



**ST. JOHNS COUNTY, FLORIDA
BOARD OF COUNTY COMMISSIONERS**

MANATEE PROTECTION PLAN

**A description of the historic and current presence, abundance
and protection of West Indian Manatees and a plan to promote
their continued existence in St. Johns County, Florida**

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LIST OF ACRONYMS

ACEE	Florida Advisory Committee on Environmental Education
ACOE	U.S. Army Corps of Engineers
AICW	Atlantic Intracoastal Waterway
ATM	Applied Technology and Management, Inc.
BFSP	Boat Facility Siting Plan
BOCC	St. Johns County Board of County Commissioners
CFR	Code of Federal Regulations
Comp Plan	St. Johns County Comprehensive Plan
CWA	Clean Water Act
EPA	U.S. Environmental Protection Agency
ESA	U.S. Endangered Species Act
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FIND	Florida Inland Navigation District
FS	Florida Statutes
FWC	Florida Fish and Wildlife Conservation Commission
FWRI	Florida Wildlife Research Institute
FWS	U.S. Fish and Wildlife Service
GTMNERR	Guana-Tolomato-Matanzas National Estuarine Research Reserve
LDC	St. Johns County Land Development Code
LDRs	St. Johns County Land Development Regulations
LOS	Level of Service
MPA	Manatee Protection Area
MMPA	Marine Mammal Protection Act
MPP	Manatee Protection Plan
NEFRPC	North East Florida Regional Planning Council
NMFS	National Marine Fisheries Service
PLRGs	Pollutant Load Reduction Goals
SAV	Submerged Aquatic Vegetation
SJCOS	St. Johns County Sheriff's Office
SJRWMD	St. Johns River Water Management District
SWIM	Surface Water Improvement and Management Plan
SMC	Save the Manatee Club
TMDLs	Total Maximum Daily Loads
USCG	United States Coast Guard
USGS	U.S. Geological Survey
WDU&MS	St. Johns County Water Dependent Uses and Marine Study
WMD	Water Management District

MANATEE PROTECTION PLAN

A description of the historic and current presence, abundance and protection of West Indian Manatees and a plan to promote their continued existence in St. Johns County, Florida

EXECUTIVE SUMMARY

Located on Florida's northeast coast, St. Johns County consists of a varied mosaic of urban lands, agricultural lands, parks, preserves and waterways. The area is widely recognized for the opportunities available to boaters. In the eastern portions of the county, there is the Atlantic Intracoastal Waterway (AICW), the Matanzas and Tolomato Rivers and further east, the Atlantic Ocean. The western boundary of the County is the northward-flowing St. Johns River, which extends approximately 310 miles from its headwaters in central Indian River County to its confluence with the Atlantic Ocean near Jacksonville. Residents and visitors share these waters with varying numbers of the Florida manatee (*Trichechus manatus latirostris*). St. Johns County and the municipalities located within the County have developed and adopted Comprehensive Plans and land development regulations that are intended to allow growth while providing protection for native flora and fauna.

In 2000, the Board of County Commissioners of St. Johns County's agreed to develop a Manatee Protection Plan and to adopt provisions of the Plan into the Land Development Code, which includes elements concerning coastal protection, conservation and open space. Since before 1989, when then-governor Lawton Chiles demanded that 13 'key' counties with the highest records of watercraft-related manatee mortality develop Manatee Protection Plans, the state and federal wildlife agencies have been tracking manatee mortality and working on ways to reduce all aspects of human-related mortality. The Board of County Commissioners of St. Johns County took a voluntary step forward in the protection of manatees when they commissioned and ultimately adopted a Water Dependent Uses and Marine Study, which took into account the history of manatee mortality.

This Manatee Protection Plan (MPP or "Plan") identifies that the economic value of the marine industries is over \$213 million annually in St. Johns County (G.E.C. 2005), and then identifies and describes manatee habitat within the county. Aerial censuses and radio tracking of manatees indicate that they are present in three major areas: 1) the nearshore Atlantic Ocean; 2) the Intracoastal Waterway and the tidal rivers through which it extends; and 3) the St. Johns River. To varying extents, manatees also use the freshwater and tidal creeks, channels and tributaries that connect to these waterways. Although manatee abundance in St. Johns County is difficult to estimate, manatees have been documented to be present in the county throughout the year. Blue Springs in Volusia County is a major wintertime attractant for manatees, which have been documented to use the St. Johns River as a major corridor for movement.

During the period since record-keeping began in 1974 through 2004, there have been 65 documented manatee deaths in St. Johns County, and manatee mortality has varied from zero to eight deaths per year. Although the State of Florida attempts to recover and determine the cause of death of all manatees, often the decayed condition prevents identification of a definitive cause of death. The causes of manatee death in St. Johns County during this period include: undetermined (51%), watercraft (17%), cold stress (12%), other natural (11%), and perinatal (9%). The MPP identifies actions that are being taken and/or could be taken in order to protect manatee habitat and minimize human-related manatee injury and death.

The Plan recognizes that historically, watercraft-related manatee mortality in St. Johns County has been comparatively low, but that manatee deaths by this cause have increased in recent years. In other counties where watercraft-related manatee mortality is (or has been) unacceptably high, the state and/or federal wildlife agencies have found the need to develop boat speed restriction zones. There is presently one manatee-related speed restriction zone in St. Johns County, and it is a goal of this plan to prevent the need for additional boat speed restriction zones to be established on waterways in St. Johns County for the purposes of manatee protection. Although no individual sites show repeated instances of watercraft manatee mortality, it is recommended that County staff meet with wildlife agency personnel to discuss specific issues regarding manatee protection in a several-mile stretch of the Tolomato River in St. Johns and Duval Counties. Repeated instances of watercraft-related manatee mortality suggest that measures are needed to reduce the likelihood of additional manatee deaths in this area.

The MPP also includes a description of the agencies that are involved with enforcement of marine regulations. An important element of increasing compliance is elevating the knowledge and awareness of boat operators. In this regard, the Plan identifies opportunities through which the County could work collaboratively with the NE Florida Sea Grant staff; the Guana, Tolomato, Mantanzas National Estuary Research Reserve; or others, to develop educational materials that can be available and/or distributed to the owners of vessels that are registered in the County.

The Plan requests that the Florida Fish and Wildlife Conservation Commission recognize that there is a lack of scientific data concerning the use of some specific areas of the County by manatees, and recommends that the State work with St. Johns County to obtain additional information in these areas.

The MPP also includes a recommended schedule for Plan implementation.

The goal is that adoption and implementation of this MPP will allow St. Johns County to maintain its designation by the U.S. Fish and Wildlife Service as 'medium-risk' to manatees.

**MANATEE PROTECTION PLAN
A DESCRIPTION OF THE HISTORIC AND CURRENT PRESENCE, ABUNDANCE AND
PROTECTION OF WEST INDIAN MANATEES AND A PLAN TO PROMOTE THEIR
CONTINUED EXISTENCE IN
ST. JOHNS COUNTY, FLORIDA**

INTRODUCTION

A. General Manatee Information

Manatees are members of the scientific Order Sirenia, large air-breathing aquatic mammals that inhabit both fresh and saltwater areas, including oceans, estuaries, rivers, canals and dredged channels. Manatees prefer warm-water areas, become physically stressed when water temperatures are below the mid-70's and therefore in the United States, they are found primarily in Florida. Although they may range northward to other states during the summer, manatees migrate to south Florida and/or natural or artificial warm-water refuges during the winter.

Adult manatees average approximately 11.5 feet in length and weigh about 2,200 pounds (USFWS, 2000). They feed primarily on aquatic and floating plants and can eat 10-15 percent of their body weight in aquatic vegetation each day. Manatees spend 6-8 hours per day foraging, and 2-12 hours resting. Although intervals between breaths vary with the amount of activity, manatees typically come to the surface to breathe every 3-5 minutes. A resting manatee may remain submerged for as long as 20 minutes. During periods of high activity a manatee may surface to breathe as often as every 30 seconds. They have seal-like bodies, a large spatulate-shaped tail for locomotion, and two forelimbs that are often used in combination with a muscular upper lip to pull food into their whiskered mouths.

Manatees have two comparatively small eyes that are equipped with inner membranes that can be drawn across the eyes for protection. They have fairly good underwater visual acuity and can distinguish between different sized objects, different colors and patterns, although sight is significantly affected by water clarity. Despite a lack of ear lobes, manatee hearing is reasonably good within a relatively narrow low-frequency band. Observations and studies have revealed that manatees emit sounds to communicate with one another, with these vocalizations often being between a cow and its calf. Evidence suggests that despite their relatively good hearing, manatees have difficulty in localizing the source and direction of sound.

Several closely related species of Sirenia are found in tropical areas throughout the world. The subspecies that is present in Florida, the Florida manatee (*Trichechus manatus latirostris*), has been designated as an endangered species by the federal government and the State of Florida. It has also been designated as the state marine mammal of Florida.

