

# The Duval County Maritime Management Plan

---

May 2018

## Table of Contents

INTRODUCTION .....	5
What is a Maritime Management Plan? .....	6
The Plan Context .....	6
THE COUNTY CONTEXT .....	7
County Description .....	8
WATERWAY DISTRICTS .....	11
Definition of Waterway Districts.....	12
Waterway District Map and Descriptions.....	12
ENVIRONMENT AND RISK.....	17
Environmental Considerations.....	18
Sea Level Rise Risk Analysis.....	25
Methodology.....	25
Results.....	25
Recommendations.....	25
PUBLIC INPUT .....	35
Public Meetings.....	36
Research on Behaviors and Opinions Regarding Duval County Waterways.....	36
WATERWAYS AND NAVIGATION CHANNELS.....	49
Waterway Inventory and Analysis .....	50
Navigation Channels .....	54
Recommendations .....	54
MOORING AND DOCKING .....	57
Docking .....	58
Recommendations .....	59
Mooring.....	60
Recommendations.....	61
EXISTING WATER ACCESS FACILITIES AND ASSESSMENTS .....	63
Boat Ramps .....	64
Kayak Launches.....	66

Fishing & Pedestrian Water Access Facilities.....	67
Overview of Assessments .....	68
Assessment Methodology.....	68
Recommendations .....	68
More Information .....	68
WATERFRONT PARK AND FACILITIES EXPANSION.....	69
Potential Water Access Facility Site Identification GIS Methodology .....	70
Site Acquisition Review: Analysis and Feasibility.....	70
Expansion and Improvement .....	70
Geographic Location .....	78
Opportunity Sites in the Waterway Districts .....	83
Highest Priority Projects .....	84
WATERWAYS TRANSPORTATION .....	85
More Information .....	86
Needs and Opportunities.....	86
WATERFRONT LAND USE AND WORKING WATERFRONT .....	89
Slip Capacity and Boat Storage Facilities .....	91
Working Waterfronts.....	91
Recommendations.....	97
ECONOMICS .....	99
Recommendations .....	102
OVERALL RECOMMENDATIONS .....	103
MAPS.....	106
TABLES .....	106
FIGURES.....	107
APPENDICES .....	107



# INTRODUCTION

## What is a Maritime Management Plan?

The Duval County Maritime Management Plan is intended as a guide for the City of Jacksonville, the Town of Baldwin and the Beaches communities to protect and develop sustainable usage of the Intracoastal Waterway, the St. Johns River and their major tributaries. The plan focuses on the utilization of selected Duval County waterways to improve the quality of life for all residents by maximizing opportunities for waterway access and recreation, as well as protecting commercial marine interests. The Plan was funded jointly by the Florida Inland Navigation District (FIND) and the City of Jacksonville.

## The Plan Context

A team of planners, scientists, geographers and engineers from the Northeast Florida Regional Council, the University of North Florida and Jacksonville University was assembled in late 2015 and held the first public meeting regarding what the Plan should include in December of that year. Public input was gathered from two surveys, extensive public outreach was conducted at community events, existing facilities were assessed and data was gathered in advance of three public meetings at the end of 2016. In 2017, the team put together what the public input indicated the community wants with the opportunities presented by existing and potential sites, and evaluated these based on a decision-making matrix.

It is important to recognize the larger community context and what was happening during the two years of planning.

- The City of Jacksonville has a Waterways Commission with a history of focus on and planning for waterways, Duval County has a Manatee Protection Plan, and a partnership of organizations produces an annual report on the state of the St. Johns River including water quality, fisheries, aquatic life and contaminants.
- The public perception was that the economy was still recovering from the 2008 recession.
- There were several hurricanes during the study period; Hermine and Matthew in 2016 and Irma in 2017. Each involved property damage, storm surge and flooding in Duval County, much of it impacting the Intracoastal Waterway, the St. Johns River, and their tributaries.
- The Northeast Florida region engaged in community conversations and action projects related to the potential for sea level rise with the business-focused leadership of the Public/Private Regional Resiliency (P2R2) Committee of the Northeast Florida Regional Council.
- The community experienced a steadily increasing interest and enthusiasm for the activation of waterways.

While each of these observations informed the work, the team found the emphasis on waterways activation transformative.

## **THE COUNTY CONTEXT**

## County Description

Northeast Florida has been settled by varying cultures for thousands of years prior to European contact. The primary reason for inhabiting this area was that the St. Johns River offered abundant food and easy water born transportation. At the time Europeans arrived, much of what is now Duval County was controlled by the Timucuans, one of the most powerful tribes in the region. The French established Ft. Caroline in the 16<sup>th</sup> century. The area saw increased European settlement throughout the 17<sup>th</sup> and 18<sup>th</sup> centuries with the establishment of Cowford, which would later be renamed Jacksonville. The importance of the St. Johns River in the establishment and continued development of Jacksonville cannot be overstated.

Duval County was formally established in 1822. On October 1, 1968, Duval County government was consolidated as the City of Jacksonville, but the cities of Atlantic Beach, Baldwin, Jacksonville Beach, and Neptune Beach which are within the county limits are not included in the corporate limits of Jacksonville, but have their own municipal governments. Services that might normally be provided by a county government are provided by the City of Jacksonville. Duval County encompasses the City of Jacksonville, plus the four municipalities, and has an estimated population of over 925,000 as of 2016. Duval County is known for having one of the lowest overall costs of living throughout Florida. Duval incorporates a variety of water-dependent markets and industries including fishing, shipping, and maritime-related industry.

### *Environmental Conditions*

Duval County is considered a mild subtropical climate with annual average temperature highs of 79.9 °F and lows of 55.9 °F. The temperature in Duval County averages 67.9 °F. The topography of the county is coastal plain. Though coastal plains typically indicate flat land adjacent to the seacoast, there are a few rolling hills present. Duval County on average experiences 221 days of sunshine a year with about 53-54 inches of rainfall on average each year, with virtually no snowfall recorded annually. Sperling's comfort index rates Duval County's climate at a 74 out of 100, indicating a comfortable year round climate.

### *Tides*

Since Jacksonville depends on the St. Johns River for its very existence, tides play a large role in the life of its citizens. The majority of Duval County experiences two high and two low tides in a 24-hour day. This phenomenon can also be referred to as a semi-diurnal tide. In many ways, the heart of Duval is the St. Johns River. The St. Johns stretches 310 miles; starting in the marshes of Indian River County and eventually flowing to the Atlantic Ocean. The St. John's is one of the few rivers that flows south to north. The St. Johns River experiences changing tidal conditions known as ebbing and flooding. An ebb tide occurs as the tide goes out, meaning water is moving from the river towards the ocean. A flood tide is the opposite and occurs as the tide comes in or moves from the coastal ocean to further down the river.

The St. Johns River experiences a relatively large tidal range between seasonal moon phases. On average there is a 5-foot range or difference between high and low tides. Changing lunar phases can result in

more extreme tidal ranges, which can be referred to as spring and neap tides. Spring tides, which are also known as king tides, occur when seasonal variations result in very high tides, occur during new and full moons. Spring tides usually result in a larger tidal range and generally occur twice a lunar month. Neap tides occur approximately seven days after a spring tide when the moon is half full. Spring tides occur when the earth, sun, and moon are in alignment and neap tides occur when the moon and sun are at right angles to each other. Neap tides result in higher high tides and lower low tides however they are not as extreme as spring tides. Both spring and neap tides affect the St. Johns River and help shape the shoreline over time.

Additional Information may be found on the websites of the City of [Jacksonville](#), the City of [Atlantic Beach](#), the Town of [Baldwin](#), the City of [Jacksonville Beach](#), and the City of [Neptune Beach](#).



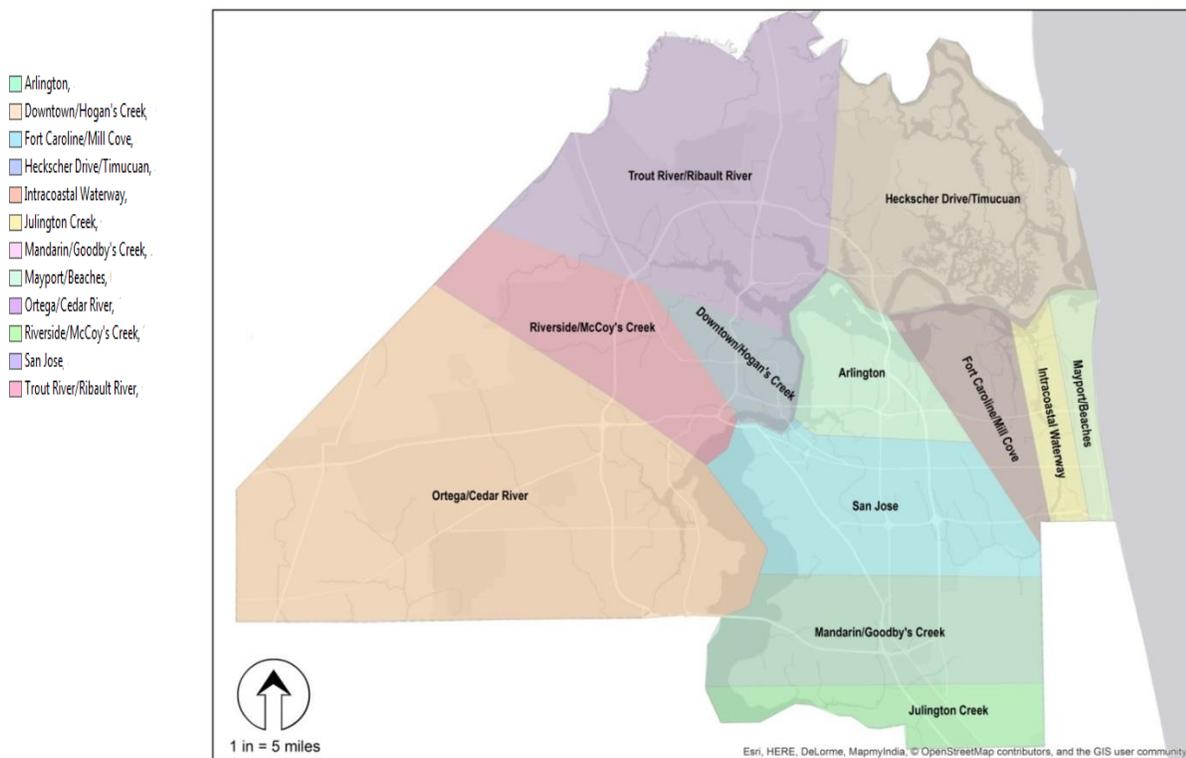
## **WATERWAY DISTRICTS**

## Definition of Waterway Districts

To characterize Duval County, twelve waterway districts were defined by the Northeast Florida Regional Council to allow for geographic location of survey data; see map 1. These waterway districts were named based on distinct portions of the waterways generally familiar to most residents. They were given boundaries so as to include all waterways within them, but they are intended to describe the waterways within a district and to some extent the neighborhood context as it impacts waterways. The names and boundaries of the districts are not intended to coincide with resident’s perceptions of which neighborhood they live in. The waterway districts are simply a way to group facilities, needs and opportunities geographically.

## Waterway District Map and Descriptions

Map 1: The 12 Waterway Districts in Duval County (NEFRC, 2016)



Ortega/ Cedar River: Located south of Downtown Jacksonville on a peninsula off the west bank of the St. Johns River, the historical Ortega and Cedar River district is one of the highest per capita income neighborhoods in Jacksonville. Starting at the junction of the St Johns and Ortega Rivers, this historic district is just south of Riverside. This neighborhood is primarily residential with small agricultural and commercial areas. Local boating facilities include the Florida Yacht Club, Timuquana Country Club, and the Ortega Yacht Club. Notable waterfront parks in this district include Stockton Park, Seminole Park,

and Yerkes Park to name a few. The Cedar Hills Shopping Center business district and the Ortega Village are known as an economic and commercial anchor to this area.

Riverside/ McCoy's Creek: Located west of Downtown Jacksonville, the Riverside and McCoy's Creek district is primarily residential. Much of the area is a designated historic district. Riverside includes a mix of residential development, local businesses, and is perceived as a walkable area known to accommodate with a range of generations with an interest in community involvement. McCoy's Creek is an area of the St. John's River that is known for its poor water quality and the connections it forms between suburbs and industry. Vacant land in certain areas of McCoy's Creek increases present opportunities for nature trails, kayaking routes, and wildlife related recreational activities. Riverside is home to the popular riverfront Memorial Park and Historic 5 Points; which is surrounded by local retailers. The Cummer Museum of Art and Gardens and the Garden Club of Jacksonville are also both located in Riverside and overlook the St. Johns River.

Downtown/ Hogan's Creek: Hogan's Creek separates the residential area of Springfield from the Downtown business district of Jacksonville. With both residential and commercial areas within this district, Downtown is known as the heart of Jacksonville. Downtown consists of a mix of industrial and commercial areas and offers a number of attractions including the Sports Complex, hotels, and the Jacksonville Landing, all of which are in close proximity to the water. Downtown Jacksonville consists of almost 6 miles of riverfront with half of that mileage dedicated to public river walks. Land uses adjacent to historic Hogan's Creek are largely residential. Notable parks that run along the water include Klutho Park and Confederate Park. Both of these parks are currently undergoing maintenance through the Hogan's Creek Improvement Project.

Trout River/ Ribault River: The Trout River district is located north of Downtown and includes attractions such as the Jacksonville Zoo and Gardens, which can be accessible by boat during high tide. The Zoo includes a view of the Trout River and is a large contributor to conservation initiatives within Jacksonville. A residential road runs along a large section of Trout River. The Ribault River is a tributary that runs into the Trout River and is composed of wetlands in wider areas of the river. A section of the Ribault River has been preserved by the City of Jacksonville and is open to the public. Trout River, Ribault River, and surrounding areas are less populated and generally more rural. Much of the surrounding area consists of industrial parks and plants. The Jacksonville International Airport is located in the northern part of this district.

Heckscher Drive/ Timucuan: This district is the northeastern boundary of Duval County. This is a more rural area of Jacksonville consisting primarily of coastal wetlands. This includes Talbot Island, Huguenot Park, Fort George, Blount Island, and Dames Point Marine Terminals, BAE Shipyard and Joe Carlucci Boat Ramp. Heckscher Drive connects this district through boat ramps, marinas, and residential canals. Running along Heckscher Drive is largely residential areas. Notably located in this district is the Timucuan Ecological and Historic Preserve which includes Kingsley Plantation.

Mayport/Beaches: Mayport and the Beaches is a historic area that is located between the Intracoastal Waterway and the Atlantic Ocean. This district, given its ocean access, includes a variety of water

activities. Mayport Village includes shrimp boats, residential areas, and is adjacent to Naval Station Mayport. The Mayport area is also well known as one of Northeast Florida's most popular commercial fishing regions. The Beaches include Atlantic Beach, Neptune Beach, and Jacksonville Beach. Hanna Park is located in this area and is known for its biking and walking trails as well as being a popular destination for surfers. Atlantic and Neptune Beach Town Center is a hot spot for tourist and locals with a wide variety of restaurants and shopping, adding commercial value to this district. Jacksonville Beach is home to the Jacksonville Beach Ocean Rescue Division and the American Red Cross Volunteer Lifesaving Corps. Jacksonville Beach is additionally home to the Jacksonville Pier, which was an important fishing and recreational destination prior to damage by Hurricane Matthew, and the Seawalk Pavilion, a popular public access and event space.

Intracoastal Waterway: Running along the Intracoastal Waterway are largely residential areas, in the City of Jacksonville on the west and the beaches communities on the east. The inland waterway is popular for boating and fishing, and provides easy ocean access. A number of boat ramps provide access to the Intracoastal Waterway.

Fort Caroline/ Mill Cove: This district includes Fort Caroline, a historic National Monument that includes walking trails along the river, an informative visitor's center, and multiple monuments. The waterway called Mill Cove includes access to a group of archaeological sites and includes kayak and fishing areas. Mill Cove is generally a shallower body of water that includes several islands. Mill Cove can also experience significant currents due to occasional high wind exposure. The Fort Caroline and Mill Cove areas are primarily residential. This area also includes the executive airport, JaxEx at Craig Airport, and Ed Austin Regional Park. This region tends to contain little commercial waterfront development.

Arlington: Arlington is located on the east side of the St. Johns River where the river begins to flow east towards the ocean. Arlington consists of both residential and commercial areas. The Tree Hill Nature Center and Jacksonville Arboretum and Gardens are located in this part of Jacksonville. Located in close proximity to the water is the Arlington Marina, the Negaard Rowing Center at Jacksonville University, and Reddie Point Preserve. This is a highly varied district consisting of multiple housing types and includes a mix of both modern and historic development. The Arlington area is also home to large economic contributors such as Jacksonville University, a mixture of retail uses, and a wide variety of residential developments. The Arlington River runs through this district.

San Jose: Located south of Arlington, San Jose is one of Jacksonville's earliest suburbs. This waterway district includes Epping Forest Yacht Club and San Jose Country Club. This area is both residential and commercial. The San Jose district also includes San Marco, a primarily residential and somewhat commercial area of Jacksonville. San Marco is connected to downtown via the Acosta Bridge, and has experienced multiple historical preservation and restoration projects. Both San Marco and San Jose are communities focused around the waterfront, and many residents have boats or access to watercraft. Pottsborg Creek is an extension of the Arlington River and runs south through this district. Artificial reefs are located south of the Fuller Warren Bridge on the east side of the St. Johns River. These are designed to enhance fishing and are currently being evaluated for effectiveness.

Mandarin/ Goodby's Creek: Located on the eastern bank of the St. Johns, Mandarin is an order suburban area of Jacksonville. Mandarin offers shopping areas such as the Avenues Mall. Mandarin also consists of a variety of residential areas, from high-end single family homes to multi-family dwellings. Development along the St. Johns River is largely residential with limited public access. Located on the water in this district are County Dock Road fishing pier with hand-launch ramp and the Walter Jones Historical Park.

Julington Creek: Julington Creek is located south of Mandarin and borders the southern Duval County line with St. Johns County. Julington Creek Fish Camp and Clark's Fish Camp can also be found here and are popular dining destinations, located on Julington Creek. Other notable locations in the Julington Creek district include Mandarin Park, Mandarin Holiday Marina, Julington Creek Marina and Old Bull Bay Pier.

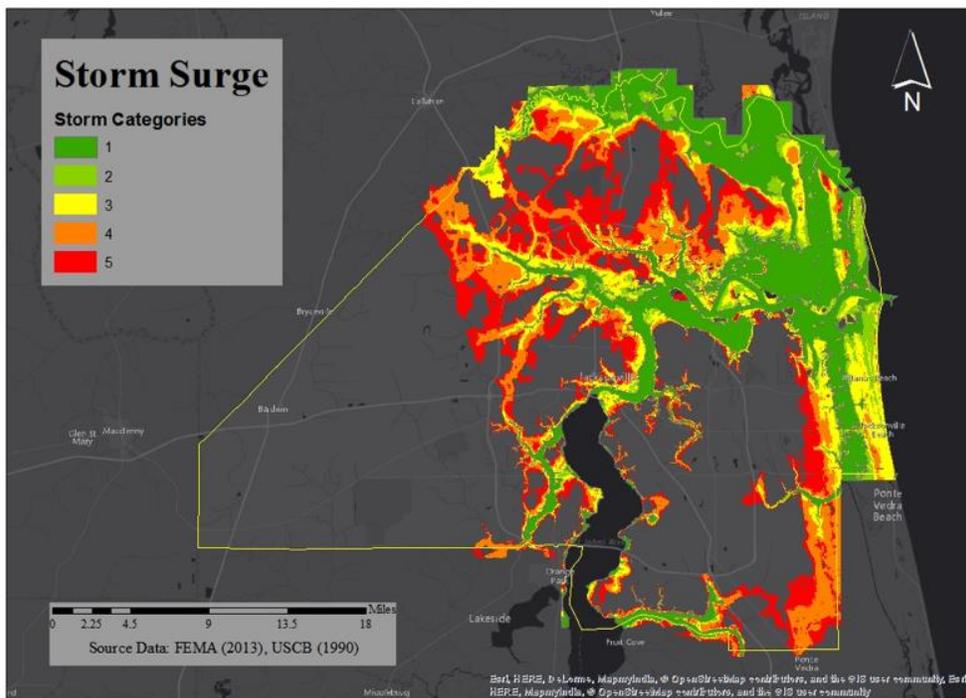


## **ENVIRONMENT AND RISK**

## Environmental Considerations

### Current Conditions

Map 2: Flood zones in Duval County, Florida. Storm surge areas are based on hurricane strength, as defined in the legend (COJ 2017)



All of the storm surge areas in Duval County, Florida are mapped in Map 2. From the map, it is clearly indicated that the Mayport/Beaches, Intracoastal, and Heckscher Drive/Timucuan waterway districts are highly affected by storm surge. Both tropical storms and category 1 hurricanes can cause flooding in these areas. During category 1 hurricanes, flooding occurs all along the St. Johns River from the Beaches to San Jose and Riverside. The Ortega River, Clapboard Creek, the Nassau River and Julington Creek are also water bodies that experience storm surges during category 1 and 2 hurricanes.

Category 3 hurricanes intensify the flooding in the areas previously mentioned. With these larger storms, storm surges occur all the way to the tips of the rivers and creeks that branch off of the St. Johns River. This includes the Trout River, Clapboard Creek, the Fort George River, Hogan's Creek, McCoy's Creek, Julington Creek, and the Ortega River. All of these branching water bodies will continue to experience storm surge. Additionally, the Mayport/Beaches and Intracoastal Waterway will experience intensified flooding during category 3 hurricanes.

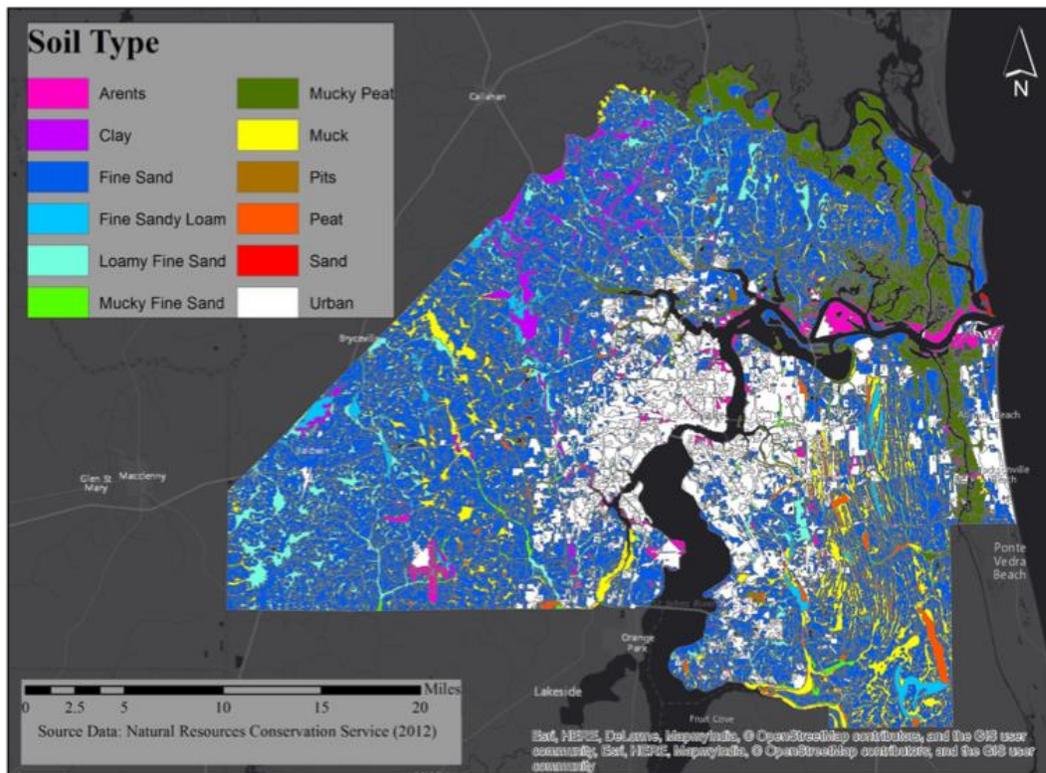
In larger storms, such as category 4 or 5 hurricanes, flooding can occur off the smaller finger creeks that branch off of Trout River and Clapboard Creek. The wetlands and tributaries that reside in the Trout River/ Ribault River and Heckscher Drive/Timucuan neighborhood districts will be affected by the storm

surge. During category 4, and especially during category 5 hurricanes, the majority of these two neighborhood districts will experience flooding. From looking at the map, you can additionally see that the majority of the southeastern county line of Duval will flood in a category 5 hurricane. Little to no storm surge is seen in the Ortega/ Cedar River neighborhood district aside from directly along the Ortega River. Overall, a large majority of northeastern Duval County would experience storm surge if a large storm hit the area, especially throughout the Beaches, Intracoastal, and along the St. Johns River. Even smaller storms will cause flooding along the beaches, Intracoastal, and St. Johns River.

### Sea Level Rise

Additional risk is posed by sea level rise, as it exacerbates the potential for flooding in vulnerable areas. A review of existing facilities was done, looking at sea level rise projected for 2040 and 2070, and is presented on page 22.

Map 3: Soil composition throughout Duval County, Florida. The different soil types are defined within the legend (COJ 2017)



The different types of soil that compose the land in Duval County is illustrated in Map 3. Shown by the dark blue coloring, a majority of Duval County is composed of fine sand. Though fine sand is clearly indicated as the main soil type, this composition also indicates that clay and other sediments are present in these areas to allow the sand to compact and maintain structure.

The lighter shade of blue indicates fine sandy loam soil while the turquoise blue indicates loamy fine sand. Fine sandy loam is hard, firm, and sticky. Loamy fine sand differs as it is only slightly hard, slightly

sticky, and slightly plastic. Both are only moderately acidic. Both sandy loam soil and loamy fine sand are found somewhat scattered throughout Duval County.

Urban soil, indicated by the white coloring on the map, is any soil that has been manipulated, distributed, or transported by man. Urban soil is predominantly found along the river in the Downtown, Riverside, Arlington, and San Jose neighborhood districts. Urban soil indicates that the natural soils in these areas were replaced for the purposes of creating recreation areas, watersheds, gardens and lawns, as well as sediment basins.

