, impacts of the proposed Jacksonville Harbor Deepening Project were to be identified.

The USACE was required to:

1. Estimate the potential impacts of the proposed federal project on water levels within the St. Johns River
2. Determine if the potential impacts are significant enough to affect the flood hazard zones designated by FEMA

Without providing any analysis regarding the quantification of floodplain impacts, the USACE study simply states that "This project would have no adverse impacts to floodplain management" (GRR/FEIS ref. pg. 289). At face value, this conclusion is hard to accept when the Corps' own modeling exercises indicate increases of water elevations of an additional 0.5 to 0.7 feet in the developed areas bordering the deepening project – for a 100-year storm with sea level rise. This includes the entirety of the Mill Cove shoreline. The damages and loss of homes, contents and businesses throughout the San Marco, Riverside and Ortega areas bordering the St. Johns River during Hurricane Irma are clear evidence that any level of floodplain increase resulting from the federal project represents significant potential financial losses and endangerment of the citizens of Jacksonville. To that end, the USACE can be considered to be noncompliant with respect to the requirements of EO11988.

It would appear that the DSEA issued by the Corps in late December 2017 is an effort to assure City of Jacksonville leadership and the general public that the occurrence of Hurricane Irma in no way invalidated the findings of the initial federal study. More specifically, the document concludes that "The Corps modeled events comparable to, or more severe than Hurricane Irma," and that "recent storm events and flooding in the vicinity of the Jacksonville Harbor Navigation Project do not constitute new circumstances or information relevant to environmental concerns bearing on the project or its impacts." Again, the Corps completely discounts or inadvertently misses the significance of the probability of high frequency flooding events in the City core due to continued deepening of the St. Johns River channel. It likewise fails to discuss additional flooding potential in developed areas directly abutting or in the vicinity of the project channel improvements.

The Corps' modelling fails to analyze water levels and the project's effect upon flooding in the weeks after a hurricane – during which the river levels remain anomalously high and lead to continued flooding. In fact, for the one or two days that are included in the model's calibration after the peak storm has passed, **the Corps' model consistently and significantly under-predicts the actual water levels that were observed in the downtown and upriver areas that were included in the model.**

That is, the model fails to accurately predict the elevated river levels that consistently occur in the fall, during which nuisance flooding is observed and sensitivities to increased water levels are greatest.

The December 2017 DSEA document re-explains the federal modeling approach by which it predicted potential future effects to the City of Jacksonville downtown urban and residential core. However, the federal analysis and discussion seek to portray the impacts of the project solely in combination with low frequency (50- and 100-year) storm events and future sea level projections. Since the latter occur over a long period of time (say 50 years or more into the future), such a comparison fails to relate or address in any meaningful way the present day probability of exacerbated higher-frequency flooding which will occur annually after channel deepening and which should be the greatest concern to the City of Jacksonville given the documented flooding caused by Hurricane Irma.

Any increase in the severity of high frequency seasonal flooding in the San Marco, Riverside and Ortega areas (even if only a few inches) can be highly impactful to private and public properties and infrastructure, as well as physical access to residences and businesses alike. The USACE acknowledges a predicted increase in the elevation of high tide of at least 0.2 feet in the San Marco and Ortega areas after channel deepening. That should be of significant concern to both the citizens of Jacksonville and their elected leaders in the impact evaluation of any proposed channel deepening project. Attempting to dilute that acknowledged increase in water level by comparing it to surge levels from a 50- or 100-year storm in the ocean and 50+ years of sea level rise does a disservice to those desiring a meaningful analysis of project impacts.

It is an undeniable fact that decades of federally sponsored deepening and channelization of the St. Johns River has "invited the ocean downtown." As such, dredging has incrementally exposed the City's riverfront interior to increased fluctuations in ocean water level, by making the downtown river more tidal. At the same time, the downtown urban core and adjacent waterfronts are 120+ years old – developed at a time when the sea level was at least 1 foot lower than present. As sea level continues to increase, and storm water drainage problems intensify, and the surge and tides of the ocean can more readily reach upriver, it is evident that every inch of water level rise is important when expressed in the context of the low-elevation areas of the St. Johns River waterfront that are already subject to high frequency flooding.

Accordingly, increases in river water levels caused by further river deepening cannot be dismissed as trivial in the context of urban flooding.

It is the responsibility of USACE to provide the public a thorough and honest assessment of the potential benefits, impacts, risks and costs of the proposed deepening of the Jacksonville Harbor and a transparent and open decision-making process. Anything less, fails to meet the minimum thresholds set by Federal Law.

USACE fails to adequately assess the environmental impacts, fails to provide a beneficial mitigation plan to offset harm to the St. Johns and its tributaries, and fails to articulate the need for this project.

The USACE release of this important yet inadequate assessment on December 14, 2017 with comments due on December 30, 2017 is a further disservice to the citizens of Jacksonville.

We request a 30-day extension for public comment period to allow citizens and the City of Jacksonville time to assess and discuss this critical issue. A sixteen day comment period over the holidays is simply inadequate.

We also request a USACE public meeting with City of Jacksonville officials to discuss flood risks resulting from the deep dredge prior to completion of the DSEA.

We cannot afford to roll the dice with the future health of our river or the surrounding riverfront communities until the flood risk has been fully vetted.

For the River,

Lisa Rinaman

Lisa Rinaman
St. Johns Riverkeeper

CC:
Mayor Lenny Curry
Jacksonville City Council Members
Duval Delegation

5

INDEX