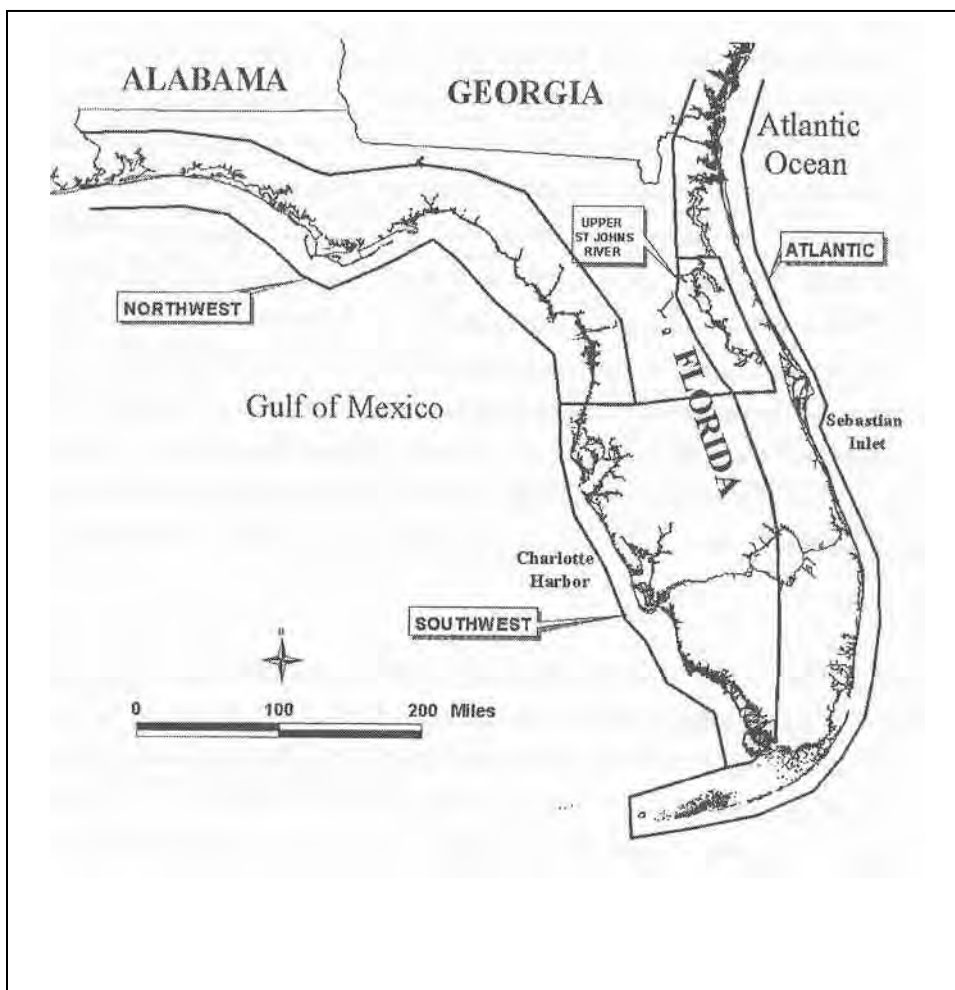
Although the precise number of manatees in Florida is not known, aerial censuses have documented the population to be at least 3,276 individuals (FWRI, 2001). Although there may be some interchange, the federal recovery plan (U. S. Fish and Wildlife Service (FWS), 2000) indicates that this statewide population of manatees can be separated into the following four distinct subpopulations:

- Atlantic (47 Percent of Florida Population);
- Southwest (37 Percent of Florida Population);
- Northwest (12 Percent of Florida Population); and

- Upper St. Johns River (4 Percent of Florida Population).

The general boundaries of these sub-populations as identified by FWS are shown on Figure 1.

Figure 1
General Regions of Sub-populations of Manatees in Florida
 Source: FWS Florida Manatee Recovery Plan, 2001



There are no permanent physical barriers that totally isolate one sub-population from another, and tracking of some individual manatees suggests that although these populations may be generally separate, some individuals move from one region to another.

Manatees in St. Johns County may be part of either: a) the Atlantic Region, which includes the Matanzas and Tolomato Rivers and their tributaries, or: b) the Upper St. Johns River populations. Analyses are ongoing by the Manatee Population Status Working Group of the federal Recovery Team to determine the extent to which each sub-population may be increasing, decreasing or remaining steady, and a statement from this group released in 2001 states:

“Evidence indicates that the Northwest and Upper St. Johns River subpopulations have steadily increased over the last 25 years. This population growth is consistent with the lower number of human-related deaths, high estimates of adult survival, and good manatee habitat in these regions. Unfortunately, this good news is tempered by the fact that the manatees in these two regions probably account for less than 20% of the state’s manatee population.” (FWS, 2001).

Manatees are relatively long-lived, with estimates of maximum life expectancy being about 60 years. Females enter their reproductive cycle at 3-4 years of age, and the mean age when they first give birth is five years. The gestation period is approximately 11-14 months, and a calf remains dependent on its mother for approximately 1-2 years.

Prior to the mid 1970’s, there was comparatively little documentation and/or research that was focused on manatees, but there is no question that *Trichechus manatus latirostris* is a naturally occurring member of Florida’s biota. Little is known about the pre-1970’s population of this native species in Florida, but the fossil and historic records indicate that manatees and their ancient ancestors have been present in Florida for 45 million years (Domning, et al. 1982).

B. Present Status of Legal Protection

The federal government and State of Florida each have criteria through which they determine the extent to which an individual species of plant or animal merits protection under their respective endangered species laws and rules. An individual species that is numerous in Florida but rare in other areas of the country may be given protection only under federal laws. Another species that may be abundant in other areas of the U.S. but is rarely found in Florida may be protected only by state laws. Occasionally the federal and state designations of an individual species are identical.

1. Federal Protection

As described in the Florida Manatee Recovery Plan (FWS, 2001):

“The Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et. seq.) (ESA) establishes policies and procedures for identifying, listing and protecting species of wildlife that are endangered or threatened with extinction. The ESA defines an “endangered species” as “any species that is in danger of extinction throughout all or a significant portion of its range.” A “threatened species” is defined as “any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.”

The West Indian Manatee, *Trichechus manatus*, was listed as endangered throughout its range for both the Florida and Antillean subspecies (*T. manatus latirostris* and *T. manatus manatus*) in 1967 and received federal protection with the passage of the ESA in 1973.

West Indian manatees also are protected under the Marine Mammal Protection Act (MMPA) of 1972 as amended (16 U.S.C. 1461 et. seq.). The MMPA establishes, as national policy, maintenance of the health and stability of marine ecosystems, and whenever consistent with this primary objective, obtaining and maintaining optimal sustainable populations of marine mammals. It also

establishes a moratorium on the taking of marine mammals, which includes harassing, hunting, capturing, killing, or attempting to harass, hunt, capture, or kill any marine mammal.”

Violations of these federal regulations can result in fines and/or up to one year in prison.

2. State Protection

Protection of manatees in Florida goes back over 100 years, when, in 1893, a Florida law was established to protect manatees. That protection was increased in 1978, when the “Florida Manatee Sanctuary Act” was adopted. This Act designated the entire state of Florida as a “refuge and sanctuary for manatees” and allowed for enforcement of boat speed regulations in designated areas. Manatees are protected pursuant to the Florida Wildlife Code (Chapter 68) Florida Administrative Code (FAC), and violations of this state law are also punishable by fines and/or imprisonment.

The state agency responsible for listing species and overseeing their protection in Florida is the Florida Fish and Wildlife Conservation Commission (FWC). In recent years, FWC has: 1) re-defined the criteria under which a species is listed as ‘endangered’, ‘threatened’, or ‘species of special concern’; and 2) begun the process of re-evaluating the status of manatees and several other species. Based on these changes, it is possible that FWC may re-classify or ‘down-list’ the manatee from endangered to threatened. Whether or not such a re-classification accurately reflects the recovery of the species or is merely a bureaucratic shuffle is widely in dispute. The reality is, however, that in the near future, such a down-listing will have comparatively little effect on the process through which potential impacts on manatees are reviewed. Species classified as threatened receive virtually the same protection as species whose designation is endangered, and regardless of the classification at the state level, manatees continue to be listed as endangered by the federal government.

C. St. Johns County

1. General Location

St. Johns County is located on Florida’s northeast coast (Figure 2). It includes approximately 608 square miles of land and open water (Source: St. Johns County). It is bounded on the north by Duval County, on the south by Flagler County, on the east by the Atlantic Ocean and on the west by the St. Johns River, which is the common boundary for portions of Clay and Putnam Counties. Approximately 42 miles of the Atlantic Intracoastal Waterway (AICW) are present along the eastern portion of St. Johns County. Long, narrow, low-elevation, naturally occurring barrier islands separate the Atlantic Ocean from tidal waterways that extend to the north and the south.

Within St. Johns County, there are two inlets that provide access for manatees (and boaters) between the inshore coastal waters and the Atlantic Ocean. St. Augustine Inlet, which is just east of the City of St. Augustine, connects the Tolomato River (to the north) and the Matanzas River (to the south) to the Atlantic Ocean. The Tolomato River, which includes the AICW channel is a comparatively narrow combination of natural and dredged areas that extend approximately 24 miles from St. Augustine Inlet northward to the St. Johns/Duval County line and beyond. The Matanzas River, which also includes the AICW channel, extends southward approximately 18 miles from St. Augustine Inlet to the St. Johns/Flagler County line and beyond.