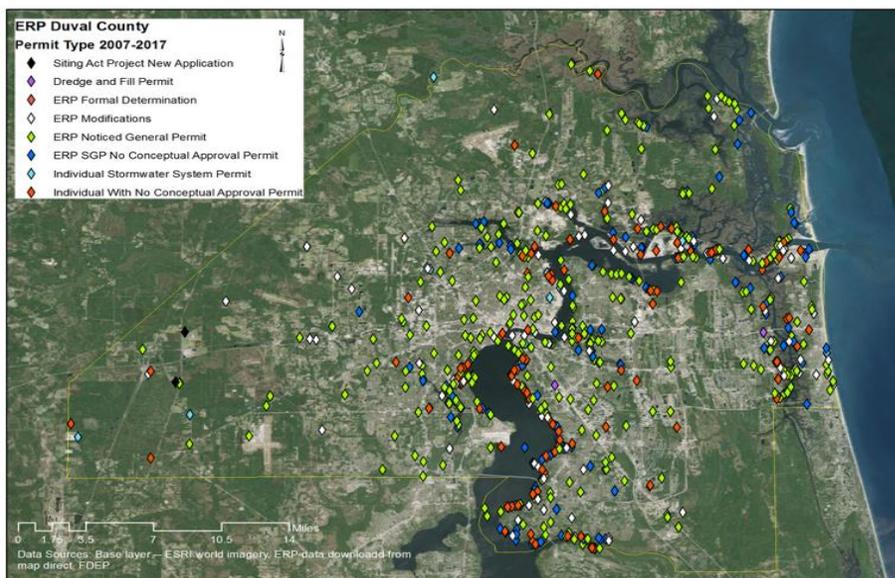
As the St. Johns River opens up to the Atlantic Ocean, the map indicates that Arent soils become more prominent along the river. Arent soils are a type of mineral soil that are not distinct in their horizons due to mechanical disturbances. In these areas, disturbances to soil composition may be a result of dredging.

In the Heckscher Drive/Timucuan waterway district, there is a large amount of mucky peat. Mucky peat indicates a large amount of vegetation decay. In the Trout River/ Ribault River neighborhood district, purple spots indicate the presence of clay soil.

Throughout Duval County there are specks of yellow on the map, which indicates mucky soil. Muck is composed of organic material and is usually the result of swampland drainage. There are also specks of orange on the map, indicating areas of peat. Peat is ideal for gardening and fuel usage, as it is slightly acidic, boggy, and composed of decomposing vegetable matter. Overall, the Duval County area is made up of a range of soil types. An understanding of the different soils that compose the land around the water bodies of Duval is pertinent to understanding what can be built upon the different neighborhood districts of Jacksonville.

### *Resources and Permits*

Map 4: Environmental resource permitting in Duval County, Florida 2007-2017



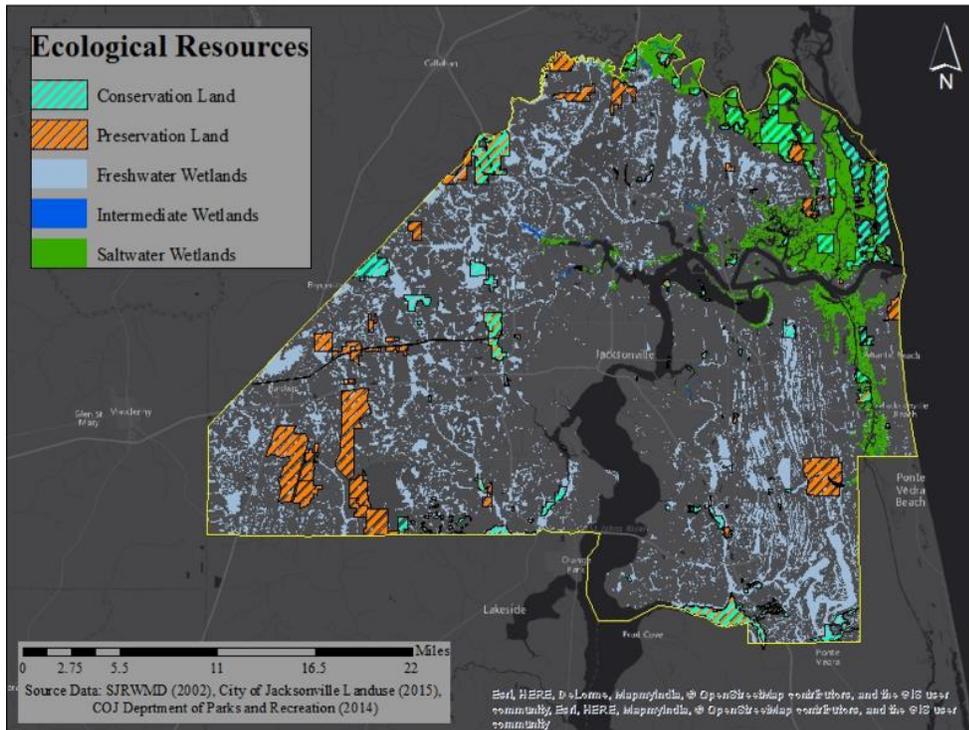
All of the areas of Duval County that have been permitted for environmental purposes between 2007 and 2017 are shown in Map 4. The most frequently found point on the map is the green points, which indicates an area that has been identified as an ERP Noticed General Permit area. Areas protected under Noticed General Permits can be protected for a number of reasons, whether it be due to the presence of endangered species, corals, estuaries, canals, channels, drainage ditches, or a range of other factors that are deemed necessary to protect. The next two points that are found frequently are Formal Determination areas and SGP No Conceptual Approval permitted areas. A Formal Determination is a request to evaluate if a substance is hazardous and if so, it is assigned a classification. Formal Determination permits are indicated by red points on the map. A Conceptual Approval permit is requested for activities occurring within urban infill and redevelopment areas. Indicated by dark blue points on the map are SGP No Conceptual Approval permits, which means these specific points have not been approved by conceptual permits and thus any construction, alteration, operation or maintenance may not be authorized. There are also orange points on the map, which indicate Individuals with No Conceptual Approval permits. The difference between the two is an individual references one facility in particular.

Indicated by purple points on the map, there are two areas that have been located as dredge and fill permitted areas. These two points are located on the Intracoastal Waterway and in the Arlington waterway district. Dredge and fill permits allow for the discharge of dredged material in waterways and wetlands in order for water resource projects, development of infrastructure, and mining projects. A range of white points on the map denote ERP Modifications. This type of permit authorizes new development or construction activities that occur to prevent flooding and manage other aspects of surface water.

There are a few light blue points on the map, which indicate Individual Stormwater System Permits. Under the Clean Water Act, the EPA requires that all facilities drain stormwater and wastewater directly from a point source. Individual Stormwater System Permits are written to address specific design and applicable water quality standards to an individual facility. This applies to all municipal, industrial, and commercial facilities.

Denoted by the two black points on the map, the Siting Act Project Application locates and licenses large power plants. On the map, these two power plant locations were identified in the Ortega/Cedar River neighborhood district. The Siting Act Project licenses power plants that can be electrical, coal, or any other kind of power source that may fit in this area.

Map 5: All ecological resources including preservations and wetlands in Duval County, FL.



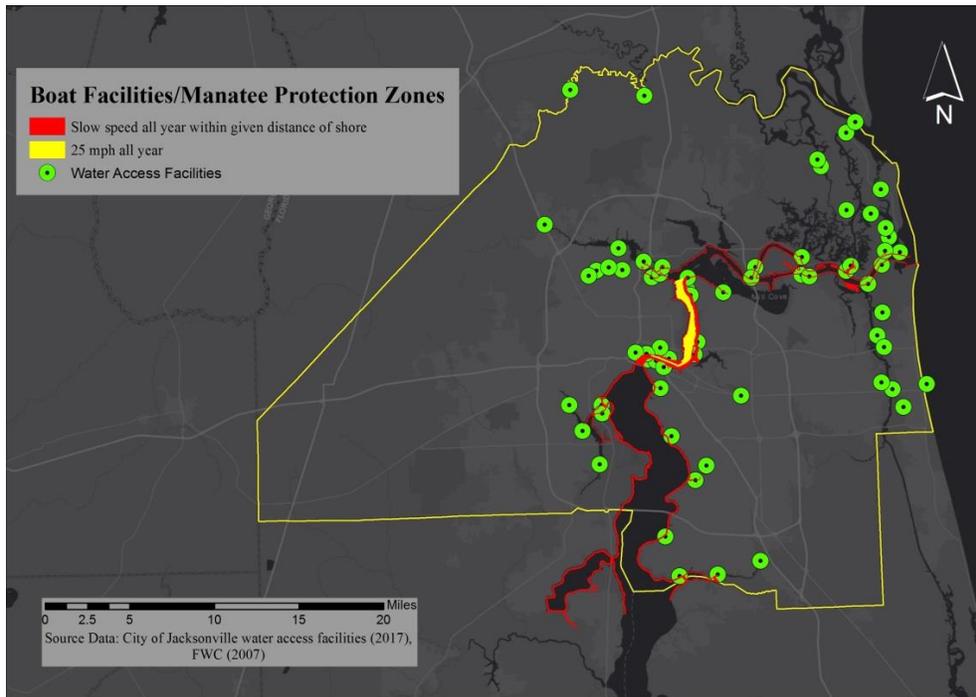
The ecological resources within Duval County are shown in Map 5. Ecological resources include three types of wetlands: freshwater wetlands, intermediate wetlands, and saltwater wetlands. In addition, conservation and preservation lands are identified. Preservation land refers to land that is protected by the City of Jacksonville. Conservation land refers to lands that have been protected by other government bodies or influenced by some sustainable measure in order to ensure current conditions for future use.

Saltwater wetlands are generally found near the ocean and along the coast. Therefore, we see a higher abundance of saltwater wetlands by the beaches, in the Intracoastal Waterway district, and the Heckscher Drive/Timucuan waterway district. In less abundance but still present, saltwater wetlands are also found in the Fort Caroline/Mill Cove and the Mayport/Beaches waterway districts. It is also worth noting that saltwater wetlands tend to border a portion of the St. Johns River or its smaller tributaries. In comparison, freshwater wetlands tend to be further away from the St. Johns River and aren't as dominant along the coast. Intermediate wetlands are less abundant but contain a mix of species found in both saltwater and freshwater wetlands. Most of the intermediate wetlands identified in the figure are located at the tips of rivers and creeks. It is important to note that different types of wetlands require different permitting when developing land.

The majority of Duval's conserved lands are located in the Heckscher Drive/Timucuan Waterway district, however they are also spread throughout Duval County. Much of the conserved land in the Timucuan area borders or is found next to saltwater wetlands. Overall, wetlands make up the majority of ecological resources in Duval

## Species Impact and Restoration

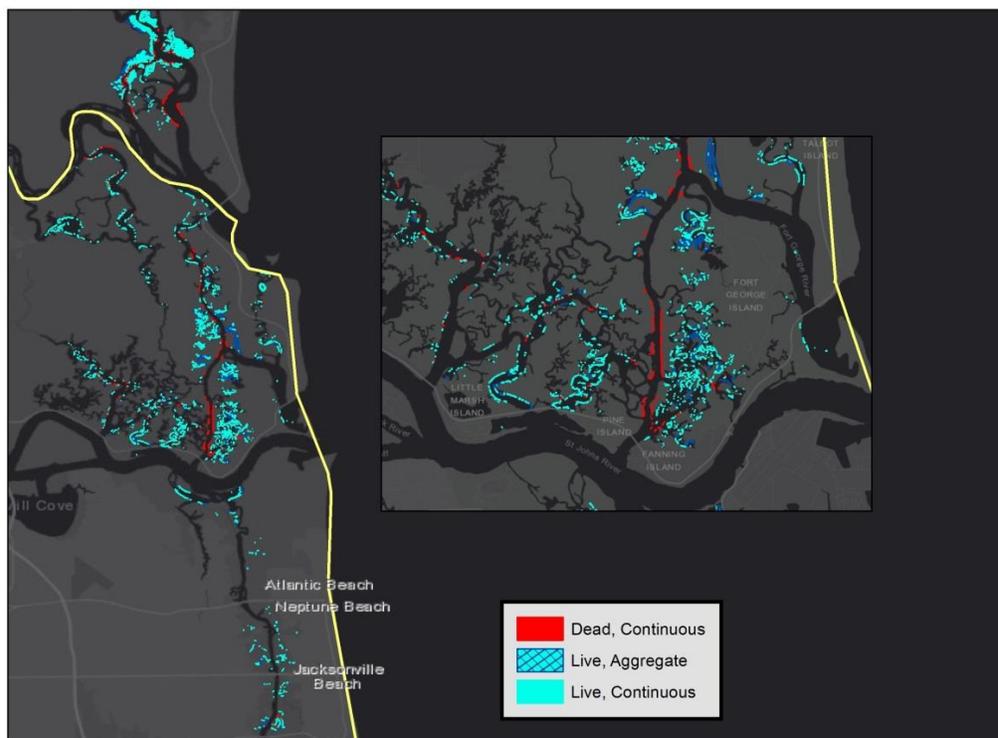
Map 6: Manatee protection zones and boat facilities in Duval County, Florida (COJ 2017)



A map of all the Manatee Protections Zones in Duval County is shown in Map 6. This map was influenced by the Duval County Manatee Protection Plan (MPP). The goal of the MPP is to address the long term preservation plan of Florida’s manatees through education, law enforcement, and regulations. The plan obtains data in order to assess the current manatee population and habitat, and based on this assessment protection zones were identified. Manatee protection zones attempt to unify and balance boater traffic with manatee protection efforts.

Slow speed zones within a certain distance to shore identified as a bright green on the map are found along a majority of the St. John’s shoreline. This compares to the blue which indicates a 25 mile per hour regulation that is in effect all year round. The 25 mile per hour speed limit is primarily enforced in the region north of downtown and within a narrower region of the St. Johns River. Overall, there appears to be a high variation of boating traffic and waterway regulations within the county.

Map 7: All oyster reefs in Duval County, Florida (SJRWMD 2017)



The oyster reefs located in Duval County are shown in Map 7. Oyster reefs are not present in most of Duval County, but are limited to mainly two waterway districts, Heckscher Drive/Timucuan and Intracoastal Waterway. It is most notable that the oyster reefs do not reside in the St. John's River, but instead in the Fort George River, the Nassau River, and in the Intracoastal Waterway (ICW).

The majority of the oyster reefs in Duval County are located in the Heckscher Drive/ Timucuan neighborhood district. Most of the oyster reefs on this map are represented by a light blue color. This indicates that a majority of the oyster reefs in Duval County are alive and continuous. Close to the mouth of Sisters Creek that opens up into the St. Johns River, there are oyster reefs present, denoted by the red coloring. This indicates that these particular oyster reefs are dead. The darker blue color on the map indicates that there are oyster reefs present that are alive and aggregate. As opposed to being continuous, these reefs are a combination of many separate reefs.

In addition to the Heckscher Drive/ Timucuan waterway district, the southern end of the ICW has a number of primarily live and continuous oyster reefs. Although they are not as prominent, there are a few dead oyster reefs in this area as well. The oyster reefs in Duval County provide habitat for other organisms in the St. Johns and also increase water quality, making their protection of importance in these areas.

## Sea Level Rise Risk Analysis

An analysis was conducted to assess the risk to existing water access facilities related to projected sea level rise (SLR) scenarios for the years 2040 and 2070.

### Methodology

Geographic Information System (GIS) software (ArcGIS 10.4) was used to examine the extent of potential risk to each site from SLR. The GIS data used for this analysis was provided by the University of Florida GeoPlan Center as a product of their “Florida Sea Level Scenario Sketch Planning Tool” project that was funded by the Florida Department of Transportation (see [sls.geoplan.ufl.edu](http://sls.geoplan.ufl.edu)). The GeoPlan Center created SLR inundation surfaces, using a “bathtub model” method, for each decade between 2040 and 2100, and for multiple projection curve and tidal datum scenarios.

According to the Geoplan Center: “These inundation surfaces were created using the United States Army Corps of Engineers (USACE) sea level change projection curves (as specified in USACE Engineer Circular EC 1165-2-12), NOAA tide gauge data, and a 5-meter horizontal resolution Digital Elevation Model (DEM)”. They provided GIS data that enables analysis for three USACE sea level change projection curves (High, Intermediate, and Low/Historic), and then five tidal datums (Mean Higher High, Mean High, Mean Sea Level, Mean Low, and Mean Lower Low Water) for each projection curve.

For this analysis, the planning team chose to use GIS data for 2040 and 2070 that reflected the “Mean High Water” tidal datum and the “Intermediate” sea level change projection curves. Each existing water access facility was examined individually to assess potential risk from SLR for each of the two decadal scenarios. Based on this assessment, each site was assigned a risk-level described as “No Significant Impact”, “Significant Impact”, or “Very Significant Impact”, and general comments were assigned for each site.

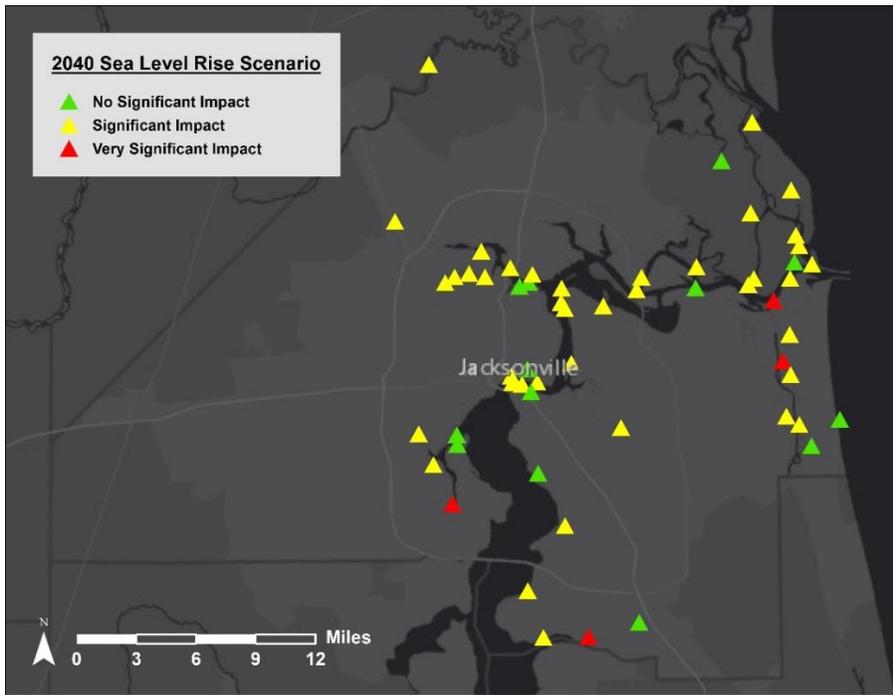
### Results

The results of this analysis are provided in both map form (Maps 8 and 9), and in Table 2, which describes the generalized risk assessment for each individual site.

### Recommendations

Based on these results, it is recommended that any major facility repairs or expansion projects that are implemented in the future should consider the latest SLR projection models in their design process.

Map 8: 2040 SLR Risk Assessments @ Existing Water Access Facilities



Map 9: 2070 SLR Risk Assessments @ Existing Water Access Facilities

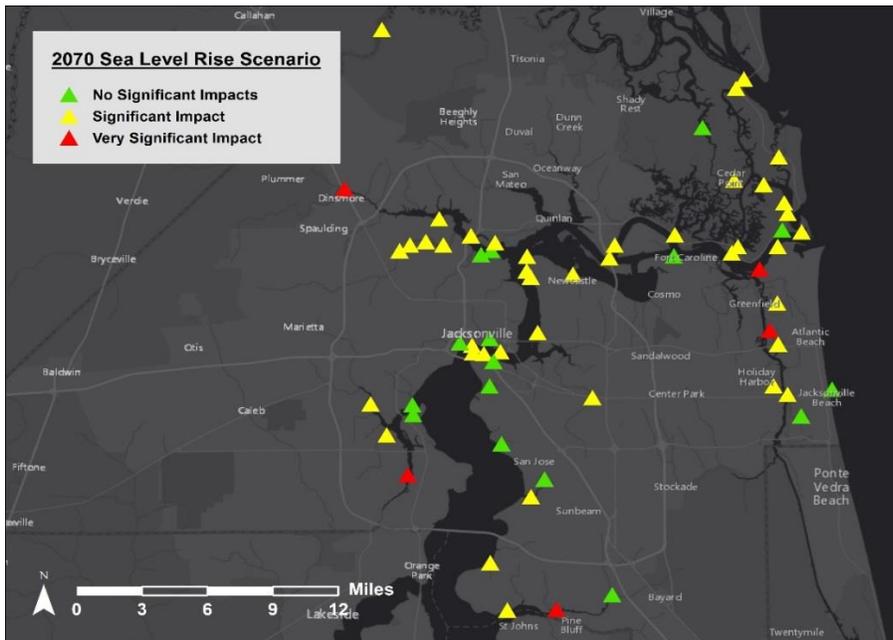


Table 1: SLR Risk Assessment for Existing Water Access Sites

<b>Hecksher Drive / Timucuan</b>			
<b>Manager</b>	<b>Name</b>	<b>Facility Type</b>	<b>Comments</b>
COJ	Dames Point Park	fishing pier	May require adaptive engineering in addition to normal maintenance by 2040.
COJ	New Berlin	motorized & non-motorized launch	May require adaptive engineering in addition to normal maintenance by 2040.
COJ	Palms Fish Camp	motorized & non-motorized launch	May require adaptive engineering in addition to normal maintenance by 2040.
COJ	Sisters Creek/Jim King Park	motorized & non-motorized launch	May require adaptive engineering in addition to normal maintenance by 2040. Access road may be affected by 2040.
COJ	Alimacani	motorized & non-motorized launch & dock	May require adaptive engineering in addition to normal maintenance by 2040.
COJ	Joe Carlucci	motorized launch	May require adaptive engineering in addition to normal maintenance by 2040. Access road may be affected by 2040.
COJ	Haulover Creek	non-motorized launch	Improvements should consider potential SLR.
COJ	Huguenot Memorial Park	non-motorized launch	May require adaptive relocation by 2040. Access road may be affected by 2040.
NPS	Cedar Point Preserve	motorized & non-motorized launch	May require adaptive engineering in addition to normal maintenance by 2040.
NPS	Kingsley Plantation	non-motorized launch & dock	May require adaptive engineering in addition to normal maintenance by 2040.
State	George Crady Fishing Pier State Park	non-motorized launch & pier	May require adaptive engineering in addition to normal maintenance by 2040.

<b>Hecksher Drive / Timucuan <i>continued</i></b>			
<b>Manager</b>	<b>Name</b>	<b>Facility Type</b>	<b>Comments</b>
State	Fort George (Ribault Club)	motorized & non-motorized launch	May require adaptive engineering in addition to normal maintenance by 2040. Access road may be affected by 2040.
State	Big Talbot Island State Park	motorized launch	May require adaptive engineering in addition to normal maintenance by 2040. Access road may be affected by 2040.
State	Kayak Amelia	non-motorized launch	May require adaptive engineering in addition to normal maintenance by 2040.
State	Pumpkin Hill Creek Preserve	non-motorized launch	Improvements should consider potential SLR.
<b>Mayport/Beaches</b>			
<b>Manager</b>	<b>Name</b>	<b>Facility Type</b>	<b>Comments</b>
COJ	Helen Cooper Floyd Park	fishing pier	Access road may be affected by 2040. Site inundated by 2070.
COJ	Mayport (Michael B. Scanlon)	motorized launch	May require adaptive engineering in addition to normal maintenance by 2040. <b>Access road may be affected by 2040.</b>
COJB	Jacksonville Beach Pier	fishing pier	Improvements should consider potential SLR.
<b>Fort Caroline / Mill Cove</b>			
<b>Manager</b>	<b>Name</b>	<b>Facility Type</b>	<b>Comments</b>
COJ	Fulton Road Landing	motorized & non-motorized launch	Improvements should consider potential SLR.

<b>Intracoastal Waterway</b>			
<b>Manager</b>	<b>Name</b>	<b>Facility Type</b>	<b>Comments</b>
COAB	Tideviews Preserve	non-motorized launch & boardwalk & fishing pier	May require adaptive engineering in addition to normal maintenance by 2040.
COAB	Dutton Island Preserve	non-motorized launch & fishing pier	<b>Access road may be inundated by 2040.</b> May require adaptive engineering in addition to normal maintenance by 2040.
COJ	McCue Park	motorized & non-motorized launch	May require adaptive engineering in addition to normal maintenance by 2040. Access road may be affected by 2040.
COJ	Oak Harbor	motorized launch	May require adaptive engineering in addition to normal maintenance by 2040.
COJ	Castaway Island Preserve	non-motorized launch	May require adaptive engineering in addition to normal maintenance by 2040.
COJB	Cradle Creek Preserve	non-motorized launch	Improvements should consider potential SLR.
<b>Arlington</b>			
<b>Manager</b>	<b>Name</b>	<b>Facility Type</b>	<b>Comments</b>
COJ	Arlington Lions Club Park	motorized & non-motorized launch & fishing pier	May require adaptive engineering in addition to normal maintenance by 2040.
COJ	Arlington Road	motorized launch	May require adaptive engineering in addition to normal maintenance by 2040.
COJ	Lonnie Wurn	motorized launch	May require adaptive engineering in addition to normal maintenance by 2040.
COJ	Blue Cypress Park	non-motorized launch & fishing pier & boardwalk	May require adaptive engineering in addition to normal maintenance by 2040.
COJ	Reddie Point Preserve	non-motorized launch & fishing pier & docks	May require adaptive engineering in addition to normal maintenance by 2040.

Trout River / Ribault River			
Manager	Name	Facility Type	Comments
COJ	Trout River Pier	fishing pier	Improvements should consider potential SLR.
COJ	Thomas Creek Preserve	motorized & non-motorized launch	May require adaptive engineering in addition to normal maintenance by 2040.
COJ	Bert Maxwell	motorized launch	May require adaptive engineering in addition to normal maintenance by 2040.
COJ	Dinsmore	motorized launch	May require adaptive engineering in addition to normal maintenance by 2040. <b>Site may be inundated by 2070.</b>
COJ	Harborview	motorized launch	May require adaptive engineering in addition to normal maintenance by 2040.
COJ	T.K. Stokes	motorized launch	May require adaptive engineering in addition to normal maintenance by 2040.
COJ	Charles Reese Memorial Park	non-motorized launch	May require adaptive engineering in addition to normal maintenance by 2040.
COJ	North Shore Park	non-motorized launch	Improvements should consider SLR.
COJ	Ribault River Preserve	non-motorized launch	May require adaptive engineering in addition to normal maintenance by 2040.
COJ	Riverview Park	non-motorized launch	May require adaptive engineering in addition to normal maintenance by 2040.
Zoo	Jacksonville Zoo & Gardens	dock	May require adaptive engineering in addition to normal maintenance by 2040.

<b>Downtown / Hogans Creek</b>			
<b>Manager</b>	<b>Name</b>	<b>Facility Type</b>	<b>Comments</b>
COJ	Metro Park Marina	marina & non-motorized launch	May require adaptive engineering in addition to normal maintenance by 2040.
COJ	Catherine St. & Hogan's Creek	non-motorized launch	Improvements should consider potential SLR.
COJ	Northbank Riverwalk	promenade & docks	May require adaptive engineering in addition to normal maintenance by 2040.
<b>Riverside / McCoy's Creek</b>			
<b>Manager</b>	<b>Name</b>	<b>Facility Type</b>	<b>Comments</b>
COJ	McCoy's Creek	Greenway/canal	Improvements should consider potential SLR.
COJ	Chelsea Street – McCoy's Creek	non-motorized launch	Improvements should consider potential SLR.
COJ	Baker Point Park	Pedestrian access	Improvements should consider potential SLR.
<b>San Jose</b>			
<b>Manager</b>	<b>Name</b>	<b>Facility Type</b>	<b>Comments</b>
COJ	St. Johns Marina	motorized & non-motorized launch	May require adaptive engineering in addition to normal maintenance by 2040.
COJ	Pottsburg Creek/Beach Blvd.	motorized launch	May require adaptive engineering in addition to normal maintenance by 2040.
COJ	Bee Street Park	non-motorized launch	Improvements should consider potential SLR.
COJ	Nathan Krestul Park	non-motorized launch	Improvements should consider potential SLR.

COJ	Southbank Riverwalk	promenade & docks & non-motorized launch	May require adaptive engineering in addition to normal maintenance by 2040.
Ortega / Cedar River			
Manager	Name	Facility Type	Comments
COJ	Curtis Lee Johnson Marina	motorized & non-motorized launch	May require adaptive engineering in addition to normal maintenance by 2040.
COJ	Wayne B. Stevens	motorized & non-motorized launch	May require adaptive engineering in addition to normal maintenance by 2040.
COJ	Ringhaver Park	non-motorized launch	Inundated by 2040.
COJ	Seminole Park	non-motorized launch	Improvements should consider potential SLR.
COJ	Stinson Park	non-motorized launch & overlook	Improvements should consider potential SLR.
JEA	Ortega River – McGirts Creek	non-motorized launch	Improvements should consider potential SLR.
Mandarin / Goodby's Creek			
Manager	Name	Facility Type	Comments
COJ	County Dock	motorized & non-motorized launch	May require adaptive engineering in addition to normal maintenance by 2040.
COJ	Mandarin Park	motorized & non-motorized launch	May require adaptive engineering in addition to normal maintenance by 2040.
COJ	Goodby's Lake	motorized launch	May require adaptive engineering in addition to normal maintenance by 2040.
COJ	Camp Tomahawk	non-motorized launch	Improvements should consider potential SLR.
Julington Creek			
Manager	Name	Facility Type	Comments
COJ	Hood Landing	motorized launch	Inundated by 2040.

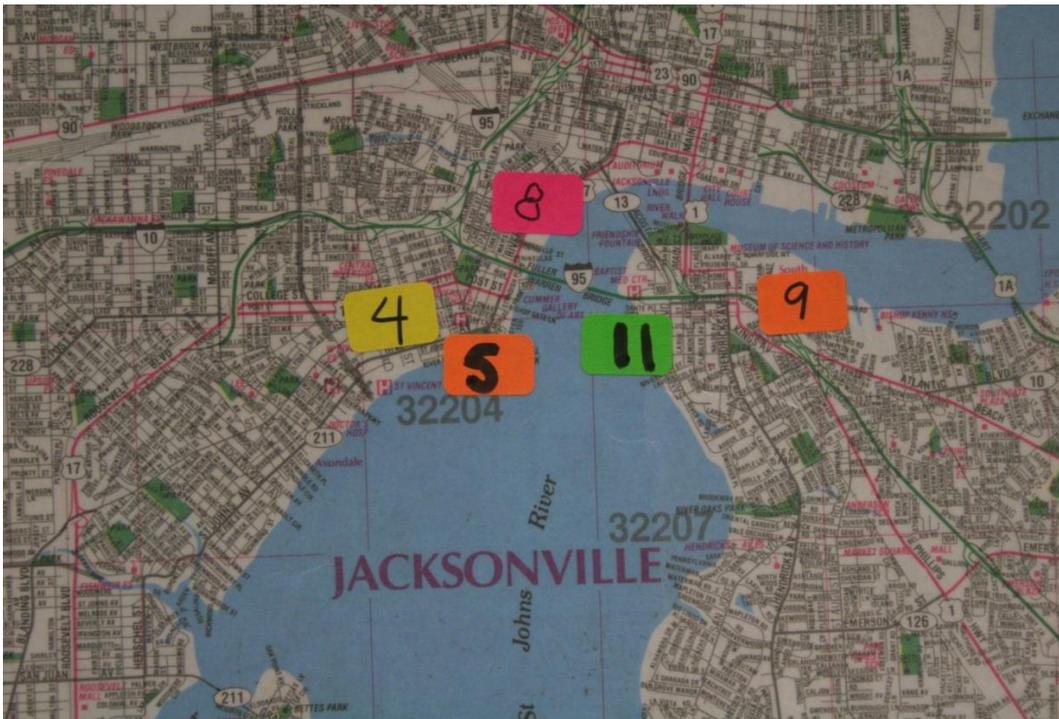
COJ	Palmetto Leaves Regional Park	non-motorized launch	Improvements should consider potential SLR.
-----	-------------------------------	----------------------	---



## **PUBLIC INPUT**

## Public Meetings

Work began on the Maritime Management Plan in late 2015, and a kickoff public meeting was held in December of that year to begin community conversation on the plan. The approach to the plan was discussed by the planning team at that meeting, and the launch of the JaxBoatPlan.com website as well as the first public input survey was announced. 2016 was a year when the planning team assessed existing facilities and launched an app to allow the public to provide comments and observations on existing facilities to the team. They also created a series of story maps in anticipation of three public meetings in October, November and December of that year. This allowed the planning team and the public to interact around both the findings of the existing facility assessments and the natural resources related to waterways in Duval County. Suggestions on where to locate new facilities were gathered through the two public input surveys associated with the plan, as well as by interacting with the public and placing numbered dots on a hard copy map (see photo below.)



## Research on Behaviors and Opinions Regarding Duval County Waterways

As part of the research to develop the Maritime Management Plan, two surveys were conducted with Duval County residents to ascertain their behaviors and opinions regarding Duval County Waterways. These included a self-administered questionnaire available in paper form or online, and a telephone survey.

Self-Administered Surveys

Most respondents completed their surveys in a self-administered fashion, although interviewers were present to assist respondents (if necessary) when the survey was distributed at public gatherings. The questionnaires were available both online and printed on paper. The online version of the questionnaire was posted at the website JaxBoatPlan.com. This link to the online questionnaire was emailed to persons who requested it and to groups involved in maritime and waterway issues and activities. In addition, email addresses were collected (to subsequently email the link) and cards with the website were distributed at public gatherings such as the Jacksonville Boat Show, Jacksonville Kingfish Tournament, the City of Jacksonville Environmental Protection Board Water Education Festival, the US Coast Guard Auxiliary, and other meetings deemed relevant to the St. John's River and related Duval County waterways. The collection of data for the first survey began in December 2015 and ended on October 31, 2016.

The primary wave of data collection (Survey #1) began in December 2015 and ended in October 2016 and resulted in completed questionnaires from 762 respondents. A supplemental wave of data collection utilizing a truncated Activating the River questionnaire took place from November 2016 to February 2017 and resulted in an additional 85 respondents. Those respondents completing the self-administered survey do not represent a scientific probability sample of all Duval County residents, and the study was not designed to do so. Rather, it is a convenience sample of persons willing to complete the questionnaire after being made aware of the City's goal to create an up to date Maritime Management Plan. Outreach attempts were purposefully diversified to reach as wide a variety of population subgroups as possible, hence producing the most representative sample possible given these methods.

#### Telephone Survey

A telephone survey was also utilized to gather data regarding behaviors and opinions about the St Johns River and related Duval county waterways. Directory based random digit dialing was implemented to produce a probability sample of 448 completed interviews with Duval County residents. Respondent selection was determined by the most recent birthday method, and the response rate was 63%. The questionnaire consisted of 13 closed-end questions, with an average time per interview of approximately 10 minutes. Data collection was conducted by a team of six telephone interviewers, and took place in September and October of 2016.

#### Survey # 1 Behavior and Usage Results

A list of seven water access facilities were offered to respondents as well as an "other specify" response, and respondents were asked to indicate which facilities they had used during the past month, and how often they had used each facility. Table 2 presents those water access facilities and the percentage of respondents who used that type of facility in the past month. Public boat ramps were used most commonly, followed by Riverwalks and waterfront parks. Boat docks were also used by more than one third of the respondents.

When analyzing and interpreting the survey results in the remainder of this section of the report, it will be helpful to think in terms of persons who enter the water when using water access facilities (for

example, those individuals who primarily use boat ramps and docks and kayak launches) and those who do not enter the water (for example, those individuals who primarily use Riverwalks, waterfront parks, and fishing piers). Approximately 65% of the respondents who had used a water access facility in the past month owned a boat and entered the water when using water access facilities. The remainder of the respondents (35%) did not. Comparisons of the two groups will be provided when their answers are noticeably different. Among the respondents who were boat owners, more than 70% owned motorized boats, about 20% owned kayaks, canoes, or rowing shells, and approximately 5% owned sailboats.

Table 2: Q.2 Here is a list of some public water access facilities available in Duval County. Please tell me if anyone in your household (including yourself) has used any of these facilities in the past month.

<u>Type of Facility</u>	<u>Percentage of All Respondents Using This Type of Facility in the Past Month</u>
Public boat ramps	62.0%
Riverwalks	56.6
Waterfront parks	55.8
Docks	45.6
Kayak launches	23.5
Fishing piers	19.5
Other (please specify below)	6.4
Mooring Buoys	2.4

When asked to indicate the actual facility they use most often, the respondents who enter the water cited the boat ramps at Sister’s Creek (Joe Carlucci Boat Ramp and Jim King Park and Boat Ramp) most frequently. For those using Riverwalks and parks, facilities in downtown area (the North and South Bank Riverwalks, The Landing, and Riverside Arts Market) were mentioned by the most respondents.

Respondents were then asked to indicate how often they used public water access facilities in Duval County (Figure 1). The facilities that are used most frequently were Riverwalks and waterfront parks. Nearly 10% of the respondents used these facilities at least every other day, with an additional 25% of the respondents using these facilities at least once a week. Public boat ramps, docks, and kayak launches were also used by approximately one-third of the respondents on a weekly basis.

Figure 1: Frequency of Use

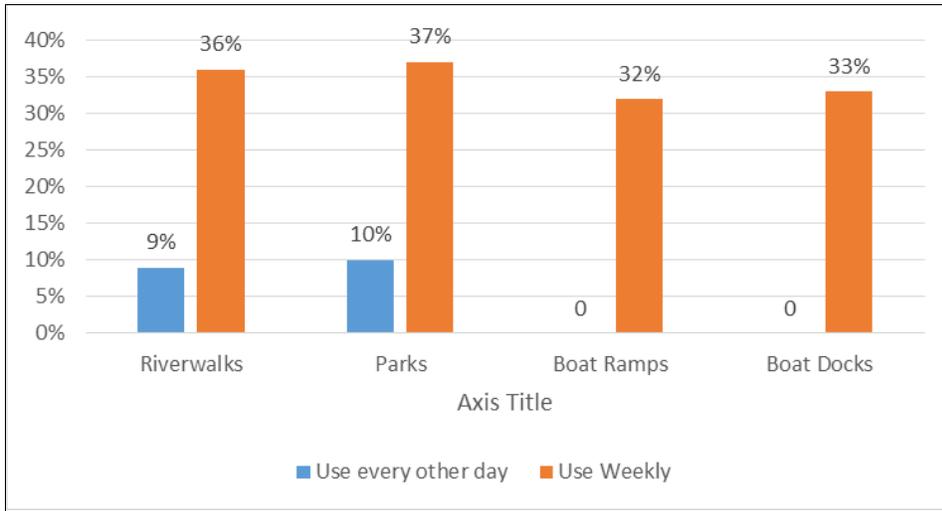
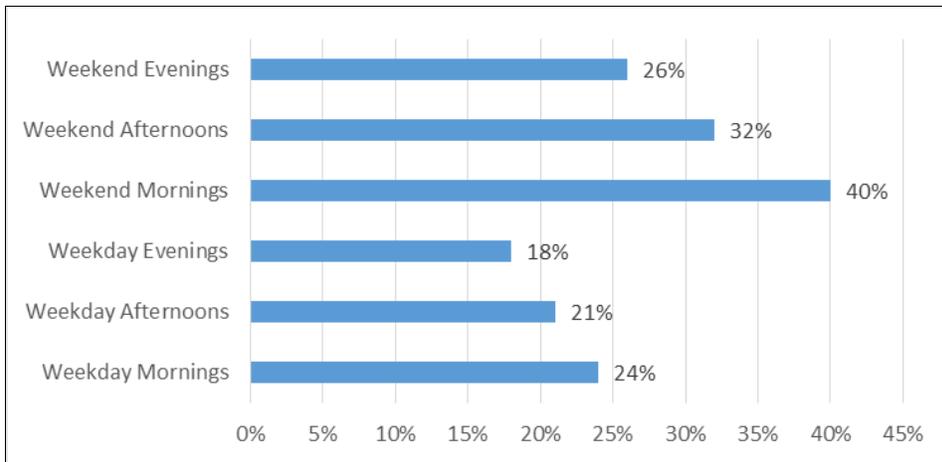


Figure 2 illustrates when waterway facilities are used most often. The results shown were consistent across all types of facilities including riverwalks and waterfront parks, as well as boat ramps and docks, and kayak launches. The weekends were more popular than the weekdays, and the mornings were more popular than the afternoons.

Figure 2: Percent of Respondents Using Water Access Facilities by Day and Time



As would be expected, the most common reason for using these facilities varies by the type of facility (Table 3). Boat ramps and docks, and kayak launches were used for motorized boating, canoeing and kayaking, and paddle boarding. Riverwalks and waterfront parks were used for observing scenic views and nature, walking and exercising. A variety of facilities were used for fishing including fishing piers, waterfront parks, and boats.

Table 3: Q6. What is the main reason you use this facility (the facility you use most often)?

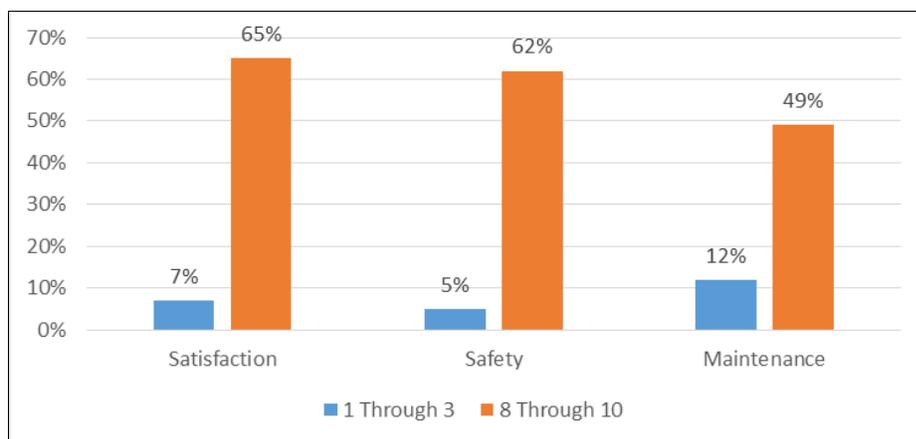
<u>Activity</u>	<u>Percentage of all respondents citing this activity as the main reason for using the facility (they use most often)</u>
Motorized boating	23.0%
Fishing	22.4
Walking/exercising	17.5
Observing scenic views/nature	16.2
Canoeing/kayaking	11.4
Other (please specify)	9.5

For many respondents, water access facilities are located close to their homes. More than 50% of the respondents travel less than 5 miles to reach the facility they use most often. The remaining 45% travel more than 5 miles, with approximately one in four travelling 11 miles or more. The overwhelming majority of respondents, more than 80% travel by car or truck to water access facilities. An additional 6% reached their facility by boat. Less than 10% walked to the water access facility they used most often, and less than 5% traveled by bicycle.

#### Opinions and Ratings

Respondents were then asked to rate the water access facility they used most often in terms of satisfaction, safety, and maintenance on a scale from 1 to 10, where 1 was the lowest rating and 10 was the highest rating. Figure 3 illustrates that most respondents rated their facilities favorably on all three criteria. The number of respondents rating facilities as an 8-9-10 was much greater than the number of respondents rating facilities as a 1-2-3. The mean rating for satisfaction was 7.24, for safety 7.62, and for maintenance 6.82. These results indicate that the respondents were satisfied with their facilities and felt that they were safe, but that there was room for improvement in terms of maintenance. It should also be noted that cross tabulations confirmed that these results are similar for persons who enter the water and those who do not.

Figure 3: Percent of Respondents Rating the Facility They Use Most Often on a Scale of 1 to 10



After informing us about the facilities they use and their rating of those facilities, respondents were asked about the need for additional water access facilities along the St. Johns River and related Duval County waterways. Nearly two-thirds of the respondents felt there was a need for additional water access facilities in addition to those they use. Once again, this result was fairly consistent for persons who entered the water and those that did not. Of course, the additional facilities they desired were different (Table 4). Those who entered the water were primarily interested in more boat ramps and docks, whereas individuals who did not enter the water cited the need for more Riverwalks and waterfront parks. Two additional answers were also mentioned frequently, kayak launches and fishing piers. Both of these facilities were mentioned more frequently in this question than in the usage question. This result suggests that persons who fish were not the only respondents to request more fishing piers, and that persons who kayak were not the only respondents to request more kayak launches. The most frequently cited “other specify” answer was the need for more waterfront restaurants.

Table 4: Q13. In addition to the water facilities you currently use, do you have the need for any additional water access facilities? Which type? Where should they be located?

<u>Type of Facility</u>	<u>Percentage of all respondents requesting more of this facility</u>
Public boat ramps	49.6%
Kayak launches	39.8
Waterfront parks	30.5
Docks	27.3
Riverwalk/boardwalks	23.8
Fishing piers	18.8
Other (please specify)	14.8
Mooring buoys	10.2

Figure 4 and Table 5 provide information as to where the respondents feel most additional facilities should be located. Respondents utilized the grid map shown in Figure 4 to specify the map quadrangle(s) where they would like additional facilities to be placed. The respondents could specify as many quadrangles as they would like for each additional facility, and most did specify multiple locations. The results were then coded into the 12 water district areas so that they could be combined with the responses to an additional online survey “Activate the River” (n=85).

Table 5 reveals that the desire for additional boat ramps is distributed along the entirety of the St. Johns River, from southern Duval County to the mouth of the river. The desire for additional boat docks is more concentrated, specifically in the Downtown and Ortega areas, as well as San Jose and Mandarin, and Fort Caroline and the Intracoastal. The demand for additional kayak launches could be found throughout Jacksonville, and as Table 4 indicates, there were almost as many requests for additional kayak launches as there were for additional boat ramps. The respondents specified Riverside, Downtown, and San Jose most frequently for additional riverwalks, suggesting the expansion of the existing facilities in those areas. The desire for additional waterfront parks is equally distributed from Ortega north through Arlington. Lastly, the respondents indicated that additional

fishing piers should be located all along the St. Johns River except for Arlington and the Intracoastal Waterway.

Figure 4: Grid map to identify the location of additional facilities

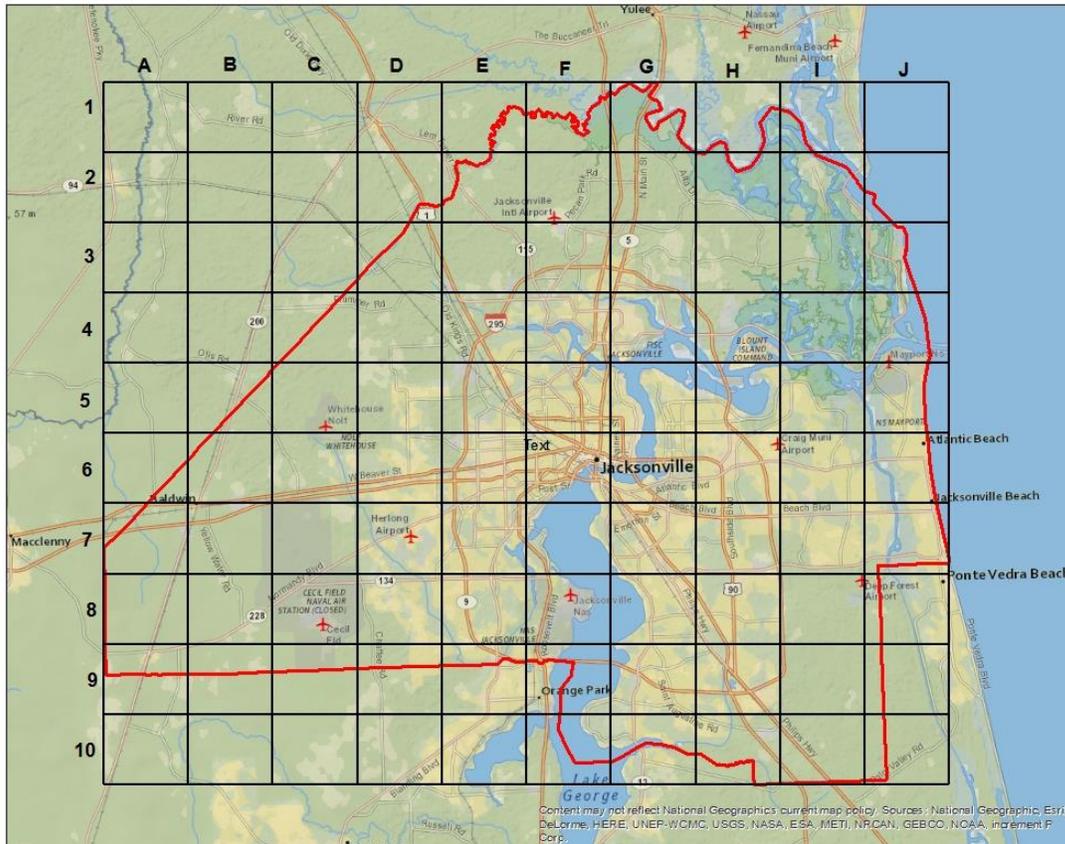


Table 5: Additional Facilities by Waterway District

Area	Public Boat Ramp	Kayak Launch	Boat Dock	Mooring Buoy	Fishing Pier	Riverwalk	Water Front Park	Restaurant
Julington Creek	12	10	0	0	10	0	0	0
Downtown Hogan's Creek	0	29	27	0	14	26	20	23
Riverside McCoy's Creek	17	35	0	0	13	24	18	16
San Jose	15	24	17	0	17	10	15	13
Ortega Cedar River	20	38	17	0	17	10	15	13
Mandarin Goodby's Creek	13	24	14	0	19	0	22	0
Trout River Ribault River	21	27	0	0	10	0	0	0
Arlington	14	19	0	0	0	0	10	0
Heckscher Drive Timucuan	22	42	0	0	12	0	0	14
Fort Caroline Mill Cove	29	37	10	0	14	0	0	10
Intracoastal Waterway	55	37	19	0	0	0	13	26
Mayport Beaches	24	20	0	0	14	0	0	15

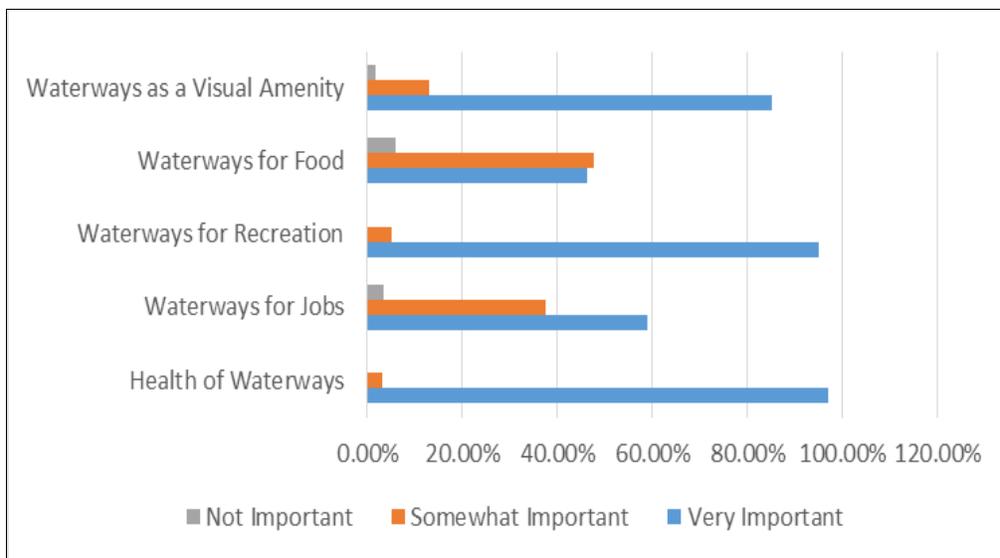
Survey # 2 was opened in November 2016 to take advantage of an ongoing community conversation and great public interest in waterways activation. It used the Waterways Districts shown in Map 1. Ultimately, the planning team used the following table to assess the need for additional types of facilities in each Waterway District. Table 5 includes all facility types and the district results are included if they equal ten or more responses.

The survey concludes with several questions designed to obtain the respondents opinions about the importance of the St. Johns River and related Duval county waterways. The first question asked the respondents to rate the value of the St. Johns as an asset to the community on a scale from 1 to 10, with 1 representing the least value and 10 representing the most value. More than 97% of those surveyed rated the St. Johns as an 8-9-10. For comparative purposes, a similar question was asked about two other high awareness assets in the Jacksonville community, the area’s naval bases and the Jacksonville Jaguars. Nearly 79% rated the naval bases as an 8-9-10, and nearly 50% rated the Jaguars as an 8-9-10.