St. Johns County

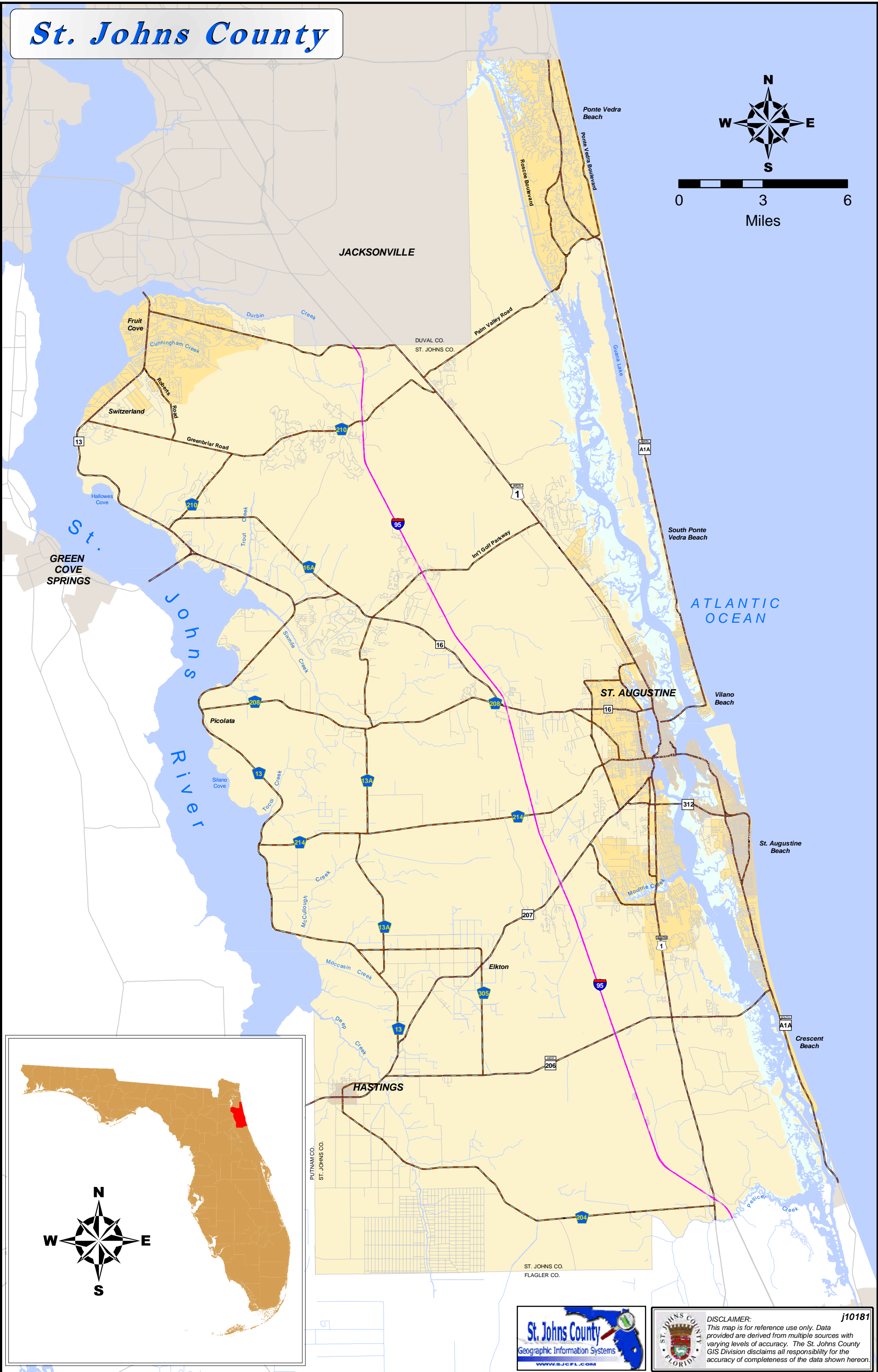


Figure 2



DISCLAIMER: This map is for reference use only. Data provided are derived from multiple sources with varying levels of accuracy. The St. Johns County GIS Division disclaims all responsibility for the accuracy or completeness of the data shown hereon.

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The county's other inlet, Matanzas Inlet, is located approximately 2.5 miles north of the St. Johns/Flagler County line.

Large tracts of public lands abut these inlets. Anastasia State Park, which is owned and managed by the State of Florida Department of Environmental Protection (FDEP) is approximately 1,372 acres in size, is present on the south side of St. Augustine Inlet.

Approximately 300 acres of oceanfront and riverfront property on the north side of Matanzas Inlet is owned and managed by the federal government as the Fort Matanzas National Monument.

St. Johns County reports that the population of the county in 2001 was 128,604. The majority of these residents live in the eastern portion of the county. In general, Interstate 95 separates urban areas to the east from agricultural areas to the west.

Approximately 27 miles of the St. Johns River are present in St. Johns County, comprising the county's entire western boundary (Figure 2). The St. Johns River is the County's boundary with Clay County (to the west) and Putnam County (to the southwest), which has presented challenges in accurately collecting and analyzing manatee abundance and mortality data. When the carcass of a deceased manatee is recovered, it is assigned an identification number and GPS coordinates are recorded for the location where the carcass is recovered. The animal's death is then 'assigned' to the county in which the carcass has been recovered. It is acknowledged that carcasses may be carried by tides or currents or pushed by wind, such that the location where the carcass is recovered may not necessarily be where the animal died. In areas where a waterway is 'split' between two (or more) counties, the Florida Fish and Wildlife Conservation Commission has analyzed the mortality for all the counties that share the waterway. Therefore, for the purposes of this Manatee Protection Plan, manatee habitat, manatee presence and other related data are shown on figures and included in analyses for the entire bank-to-bank portions of the St. Johns River, not just for the area east of the centerline of the river. Wherever appropriate, however, the data for the non-St. Johns County manatees has been identified.

The authority of the County is restricted to unincorporated areas of the County. There are three municipalities located within St. Johns County: 1) the City of St. Augustine; 2) the City of St. Augustine Beach; and 3) the Town of Hastings. The cumulative area of these municipalities is estimated to be less than 10% of the County. The County has no responsibility for issues and/or activities that pertain to manatees within municipal boundaries.

2. Economic Value of Local Marine Industries

Waterfront development and marine-related industries are extremely important components of the economy of St. Johns County. Recently, G.E.C., Inc. conducted an analysis of the economic impacts that are attributable to the waterways in St. Johns County that are maintained by the Florida Inland Navigation District (FIND). The study, entitled "An Economic Analysis of the District's Waterways in St. Johns County" revealed that under the present conditions, the combined recreational and commercial impact of the marine industries is 213.13 million (G.E.C. 2005). In 2004-2005 (the last full year for which data are available), approximately 11,000 vessels were registered in St. Johns County. The number of boats within the County is significantly higher, though, as this number does not include the vessels owned by individuals who are seasonal residents of the County, nor does it include the boaters who live in adjacent counties but who boat on waters within St. Johns County.

From trailered jon boats to ocean-going cruisers, the ownership, maintenance and use of these vessels involves various businesses throughout the county, including but not limited to sales of new and used boats, replacement parts, servicing, fueling and docking. It is impossible to place a value on the registered vessels themselves at this point, because of the great variation in purchase price, age, length, condition, type of power, etc. Monetary value is not incorporated into the vessel registration information itself; however, sales taxes are collected on each purchase.

Boaters use their vessels for a variety of commercial and recreational purposes. Commercial fishing vessels are based in St. Johns County, and their products are served at local restaurants and fish markets or exported outside the area. Charter vessels also provide boating opportunities for a variety of people who are not boat-owners. Recreational uses include cruising, fishing, scuba diving and water skiing.

The waters off St. Augustine and St. Johns County are also recognized for the gamefish that are caught in the Atlantic Ocean. But the economic value of marine industries is not limited to the coastal waters. The AICW and the St. Johns River provide a variety of boating opportunities for non-ocean going boaters.

Real estate values are significantly higher for waterfront parcels, especially if they front boat-accessible waterways. According to the G.E.C. study performed for the Florida Inland Navigation District (G.E.C., Inc., 2005):

“The data indicate that the waterways have had a significant positive influence on residential property values in the St. Johns County throughout the length of the waterways. Under existing conditions, it is estimated that the waterways had increased residential property values in the county by between \$382.4 million to \$598 million. The influence of the waterways on subdivided vacant residential parcel values was estimated at the 9.8 million, and the value of waterfront mobile homes had increased by between 36.2 million and 58.8 million. The impact of the waterways on commercial property was assumed to be minimal, with property values increasing slightly (20.7 million), assuming that the land currently occupied by commercial property would have been developed as residential land. However, because of the small value of commercial property compared with the total appraised value of residential property, and the impact to commercial property value, would be minimal compared to the overall impact to residential property. In summary, without the waterways, property values in St. Johns County would be between \$487.7 million and \$725.9 million less than their current values.”

G.E.C.'s research also revealed that the marine industries employ over 2,100 people annually. Additionally, numerous special events, including fishing tournaments and other events (e.g., the 4th of July Fireworks and the early-December “Regatta of Lights”) bring additional revenue to the area in terms of tourists and sales taxes. This revenue benefits virtually all sectors of the community, including real estate, taxes paid on vessels, marinas and bait shops, restaurants and hotels, clothing, and grocery stores.

In recognition of this vitally important component of the local economy, this MPP has been developed with an inherent desire to provide protection for manatees in compliance with state

regulations and the federal Endangered Species Act, while minimizing social and economic impacts to the boating community and related marine industries.

D. Purpose and Goal

Due to a variety of factors, including relatively low population numbers, low reproductive rates, a geographically restricted range, and comparatively high levels of human-related mortality, the Florida manatee is particularly vulnerable to extinction. Subsequent to its designation as an endangered species, numerous programs have formed in order to protect manatees and their habitat. The Florida Manatee Recovery Team, an interagency group of manatee experts, developed the first Florida Manatee Recovery Plan, which was approved by FWS in 1980. It was updated in 1989, in 1996 and again in 2001. The Plan is presently being reviewed again in order to keep it up-to-date with the results of ongoing research, which provides valuable information related to the survival of the species. One of the recommendations in the federal Recovery Plan is to “develop site-specific manatee plans at a local level.” The Recovery Plan ranks this as a priority goal, essential for the recovery of the species in the wild.

In 1989, the Florida Governor and Cabinet directed the 13 “key” counties that had the highest number of watercraft-related manatee mortalities, to develop Manatee Protection Plans. Most of the counties on Florida’s east coast were designated as ‘key counties’, however, due to the comparatively low number of watercraft-related manatee mortalities, St. Johns County **was not** designated as one of the key counties.

During the early years after the Governor’s 1989 directive, the focus by county governments was on the development of county-specific vessel speed zones which are one component of an MPP. Speed Zones have now been adopted by all 13 key counties, and in some cases, these speed zones have also been revised and updated.

With legislatively approved funding, FWC also provided financial assistance to several counties where plans had not been adopted. As further incentive for several counties to complete development of their MPPs, in the late 1990s the Governor and Cabinet, sitting as the Board of Trustees of the Internal Improvement Trust Fund, indicated their intent to deny use of state-owned submerged lands for boating infrastructure projects in key counties that did not have approved manatee protection plans or which were not making significant progress toward that goal. Several counties which had not completed their MPPs by that time were moved to resume development of their MPPs, and with the assistance of FWC staff, full manatee protection plans have been developed and approved for ten of the 13 counties, and progress is being made in the development of several other county-specific MPPs (Figure 3).