These results illustrate two important points. First, as noted in the introduction, the sample for this study is not a scientific probability sample, it is a convenience sample of persons made aware of the need for an up to date county Maritime Management Plan. Hence, the sample will be selective of and biased towards persons who take an interest in the St. Johns River and related Duval County waterways. A similar question asked in a 2012 study about the St. Johns River utilizing a scientific probability sample found the naval bases to be more valued than the river. Second, the results do illustrate that individuals who interact with the river, whether that interaction is through boating, fishing or simply observing, will value the river.

Respondents were also asked to rate the importance of Duval County waterways on five criteria: the health of the waterways, their importance as a source of jobs, recreation, and food, and as a visual amenity. Figure 5 illustrates that over 80% of the respondents consider the waterways as a very important source of recreation, and that they also consider them to be a very important visual amenity. More than 80% also expressed that keeping our waterways healthy is very important. Somewhat lesser percentages considered our waterways as a very important source of jobs and food, but those persons did express that they were somewhat important.

Figure 5: Rate the Importance of Duval County Waterways



When asked about future spending priorities, nearly 60% of the respondents stated that the City of Jacksonville should focus on maintaining existing water access facilities (Table 6), whereas more than one-third felt that existing facilities should also be expanded. The desire for spending on specific facilities closely followed the results from the earlier question about desiring additional facilities: boat ramps, kayak launches, and boat docks were popular among individuals who enter the water. Riverwalks and shoreline walkways were most popular among those who do not enter the water. The other specify responses were comprised of a small number of individuals suggesting a wide variety of spending priorities, such as more waterfront restaurants, more parking at all types of facilities, and cleaning trash from waterways and litter prevention.

Table 6: Q24. Of the issues listed below, which three would you like to see receive the most attention from the City of Jacksonville in terms of funding?

<u>Type of Spending</u>	<u>Percent of all respondents prioritizing this type of spending</u>
Maintaining existing water access facilities	58.2%
Downtown Riverwalks	40.0
Expanding existing water access facilities	36.1
Building new shoreline walkways	31.0
Building new boat ramps	22.8
Building new kayak launches	21.6
Adding more docking facilities	19.2
Dredging for recreational boating use	18.4
Other (please specify)	14.9
Building new fishing piers	12.2
Developing mooring fields	3.9

#### Additional Results: Telephone Survey

In addition to the self-administered online survey data, additional survey data were collected by telephone through interviews conducted in November 2016 among a probability sample of 448 adults, 18 years of age or older, living in the Jacksonville Metropolitan area. The survey was conducted by interviewers at Jacksonville University under the direction of the Jacksonville University Social Science Research Center. A combination of landline and cell phone random digit dial samples were used. The error attributable to sampling that would be expected at the 95% level of confidence for the total sample size and this population is plus or minus 5%.

We felt it was also useful to compare these results to a similar survey conducted in 2012. Those results are based on telephone interviews conducted in November 2012 among a sample of 379 adults, 18 years of age or older, living in seven counties along the St. Johns River in Northeast and Central Florida: Duval, Clay, St. Johns, Putnam, Volusia, Seminole, and Brevard. The percentages reported here represent the 171 interviews obtained from residents of the Jacksonville Metropolitan area.

The actual question wording and results are presented below.

1. How familiar are you with the current debate about dredging the St. Johns River? Would you say that you are very familiar, somewhat familiar, or not really familiar with that debate at all?

Very familiar	28%
Somewhat familiar	45
Not really familiar at all ( <i>Skip to Q3</i> )	27

2. In general, would you say that you support or oppose the current plan to dredge a portion of the St Johns River?

Support	34%
Oppose	51
Don't know/Not sure/Undecided	15

3. Thinking about the past year, please tell me how often you have enjoyed the following activities on or along the St. Johns River. How about fishing? Would you say that over the past year you have fished on or along the St. Johns River at least . . .

	<u>2016</u>	<u>2012</u>
Once a week,	5%	4%
Once a month,	10	9
Once a year, or	11	16
Not at all?	74	71

4. How about boating, canoeing, kayaking, or jet skiing? Would you say that over the past year you have boated, canoed, kayak, or jet skied on or along the St. Johns River at least . . .

	<u>2016</u>	<u>2012</u>
Once a week,	5%	6%
Once a month,	10	11
Once a year, or	14	20
Not at all?	71	63

5. How about swimming? Would you say that over the past year you have swam on or along the St. Johns River at least . . .

	<u>2016</u>	<u>2012</u>
Once a week,	1%	2%
Once a month,	3	5
Once a year, or	4	4
Not at all?	92	89

6. How about hunting or observing wildlife? Would you say that over the past year you have hunted or observe wildlife on or along the St. Johns River at least . . .

	<u>2016</u>	<u>2012</u>
Once a week,	13%	15%
Once a month,	23	18
Once a year, or	11	10
Not at all?	53	57

7. Which of the following statements do you think best describes the health of the St. Johns River? Is it:

	<u>2016</u>	<u>2012</u>
A polluted river not worth saving,	4%	3%
A degraded river which has value, but needs a major cleanup, or	59	52
A river in good condition in need of improvements in some areas?	31	41

8. What do you see as the biggest source of pollution in the St. Johns River? Is it . . .

	<u>2016</u>	<u>2012</u>
Industrial and commercial activity,	34	29
Storm water runoff, or	8	26
littering and dumping?	47	36
DK/NA	11	9

9. Do you feel you are knowledgeable about what you can do to help improve the health of the St. Johns River?

	<u>2016</u>	<u>2012</u>
Yes	37	48
No	63	52

10. Do you think there is a direct connection between your personal actions and the health of the St. Johns River?

	<u>2016</u>	<u>2012</u>
Yes	69	55
No	31	45

11. On a scale from 1 to 10, where 1 means "you don't try at all" and 10 means "you try very hard," how would you rate your personal efforts to protect the St. Johns River

	<u>2016</u>	<u>2012</u>
1-5	50	43
6-8	43	41
9-10	7	16

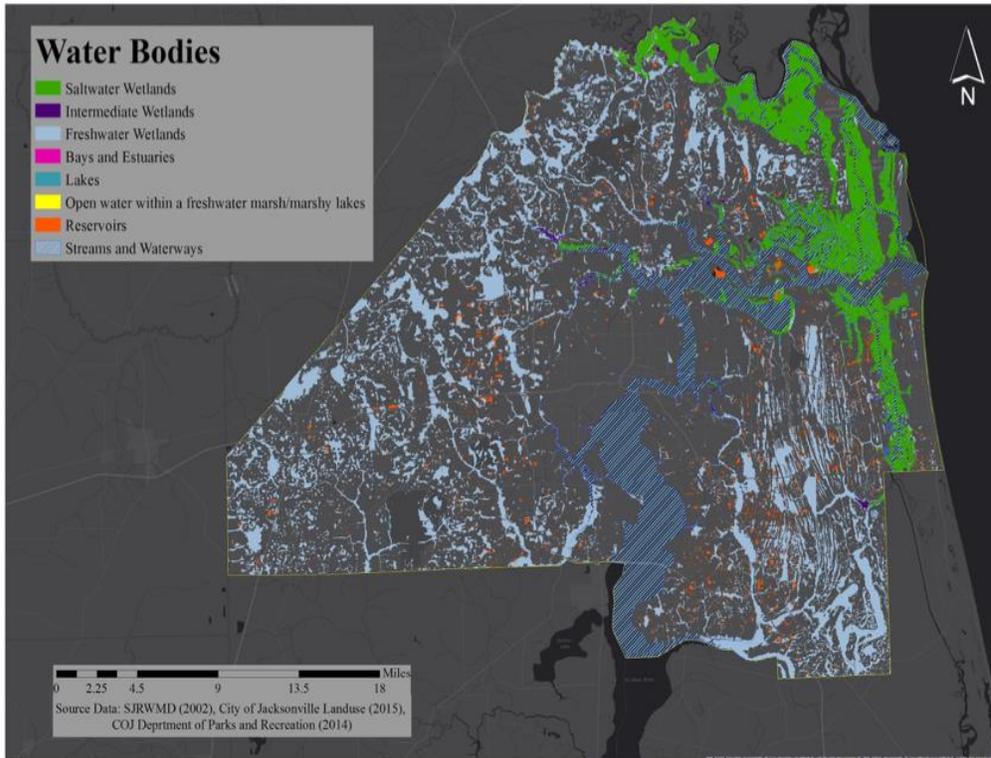


**WATERWAYS AND NAVIGATION CHANNELS**

## Waterway Inventory and Analysis

### Waterbodies

Map 10: All bodies of water within Duval County, Florida (COJ 2017)



Map 10 identifies the eight different water body types found in Duval County. Saltwater wetlands, as indicated by the green, are dominantly found in the Northeast region of Duval near the coast and along St. John tributaries. Saltwater wetlands can be found in the Heckscher Drive/ Timucuan district. Saltwater wetlands make up a large portion of the land within Duval County and based on the map, represents approximately  $\frac{1}{5}$  of total land composition. The St. Johns River is displayed on the map as a blue cross-hatched region, spanning from the beaches to as far south as Julington Creek. The majority of the St. Johns River falls under the streams and waterways category. The next largest waterway type falls under the category of freshwater wetlands. Freshwater wetlands are displayed as light blue on the map and are found throughout Duval County, across all waterway districts. It is important to note that wetlands, both saltwater and freshwater make up the majority of the water body types found in the county. Wetlands are a transitional body of water and in many cases connect the St. Johns River and its tributaries to the coast.

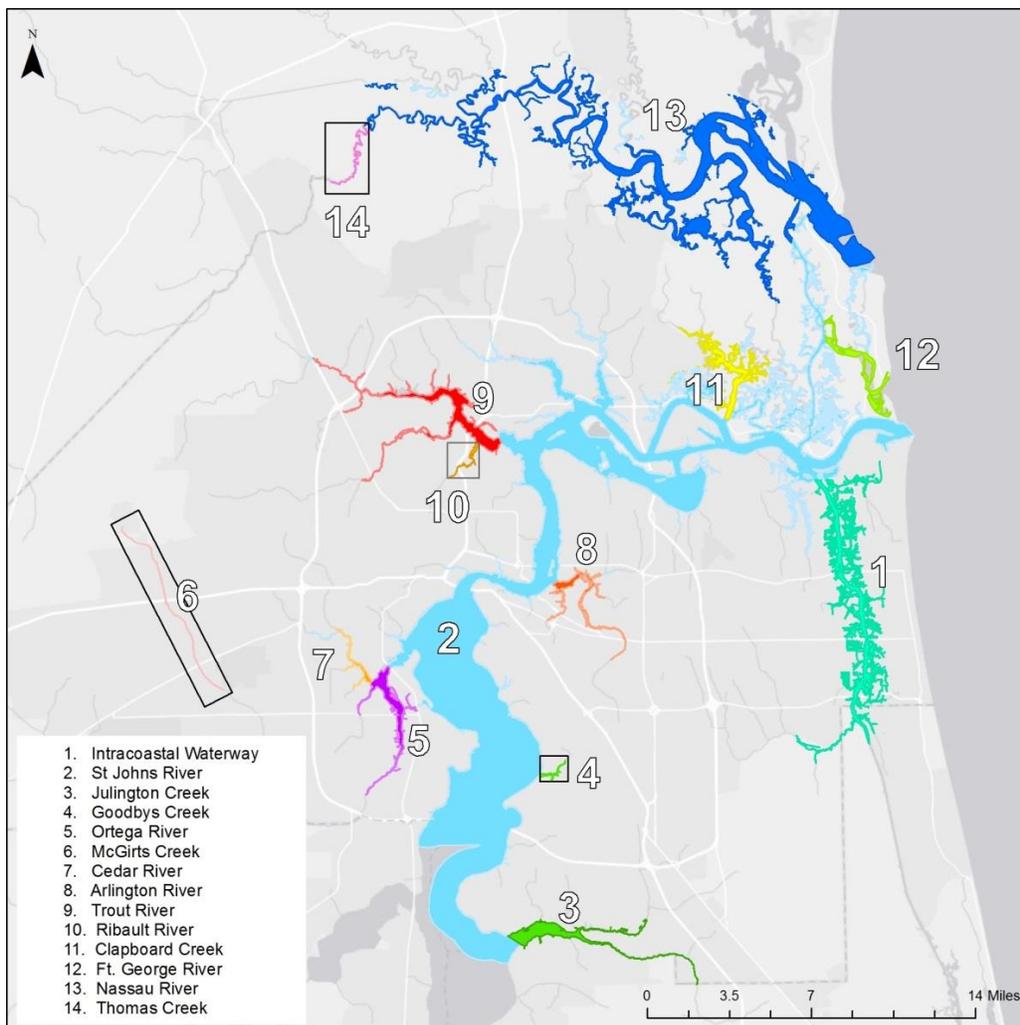
A smaller portion of the waterbodies within Duval County are identified as bays, estuaries and lakes. Bays and estuaries, indicated by a pink color, represent a very small portion of water bodies within the county and as such, are difficult to discern at the scale of Map 10. Lakes displayed by a darker blue are

found within close proximity to saltwater wetlands and their tributaries. Lakes are shown within several waterway districts including the Intracoastal Waterway, San Jose, and Heckscher Drive/Timucuan. Overall, there are few bodies of water identified as lakes.

Reservoirs, shown in orange, are found in a wide range across the county. There appears to be no one waterway district that contains more reservoirs over the others. In general, reservoirs appear to be more abundant further away from the St. Johns River. As manmade features, this could be attributed to the development around the river and the increase in wetlands along the river as opposed to directly next to it.

Overall, saltwater wetlands are found closer to the coast and freshwater wetlands are more abundant inland. Freshwater wetlands appear to be evenly distributed between waterway districts. There are few lakes, estuaries and bays, and open waters within freshwater marshes within the county. All together the St. Johns River, its tributaries, the Intracoastal Waterway and wetlands make up a group of connected and diverse water bodies.

Map 11: The St. Johns River subsections in Duval County, Florida (COJ 2017)



The St. Johns River, including all of its subsections, is included as Map 11, and the navigational channels are shown in Map 12. These subsections include a number of creeks and branching rivers, as well as the Intracoastal Waterway (ICW). The St Johns (2) is the longest river in Florida and is considered to be one of the most significant for both commercial and recreational purposes. Along the St. Johns River are a number of organizations and companies that act as important shipping points. Most notably is the Jacksonville Port Authority, also known as JAXPORT. JAXPORT is known primarily for cargo shipping of automobiles, forest products, containers, and bulk. JAXPORT ships and receives from countries worldwide, making it an important point of trade in the state of Florida. The Jacksonville community in Duval County also thrives along the St. Johns River, as the densest portions of the population live along the residential areas of the river. Additionally, the St. Johns River is considered an American Heritage River. American Heritage Rivers are designated by the Environmental Protection Agency (EPA) as a river to receive special attention in the areas of natural resources and environmental protection, economic revival, and historical and cultural preservation.

The St. Johns River branches into a number of creeks and smaller rivers and connects to the ICW. The ICW (1) runs parallel to the Atlantic Ocean and provides easy access to the open ocean. For this reason, the ICW is a popular boating and fishing destination with a number of boat ramp access points. Aside from the recreational access points, running along the ICW are large residential areas. The ICW resides mainly within its titular waterway district, but also branches into the Mayport/Beaches waterway district as well as slightly into the San Jose waterway district at its southern most point.

Within the Ortega/ Cedar River waterway district are the Ortega River (5), McGirts Creek (6) and the Cedar River (7). Located recreationally along the Ortega River is the Ortega Yacht Club, Timuquana Country Club, and the Florida Yacht Club. The Ortega neighborhood is a wealthier area and is known for its more private boating facilities. Cedar River is known as a fishing destination as well as for its Cedar River Seafood Restaurant. Both Ortega River and Cedar River are historical districts. McGirts Creek is recognized as an area of interest for preservation. McGirts Creek Park was specifically created for the protection of the surrounding environmentally sensitive area. McGirts Creek is primarily in the Ortega/Cedar River waterway district but also reaches into the Riverside/ McCoy's Creek waterway district.

Julington Creek (3) is located in the southern part of Duval County and opens into Old Bull Bay. Julington Creek consists of mostly suburban communities. In general, Julington Creek is popular for fishing, boating, and kayaking. Destinations along the creek are Mandarin Holiday Marina, Julington Creek Marina, Freedom Boat Club, Clark's Fish Camp and Julington Creek Fish Camp.

Goodby's Creek (4) flows within the Mandarin/Goodby's Creek waterway district. Goodby's Creek is destination known for fishing and kayaking. Goodby's Creek is also accessible by motorized boat ramps. Mandarin consists of commercial and residential areas, often with higher income families. Located on the water in this district is North Florida Yacht Sales, Hooters Restaurant, Wicked Barley Brewing, the Florida Tackle and Gun Club and the Walter Jones Historical Park.

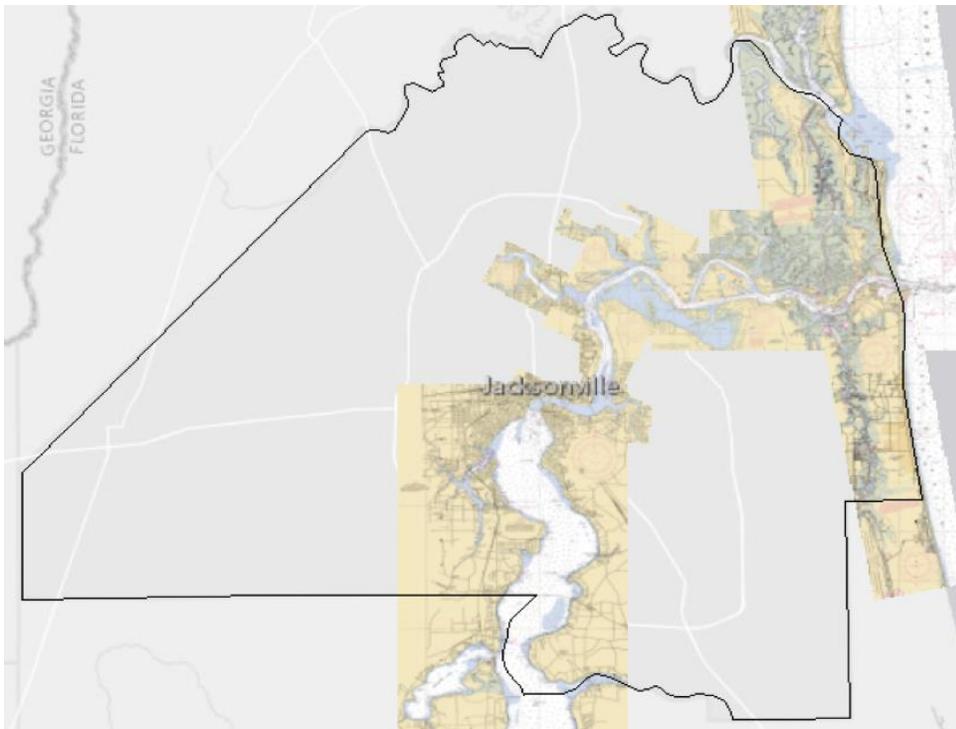
The Arlington River (8) is located within the Arlington waterway district. The Arlington River is located just south of the Matthews Bridge and is a spot known for its fishing, water skiing, rowing, and kayaking. Located in close proximity to the Arlington River is the Arlington Marina, the Negaard Rowing Center at Jacksonville University, and Reddie Point Preserve.

Within the Trout/ Ribault River waterway district are the Trout River (9), the Ribault River (10), and the Thomas Creek (14). Trout River is a popular recreational fishing spot for local residents. The Jacksonville Zoo is a major destination along the Trout River. The Ribault River flows into the Trout River. The Ribault River is also known for its use as a fishing destination as well as for kayakers. Both the Trout River and the Ribault River are located in a more rural area of Jacksonville.

Within the Heckscher Drive/ Timucuan waterway district is Clapboard Creek (11), Ft. George River (12), and the Nassau River (13). The Nassau River runs near Little Talbot Island, which is a popular spot for camping, surfing, fishing, and picnicking. Clapboard Creek is known for kayaking and fishing, as well as for the Clapboard Creek Fish Camp Marine and Palms Fish Camp. Ft. George River is also known for its kayaking, fishing, and net fishing through rural tributaries.

Overall, all these subsections that branch off of the St. Johns River make up Duval County's waterways. These different subsections allow for a diverse range of activities and development potential along the waterfront in Jacksonville, Florida.

Map 12: The navigational channels along the St. Johns River and its subsections (NOAA Office of Coast Survey 2017)



## Navigation Channels

The Army Corp of Engineers (ACOE) maintains the St. Johns River. The Intracoastal Waterway is maintained by both the Florida Inland Navigation District and ACOE. The City of Jacksonville has marked the channel and maintains sections of the Ortega River, Goodbys Creek and Arlington River. The remaining waterways are considered non-maintained channels since they do not have regular upkeep or designated maintenance schedule by any government entity. Non maintained channels may present hazards to boaters and other recreational crafts, therefore it is important to monitor these channels to determine if/when dredging and channel markers are needed and advisable.

Three of the non-maintained channels are located within the Ortega/Cedar River waterway district. This area has been identified as a working waterfront, and thus the need for enhancements and repairs becomes even more apparent as we see a number of channels in disrepair. There are also two non-maintained channels, Jim King and Jacksonville Zoo, located in the Heckscher Drive/ Timucuan waterway district.

A single non maintained channel has also been identified in each of the San Jose (Goodby's Creek), Arlington (Beacon Hills), and in the Trout/Ribault River (Bert Maxwell) waterways districts.

Overall, the presence of non-maintained channels in Duval County indicates a need for ongoing monitoring to identify potential needs and enhancements, such as dredging and channel marking.\*

## Recommendations

The following are the recommendations for known dredging and channel marking needs associated with access to public water access facilities:

<b>Facility</b>	<b>Waterway District</b>	<b>Maintenance Type</b>	<b>Priority</b>
Castaway Island	Intracoastal	Dredging at basin	High
Oak Harbor	Intracoastal	Dredging at ramp approach	High
Dinsmore	Trout/Ribault Rivers	Dredging at ramp approach	Low
Harborview	Trout/Ribault Rivers	Channel Marking	Moderate
Bert Maxwell	Trout/Ribault Rivers	Dredging at ramp approach	High
Mandarin & Hood Landing	Julington Creek	Dredging at low spots	Moderate
Ortega River	Ortega/Cedar River	Dredging at confluence	Moderate

Goodbys Creek	Mandarin/Goodbys	Dredging at confluence	High
Jim King/Sisters Creek	Heckscher Drive/Timucuan	Dredging at transient docks	Moderate
Jacksonville Zoo	Heckscher Drive/Timucuan	Dredging and/or New Dock Construction at Deeper Location	High
Arlington River	Arlington	Dredging & Channel Marking	Recently Completed
Beacon Hills and Harbor	Arlington	Dredging	Low

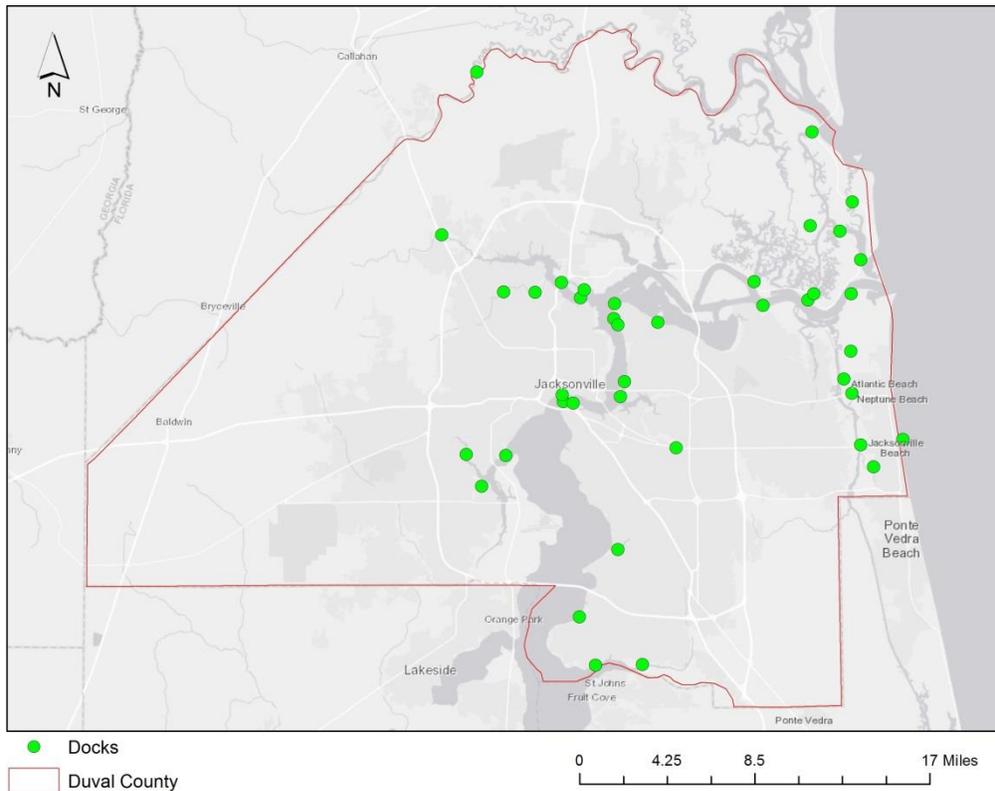
\*Note- Fishweir Creek has been identified as a potential eco-restoration site. The City should seek property suitable for public access development.



## **MOORING AND DOCKING**

## Docking

Map 13: All Destination Docking facilities in Duval County (COJ 2017)



Public facilities with docks in Duval County are shown in Map 13. Most docks are associated with boat ramps or parks. Docks are dispersed throughout all twelve waterway districts, although they are more concentrated in some waterway districts. Over time docks can be subject to sediment erosion and extreme weathering. Hurricanes Matthew and Irma, as well as other events, have left docks and piers damaged.

The majority of the docks in Duval County are located on saltwater or brackish bodies of water. There tend to be fewer docks on freshwater systems. The major focus for docks is in the Downtown Jacksonville area, as they are pivotal in the City's waterways activation plans. This includes docks that may serve as water taxi stops and also docks for boaters who travel by water to Downtown destinations.