Figure 3
Florida Counties MPP Status – November 2004



Source: Florida Fish and Wildlife Conservation Commission, Aug, 2005

The purposes of St. Johns County’s MPP are to: 1) summarize what is known about the historic and current local populations of manatees and to: 2) provide and describe actions that St. Johns County could consider undertaking if human-related watercraft manatee mortality were to increase to levels that are unacceptable. To achieve this goal, the following tasks have been undertaken:

1. Data pertaining to manatee distribution, abundance, and mortality in local waterways have been obtained and analyzed. This work has included reviewing and assessing existing information pertaining to natural resources, human activity, and other factors that potentially affect the health and well-being of manatees and their habitat.
2. Local, state, and federal programs that benefit manatees have been identified and described. Additionally, recommendations have been formulated to develop new and/or improve existing programs to better protect manatees and their habitat in St. Johns County.

3. The County's Comprehensive Plan has been reviewed to identify any component that either has potential benefits to manatee or which is potentially at odds with manatee protection
4. A process flow chart and schedule have been developed to guide the implementation of the MPP.

As discussed later in this plan, no cause of death could be determined for the majority of manatee deaths in St. Johns County. The FWC's Florida Wildlife Research Institute (FWRI) is the lead agency in performing necropsies to determine the cause of death for manatees, and they are constantly refining their techniques in order to reduce the percentage of manatees to which no cause of death can be determined.

Boating impacts, however, are the largest source of human-related manatee mortality. Consequently, the siting of new boating facilities and expansion of existing boating facilities is a critical component of manatee protection, and a Boat Facility Siting Plan (BFSP) is a requirement for all state-approved Manatee Protection Plans. Although development of a BFSP is not a within the scope of the current work effort, in 2002 St. Johns County commissioned a "Water Dependent Uses and Marine Study", the results of which have been used in the development of this MPP.

As part of its strategy to develop appropriate conservation measures for manatees, the FWS delineated areas throughout Florida based on the relative risk of watercraft-related manatee mortality in those areas (FWS, 2001). FWS defined high risk areas as those averaging one or more watercraft-related manatee mortalities per year during the past ten years. Medium risk areas averaged less than one, but more than zero, watercraft-related manatee mortalities per year. Low risk areas (e.g., inland counties and counties with little manatee usage) had no documented watercraft-related mortality.

St. Johns County is currently designated by the FWS as a 'medium risk' county. It is recommended that the County's goal be to implement this MPP in order to maintain the county's designation as medium risk and prevent being re-designated as 'high risk'.

INVENTORY OF EXISTING CONDITIONS

A. Habitat

Manatees are large, air-breathing aquatic mammals that are found in marine, estuarine and freshwater systems throughout Florida, and which appear to move freely between these differing salinities without problems. They can be found in clear waters or in areas where underwater visibility is exceedingly low. They use these water bodies for food, shelter, migratory pathways, and/or warm water refugia. Water depths of at least one to two meters (3-7 feet) appear to be preferred, and flats and shallows are generally avoided unless these areas are adjacent to deeper water (FPL, 1987). This section contains a description of the aquatic areas within St. Johns County that are accessible to manatees.

1. Locations

Manatee habitat in St. Johns County can be separated into five distinct areas:

- Nearshore Atlantic Ocean;
- The Atlantic Intracoastal Waterway (AICW) north of St. Augustine Inlet, including the Tolomato River and its tributaries, creeks and man-made canals;
- The AICW between St. Augustine and Matanzas Inlets, including the Matanzas River and its tributaries, creeks, and man-made canals;
- The AICW South of Matanzas Inlet, including the Matanzas River, its tributaries, creeks, and man-made canals; and
- The St. Johns River, including its tributaries, creeks, and man-made canals.

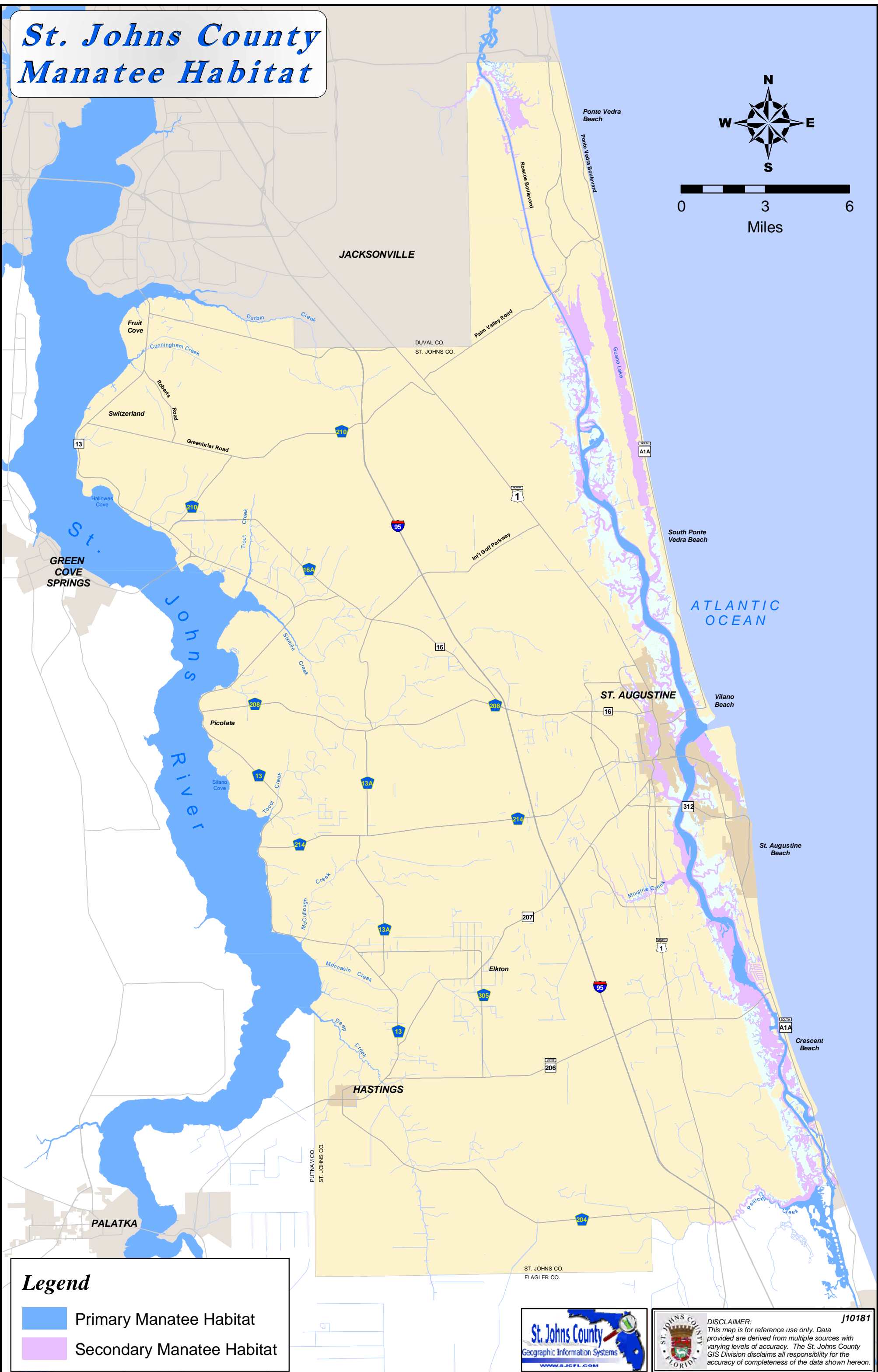
General areas of manatee habitat in St. Johns County are shown on Figure 4. Areas of high marsh (that would typically be too high in elevation for manatees to access except during periods of unusually high tides) and areas upstream of various structures (e.g., bridges, culverts, stormwater control structures...) are identified as 'potential habitat' but development of this MPP has not involved a detailed field effort or reconnaissance of culvert sizes to determine accessibility by manatees.

Nearshore Waters of the Atlantic Ocean

As described in Section I.C.1, St. Johns County is located on the southeast coast of Florida between Duval County to the north and Flagler County to the south (Figure 2). It has approximately 42 miles of frontage on the Atlantic Ocean, with the St. Augustine Inlet and the Matanzas Inlet providing two surface-water connections between the ocean and inland waterways. Although manatees are most frequently observed in the inshore waters (e.g., Tolomato and Matanzas Rivers and their tributaries, and the St. Johns River and other inland waters), there has been credible documentation of the occasional presence of manatees along the coast in the shallow, nearshore waters of the Atlantic Ocean.

Much of the nearshore Atlantic Ocean in St. Johns County, however, consists of barren sandy substrate that provides little, if any, food for manatees. Nearshore hardbottom is present intermittently along the County's southern Atlantic coastline, and in other areas, manatees have been known to graze on the marine algae that grows on hardbottom. The extent to which

St. Johns County Manatee Habitat



Legend

- Primary Manatee Habitat
- Secondary Manatee Habitat



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Figure 4

manatees feed on these resources along St. Johns County beaches is not known, but is expected to be minimal if at all.

A large freshwater spring introduces land-based waters into the Atlantic Ocean at a location approximately 2.5 miles offshore of St. Johns County in the vicinity of Crescent Beach (Appendix A). Estimates of discharge rates are 10-300 ft³/sec, a volume that, if present at a more appropriate location, could be sizable enough to attract manatees. The distance from shore, though, coupled with the water depth at the point of discharge being approximately 60' and comparatively little manatee presence in the nearshore area makes it unlikely that manatees are attracted to this site. Additionally, none of the manatee survey data have documented that manatees travel to the spring site.

The Atlantic Intracoastal Waterway AICW north of St. Augustine Inlet, including the Tolomato River and its tributaries, creeks and manmade canals

The Tolomato River is a natural, tidally influenced waterbody that extends northward from St. Augustine Inlet. It varies somewhat in width but is generally less than one mile wide. The Atlantic Intracoastal Waterway is a navigation channel within the Tolomato River, and approximately 12 miles north of the inlet, near Pine Island, the natural Tolomato is replaced by the dredged AICW channel that extends approximately 12 miles further northward to the St. Johns/Duval County line and further. This water body (although it is named differently in different areas) parallels the coast for the entire length of St. Johns County (Figure 2). Vast areas of low-elevation marshes border the Tolomato and AICW making the shorelines largely inaccessible to people except by watercraft. Numerous creeks (e.g., Robinson Creek, Indian Creek, Stokes Creek, Deep Creek, Capo Creek, Pablo Creek) also flow into the Tolomato.