Up to 789 boat slips are currently allowed in the downtown Jacksonville Development of Regional Impact. It will be some time before these are constructed, and given ownership patterns and river currents, there is a question as to how many will ever be developed. Additional development of

slips/docks and mooring fields would all be subject to the Boat Facility Siting Recommendations of the Duval County 2014 Manatee Protection Plan. The team recommends additional docks in support of waterways transportation (see Chapter 8).

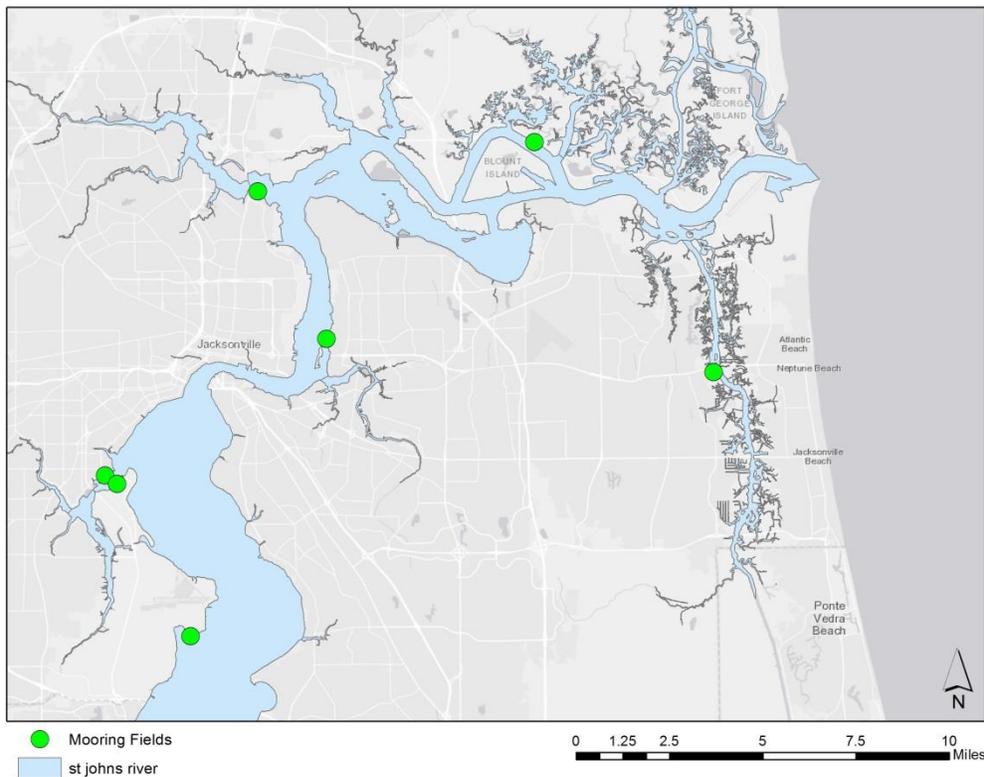
## Recommendations

The following sites have been recommended for new or expanded docks, some of which have already received funding, in an effort to encourage boating and enhance the experience by making it easier for recreational boats and/or the River Taxi to access waterfront destinations:

- Northbank Riverwalk:
  - o Jackson Street
  - o Post Street
  - o Shipyards
  - o Liberty Street basin
- Southbank Riverwalk
  - o Friendship Fountain expansion
  - o Riverplace Tower
  - o Dinner Cruise dock expansion
  - o Lexington Hotel
  - o Baptist Hospital
- Jacksonville Zoo and Gardens
- Palms Fish Camp
- Riverfront Park
- Yacht Basin Park
- Reed Island
- Mayport Village

## Mooring

Map 14: All Mooring Facilities in Duval County (COJ 2017)



Mooring locations within Duval County are shown on Map 14. There are a total of six mooring spots in the county. Three of the mooring fields can be found in the Ortega/ Cedar River waterway district. Moorings can also be found both in Arlington and the Trout/Ribault River waterway districts. There are no mooring locations in either the Fort Caroline/Mill Cove or Beaches/Mayport waterway district.

All but one of the mooring fields in Duval are not official but rather informally established over time by boaters frequently tying up in certain areas. While the City of Jacksonville has expressed support for formalizing mooring fields in the past, this presents several challenges. The City would need upland/riparian rights to qualify for the submerged land leases needed from the Florida Department of Environmental Protection. In addition, uplands are needed as locations for support facilities such as pump out stations, landing areas and parking. In most instances, this would be best approached as a public/private partnership. Until these issues can be worked out, the only formal mooring field in the County is at Naval Air Station Jacksonville (NAS JAX).

When compared to other facilities, there are significantly fewer mooring fields. There is potential for formalizing the current fields and adding additional mooring fields in Duval County. Formalizing them could be accompanied by increasing public awareness of their locations and availability. Overall, mooring fields within Duval can be characterized as dispersed and limited, throughout the St. John's and its tributaries. Derilict vessels as defined by State statute are an ongoing issue. Coordinated effort of local law enforcement and city resources is ongoing.

## Recommendations

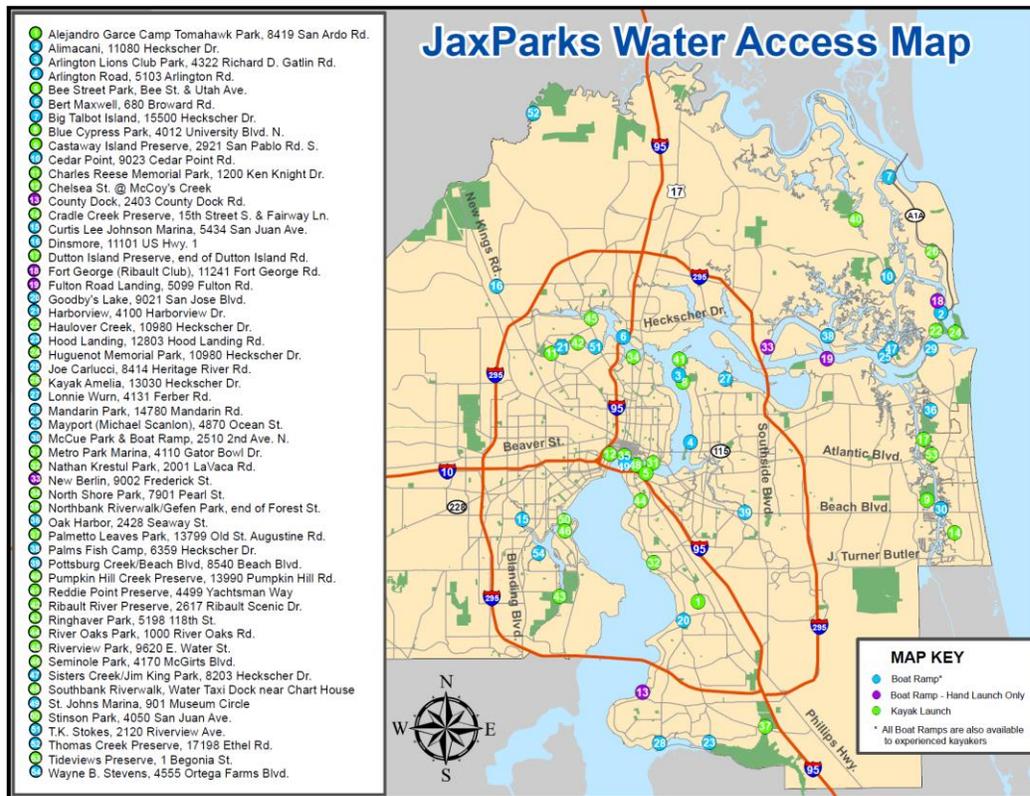
The following table summarizes the recommendations for formalizing the existing and potential mooring fields in Duval County.

<b>Informal Mooring Field</b>	<b>Status/Priority</b>
Julington Creek/Bulls Bay	Priority (Potential for support facility site through a public/private partnership).
Ortega River	Priority due to high boating traffic and safety issues.
Trout River	Priority (Potential for support facility site through a public/private partnership).
Bert Maxwell	Moderate priority to allow access to boat ramp.
Exchange Island/East Side	Priority (Potential support facility site at Arlington Marina as a public/private partnership or through acquisition, if the private owner is interested).
Back River	Low priority (Often used for hurricane preparedness.)



## **EXISTING WATER ACCESS FACILITIES AND ASSESSMENTS**

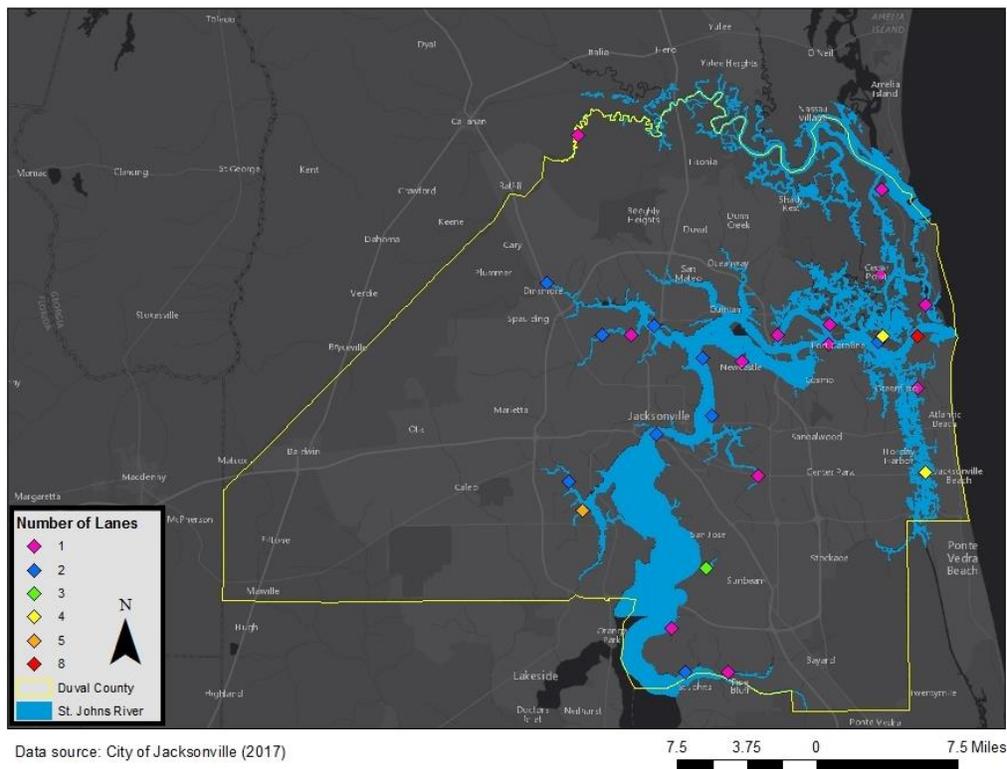
Map 15: Public motorized and non-motorized launching facilities in Duval County Florida. (Source: COJ)



The most recent inventory of public boat ramps and kayak launch facilities in Duval are shown in Map 15. Please note that ramps and launches on inland lakes were not included in the scope of this plan so are not shown on this map. There are a total of 54 launch sites throughout Duval County. The compilation of sites provides fairly even coverage along the ICW, the St. Johns River and the numerous tributaries and tidal creeks. The majority of water access facilities are maintained by the City of Jacksonville; however, there are a few that are managed by Florida State Parks and National Park Service. Examples include the Ribault Club on Fort George Island, Big Talbot Island State Park, Pumpkin Hill Creek Preserve, and Kayak Amelia.

## Boat Ramps

Map 16: Motorized boat ramps within Duval County, Florida. Ramps are separated by size, which is determined by the number of lanes at each boat ramp (COJ 2017)



All of the public motorized boat ramps within Duval County as of 2017 are shown in Map 16. As defined in the legend, the boat ramps are separated by a size index. The size of the boat ramp is determined by the number of lanes available for motorized boat launching. Within the county boundaries, there are a total of 28 motorized boat ramps. Most common in Duval County are single lane boat ramps, indicated by pink points on the map. There are a total of 13 single lane boat ramps, which can be found throughout Duval County. Seven of the single lane boat ramps are located within the Heckscher Drive/ Timucuan waterway district. And, four of these single lane ramps are considered “hand-launch only” due to site limitations which includes Fort George Island (Ribault Club), Fulton Road Landing, County Dock and New Berlin.

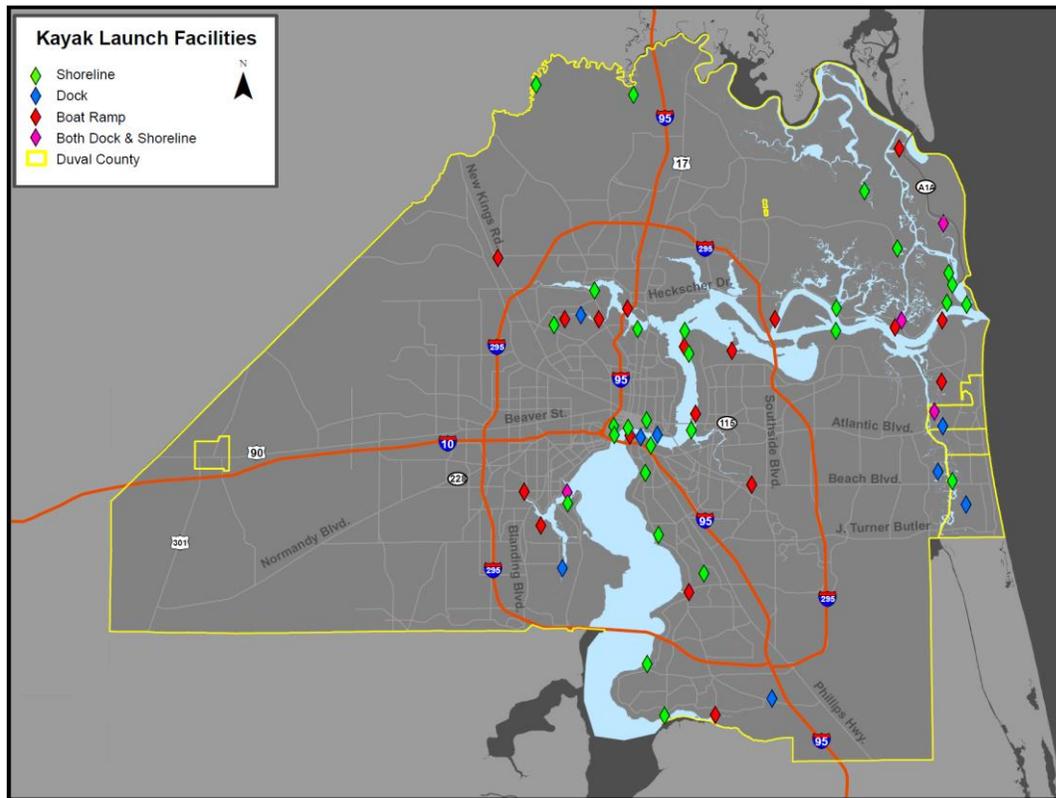
Two lane boat ramps are indicated by blue points on the map. There are a total of nine two lane boat ramps, five of which are located in the Arlington and Trout River/Ribault River waterway districts. Two lane boat ramps in Arlington include the Arlington Lions Club and Arlington Road motorized launches. In the Trout/ Ribault River waterway district are found the Dinsmore, Harbor View, and the Bert Maxwell motorized launches.

While single lane and two lane boat ramps make up a majority of motorized boat ramps in Duval County, there are also larger boat ramps. The John Lowe Boat Ramp on Goodbys Creek is a three lane boat ramp in San Jose, indicated by the yellow point on the map. There are also two 4 lane boat ramps, indicated by green points on the map. The McCue Park and Boat Ramp is located on the Intracoastal Waterway and the Jim King Park and Boat Ramp at Sisters Creek is located on Heckscher Drive, both of

which are very popular due to their location along the ICW. The Wayne B. Stevens Boat Ramp, consisting of five lanes is indicated by an orange point on the map and is the busiest ramp on the west side of the city within the Ortega/Cedar River waterway district. The largest boat ramp in Duval County is indicated by a red dot and consists of 8 lanes. This is the Michael B. Scanlon Boat Ramp located in Mayport which provides the best access to the Atlantic Ocean for offshore fishing. The highest concentration of ramps and launch lanes is along the ICW, especially near its intersection with the St. Johns River and offshore access. These launch locations are consistent with where demand is highest.

## Kayak Launches

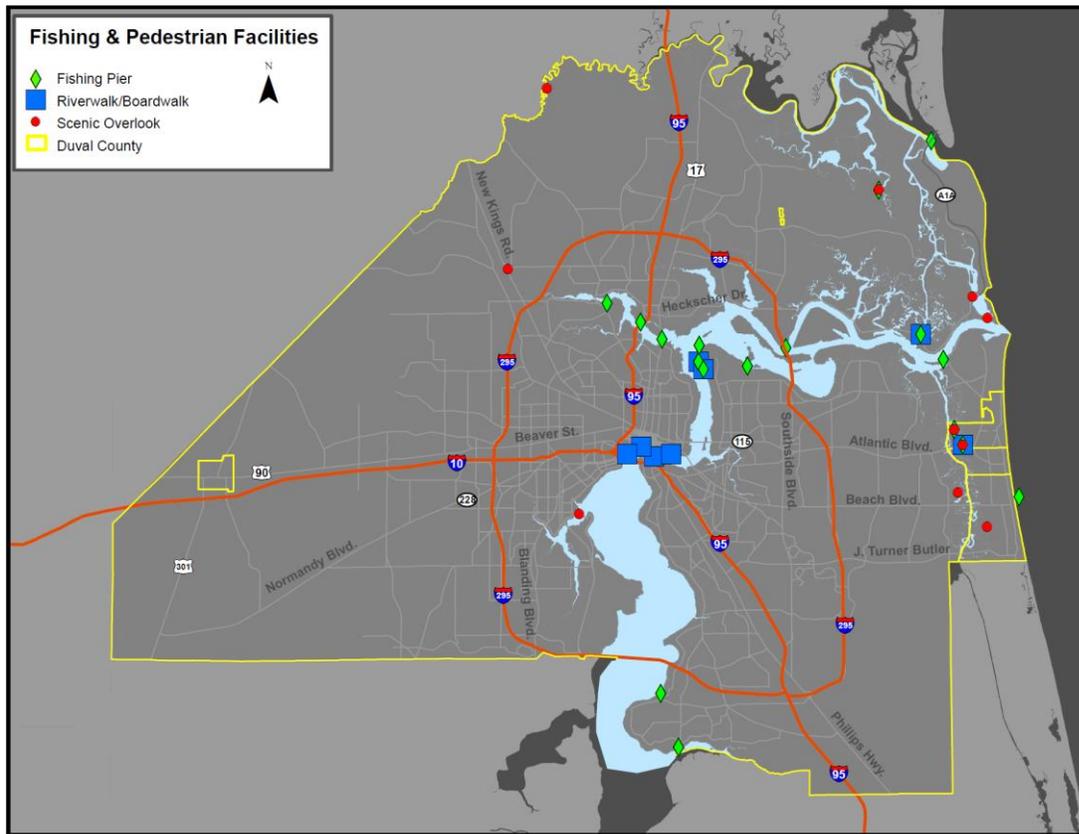
Map 17: All Kayak Launches in Duval County, Florida. Launches are categorized by surface type (COJ 2017)



There are currently 57 public, water access sites in Duval County that offer a designated area for launching kayaks, canoes and paddle boards. The map above categorizes the different types of common launching surfaces available at each site, i.e. shoreline, dock or boat ramp. Most paddlers prefer a natural or stabilized shoreline launch which is available at 32 of the launch sites. Twelve sites contain a floating dock that serves as a kayak launch where a shoreline launch is not available or advisable due to site conditions. And, all boat ramps are also available for launching kayaks and other non-motorized vessels; however, paddlers should use caution and be mindful of potential boat traffic, strong currents and slippery ramps when using these facilities.

## Fishing & Pedestrian Water Access Facilities

Map 18: All Fishing Piers, Riverwalks, Boardwalks and Overlooks in Duval County, Florida (COJ 2017)



The map above identifies 27 different public sites with fishing piers and pedestrian waterfront facilities, such as Riverwalk promenades, riverfront boardwalks and scenic overlooks. Riverwalks/Boardwalks, shown as blue squares, are most abundant in Downtown and include the Northbank and Southbank Riverwalks and Metro Park Marina. Riverfront boardwalks are available at Blue Cypress/Arlington Lions Club Parks, Jim King Park and Boat Ramp and Tideviews Preserve.

Most of the 17 fishing piers in Duval County are located in the Trout River and along the St. Johns River in Arlington and Mandarin waterway districts. The largest fishing piers are the George Crady Fishing Bridge State Park and the Jacksonville Beach Pier in the Atlantic Ocean. Both were heavily damaged by Hurricanes Matthew and Irma. Compared to other facilities, fishing piers in Duval County are less abundant.

Nine park sites also offer scenic overlooks along waterbodies and expansive marshes. Some of the most impressive views are visible at Betz-Tiger Point Preserve, Castaway Island Preserve, Dutton Island Preserve and Cradle Creek Preserve which are located along the impressive marshes of the ICW and Timucuan Preserve.

## Overview of Assessments

Sixty five existing water access facilities were assessed via site inspections. Most sites appeared to be relatively well-maintained; observed issues are noted in the assessments (included as Appendix 1). The most frequent issue observed were floating docks sitting on the mud during low tide. However, Hurricane Irma caused significant damage between the dates of inspection and the writing of this report so it is likely that results shown here may have changed due to the storm. Finally it should be noted that several sites showed potential for improvement and/or expansion.

## Assessment Methodology

The existing water access facilities were visited by investigators and photographs were taken. Because the existing water access sites' sizes and purposes are so variable, it was difficult to standardize the inspection process. For example, the same inspection "checklist" is not suitable for a pedestrian pier, a large-scale boat ramp, and a small kayak launch. Therefore, the inspections consisted of taking a general overview of each site, noting any observed problem areas, and taking a number of photographs.

All inspections were land-based only; no boats or dive inspections were used during any portion of this project. Therefore, results should not be considered comprehensive since investigators had no way of knowing about conditions below the water surface.

Data analysis consisted of qualitative analysis of aerial photography as well as analysis of the photographs taken during the site visits.

With the exception of the Catherine Street kayak launch, River Oaks Park, the Chelsea Street kayak launch, Camp Tomahawk Park, and Thomas Creek Preserve, all sites were visited during the summer of 2016. Camp Tomahawk, River Oaks Park, and Chelsea Street were assessed during the fall of 2016 after Hurricane Matthew. Additionally, after Matthew (again, fall of 2016), Arlington Lions Club and Lonnie Wurn Park were reassessed. Thomas Creek Preserve was assessed during the fall of 2017 after Hurricane Irma.

Note that assessments do not take Hurricane Irma damage into account.

## Recommendations

Maintenance of existing facilities was the most important thing upon which to spend funds according to public input. The team recommends some sites for significant maintenance or improvement. These are included on the existing facilities recommendations list included as Appendix 4.

## More Information

Assessment results are presented in Appendix 1. The City has useful maps showing each existing waterfront facility and the services it provides. Find them at [www.JaxParks.com](http://www.JaxParks.com).

**WATERFRONT PARK AND FACILITIES EXPANSION**

## Potential Water Access Facility Site Identification GIS Methodology

The GIS analysis to determine water access facilities in Duval County was accomplished using two sets of methods. One set analyzed spatial data to determine potential sites for acquisition (Maps 20-24). A second set of methods looked at existing facilities and existing public properties that could be used for facility expansion and/or improvement (Map 19).

## Site Acquisition Review: Analysis and Feasibility

The team used SJRWMD land use (2015), and the city of Jacksonville's parcel data (2015) as the basis for the potential site identification. A proximal zone (buffer) was established around the St. Johns River of 1/16th mile, and the parcel data was attributed to the river buffer. This distance is approximate to one-half city block. Environmentally constrained land was determined through the land use classifications using FLUCCS (Florida land use, cover and forms. classification system) codes. Specifically, the land classified as any type of wetland (FLUCCS codes 6110-6500). These lands were removed from consideration.

Once the adjacent river parcels were selected, they were filtered further by the total improved value of structures/buildings found on the property. The team chose \$50,000.00 as the ceiling for improved value on these properties. Next, these properties were evaluated based on parcel size. All parcels less than 0.5 acres were removed from consideration. Lastly, the remaining parcels were evaluated based on their proximity to existing roads. Again, the team chose 1/16th of a mile as the proximity distance. This analysis resulted in 464 parcels that met the criteria set forth by the team.

Next, the team examined the 464 parcels using satellite imagery and aerial photos. Each parcel was evaluated based on a visual examination of the site, and the surrounding areas. Upon further inspection, 118 parcels were determined to be potential candidates for water access facility acquisition. See Appendix 2.

## Expansion and Improvement

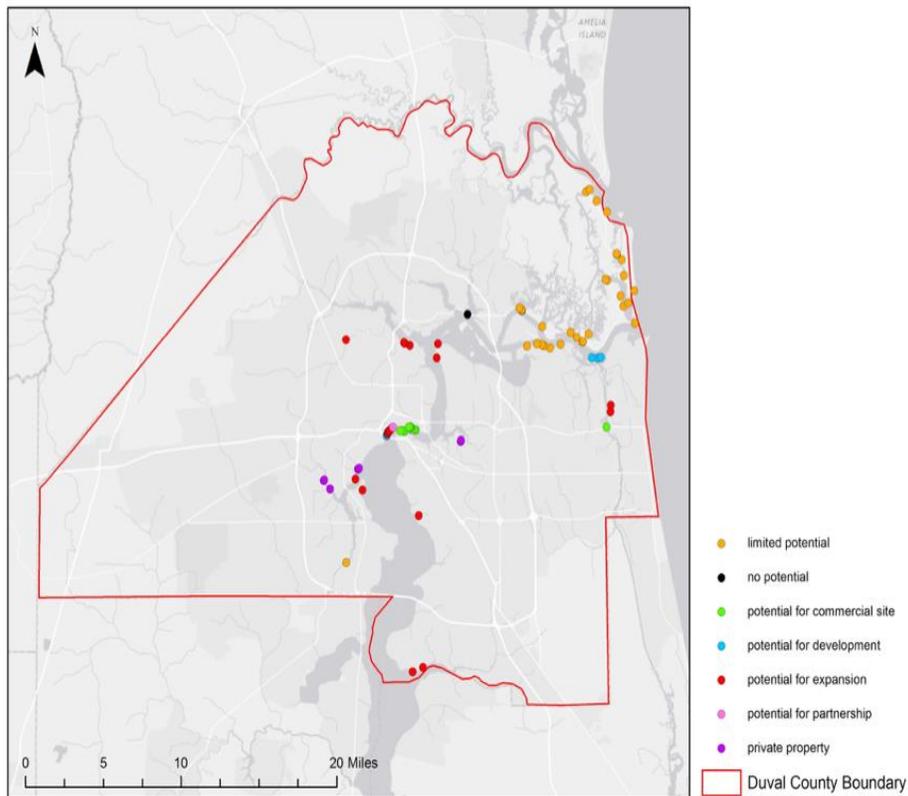
An additional analysis was done using the river-adjacent right of way (city ownership) data. This yielded 67 sites with varying potential for development or expansion (Map 19). Only sites that were within one eighth of a mile from the water were identified in this analysis. Sites with limited potential are labeled as a pale orange and can be found mostly in the Heckscher Drive/Timucuan waterway district along the river. The limited potential at these sites can be attributed to the lack of ability to develop the marshes that make up these districts. The figure shows one district that has no potential for development, as indicated by the black dot. This site is located between Dunn Creek and the Broward River. Sites with no potential do not meet the necessary qualifications for land use development or expansion.

The areas that show potential for development, as indicated by the light blue dots, are found primarily in the Intracoastal Waterway district. Sites that have developmental potential are located in close proximity to each other and are found only in specific areas of the county. Sites that have the potential

for commercial development are shown as a pale green on the map. The majority of these sites are located within the middle of Duval County in Downtown Jacksonville. In addition, sites classified as having potential for commercial development, private property sites and sites with the potential for partnership can also be found in downtown. There are limited sites characterized as having the potential for partnership.

South of Downtown Jacksonville are several sites that have expansion potential. These sites are located in the Riverside/ McCoy Creek and the Ortega/ Cedar River waterway districts. There are also several sites with the potential for expansion located in the Julington Creek waterway region along the Duval County southern border. In addition, there are sites identified for expansion in the northern part of the county, along the Trout and Ribault Rivers.

Map 19: River Adjacent to Right of Way Properties in City Ownership

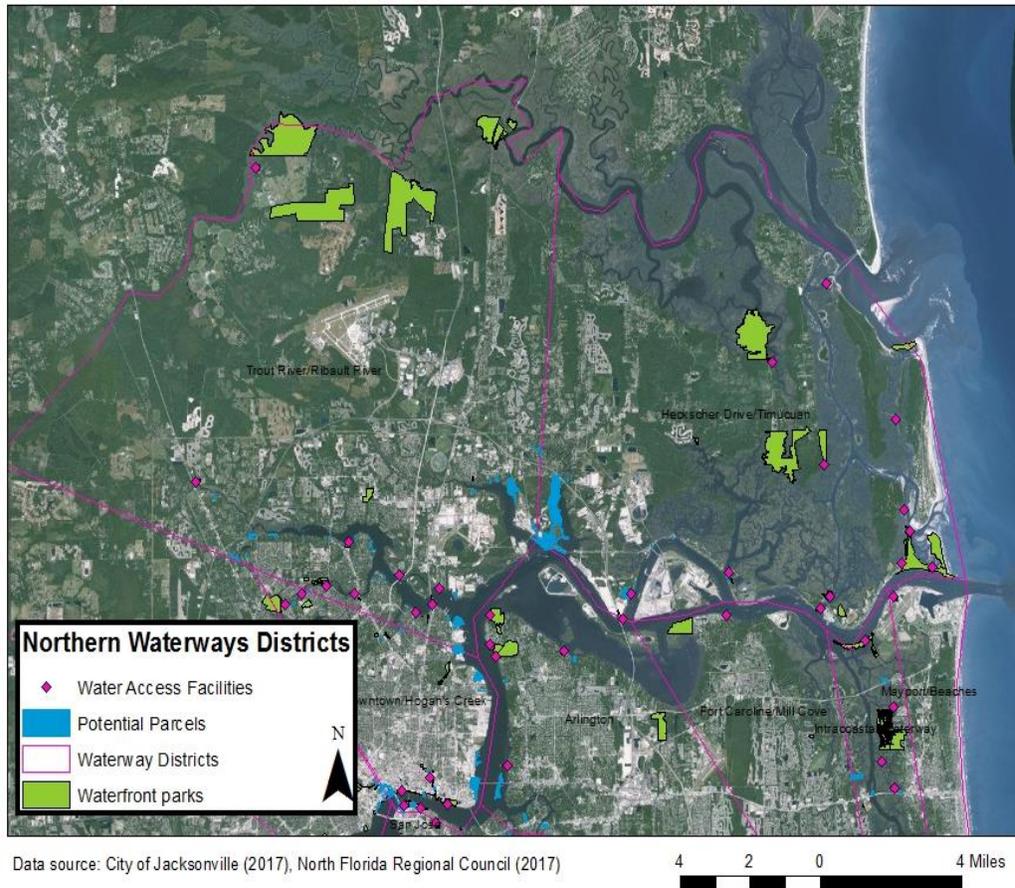


### Northern Waterway Districts Potential Parcels

The potential parcels for development in the Heckscher Drive/Timucuan Waterways Districts are displayed in Map 20. In addition, the Trout and Ribault Rivers potential parcels are also included on this map. Potential parcels represent sections of land that have developmental potential, as described in the GIS methodology above. Potential parcels within the district were selected based on proximity to the water; and only areas within one-sixteenth of a mile of a waterway were selected. Potential parcels are

only shown for the Heckscher Drive/Timucuan, as well as the Trout and Ribault Rivers waterway districts.

Map 20: Potential parcels in the Northern Waterways Districts of Duval County, Florida



### Northern Waterways Districts: Requests for Facilities and Plan Objectives

The Heckscher Drive/Timucuan waterway district received the most survey responses of any district in support of new kayak launches, showed moderate support of new fishing piers and slightly more than moderate support of new restaurants. The public identified uses they recommended on the maps used at all public meetings. One was a potential location for a paddleboarding facility, the other an area for kayak-share (storage of rentable kayaks in close proximity to a launch). There was a recurring theme in public input supporting improvements to the docks at the Zoo, fish cleaning stations at existing boat ramps and additional water taxi stops, including Kingsley Plantation. In addition, the North Jacksonville Vision Plan and the Recreation and Open Space Element of the Jacksonville Comprehensive Plan support Neighborhood Centers at Clapboard Creek or along Heckscher Drive, and these might address another recurring theme from public input, that of a Waterways visitors center or welcoming function.

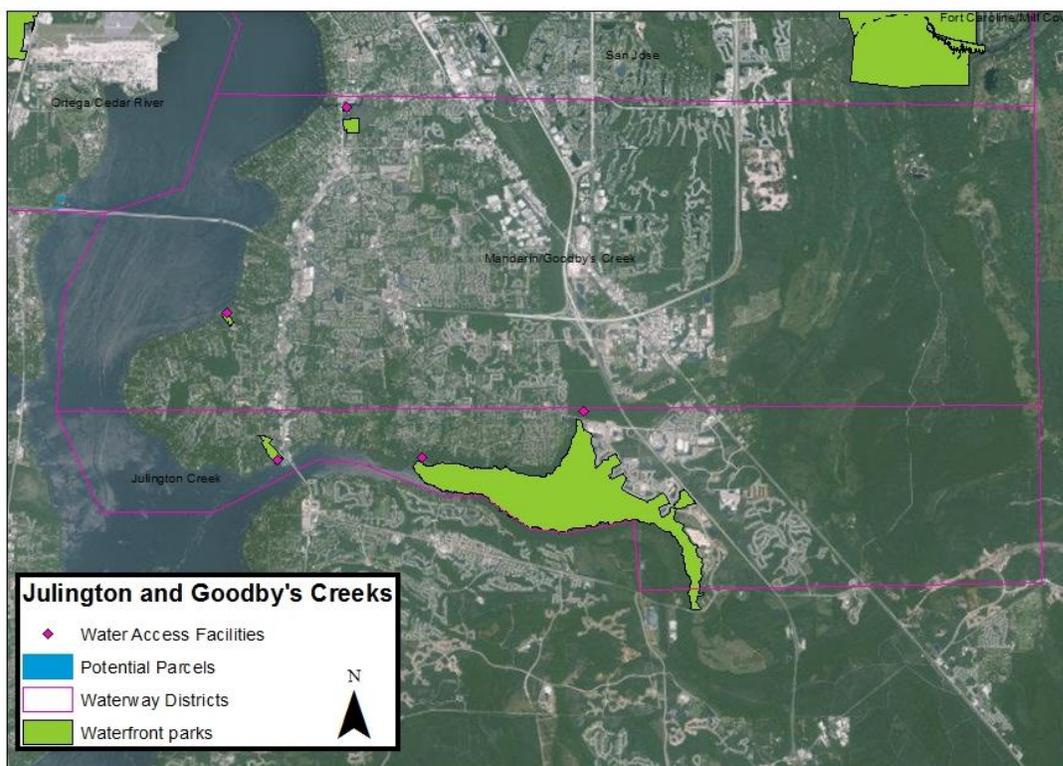
Trout River/Ribault River waterway district: There was significant public interest expressed in new kayak launches in this area, along with boat ramps. Moderate interest was expressed in fishing piers. Public

support was expressed for dredging or other approaches that would increase the long term utility of the public access pier at the Jacksonville Zoo and Gardens, both for the water taxi and the public.

### Southern Waterways Districts Potential Parcels

In the southern part of the county, the following waterways districts were analyzed for parcel acquisition: Julington Creek, Mandarin/Goodby's Creek, San Jose area, and Ortega/Cedar River. The potential parcels in the Julington Creek and Goodby's Creek Waterways Districts are shown in Map 21. Please note that there is no potential for additional facilities in these districts. However there is a large waterfront park and several smaller waterfront parks in these areas.

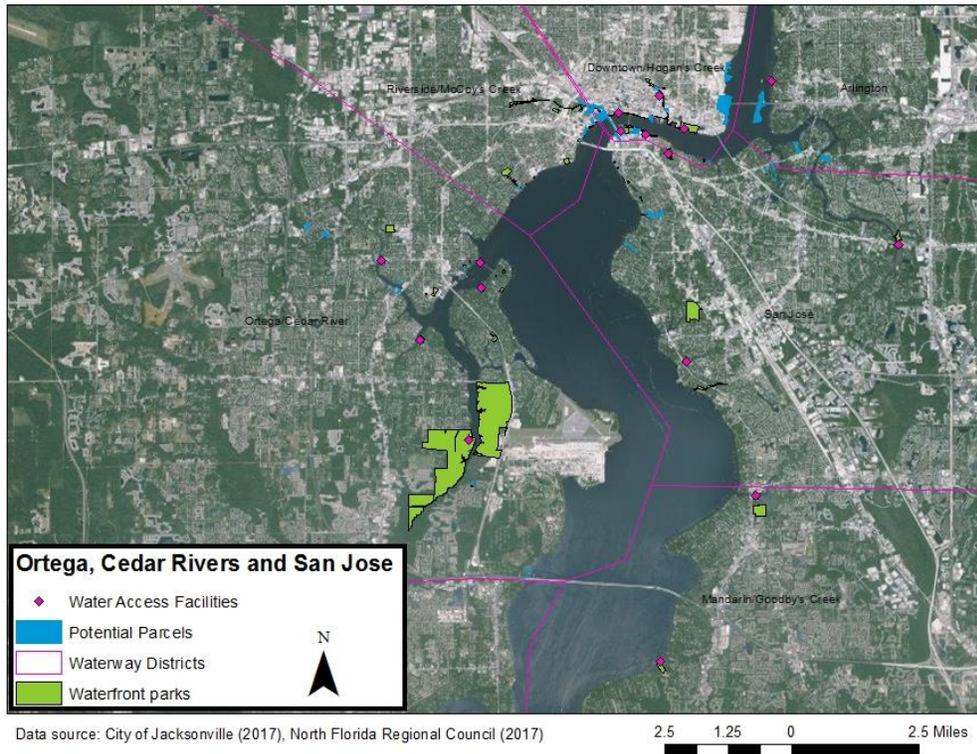
Map 21: Potential parcels in the Julington and Goodby's Creeks Waterways Districts of Duval County, Florida



Data source: City of Jacksonville (2017), North Florida Regional Council (2017)

There are several potential parcels identified in these regions of the waterway. Although many of the parcels in the San Jose region are nested in residential areas, there is potential for acquisition in the Ortega area, and several places for expansion along the Cedar River.

Map 22: Potential parcels in the Ortega/Cedar River and San Jose Waterways Districts of Duval County, Florida



### Southern Waterways Districts: Requests for Facilities and Plan Objectives

Ortega/ Cedar River waterway district: There was significant public interest in new facilities in this district, including the second highest level of interest County-wide in new kayak launches. There was also significant interest in new boat ramps and docks, fishing piers and waterfront parks. Specifically, support was expressed for acquisition of land for a kayak launch at Big Fishweir Creek, at McGirts Creek and Collins Road, and for the transfer of potentially surplus land from JEA for an Ortega River/McGirts Creek kayak launch.

Julington Creek waterway district: There was moderate interest expressed by the public in boat ramps, kayak launches and fishing piers in this area and this was echoed at public meetings.

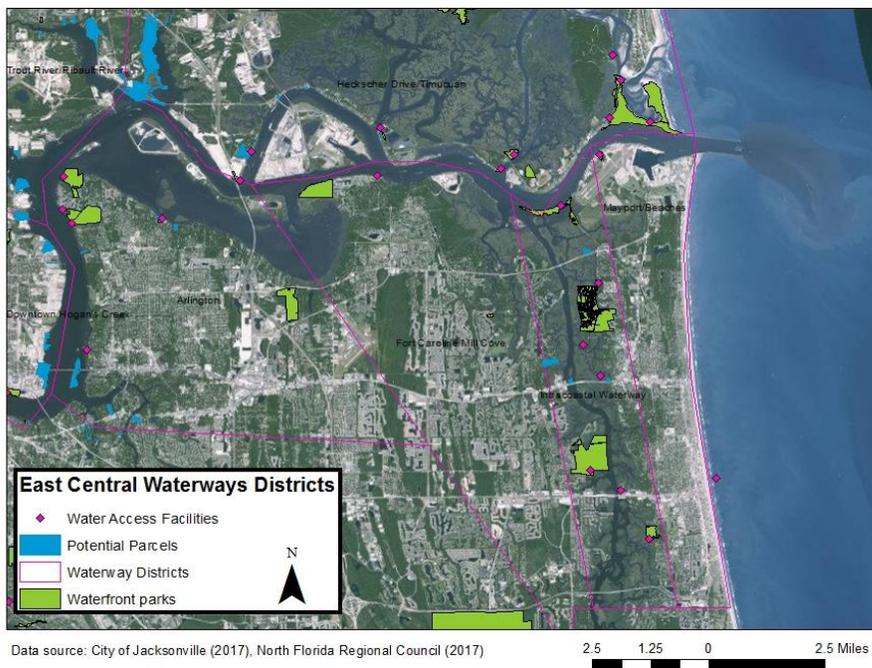
Mandarin/Goodby's Creek waterway district: There was significant public interest expressed in new kayak launches and moderate interest in waterfront parks, fishing piers and boat ramps. One member of the public identified the entire east bank of the River in Mandarin and San Jose as in need of additional public access, and this was a recurring theme in each public meeting, especially in regards to the need for fishing access between River Road and Goodby's Creek. The Southeast Vision Plan also identified this need and recommends areas for consideration. Specific recommendations were made regarding County Dock, including the idea to fix the dock but close the boat ramp due to the potential for manatee impacts.

San Jose waterway district: There was significant public interest expressed in new kayak launches and moderate interest in waterfront parks, boat docks, fishing piers boardwalks, waterfront parks, restaurants and boat ramps. See above, as this area was identified in each public meeting as needing additional access to the River. The Southeast Vision Plan also identified this need and recommends areas for consideration.

**East Central Waterways Districts Potential Parcels**

The potential parcels in the East Central Waterways Districts of Duval County are displayed in Map 23. They include those located in the Arlington waterway district, the Fort Caroline/Mill Cove waterway district, the Intracoastal waterway district and the Mayport/Beaches waterway district. Water access sites are represented as a pink triangle and are found throughout the districts with no specific concentration area. There are roughly 24 water access facilities in these two districts. Although the majority of water access sites are along the main portion of the St. Johns River, several facilities can be found along neighboring rivers and tributaries. There are a few parcels identified as potentially viable for water facility expansion, however, further feasibility and suitability analyses need to be done.

Map 23: Potential parcels in the East Central Waterways Districts in Duval County, Florida



**East Central Waterways Districts Requests for Facilities and Plan Objectives**

Arlington waterway district: There was significant public interest expressed in new kayak launches and moderate interest in waterfront parks and boat ramps. The Arlington Vision Plan also identified the need for waterfront parks and targets where to locate them. Exchange Island came up at public meetings and it was recommended that sufficient funding be secured to complete planned construction

and ensure ongoing public safety and maintenance. There was discussion of acquisition of land along the Arlington River for a rowing center, especially as there is an annual regatta already held in this area.

Fort Caroline/Mill Cove waterway district: There was significant public interest expressed in new kayak launches in this area, along with boat ramps. Moderate interest was expressed in docks, fishing piers and restaurants. The Arlington Vision Plan also identified the need for waterfront parks in this district. It identifies a parcel along Fort Caroline Road at Mill Cove west of St. Johns Bluff road as appropriate for acquisition. Public interest was also expressed in activation of an existing, undeveloped city-owned parcel along Mill Cove that is accessed by Baker Tract Lane from Fort Caroline Road, as a potential public dock and kayak launch.

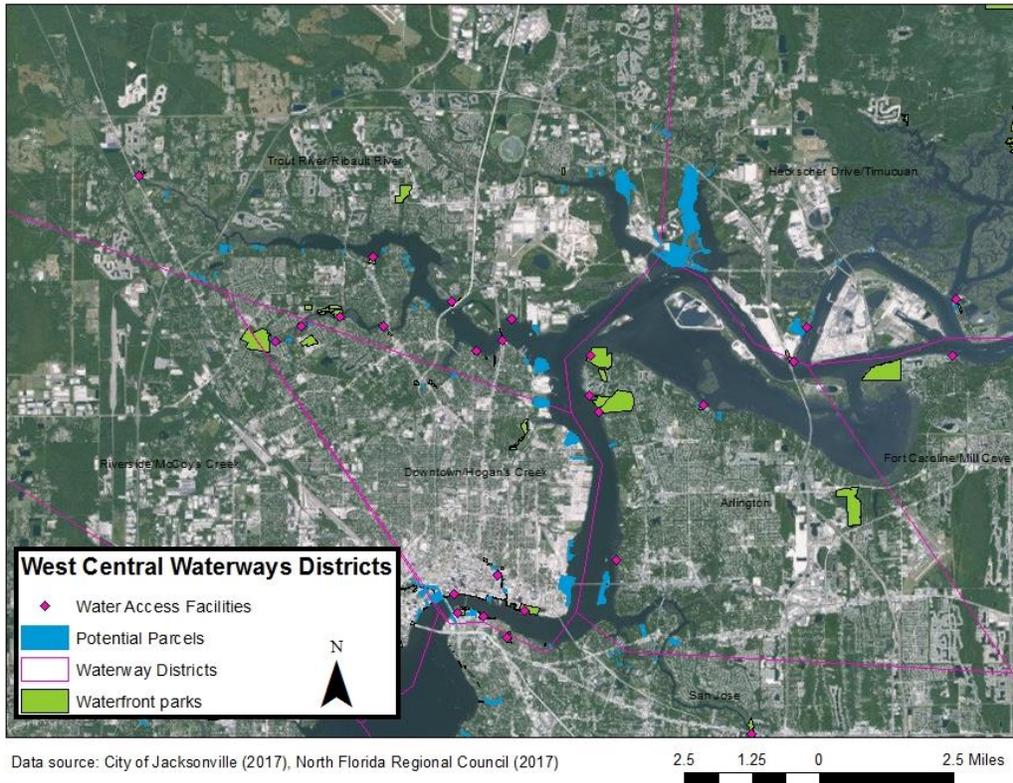
Intracoastal waterway district: More public interest was expressed in a new boat ramp or ramps along the Intracoastal Waterway than any other type of facility in any waterway district. There was also significant interest expressed kayak launches and restaurants, and moderate interest in docks and waterfront parks. The ICW was identified at public meetings as a potential location for a houseboat condominium (along with the St. Johns River.) Support was expressed at public meetings for acquisition of Johnston Island as a new waterfront park with potential water access facilities and the Taylor property as an extension to the existing facilities at the McCue Boat Ramp. Support was also expressed for passive parks with trails. The City of Atlantic Beach Marsh Master Plan recommends acquisition, expansion and improvements at Dutton Island, Tideview and River Branch preserves.

Mayport/Beaches waterway district: There was significant public interest expressed in a new boat ramp or ramps and new kayak launches, and moderate interest expressed in fishing piers and restaurants. Mayport Village came up at every public meeting, with an emphasis on re-establishing a robust and safe set of docks to be used by shrimpers and commercial fishermen and constructive use of vacant land along the waterfront. The concept of a Charter Boat Fishing Center was proposed with an adjacent fishing tournament site. The boat ramp in Mayport Village was recommended for a fish cleaning station. Public support has been expressed for improvements to Hanna Park and accelerated reconstruction of the hurricane damaged Jacksonville Beach Pier. Support was also expressed for addition of a kayak launch at the Hopkins Creek Bridge in Neptune Beach.

### **West Central Parcel Potential**

The potential parcels within the West Central Waterways Districts are shown in Map 24. These consist of the Downtown/Hogan's Creek waterway district, and the Riverside/McCoy's Creek waterway district. There are 19 existing water access facilities in the West Central Districts. Potential parcels downtown and are well dispersed, as are those along the tributary rivers. This is an area with good potential for new sites or expansion.

Map 24: Potential parcels in the West Central Waterways Districts in Duval County, Florida



### West Central Waterways Districts Requests for Facilities and Plan Objectives

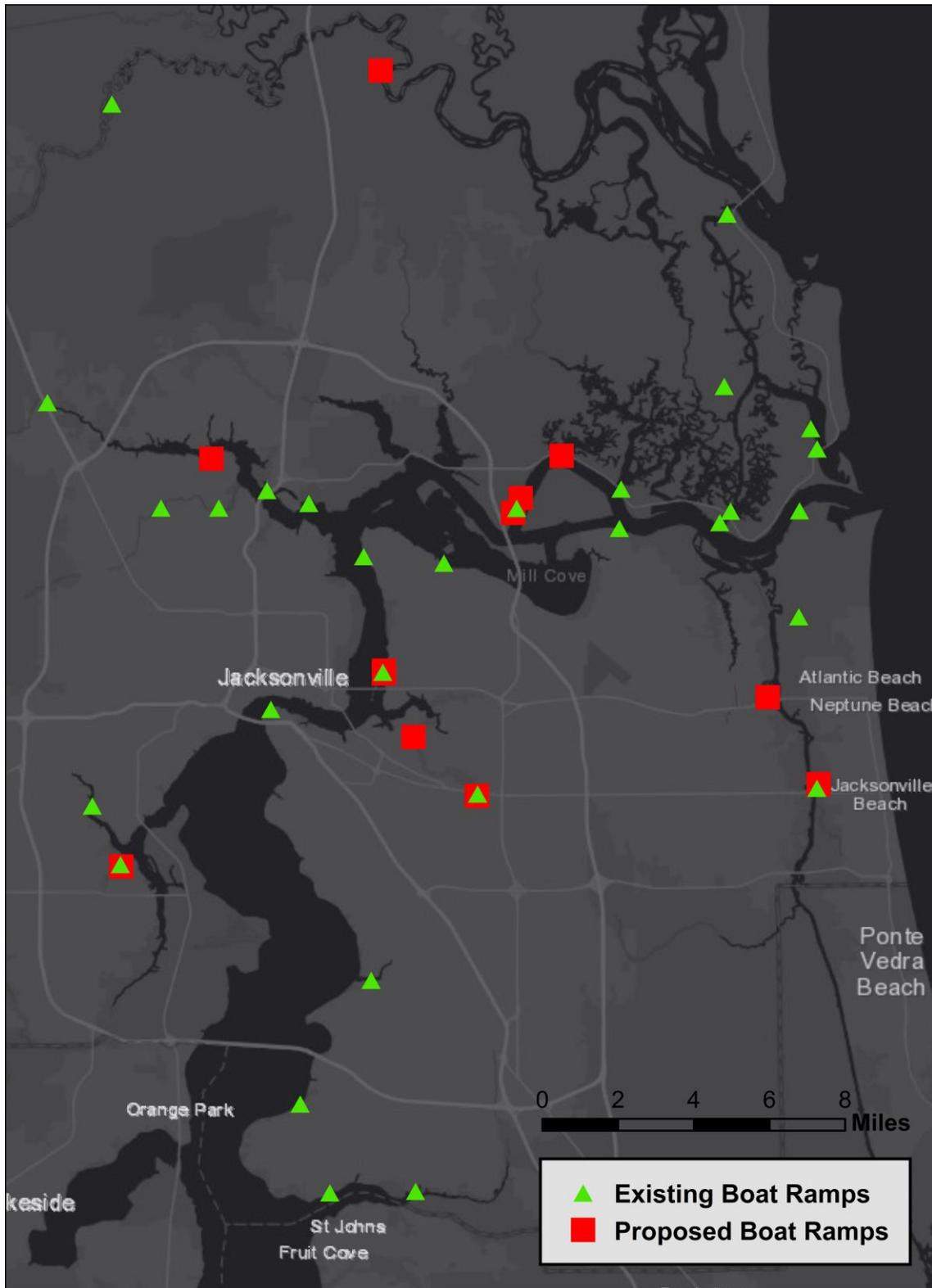
**Downtown/Hogan’s Creek waterway district:** There was significant public interest expressed in new kayak launches, boat docks, riverwalks, boardwalks, waterfront parks and restaurants in this area. Moderate interest was expressed in fishing piers. Public support was expressed for providing water taxi stops at an expanded number of locations regularly located along the River. Public support was also voiced for additional boardwalks and riverwalks, a non-motorized launch along the Southbank Riverwalk near the headquarters of Duval County Public Schools, maintenance of the Hogan’s Creek kayak launch, parking spaces and amenities, including an ice machine, at Metro Park, providing a public fishing pier at the Shipyards, making The District a public and water taxi access point, and generally for placing emphasis on waterfront activation between the Mathews and Fuller Warren Bridges and along the Southbank. The Urban Core Vision Plan recommends acquisition of lands adjacent to Hogan’s Creek.