Jointly, Guana Lake and Guana River comprise a long, narrow aquatic ecosystem located on the west side of the barrier island bordered by State Rd A1A and the Atlantic Ocean to the east and the Tolomato River to the west. Although Guana Lake is largely inaccessible to manatees due to the presence of a dam and water control structure located in its southern portion, on rare occasions manatees have accessed portions of Guana Lake north of the water control structure and dam. On two occasions (once in May 1991 and once in October 1993) a manatee capture took place at this location and the rescued manatee was released on the downstream side of the water control structure.

Due to the comparatively high quality condition of the varied habitats, various portions of Guana River have been acquired and are managed for public purposes. Guana River Wildlife Management Area consists of approximately 9,800 acres of state-owned land, and recently, the area known as Guana River State Park was absorbed into the new Guana-Tolomato-Matanzas National Estuarine Research Reserve (GTMNERR).

Although manatees are well known for their diet of seagrass, particularly manatee grass (*Syringodium filiforme*), St. Johns County is too far north for the typical existence of most seagrasses. Manatees are known to also feed at high tide in salt marshes on smooth cordgrass (*Spartina alterniflora*) (FWS 2000). Due to the extensive cordgrass marshes along the Tolomato River and AICW, including various embayments and connected tributaries, these areas are considered habitat for manatees. The lack of preferred food material, however, prevents this area from being higher in value for manatees.

The Atlantic Intracoastal Waterway between St. Augustine and Matanzas Inlets and the Matanzas River, including its tributaries, creeks, and man-made canals

The Matanzas River is a natural, tidally influenced waterbody that extends southward from the St. Augustine Inlet along the eastern portion of St. Johns County. It varies somewhat in width and reaches a maximum width of approximately 1.5 miles just north of State Road 206 in the area of Crescent Beach. South of S.R. 206, there are extensive tidal marshes on the western side of the river. The AICW navigation channel is within the Matanzas River. The stretch of the Matanzas River between the St. Augustine and Matanzas Inlets is approximately 15 miles in length. As with the Tolomato River to the north, there are numerous creeks (e.g., San Sebastian River, Moultrie Creek, East Creek, San Julian Creek,) that also flow into the Matanzas.

The shoreline vegetation, including cordgrass, that is present along most of these creeks, may be browsed upon by manatees, and therefore the entire Matanzas River and AICW, including various embayments and tributaries where water depths are adequate, are prime habitat for manatees.

The Atlantic Intracoastal Waterway south of Matanzas Inlet, including the Matanzas River, and its tributaries, creeks, and man-made canals

The Matanzas River and AICW extend approximately three miles south from the Matanzas Inlet to the St. Johns/Flagler County line. The waterway is fairly narrow in this area, although wide areas of herbaceous marsh are present along the western shore for most of this reach. Near the county line is Pellicer Creek and Faver Dykes State Park, a ± 1,450-acre park that is located on Pellicer Creek several miles to the west. Much of Pellicer Creek has been designated as "Aquatic Preserve" by the State of Florida due to the excellent condition of the waterway and adjacent uplands.

The shoreline vegetation that is present along most of this stretch of the river may be browsed upon by manatees, and therefore the entire Matanzas River and AICW, including various embayments and tributaries where water depths are adequate, are prime habitat for manatees.

The St. Johns River

The St. Johns River is a naturally meandering inland watercourse that flows south-to-north and which forms the western boundary of St. Johns County (Figure 2). Approximately 27 river miles of the St. Johns River's 310 miles extend along St. Johns County. St. Johns County shares the river with Putnam County to the southwest and with Clay County to the west. In the northwestern corner of the county, Julington Creek a westerly flowing tributary of the St. Johns River forms the boundary between St. Johns County and Duval County.

In addition to Julington Creek, several other natural creeks and waterways flow into the St. Johns River. The more substantive of these tributaries, which primarily drain agricultural lands within St. Johns County, include Cunningham Creek, Trout Creek, Six-mile Creek, Toco Creek, McCullough Creek and Deep Creek. Because most of these creeks are narrow and shallow within a short distance from their confluence with the St. Johns River, they provide relatively little habitat for manatees, although manatees may seek refuge in these creeks.

With the exception of the narrow creeks, the entire St. Johns River and its tributaries within St. Johns County are manatee habitat.

2. Public Lands within or adjacent to Manatee Habitat and Public Acquisition Initiatives

Over the years, many sites within St. Johns County have been acquired by local, state, and/or federal agencies for the purposes of conservation, preservation and/or public recreation (Figure 5).

Several of these tracts are situated adjacent to waterways that serve as habitat for manatees. The most substantive tracts of these public lands are shown on Table 1, below:

Table 1.

Public Lands That Contain and/or Are Located Adjacent to Manatee Habitat Areas		
Site	Waterfront	Acres
Guana-Tolomato-Matanzas Nat'l Estuarine Research Reserve	Yes	55,000 acres
Anastasia State Park	Yes	1,372 acres
Fort Matanzas National Monument	Yes	300 acres
Faver-Dykes State Park	Yes	1,450 acres

Although there is presently no locally sponsored public land acquisition program, St. Johns County staff actively work with other local, state and/or federal agencies to acquire and preserve notable lands within the County which are worthy of preservation.

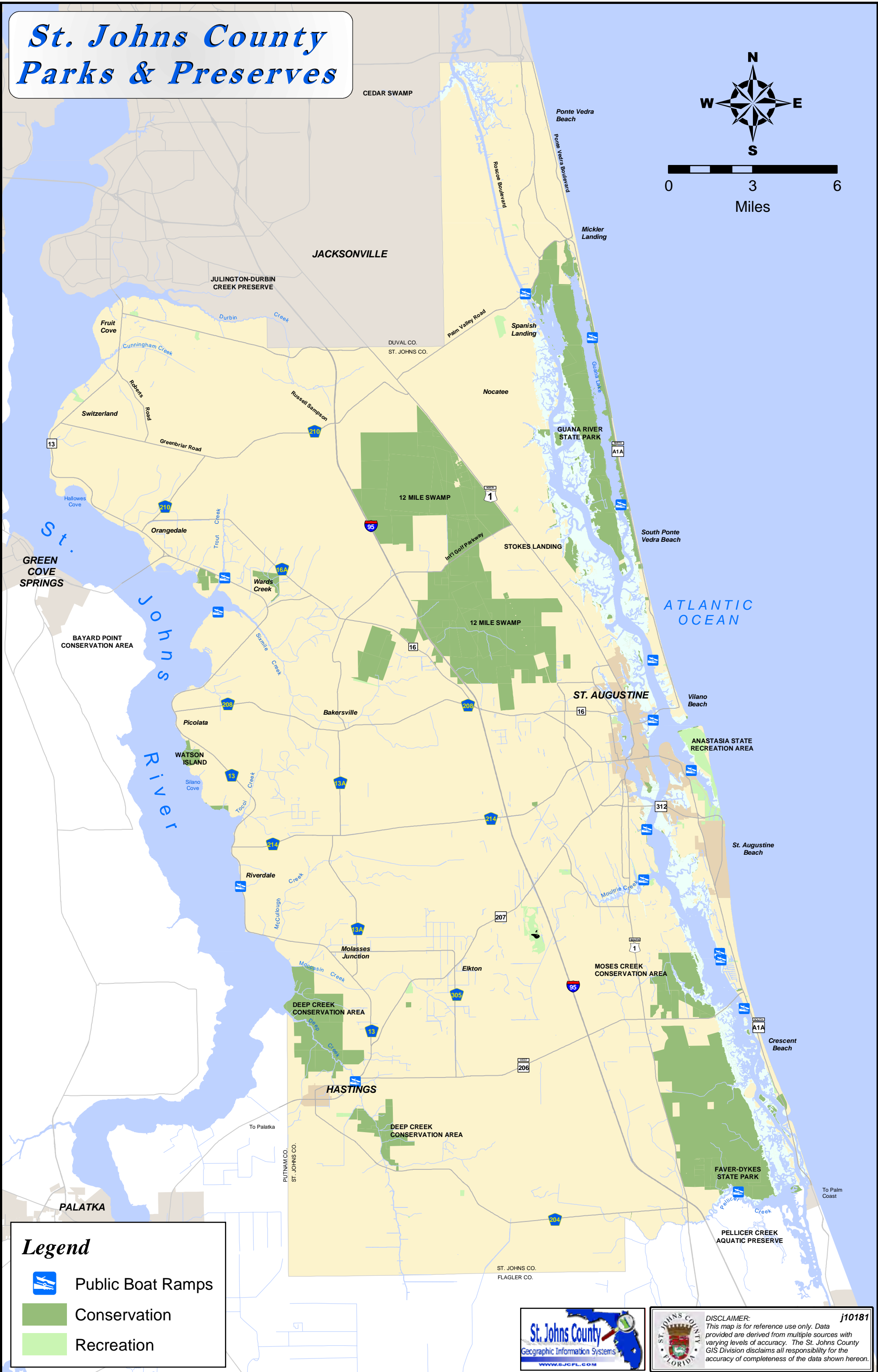
The County has been successful in partnering with the State of Florida (e.g., Conservation and Recreational Lands, Florida Forever), and the St. Johns River Water Management District (SJRWMD) on land acquisition projects. Through their Comprehensive Plan, the County has committed to continue working with these and other partners (including the Florida Communities Trust, the Trust for Public Lands, the North Florida Land Trust and The Nature Conservancy) to continue acquiring environmentally sensitive parcels for preservation.

3. Water Quality and Vegetation

Estuaries are water bodies where saline ocean waters and fresh waters mix. The distribution and abundance of submerged vegetation (seagrasses and other macroscopic marine plants attached to the bottom), oysters, and other aquatic organisms are related to salinity and other water quality patterns within the estuary. In turn, water quality is largely affected by upland land-use activities. Fertilizers, pesticides and other pollutants often find their way into estuaries via freshwater tributaries, canals, and upland run-off, including storm-water discharges.