**Riverside/McCoy’s Creek waterway district:** There was significant public interest expressed in new kayak launches, riverwalks and boardwalks. Moderate interest was expressed in boat ramps, fishing piers, waterfront parks and restaurants. Public support was expressed for providing water taxi stops at an expanded number of locations regularly located along the River. Public support was expressed for more docks in Riverside, better water access at the Riverside Arts Market, general activation of the waterfront and incorporating interpretive learning opportunities related to the water throughout the urban core. The Urban Core Vision Plan recommends acquisition of lands adjacent to McCoy’s Creek.

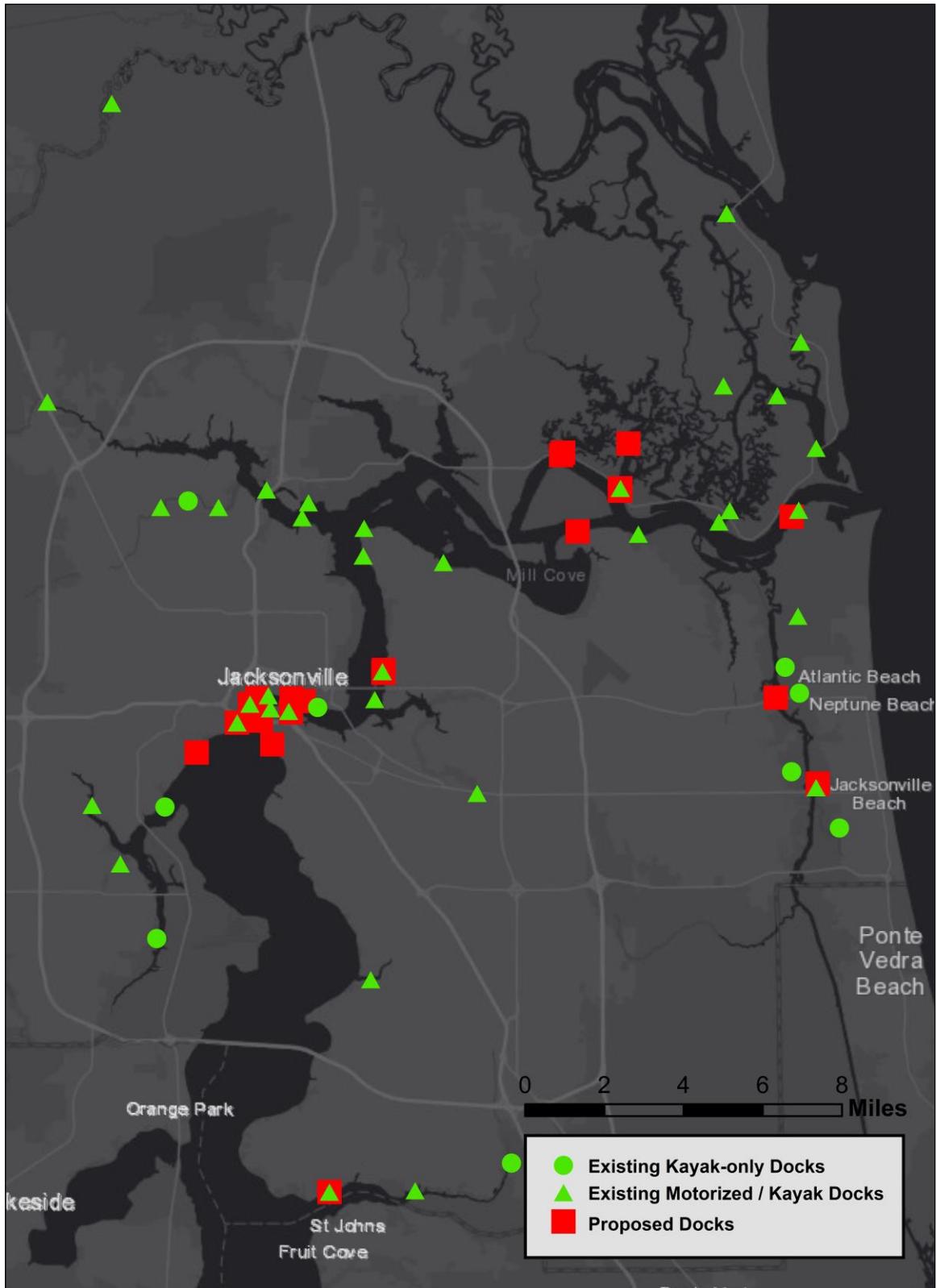
## Geographic Location

Finally, the planning team reviewed many of its potential recommendations in the context of the current locations of existing water access facilities. The following maps were used for this review.

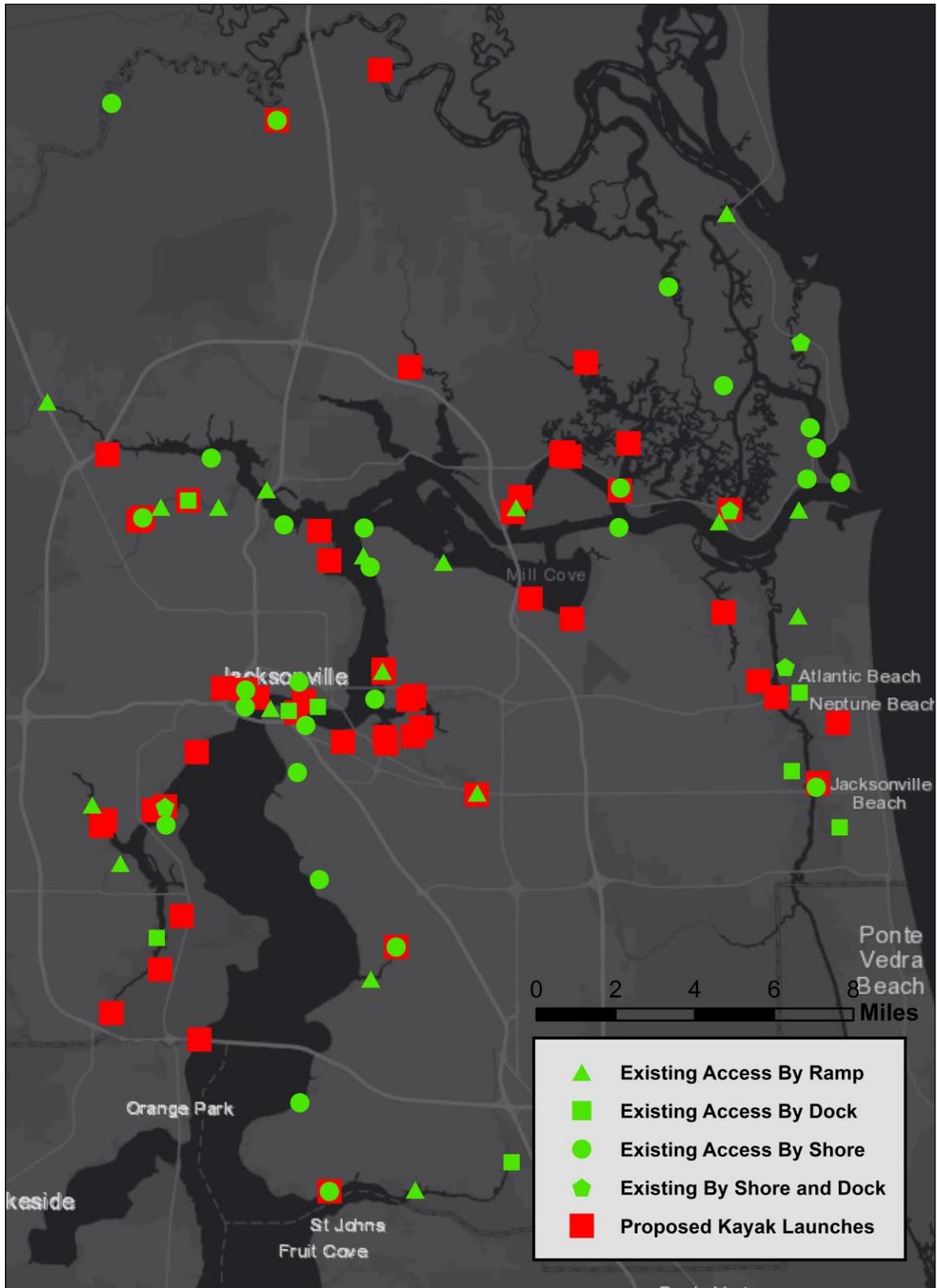
Map 25: Existing and Proposed Boat Ramps



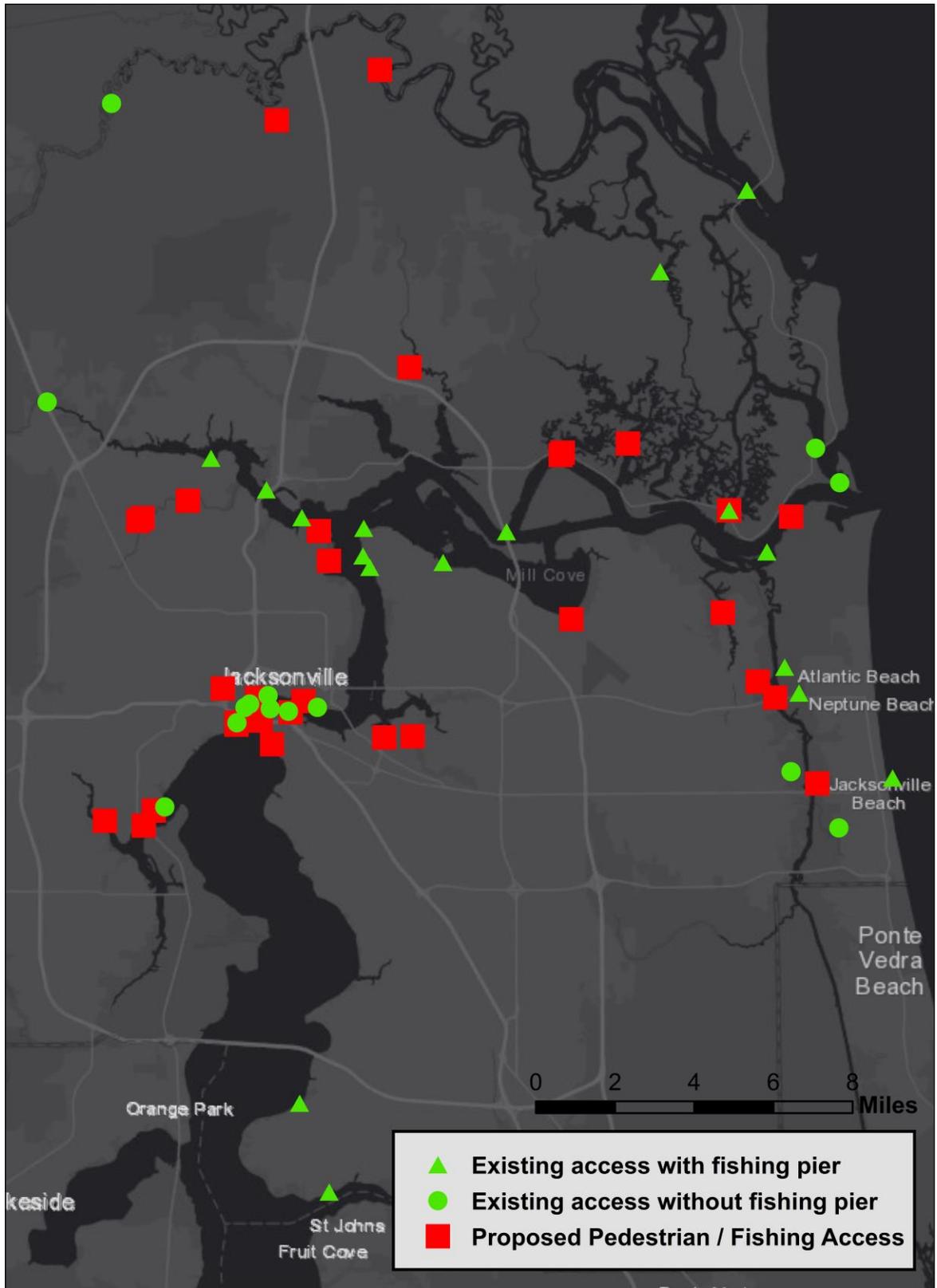
Map 26: Existing and Proposed Docks



Map 27: Existing and Proposed Kayak Launches



Map 28: Existing and Proposed Pedestrian Access Sites



## Opportunity Sites in the Waterway Districts

Ultimately, the planning team put together the sites identified by parcel data review, the wishes and input expressed by the public and the geographic locations of existing and needed facilities and developed lists that identify opportunities presented by sites currently in the ownership of the City of Jacksonville, private sites that the City may want to research and consider for acquisition should the owner wish to sell, and sites in other jurisdictions with needs and potential for enhanced water access. The planning team believes that the projects that are highlighted on these lists should be prioritized. Projects were prioritized based on:

- Funding
  - If a phase of the project is already funded, these sites were prioritized so as to capitalize on previous investments.
- Leverage
  - Acquisition of private sites is prioritized when adjacency to an existing City-owned site makes for a more functional park or access point, when public/private partnership allows for water access that would not otherwise be available, or work on related sites can result in better public access overall.
- Perception of Need
  - The overall survey results prioritizing the need for maintenance of existing facilities was considered, especially when the facility is subject to high levels of public use or has impact beyond the waterway district.
- Request for Facility Type
  - Efforts were made to match the facilities requested by survey respondents in each waterway district with opportunities in the district or nearby.
- Planning Objective
  - Sites that came up repeatedly in public input or that have been included in previous planning efforts were prioritized.
- Geographic Location
  - Where the geographic location maps indicate a significant geographical gap in a type of facility, these were prioritized.
- Accessibility
  - All projects that enhance accessibility to existing sites were prioritized.
- Risk
  - Some sites were prioritized even if the sea level rise review indicated that access may be impacted by 2040. These were included because of the significance of the projects and the overall community need to address road infrastructure in these areas. No site was prioritized if the sea level rise review indicated inundation of a large part of the site by 2040.
- Cost
  - If two sites were considered in the same waterway district that addressed a similar need and one was projected to be lower cost, the lower cost option was prioritized.

- Non-profits and Other Jurisdictions
  - All projects identified within the Maritime Management Plan that are in the jurisdiction of a non-profit or governmental entity other than the City of Jacksonville were given priority in this plan, so as to support facilities that may be enjoyed by all of the residents of Duval County.

### Highest Priority Projects

Some projects transcend a particular waterway district and are of County-wide significance. Others are opportunities that capitalize on current assets and investments. The planning team places the highest priority on the following projects:

PROJECT	REASON FOR HIGH PRIORITY
Water Taxi Landings and Docking Improvements	Waterways activation efforts depend on access to the St. Johns River in the Downtown (north and south bank) and Riverside areas.
Arlington Marina and Exchange Island	Should the owners of Arlington Marina ever wish to sell, the City of Jacksonville will be presented with a rare opportunity to create a sailing center that has the ability to greatly enhance the utility of Exchange Island, a City-owned asset with no access by land.
Acquisitions in Mill Cove	Given the geographic distance from other facilities, this part of the County should be given priority.
Maintenance of Facilities in Mandarin and Julington Creek	Most of the riverfront in these areas is privately owned and occupied by residences. This makes acquisition of new facilities difficult, so maintenance of existing facilities should be prioritized.
Mayport Village Docks	Rebuilding the docks for shrimpers, other fishing and charter boats has the potential to have significant economic impacts and is a use compatible with nearby Naval Station Mayport.
McCue Boat Ramp Expansion	Strong support was indicated for acquisition in the Intracoastal Waterway district of the privately owned Taylor property adjacent to the McCue Boat Ramp, a heavily used boat ramp.
Johnston Island	This island in the Intracoastal Waterway provides a unique opportunity for a County-wide resource such as a "Welcome to the Intracoastal Waterway" center, supported by a dock and amenities for visitors.
Jacksonville Zoo Dock	This facility has County-wide and regional impact, and is also a Water Taxi landing.

## **WATERWAYS TRANSPORTATION**

Duval County has two major waterways transportation assets. One is the downtown-based water taxi, currently run under and contract with the City by the local firm, St. Johns River Taxi and Tours. River Taxi does regular loops around the north and south banks of the St. Johns River in Downtown Jacksonville every day except for Monday. The regular service is between The Landing on the north bank and Friendship Park, the Doubletree Hotel and the Lexington Hotel, all on the south bank. Several landing docks were damaged in recent hurricanes. During special events when additional stops are functioning, the service can include the Riverside Arts Market, Metro Park and a dock at the end of A. Philip Randolph Blvd. on the north bank. River Taxi also goes by appointment to Jacksonville University (JU) and regularly to the Jacksonville Zoo and Gardens, although service was limited by hurricane damage for a time at JU and is limited by damage and limited water depth at the Zoo. River Taxi also does custom tours and events. It provides a service and is an amenity, enhancing mobility and allowing for a fun way to see the city, for locals and tourists alike.

The other major asset is the St. Johns River Ferry. The ferry is unique. It is a car and passenger ferry that is part of Florida State Road A1A, linking Mayport Village to Fort George Island. It serves commuters by cutting more than 20 miles off the trip between those destinations if roads were taken. Service is every ½ hour, and it takes less than 15 minutes to make the .9 mile crossing. It also serves eco-tourists and travelers, as it is a part of the East Coast Greenway, a nationally popular route for trails enthusiasts. In addition, with the 2016 designation of State Road A1A in Duval and Nassau Counties as a Scenic Byway known as A1A Ocean Islands Trail, the ferry itself is recognized as an asset which adds to the economic development of the region as well as providing a pleasurable and quick way to travel across the river and ultimately, between counties. It has faced difficult times in the past, as various agencies have sought to lessen or terminate operations. Strong community commitment to the ferry has resulted in the continued operation of the ferry. Since March 2016, it has been operated by the Jacksonville Transportation Authority, where its value seems to be recognized and where it is actively marketed as a mobility option and amenity. Day to day operations are currently provided by HMS Ferries, Inc.

### [More Information](#)

Visit the River Taxi website at [www.jaxrivertaxi.com](http://www.jaxrivertaxi.com) and the JTA St. Johns River Ferry webpage at <http://ferry.jta.com>.

### [Needs and Opportunities](#)

Water taxi service can benefit from strong commitment to marketing and inclusion of the service into public and private events. Several repair projects are planned or underway to address hurricane damage and/or maintenance issues at taxi stops, and opportunities for new stops are under consideration at the Liberty Street basin, the Shipyards redevelopment area, the private Florida Times Union building, the private District development site, Post Street, Jackson Street, Riverfront Park and Baptist Hospital. Another need is for smaller and faster vessels that can allow the service to operate on demand like a traditional taxi or transportation network company, and for additional stops to widen the impact of the

service. There is the potential for public/private partnerships where a business or businesses benefit from the accessibility and the service benefits from a commitment to maintenance that can be quickly implemented by the private sector.

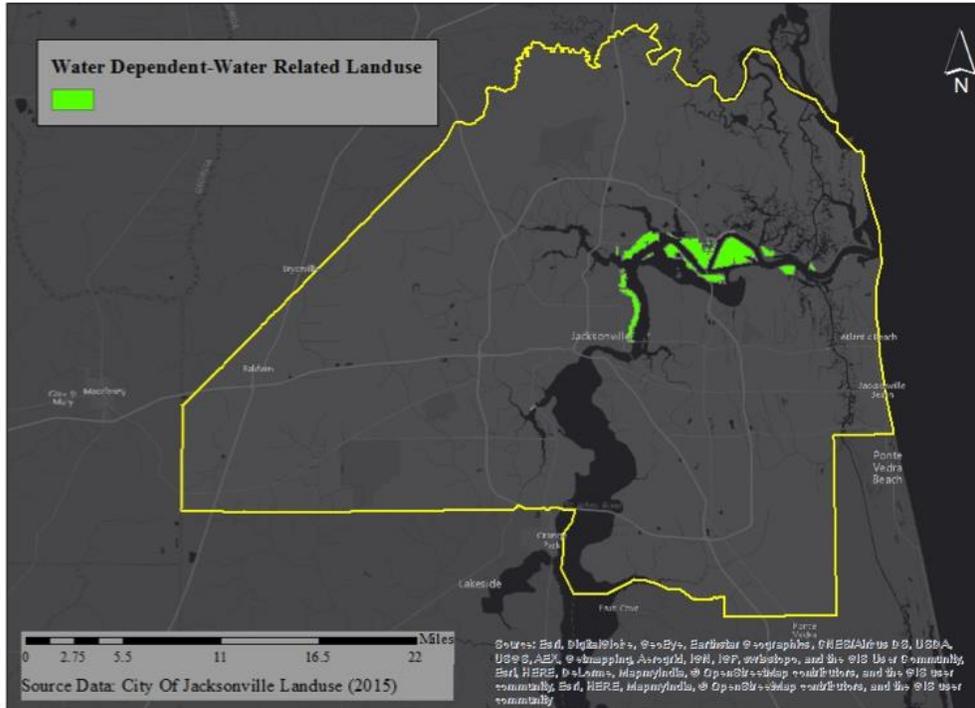
The St. Johns River Ferry needs the continuing commitment to marketing of this important asset and increasing its resiliency and capacity. Capital projects are underway and planned to repair ferry landings and eventually, to acquire new vessels. The ferry is a vital part of future economic redevelopment plans for Mayport Village.



**WATERFRONT LAND USE AND WORKING WATERFRONT**

## Waterfront Land Use

Map 29: Areas in Duval County with water dependent-water related land use (COJ 2017)



## Water Dependent/Water Related Land Use

The future land use category that accommodates working waterfront in the City of Jacksonville is called water dependent/water related. None of the other municipalities in the County have a future land use category that is exclusive to waterfront uses. All of the water-dependent/water related land use parcels within Duval County are shown in Map 29 as indicated by the green areas. The majority of the land highlighted on the map as a water dependent/water related land use falls into three waterway districts: Heckscher Drive/ Timucuan, Trout River/ Ribault River, and Downtown/ Hogan's Creek.

In the Heckscher Drive/ Timucuan district working waterfronts consist of a variety of restaurants and marinas, including Palms Fish Camp. Currently, there are several ideas and action plans in the works in hopes of maintaining, expanding, and improving this district's working waterfront. The Heckscher Drive district is also home to a business area within close proximity to the water.

The Jacksonville Port Authority was created in 1963 by Chapter 63-1447 of the Laws of Florida to own and operate marine facilities in Duval County, Florida. Known as JAXPORT, the port is subject to its own master plan but as an important user of waterways, it also has a place in the Maritime Management Plan. JAXPORT is comprised of three separate terminal locations handling cargo and passengers in Jacksonville, at Talleyrand, Blount Island, and Dames Point. These facilities handle containers,

automobiles, bulk and cruise operations. From 2012 to 2017, total tonnage handled has increased, as has the number of containers (TEUs) and automobiles. JAXPORT's terminals are important working waterfront as they are a significant destination for cargo and cruise ship vessels using the waterways. Like smaller vessels, the large vessels accessing the port also need to be maintained. There are several facilities downtown near the Hart Bridge that can accommodate the servicing of large vessels, as well as locations of BAE Systems in Jacksonville Beach and in Jacksonville, off Heckscher Drive.

In the Trout River and Ribault River district working waterfronts are centered around a growing seafood industry. A seafood processing plant and a diverse range of marinas and restaurants can also be found along the Trout River and Ribault River. This district also includes the Commercial Dive Academy (CDA) as part of its working waterfront. The CDA is located along the trout river and provides those who wish to pursue careers in the commercial dive industry the proper training.

The working waterfront in the Downtown and Hogan's Creek district is primarily composed of a network of ports. The working waterfront is an economic catalyst for the county and can be seen on the map as the area North of Downtown Jacksonville.

Overall, the map shows a high concentration of water dependent and water-related land use in the north and east areas of Duval County. The majority of the working waterfront land is located in the Heckscher Drive/Timucuan waterway district.

### Slip Capacity and Boat Storage Facilities

A total of 187 boat storage waterfront facilities, which are both public and private, have been identified in Duval County (Appendix 3) as part of the Manatee Protection Plan. This includes marinas, yacht clubs, shipyards, terminals, and boat ramps. In 2016, the facilities on the list included 3,882 wet slips and 2,509 dry slips. The facilities can be found throughout the entire county and are in all the Waterway Districts. The list is updated annually as part of the Manatee Protection Plan.

### Working Waterfronts

Working waterfronts are defined by FS 342.201. A working waterfront is waterfront land or structures that are used for water dependent activity. Water dependent activities include commercial fishing, boating, and kayaking which all may require waterfront infrastructure such as ports, recreational harbors, fishing docks and other water access points. Working waterfronts may also consist of any facilities that offer marine repairs or services. Thus, marinas can also be considered working waterfront, especially if they provide maintenance and repair services as well as fueling or pump out. The working waterfront sites that have been identified in Duval County principally include facilities located at and near JAXPORT, Mayport, Arlington, and the Trout and Ortega Rivers.

#### *Port of Jacksonville-*

The Jacksonville Port Authority or JAXPORT was created in 1963 to develop, maintain, and raise awareness of Jacksonville's ports. JAXPORT sites are primarily industrial, consisting of a variety of private cargo vessels and public cruise ships. Known as one of the largest export and shipping ports in the area,

JAXPORT includes Blount Island, Dames Point Terminal, Talleyrand and a cruise terminal. JAXPORT is an economic catalyst for Jacksonville, providing a variety of services across the world and generating billions of dollars of annual economic income. JAXPORT ships and receives automobiles, forest products, containers, break bulk cargo and more. Thousands of people are currently employed in port-dependent positions. JAXPORT participates in multiple environmental awareness projects. Blount Island Marine Terminal is home to one of the Nation's highest weight-bearing capacity docks.

#### *Mayport -*

Mayport is traditionally known as a historic fishing village and today it is possibly a site for future development. Mayport was recognized as a working waterfront by the State of Florida Waterfronts Program and is located near the mouth of the St. Johns River where it meets the Atlantic Ocean. As a working waterfront, Mayport is able to receive assistance from the state of Florida for the revitalization of their waterfront. Mayport is home to an industry dominated by fishing and shrimping. The area is influenced by its proximity to Naval Station Mayport, and its zoning reflects uses and height restrictions consistent with adjacent flight operations. Fishing at Mayport consists of both private and public charters and is a way for visitors to take advantage of Jacksonville's waterways. Mayport is also home to the Mayport Jetties which brings in tourists and locals alike to fish the shores. Mayport Village is the residential area with associated commercial uses within the Mayport waterway district. The reuse of vacant waterfront land is currently under discussion. Recently, the City of Jacksonville did a redevelopment plan with an emphasis on encouraging small scale industry and business, especially fishing-based, in the Mayport area.