Although water quality in the nearshore areas of the Atlantic Ocean is excellent, water quality in manatee habitat in inland St. Johns County waterways is highly variable. Fluctuations occur daily, based primarily on tidal cycles, and seasonally, in response to Florida's annual cycle of summer-time wet season and wintertime dry season. Diurnal tides affect the Tolomato and

St. Johns County Parks & Preserves



Legend

- Public Boat Ramps
- Conservation
- Recreation



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Figure 5

Matanzas Rivers to the greatest extent near the St. Augustine and Matanzas Inlets, and tidal exchange through the inlet at Jacksonville in neighboring Duval County also influences the St. Johns River. Tidal effect is reduced, however, as the distance from each inlet increases. Overall, water quality in St. Johns County is comparatively good.

Over the past several decades, the water quality of surface waters within St. Johns County has been somewhat degraded by various drainage and development projects. Agricultural and urban drainage projects have had some effect on the boundaries of the watershed/drainage basins, but these changes have had varying impacts on the timing, distribution, quality and quantity of fresh water that enters St. Johns County waterways. Through various federal, state, regional and local programs, data on the quality of surface waters in St. Johns County have been collected. The remainder of this section provides a summary of the information available on these issues.

Water Quality

In Chapter 62-302 of the Florida Administrative Code (FAC), the State of Florida designates all surface waters in Florida into one of the following classes:

- Class I Potable Water Supplies
- Class II Shellfish Propagation or Harvesting (harvesting contingent upon results of periodic FDEP water quality monitoring)
- Class III Recreation, Propagation and Maintenance of a Healthy, Well-Balanced Population of Fish and Wildlife
- Class IV Agricultural Water Supplies
- Class V Navigation, Utility and Industrial Use

There are separate state water quality standards for each class of surface water. These standards identify the acceptable levels of a variety of constituents (e.g., nutrients, suspended solids, turbidity, dissolved oxygen, metals, etc.). There are no Class I, Class IV or Class V waters in St. Johns County. All surface waters in St. Johns County are Class III waters except as noted below:

Class II

- Guano River and Tributaries – From Guano Lake Dam south to Tolomato River (*Although the term ‘Guano River and ‘Guano Lake’ are used in the FAC, it refers to the same water body that is known as Guana River as used in this text*).
- Matanzas River, Intracoastal Waterway and Tributaries, excluding Treasure Beach Canal System
- From Intracoastal Waterway Marker number 29, south to Flagler County Line
- Pellicer Creek
- Salt Run – Waters south of an east-west line connecting Lighthouse Park boat ramp with Conch Island
- Tolomato River (North River) and Tributaries – From a line connecting Spanish Landing to Booth Landing, south to an east-west line through Intracoastal Waterway Marker number 55

In Putnam, Clay and Duval Counties, which each adjoin portions of St. Johns County, the St. Johns River is designated as Class III waters. The Tolomato River/Intracoastal Waterway in Duval County immediately north of the St. Johns/Duval County line is also Class III. Adjacent to

the St. Johns/Flagler County boundary, the waters of the Matanzas River/Intracoastal Waterway and Pellicer Creek are both classified as Class II.

Chapter 62 FAC also identifies surface waters that, due to their ecological value and/or sensitivity are designated as “Outstanding Florida Waters” and “Outstanding National Resource Waters”. Waters in St. Johns County that have been designated as Outstanding Florida Waters include waters within:

- Anastasia State Recreation Area
- Faver-Dykes State Park
- Guana River State Park (now National Estuarine Research Reserve)
- Portions of Guana River and the Guana River Marsh that are not within the GTMNERR
- Fort Mose
- Pellicer Creek

Additionally, in order to protect some of the state’s most extraordinary aquatic resources, in 1975, the Florida Legislature adopted the Florida Aquatic Preserve Act. Separate state laws which are found in Chapter 258 Florida Statutes (FS). Identify the boundaries and specify the activities that can be conducted, or which are prohibited, within each aquatic preserve. The stated goal of the Aquatic Preserve program is that “...state-owned submerged lands in areas which have exceptional biological, aesthetic, and scientific value, as hereinafter described, be set aside forever as aquatic preserves or sanctuaries for the benefit of future generations”. Of the 41 aquatic preserves that have been designated in the State of Florida, two are present within the project area. They are:

- Guana River Marsh Aquatic Preserve, and
- Pellicer Creek Aquatic Preserve.

While, in general, many surface waters in St. Johns County meet applicable water quality standards for their respective classifications, others currently do not. Section 303(d) of the federal Clean Water Act (CWA) requires that each state identify a list of “impaired” waterways, or surface waters that do not meet applicable water quality standards. In fulfillment of this requirement, the Florida Department of Environmental Protection (FDEP) assessed the condition of surface waters throughout the state and developed a Water Quality Assessment Report that identified impaired water bodies. The Water Quality Assessment Report utilized a variety of sources to assess watersheds based on wetland, surface, and ground waters. Sources included, but were not limited to, the US Environmental Protection Agency’s (EPA’s) STOrage and RETrieval (STORET) database, the Statewide Biological Database (biological assessments), SJRWMD, fish consumption advisory information, and input from the public.

FDEP provided the federal government with a list of the surface waters of the state where sampling and analyses indicated that applicable water quality standards were not being met. The EPA approved Florida’s 303(d) list in November of 1998. A number of waterbodies in St. Johns County did not meet applicable standards and are therefore considered impaired. Some of these waters are also manatee habitat, although others are too narrow or shallow to be accessible to manatees. Figure 6 identifies by name and location the waterbodies that were classified as impaired during the 1998 analysis.

1998 303(d) Listed Water Segements in St. Johns County

Map prepared January 5, 2002 by the Bureau of Watershed Management, Division of Water Resource Management. This map is a representation of ground conditions and is not intended for delineations or analysis of water features shown. For more information, contact the Bureau of Watershed Management at halli_brown@dep.state.fl.us. Location: [bdpwrk01](#) E:\various_maps\final_access_maps

Basin	Wbid
ICWW	2205C
GUANO RIVER	2320
Mantanzas River	23631
DURBIN CREEK	2365
ST. JOHNS RIVER	2213G
SIXMILE CREEK	2411
MILL CREEK	2460
TOCO CREEK	2492
ST. JOHNS RIVER	2213K
MOCCASIN BRANCH	2540
DEEP CREEK	2549
CRACKER BRANCH	2553
ST. JOHNS RIVER	2213L
CRACKER BRANCH	2555
WEST RUN INTERCEPTER D	2569
SIXTEENMILE CREEK	2589
Pellicer Creek	2580B

Legend

- County Boundary
- WAFR Facilities**
 - NPDES (National) Facility
 - State or Local Facility
- Major Roads
- Water Lines
- Water Bodies
- 1998 303(d) Listed Waters

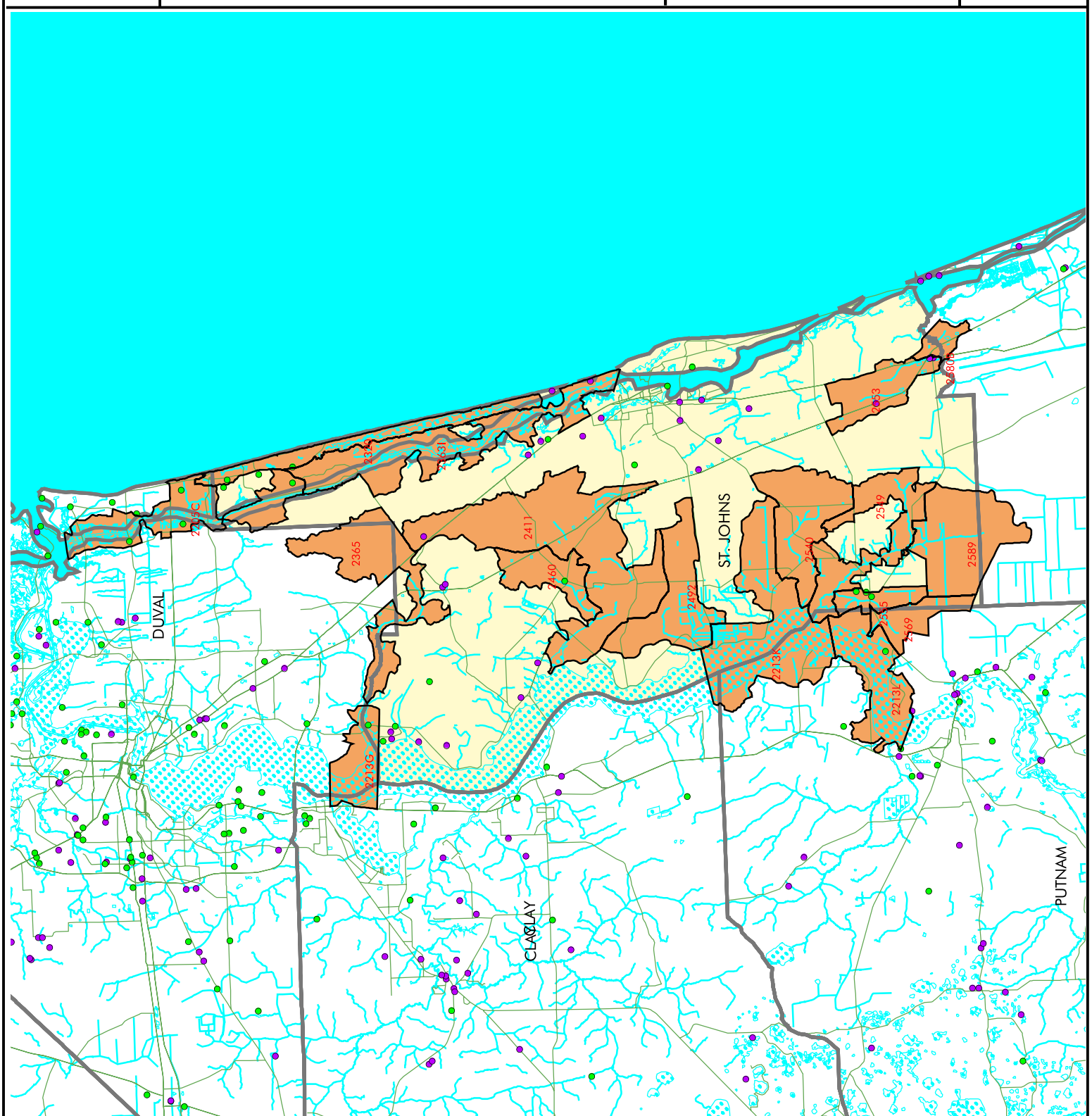


Figure 6. Section 303(d) 'Impaired' Waters in St. Johns County

Figure 6. Section 303(d) 'Impaired' Waters in St. Johns County

There are various programs that are currently in place or under review that, if implemented, would improve water quality in the St. Johns County waterbodies that were determined to be impaired. These programs include federal programs, state programs, regional initiatives and County projects, as described below.