#### *Arlington-*

The working waterfront in Arlington consists of boat ramps and marinas that assessments show are in need of maintenance, repair, and/or expansion. In addition, the Arlington neighborhood has a number of schools and colleges with recreational facilities that could be opened for public use, such as the Negaard Rowing Center. Arlington is home to Fort Caroline National Memorial which has water access and trails along the river's shore and the Tree Hill Nature Center. Much of the Arlington area contains preserved or undeveloped shorelines. These shorelines have the potential to be enhanced and developed into parks and boat ramps for the purpose of increased accessibility and greater distribution. Additionally, the Florida Barge Corporation (FBC) operates out of Arlington. The FBC offers a range of services to the maritime industry including lift services, dredging equipment, towing, and project cargo to name a few.

#### *Trout River-*

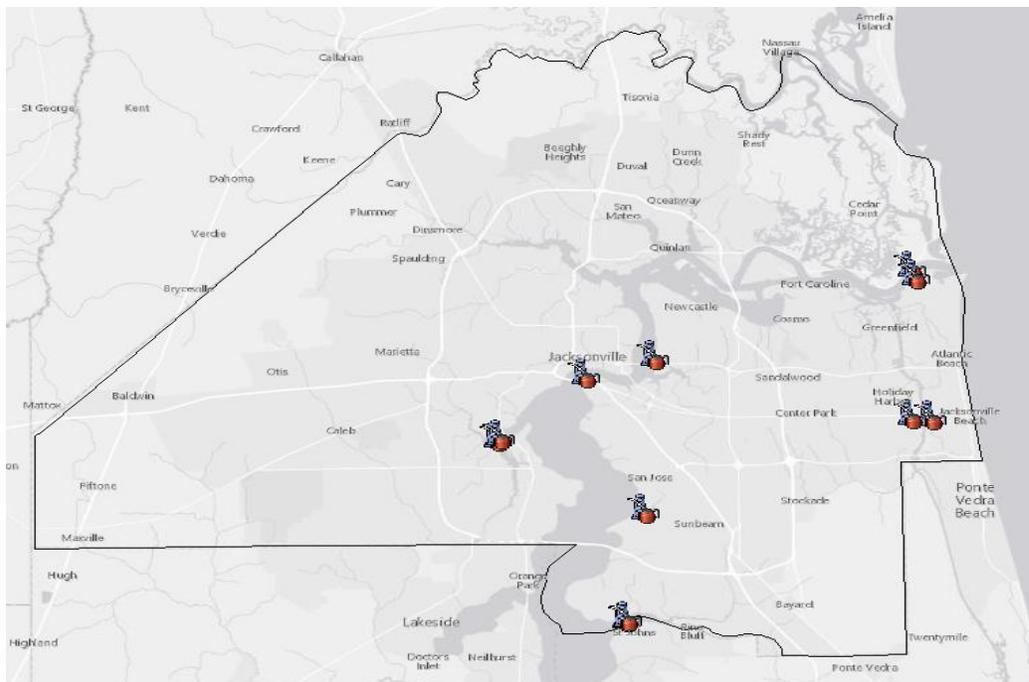
Historically a railroad district, Trout River today is home to one of the few urban core developments that contains a working waterfront. Panama Park, located within the Trout River Region, makes up the widest portion of Trout River. A diverse range of businesses and marinas can be found along Trout River. The Trout River district is known for seafood and contains a seafood processing plant within close proximity to the river. The Old Trout River Bridge Pier is a popular spot for local fishermen. The Commercial Diving Academy (CDA) is also located along the Trout River and provides services to those

wishing to pursue careers in professional or commercial diving. Land use in this region is primarily privately owned and residential. The Trout River working waterfront also contains the Jacksonville Zoo and Gardens, which is accessible by boat.

*Ortega-*

The working waterfront of Ortega is primary a yacht community including Florida Yacht Club and the Ortega Yacht Club. The Ortega district is a recreational boating hub of Jacksonville filled with marinas, boat repair and rentals, and yacht sales. The combination of recreational boat users and retailers provides for a unique waterfront experience. Reaching a maximum of 7 feet above water, the Ortega Bridge is one of the most frequently opened draw bridges in Jacksonville and the state of Florida. The Ortega River Boat Yard is also located in Ortega at the end of what’s known as “Marina Mile”, a stretch of road that is surrounded by urban waterfront development. Historically, the Ortega district has been centered on community providing easy waterway access to all residents. Today, the Ortega area is mostly residential. Ortega consist of several parks, a historic district, and a smaller fishing community.

Map 30: Fueling locations in Duval County Florida. Marinas that provide fuel indicate a working waterfront

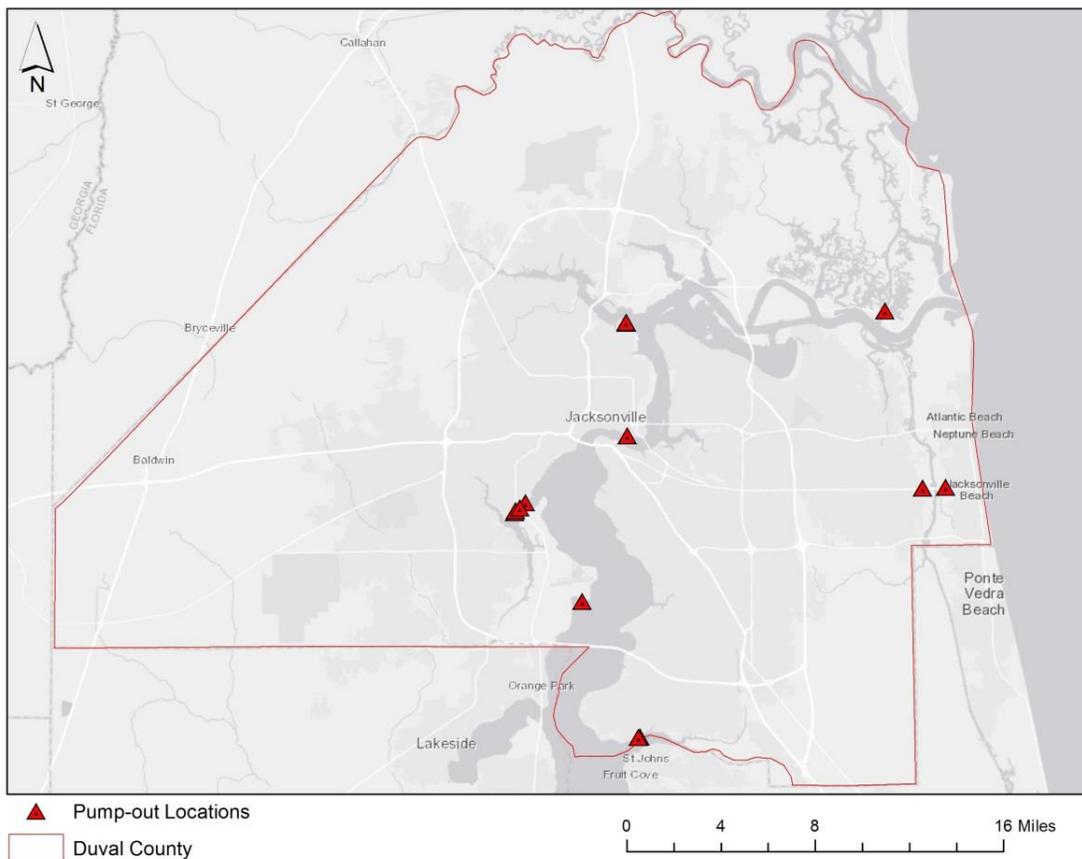


The marinas and yacht clubs that have either diesel, gas, or both fuel types are shown in Map 30. There are a total of 11 fueling spots in Duval County, two of which are located in the Intracoastal waterway district. Fueling points near the ICW include Beach Marine and Palm Cove Marina. Both of these marinas have gas and diesel fueling options. Also located in close proximity to the ICW is Morningstar Marina, which is located in the Mayport/Beaches neighborhood district. Morningstar Marina provides only regular gas, no diesel fuel.

In the Heckscher Drive/ Timucuan waterway district, there is only one marina that provides fuel. This is the Fort George Island Marina, which provides both gas and diesel fuel. Arlington and the neighboring Downtown district each have one fueling station, Arlington Marina and River City Marina, respectively. Both of these two marinas provide gas and diesel fuel. As both of these neighborhoods continue to develop as a working waterfront, more fueling options may be a consideration.

The Mandarin/Goodby's Creek waterway district possesses only one marina with fueling, North Florida Yacht Sales which provides only gas fuel. Along the Ortega River, both Lakeshore Dry Storage and Lamb's Yacht Center provide fuel. Near Julington Creek, there are two marinas that provide fuel, the Mandarin Holiday Marina and Julington Creek Marina.

Map 31: Pump out locations in Duval County Florida. Marinas that provide pump out indicate a working waterfront



The marinas and yacht clubs that provide pump-out in Duval County are illustrated in Map 31. A majority of the marinas that include pump out are registered as Clean Marinas with FDEP.

There are a number of pump-out facilities along the Ortega River, including Lake Shore Dry Storage, Lamb's Yacht Center, Sadler Point Marina, and the Marina at Ortega Landing. The Ortega Yacht Club is also located in this area, and though they do not currently have pump-out they have applied for a grant to get it.

Within the Julington Creek waterway district, Julington Creek Marina and Mandarin Holiday Marina both have pump-out areas. North of Julington Creek in the San Jose neighborhood district, there is a pump-out station located at Epping Forest Yacht Club.

Downtown/ McCoy’s Creek has Metropolitan Park Marina, which provides pump-out. The Trout River/ Ribault River waterway district is the location of Seafarers Marina, which has pump-out available for boaters.

In the Heckscher Drive/ Timucuan waterway district, Jim King Park and Boat Ramp at Sisters Creek has a pump-out facility and the Dames Point Marina has a portable pump-out cart available. In the Intracoastal waterway district, Beach Marine and Palm Cove Marina both have pump-out areas.

Table 7: A list of all the facilities that were contacted in regards to their boat capacity, fueling, and pump-out availability

PLACE	PUMP-OUT	FUELING	MIN. BOAT SIZE	MAX. BOAT SIZE	NOTES
Marina at Julington Creek	Yes	Yes	20’	36’	
Mandarin Holiday Marina	Yes	Yes	16’	68’	
Florida Tackle and Gun	No	No	19’	42’	
Epping Forest Yacht club	Yes	No	30’	50’	
Rudder Club of Jacksonville	No	No	12’	40’	
Florida Yacht Club	No	No	14’	82’	
Lakeshore Dry Storage	Yes	Yes	13’	33’	Just gas no diesel
Lambs Yacht Club	Yes	Yes	18’	92’	
Sadler Point Marina	Yes	No	16’	42’	
Ortega Yacht Club	No	No	17’	75’	Applied for grant to get fuel and pump-out

PLACE	PUMP-OUT	FUELING	MIN. BOAT SIZE	MAX. BOAT SIZE	NOTES
Ortega Landing Marina	Yes	No	15'	100'	
River City Marina	No	Yes	30'	50'	Both diesel and gas
Berkman Plaza and Marina	No	No	12'	120'	
Metropolitan Park and Marina	Yes	No	16'	80"	
Dames Point Marina	Yes	No	12'	65'	
North Florida Yacht Sales	No	Yes	16'	30'	Just ethanol free gas
Beach Marine	Yes	Yes	12'	125'	Gas and diesel
Palm Cove Marina	Yes	Yes	12'	70'	Gas and diesel, restricted by draft rather than length
Ft. George Island	No	Yes	16'	40'	Gas and diesel
Arlington Marina	No	Yes	17'	42'	Gas and diesel
Venetian on the Ortega		No	12'	40'	
Seafarer's Marina	Yes	No	12'	106'	Pump out cart
Edward's/Fisherman's Marina					Believed to be closed
Dames Point Yacht Club (Dames Point Workboats)	No	No			Not recreational, tug boat and barge

PLACE	PUMP- OUT	FUELING	MIN. BOAT SIZE	MAX. BOAT SIZE	NOTES
					company
Morningstar Marinas	No	Yes	16'	32'	Both diesel and gas
Jim King Park and Boat Ramp at Sisters Creek	Yes	No	12'	60'	

**Recommendations**

All marinas developed should adhere to Clean Marina standards. Anecdotally, the team heard at public events that there were barely enough fueling facilities and that their locations often dictated where and how far boats can go. Repair facilities have more flexibility in location than fueling facilities, as they can be located off the water and in land use districts other than water dependent/water related, especially if they service smaller boats that may be trailered. Growth in the maritime sector is both desired and likely. See economic conditions review below. Given the inevitability of growth and the desire to maintain a viable maritime sector, it is recommended that conversions away from water front uses be seriously reviewed in every municipality in the County, and that consideration be given to incentives or other benefits to encourage the private sector to continue to provide and add new maritime services, amenities and destinations, such as waterfront restaurants.



## ECONOMICS

## Impact of the Industry

According to the 2016 report "Florida's Recreational Marine Industry-Relative Growth and Economic Impact 2008-2015" performed by Thomas J. Murray and Associates Inc. for the Marine Industries Association of Florida, Inc., overall the boating industry statewide declined between 2006 and 2008. It has since rebounded but not recovered to peak year levels seen previous to 2006. The report puts the number of recreational boats statewide at 867,463, estimated \$4.9 Billion in gross boat-related sales, identifies 183,820 total jobs related to the marine industry and puts marine industry-related spending at \$8.7 Billion statewide. The report notes that Duval County is not one of the top ten counties in Florida when it comes to boat related sales, but rates as 8<sup>th</sup> in the State when it comes to recreational boating related employment. The report identifies counties using that criteria as marine industry counties, and identified Dade and Pinellas counties as leading the state. It notes that boat-related sales in Duval County were about \$71 Million in 2015. The report notes gross boat-related sales were over \$92 Million, marine industry-related spending exceeded \$141 Million and the marine industry in the county includes a total of more than 1,800 jobs.

According to the Ocean Jobs Snapshot of Duval County provided by the NOAA Office for Coastal Management, Duval County ocean jobs accounted for 18,097 jobs in 2013, or about 4% of the total jobs in the County. This equates to \$584 Million in wages, and about \$1 Billion in purchases of goods and services. Ocean jobs are counted from six employment sectors that are dependent on the ocean either directly (such as seafood markets) or indirectly (such as beach or waterway dependent hotels.) Of these jobs, 53% are related to tourism and recreation, 33% are related to marine transportation, 3% are related to marine construction and .4% are related to living resources. Marine transportation jobs increased significantly between 2005 and 2007 and have remained generally constant since then. Tourism and recreation jobs were relatively low until 2009 and increased significantly until 2011, after which they leveled off. While these statistics are specific to the ocean, with the exception of marine transportation (which is heavily dependent on JAXPORT), they are an indicator of the types of jobs that are related to waterways in general.

The Florida Fish and Wildlife Conservation Commission puts Florida as the first in the nation as far as number of saltwater anglers (2.4 Million), estimates the economic impact of recreational saltwater fishing statewide at \$7.6 Billion and the number of jobs generated at about 109, 000.

## Projected Growth, Disposable Income and Market Potential

According to UF/BEBR, Duval County population was estimated at 923,647 in 2016, and its medium level projections are that it will to grow to 975,500 by 2020, 1,089,300 by 2030 and 1,179,900 by 2040. Per capita real disposable income in Duval County in 2016 was \$35,893 and is projected to grow to \$39,906 in ten years. Per capita real disposable income for Duval County residents is similar to Miami/Dade,

while the growth in this income projection is 20-25% higher for Pinellas County.<sup>1</sup> These are the counties with the most registered watercraft in Florida’s Leading Maritime Industry Counties as identified by the Marine Industries Association of Florida study. ESRI in their Sports and Leisure Market Potential report for 2016 estimates that 4.9% of households containing an adult did power boating, 5.3% did canoeing or kayaking, 12% did freshwater fishing and 4% did salt water fishing. The Market Potential Index from that report measures the relative likelihood of the adults or households in an area to exhibit certain consumer behavior compared to the United States average. Power boating, canoeing or kayaking, and freshwater fishing each have Market Potential Indexes below the national average, indicating that there is likely potential for expansion of that activity in a market if circumstances change. Specific circumstances that might result in additional activity include changing availability of facilities, education on activities and facilities, access to facilities, marketing and similar approaches. General circumstances such as increasing per capita real disposable income or increasing leisure time might also increase market potential for sports and leisure activities. The St. Johns River Economic Study in 2015 looked at the value of the river specifically and found additional potential for uses related to boating, especially ecotourism. In summary, the boating market in Duval County has the potential to grow along with its population and income, at rates similar to markets better known for boating activity, such as Miami/Dade.

#### Vessel Size

Duval County had 26,764 registered vessels in 2016, while Miami/Dade had 66,422 and Pinellas had 49,754. While each of the noted counties has more vessels (excluding canoes) in the 16’-25’ size category than any other, approximately 8 % of the vessels in Duval County are larger than 26’. This is in contrast to the leading Florida marine industry counties (see above) with approximately 22% in Dade and approximately 15% in Pinellas.

Table 8: Vessel Size and Type (2016, Florida Division of Motor Vehicles)

County	< 12’	12’-15’	16’-25’	26’-39’	40’-64’	65’-109’	110’ or More	Canoes	Dealers	Pleasure	Commercial	Total
Duval	4,432	5,711	14,036	1,739	347	37	4	341	117	26,060	587	26,764
Dade	14,875	6,039	35,806	11,581	2,404	533	56	359	808	63,670	1,944	66,422

<sup>1</sup> Disposable Personal Income is the total after-tax income received by persons; it is the income available to persons for spending or saving. Real Disposable Income is Disposable Personal Income deflated by the PCE-Price Index (the Personal Consumption Expenditure Price Index). Per Capita Real Disposable Income = Total Real Disposable Income/Population. (Source REMI PI+ v2.1.0, run date 7/7/17)

<b>Pinellas</b>	9,783	6,499	24,514	6,366	1,092	74	3	909	514	48,029	1,211	49,754
-----------------	-------	-------	--------	-------	-------	----	---	-----	-----	--------	-------	--------

Duval differs from South and Southwest Florida counties in that it does not have an extensive recreational boat building sector and is not an area known for a preponderance of very large recreational boats. This is important when considering the needs of the sector as far as boat storage and repair facilities, as well as when planning for new or expanded uses related to boating.

### Recommendations

The team drew several conclusions from its economic review. Acknowledging the current impact of the maritime industry on the economy, they concluded from public input that there is support for boating and waterways access in all its forms, and a desire to enhance waterways in the public perception, for both residents and tourists. The statistics indicate population will grow and that current and new population has and will have income to spend on boating. There are aspects within the spectrum of maritime uses that present opportunities as well, including larger vessels and the strong desire for boating destinations.

In order to capitalize on the economic potential of waterways, the current community conversation and focus on waterway activation must continue and grow, additional marketing and messaging as to the depth and uniqueness of current assets must be undertaken, commitment to maintenance of existing facilities must continue, and the opportunities presented by acquisition of further unique sites and addition of needed infrastructure should be pursued.

## **OVERALL RECOMMENDATIONS**

Overall, the team recommends the following:

### **Maintenance**

The public input was clear that this is the most important thing. Duval County has remarkable assets and they must be safe, functional and attractive. As public acknowledgement of the importance of waterways increases, there may be opportunities for “Adopt a Boat Ramp” or similar initiatives involving corporate entities or community groups to support ongoing maintenance/repair needs and improvement projects.

### **Focus on Waterways Activation**

The City of Jacksonville and its Waterways Commission have made this a priority, and it was clear that public enthusiasm for waterways activation increased during the planning process. This is a significant opportunity to transform the image of Jacksonville into that of a vibrant waterways destination and a desirable place to live and work with world-class waterfront and waterway amenities. There is “low-hanging fruit” in this category. Adding docks for shrimp and charter boats and fishing tournament infrastructure to Mayport Village is one. Marketing reefs, offshore and in inland waterways, is another. Finally, the enhancement of the waterfront downtown including new docks for the water taxi and others, programming interesting features and activities, increased destinations and smarter use of land around downtown creeks is widely supported and highly recommended.

### **Education on How to Preserve Waterways**

The public input surveys showed how education on how to protect waterways needs to be ongoing. Respondents understood their role in protecting the health of waterbodies in 2012, as a public education campaign has just concluded. When we asked the same questions in 2016, they no longer remembered that their use of fertilizers, for example, could impact the health of the St. Johns River. This public education needs to be consistent and ongoing, and a willing entity should be identified to “own” this issue and its implementation.

### **Importance of Resiliency in Planning and Design**

Recent storm events have demonstrated that all waterfront public (and private) facilities should be designed with the potential for flooding, exacerbated by sea level rise, in mind. Review of existing facilities indicates that location and design can address many of these issues, and that risk factors should be considered before new acquisition to ensure the long-term viability of waterfront property and facilities.

### **Preservation of Working Waterfront**

There is the perception that Duval County has barely enough waterfront fueling and repair facilities, and is lacking in facilities of all kinds for larger vessels. The population will grow and demand will increase,

so it is recommended that municipalities consider ways to incentivize existing facilities to remain in place or expand, and water-related businesses to establish new facilities.

### **Review of Private Sites for Public Opportunities**

The planning team's review of private sites revealed an opportunity to more comprehensively review private sites proposed for development, with a goal of public/private partnerships. Each waterfront site proposed for development should be reviewed for its potential to provide public access while also accommodating private development goals, and the landowner should be approached to discuss the possibilities if the potential for partnership exists.

## MAPS

Map 1: The 12 Waterway Districts in Duval County (NEFRC, 2016) .....	12
Map 2: Flood zones in Duval County, Florida. Storm surge areas are based on hurricane strength, as defined in the legend (COJ 2017) .....	18
Map 3: Soil composition throughout Duval County, Florida. The different soil types are defined within the legend (COJ 2017) .....	19
Map 4: Environmental resource permitting in Duval County, Florida 2007-2017.....	20
Map 5: All ecological resources including preservations and wetlands in Duval County, FL. ....	22
Map 6: Manatee protection zones and boat facilities in Duval County, Florida (COJ 2017) .....	23
Map 7: All oyster reefs in Duval County, Florida (SJRWMD 2017) .....	24
Map 8: 2040 SLR Risk Assessments @ Existing Water Access Facilities.....	26
Map 9: 2070 SLR Risk Assessments @ Existing Water Access Facilities.....	26
Map 10: All bodies of water within Duval County, Florida (COJ 2017) .....	50
Map 11: The St. Johns River subsections in Duval County, Florida (COJ 2017) .....	51
Map 12: The navigational channels along the St. Johns River and its subsections (NOAA Office of Coast Survey 2017) .....	53
Map 13: All Destination Docking facilities in Duval County (COJ 2017) .....	58
Map 14: All Mooring Facilities in Duval County (COJ 2017) .....	60
Map 15: Public motorized and non-motorized launching facilities in Duval County Florida. (Source: COJ) .....	64
Map 16: Motorized boat ramps within Duval County, Florida. Ramps are separated by size, which is determined by the number of lanes at each boat ramp (COJ 2017) .....	65
Map 17: All Kayak Launches in Duval County, Florida. Launches are categorized by surface type (COJ 2017).....	66
Map 18: All Fishing Piers, Riverwalks, Boardwalks and Overlooks in Duval County, Florida (COJ 2017) .....	67
Map 19: River Adjacent to Right of Way Properties in City Ownership.....	71
Map 20: Potential parcels in the Northern Waterways Districts of Duval County, Florida .....	72
Map 21: Potential parcels in the Julington and Goodby's Creeks Waterways Districts of Duval County, Florida .....	73
Map 22: Potential parcels in the Ortega/Cedar River and San Jose Waterways Districts of Duval County, Florida...	74
Map 23: Potential parcels in the East Central Waterways Districts in Duval County, Florida .....	75
Map 24: Potential parcels in the West Central Waterways Districts in Duval County, Florida .....	77
Map 25: Existing and Proposed Boat Ramps.....	79
Map 26: Existing and Proposed Docks.....	80
Map 27: Existing and Proposed Kayak Launches.....	81
Map 28: Existing and Proposed Pedestrian Access Sites .....	82
Map 29: Areas in Duval County with water dependent-water related land use (COJ 2017) .....	90
Map 30: Fueling locations in Duval County Florida. Marinas that provide fuel indicate a working waterfront.....	93
Map 31: Pump out locations in Duval County Florida. Marinas that provide pump out indicate a working waterfront .....	94

## TABLES

Table 1: SLR Risk Assessment for Existing Water Access Sites .....	27
Table 2: Q.2 Here is a list of some public water access facilities available in Duval County. Please tell me if anyone in your household (including yourself) has used any of these facilities in the past month.....	38

Table 3: Q6. <i>What is the main reason you use this facility (the facility you use most often)?</i> .....	40
Table 4: Q13. In addition to the water facilities you currently use, do you have the need for any additional water access facilities? Which type? Where should they be located?.....	41
Table 5: Additional Facilities by Waterway District .....	43
Table 6: Q24. Of the issues listed below, which three would you like to see receive the most attention from the City of Jacksonville in terms of funding? .....	45
Table 7: A list of all the facilities that were contacted in regards to their boat capacity, fueling, and pump-out availability .....	95
Table 8: Vessel Size and Type (2016, Florida Division of Motor Vehicles) .....	101

## FIGURES

Figure 1: Frequency of Use .....	39
Figure 2: Percent of Respondents Using Water Access Facilities by Day and Time.....	39
Figure 3: Percent of Respondents Rating the Facility They Use Most Often on a Scale of 1 to 10.....	40
Figure 4: Grid map to identify the location of additional facilities .....	42
Figure 5: Rate the Importance of Duval County Waterways.....	44

## APPENDICES\*

1. Assessments
2. Waterfront Facilities
3. Opportunity Sites

## RECOMMENDATION LISTS\*

4. Existing Facilities and City Owned Opportunities
5. Private Opportunities
6. Nonprofit and Other Government Projects

\* Appendices and Recommendation Lists can be found at the following website:  
<http://www.jaxboatplan.com>