Pollutant Load Reduction Goals (PLRGs)

The primary purpose of PLRGs is to reduce pollutant discharges from watersheds so that the water quality in the receiving body of water meets state standards.

Total Maximum Daily Loads (TMDLs)

The federal Clean Water Act requires that Total Maximum Daily Loads (TMDLs) be calculated for impaired waters based on detailed effluent assessments where pollution control measures are insufficient to meet current water quality standards. The TMDLs require the use of Best Management Practices to limit the volume of nutrients or other pollutants that can be discharged into receiving water bodies. They also establish objective and enforceable standards that can be easily monitored.

Lower St. Johns River Surface Water Improvement and Management Program

The SJRWMD is overseeing a river-wide program to improve and restore waters in the St. Johns River through the Surface Water Improvement and Management (SWIM) program. The river has been designated as a priority water body in need of restoration and special protection, and the WMD is involved in a variety of projects that target improvement in the areas of sediment management, water quality assessment, agricultural non-point sources, biological assessment, hydrology and hydrodynamic modeling, interagency coordination, public awareness, and environmental education. Within each of these program areas, there are a number of projects which are intended to provide resource managers with the understanding necessary to develop or implement workable restoration and protection strategies.

Guana, Tolomato, Matanzas Shellfish and Water Quality Task Force

Deteriorating water quality in portions of the eastern area of the County has caused most of the former shellfish harvesting beds to a more restrictive class. As a response to the reclassification, St. Johns County officials, concerned citizens and agencies have established a cooperative effort to restore the area to its former classifications and to meet Class II water quality standards. Surveys have examined septic systems, uncontrolled stormwater runoff, water quality sampling, statistical analysis of water quality results and land-use identification. A basin hydrologic model is being developed to examine water flow and pollutant transport.

County Initiatives

St. Johns County is presently involved in a variety of programs that are designed to address various water-quality related issues. They have adopted Comprehensive Plan Goals, Objectives and Policies that state their commitment to improving water quality through a variety of programs. Programs include such as retrofitting stormwater management systems, promoting implementation of Marine Best Management Practices, replacement of out-dated package wastewater treatment plants, improving sanitary sewer systems to meet the standards

of 'Advanced Waste Treatment', and discouraging any new or upgraded public or private sanitary sewer facilities that would drain into estuarine waters of the County.

Vegetation

Manatees are herbivores, and various studies have revealed that manatees spend about five hours of every day feeding, and that during that time, they may eat over 100 lbs of vegetation. The manatee's general body and head shape suggest that they are particularly well adapted to feeding on the bottom, and studies indicate that their order of preference is for submerged, emergent and then floating vegetation (Domning, 1980). In most areas of Florida, the focus on vegetation as it pertains to manatees is on the presence, abundance, distribution and vitality of seagrasses. Seven species of seagrass have been documented to occur in marine and estuarine areas along Florida's east coast, but St. Johns County is further north than the natural range of most seagrass species, and therefore comparatively little information is available regarding food resources used by manatees in St. Johns County. As noted previously though, manatees will consume cordgrass, which is one of the more abundant herbaceous vegetation species in the salt marshes in the County.

Submerged freshwater vegetation, including eelgrass (*Vallisneria americana*), *Najas guadalupensis*, and *Chara* sp., occurs in portions of the St. Johns River and its tributaries. During their field studies, SJRWMD even documented manatees that were feeding on *Vallisneria* near Ferriera Point and Orangedale (Burns, et al., 1997). Figures showing the location, distribution and abundance of submerged aquatic vegetation in the St. Johns County portion of the St. Johns River are included in Appendix B.

Manatees have also been observed to consume leaves from trees and shrubs that overhang their waters. It is possible that manatees may eat leaves of the black mangrove (*Avicennia germinans*) trees which grow along the shore in areas of eastern St. Johns County.

Summary of Water Quality and Vegetation

Through the efforts of various federal, state and local governmental entities, a variety of data have been collected concerning water quality in the areas of St. Johns County inhabited by manatees. In general, water quality in the nearshore areas of the Atlantic Ocean is excellent, and water quality in the Matanzas and Tolomato Rivers appears to be adequate enough that manatees are not subjected to pollutants to the extent that they would develop health-related problems. Water quality is generally below standard in portions of the St. Johns River and its tributaries and several initiatives are presently underway to address these deficiencies.

No data have been found that describe the dietary habits of manatees while they are in St. Johns County, however the lack of seagrasses and the abundance of herbaceous emergent vegetation suggest that cordgrass (*Spartina alterniflora*) may be a preferred food item. No studies have been found that would suggest that the impaired quality of the waters in the County is having an adverse impact on the presence, distribution and/or vitality of *Spartina* in the County's tidal marshes.

4. Manatee Distribution

Manatees are potentially present in marine, estuarine and virtually all non-landlocked fresh water bodies in St. Johns County. This Section provides information on the geographic (spatial) and temporal distribution of manatees in St. Johns County waterways.

Data concerning manatee presence were obtained and analyzed from four major sources:

- Aerial surveys;
- Radio telemetry;
- Results of captures of injured manatees; and/or
- Recovery of manatee carcasses

Aerial Surveys

FWC has conducted aerial surveys of manatees periodically over the past 20 years. The surveys are performed by scientists in fixed-wing aircraft at an altitude of approximately 500 feet, and consist of annual statewide synoptic surveys and local bimonthly surveys.

Synoptic flights are conducted each year to obtain a minimum statewide count of manatees. The primary focus of these aerial surveys is to count manatees in places and at times when they are most concentrated. Thus, the synoptic flights are performed during the winter and are timed to coincide with the passage of major cold fronts, periods when manatees gather at various thermal refugia around the state. The number and dates of surveys vary from year to year depending on weather conditions. Water clarity/visibility, weather conditions, and time of day significantly affect observations of manatees during these surveys. Because there are no significant warm-water attractants in St. Johns County, observations of manatees in the county are typically individuals that have been seen as the flight team is traversing the county to get from one congregating area to another. (Blue Springs State Park in Volusia County is a well-documented winter congregating area, and there are five industrial sites in Duval County that attract manatees in lower numbers).

Bi-monthly surveys, which are intended to document the relative abundance and distribution of manatees on a seasonal basis in local waterways, have been conducted at various times. FWRI describes the aerial surveys they conduct as follows:

“Aerial distributional surveys are used by marine mammal biologists from FWC and other agencies to determine the seasonal distribution and relative abundance of manatees. Surveys are typically conducted in nearshore waters around the state. Flights are usually 4-6 hours long, and are most commonly flown every two weeks for two years. Most surveys are done from small four-seat, high-winged airplanes (Cessna 172 or 182) flying at a height of 150 m (500 feet) at a speed of 130 km/h (80 mph). The flights are designed to maximize the manatee counts by concentrating on shallow nearshore waters where manatees and their primary food source, seagrasses, are located. Flight paths curve along parallel to the shoreline, and the airplanes circles when manatees are spotted until a count of the number of manatees in each group is obtained. Deeper waters are usually not surveyed. Some studies are made using small helicopters in urban areas or where waters are particularly opaque. All aerial data are recorded on photocopies of navigation charts and entered into the Florida Marine (Wildlife) Research Institute’s Marine Resources Geographic Information System

(GIS) for spatial analysis. GIS is a computer software system for making maps of data and for doing spatial data analyses.”

In addition, personnel from Jacksonville University also performed some aerial surveys for manatees. Databases that were obtained and reviewed are shown in Table 2.

Table 2

Aerial Surveys for Manatees in and/or Near St. Johns County		
# flights	Dates Flown	Location
50	5/9/88 – 4/24/90	St. Johns River – Southern limit near N boundary of St. Johns County
79	5/2/90-3/11/97	St. Johns R. - Southern limit near N boundary of St. Johns County
45	3/11/91-11/30/93	Atlantic Intracoastal Waterway – entire St. Johns County
21	5/20/93-5/27/94	St. Johns R- Northwestern county boundary
301	3/14/94-9/11/03	St. Johns R. - entire Western boundary of St. Johns County
25	6/29/94-6/28/95	St. Johns R. – entire Western boundary of St. Johns County

Collectively, these surveys, which consist of 442 flights that were conducted between May 1988 and July 1995, provide a reasonably good understanding as to the abundance and distribution of manatees in northeast Florida.

Data from both of these types of surveys in St. Johns County are somewhat difficult to gather and interpret; however, in part because some flight paths only covered portions of the County’s waterways. Additionally, challenges arise due to the boundary between counties being the St. Johns River (i.e., some sightings within the St. Johns River are considered to be in St. Johns County, others are in Clay County or Putnam County). For these reasons, data hereafter for the St. Johns River include both those sightings that were accredited to St. Johns County and those accredited to the adjacent county.

From these data, it is clear that manatees may be present in coastal or non-land-locked freshwater areas in northeast Florida at any time of the year, and that numbers vary considerably from month to month and year to year. Lowest numbers appear to be during the winter and highest numbers during the summer.

Based on aerial survey data, it appears that manatees were most abundant along the shorelines of the county’s waterways. It is unclear as to whether or not this is an accurate representation of their distribution, or merely a reflection of the fact that manatees are more likely to be seen in shallow waters than in deeper areas.

Although it would take more detailed analysis than the data has thus far been subjected, cursory analysis suggests that manatees use the St. Johns River and the AICW as corridors for movement during different times of the year. However, because some manatees were observed to be eating *Spartina*, the value of this resource as food for manatees cannot be overstated.

Radio Telemetry

One source of information on the movement of individual manatees is available from the USGS Sirenia Project (National Biological Survey 1994). This study examined the movements of 63 manatees fitted with transmitters and tracked by satellite at various times between 1986 and 1993. It should be noted that this data set is based on tracking results for a limited number of individuals and, thus, is not considered the best source of information for estimating population sizes or determining where manatees are most abundant in local waterways. However, the data do provide an indication of the movements of individual manatees within the county.

Several of the manatees that were fitted with transmitters were documented to spend time in St. Johns County waters. The movements of four of these manatees (Xena, Peewee, Patience, and Connie) are shown on Figure 7.

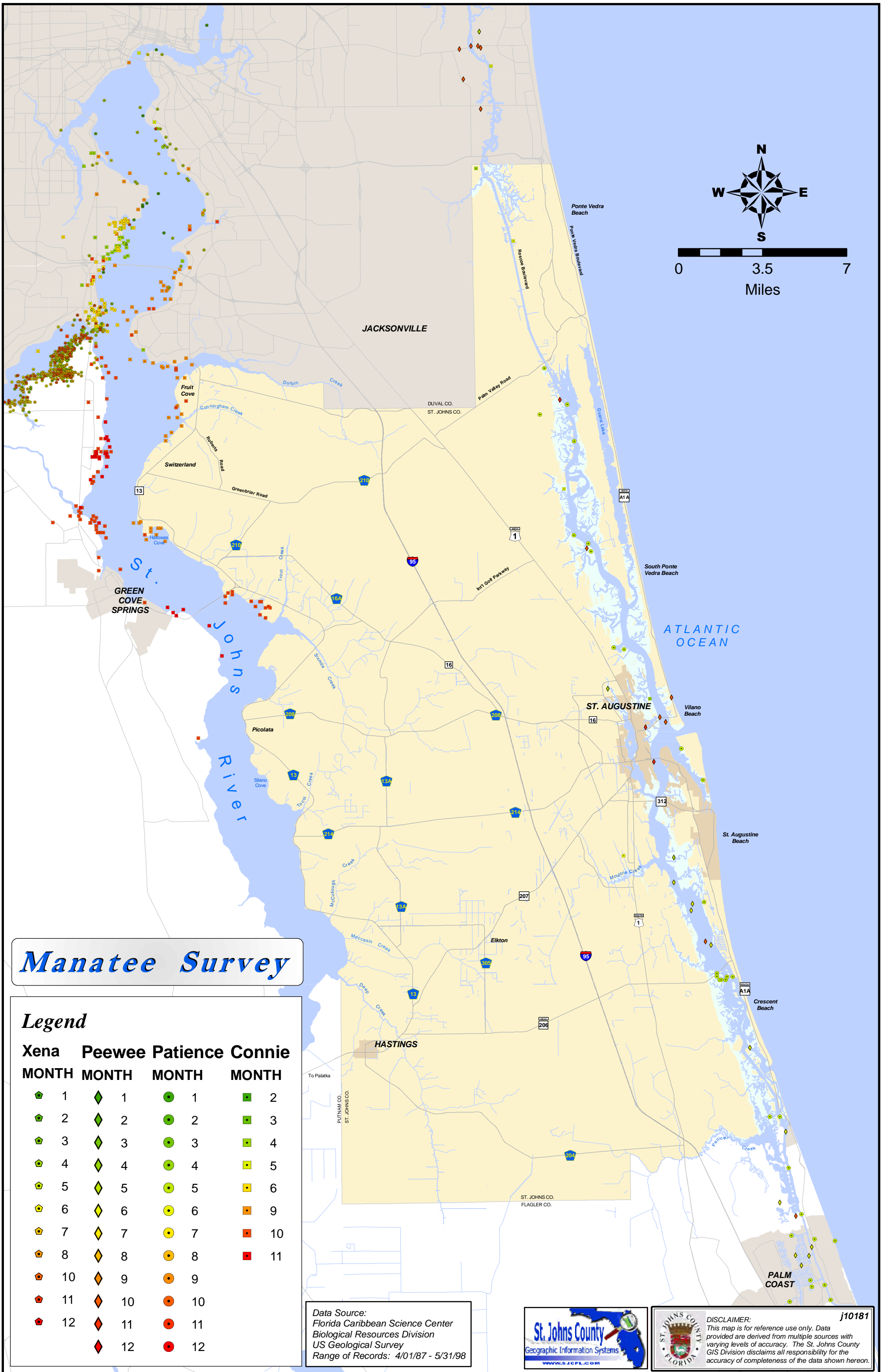
Peewee and Patience were observed only in the Tolomato-Matanzas-AICW complex in the eastern part of the County. Peewee was present primarily during the months of September-November, and his travels included time spent in Flagler and Duval Counties. Patience was present in St. Johns County primarily during May, and several occurrences were documented in the area of the Matanzas River just south of the County Rd. 206 bridge to Crescent Beach.

Xena and Connie were present primarily in the St. Johns River system. Xena was present primarily from April through October and most often on the south side of Doctor's Lake in Clay County. Connie was the most wide-ranging of these four individuals, with most observations being along the banks (both east and west) of the St. Johns River from April through November. Connie was also tracked to the eastern parts of the county, though, where her presence was noted from near the Duval/St. Johns County line to the headwaters of Moultrie Creek.

Analysis of manatee movements along the southeast Florida Coast by the Treasure Coast Regional Planning Council revealed that:

- Individual manatees often return to the same warm season site year after year;
- Individual manatees may also return to previously used warm-water sites during the winter, but some manatees will travel during mid-winter to alternate sites;
- There is considerable variation among individuals concerning the timing and extent of migration and the amount of time spent at warm-water sites;
- The range of some manatees includes the entire eastern coast of Florida with seasonal movements of 525 miles;
- Manatees have been found traveling at a rate of about 25 miles/day for several consecutive days when moving from one area to another;
- Most long-range movements are seasonal, but some long-range movements and many short-range movements do not appear to be related to temperature;
- Most manatees travel within the Intracoastal Waterway, but some individuals travel in the Atlantic Ocean near the coast;
- Manatees often travel in deep water channels that are also used by boats.

It is likely that these conclusions are valid for manatees that travel to Northeast Florida as well. Months during which manatees have been documented to occur in various habitat areas in St. Johns County are shown in Table 3.



Manatee Survey

Legend

Xena	Peewee	Patience	Connie
MONTH	MONTH	MONTH	MONTH
1	1	1	2
2	2	2	3
3	3	3	4
4	4	4	5
5	5	5	6
6	6	6	9
7	7	7	10
8	8	8	11
10	9	9	
11	10	10	
12	11	11	
	12	12	

Data Source:
 Florida Caribbean Science Center
 Biological Resources Division
 US Geological Survey
 Range of Records: 4/01/87 - 5/31/98



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Figure 7

Table 3

**Months During Which Manatees Have Been Documented in St. Johns County Waterways,
(Based on satellite telemetry, mortalities and rescues)**

Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Atlantic Ocean	X		X	X								X
AICW/Matanzas River from Flagler Co line to Matanzas Inlet	X		X		X					X		X
AICW and Matanzas River from Matanzas Inlet to St. Augustine Inlet	X	X	X	X	X	X	X	X	X	X	X	
AICW and Tolomato R from St. Augustine Inlet to Duval County line	X	X	X	X	X	X	X	X	X	X	X	X
St. Johns R in St. Johns Co.	X	X		X	X	X	X	X	X	X	X	X
St. Johns River in neighboring Counties (i.e., Duval, Clay & Putnam)	X	X	X	X	X	X	X	X	X	X	X	
Julington Creek	X	X					X	X	X	X		

Collectively, data obtained through aerial surveys and radio telemetry makes it apparent that manatees are found in most of St. Johns County’s non-land-locked waterways. Although they may be present in any month of the year, abundance is minimal during the coldest months of the year. Tracking of satellite-tagged manatees has revealed that many individual manatees have seasonal movements. Due to their sensitivity to cold water, manatees that range widely during the summer months seek warm water (e.g., springs, power plant discharges, or the naturally warmer waters of springs or in south Florida) during the winter. There are no known warm water attracts in St. Johns County, and there do not appear to be any major congregating areas within the County.

Results of Captures

Whenever an injured manatee is captured and taken to a recovery center, the location from which it was captured is recorded. There have been 18 captures of manatees in St. Johns County, and the location of each of these captures has helped to understand manatee presence in the County.

Locations of Carcass Recoveries

The locations in St. Johns County where manatees carcasses have been recovered also provides some information regarding habitat usage, although, as previously described, it must be recognized that the location where the carcass is recovered is not necessarily where it died.

B. Manatee/Human Interaction

This Section provides information concerning interactions between manatees and humans. It includes a presentation and discussion of manatee mortality statistics, vessel speed zones and enforcement of manatee-related regulations.

1. Manatee Mortality

Since 1974, FWC has maintained records of manatee injuries and deaths reported by the public. FWC staff located at the Jacksonville Field Station responds to reports from St. Johns County. Severely ill or injured manatees are captured and transported to rehabilitation facilities outside of the county for professional care. Those that recover are typically released back into the wild near the location where they were captured. Carcasses of deceased manatees are recovered and, whenever possible, necropsies are performed to determine the cause of death. Based on many years of examining manatee carcasses, FWC has defined the following nine categories of manatee mortality:

- Category 1 Watercraft-related
- Category 2 Floodgate/canal lock
- Category 3 Other Human
- Category 4 Perinatal (Dependent Calf)
- Category 5 Cold Stress
- Category 6 Other Natural
- Category 7 Carcass Verified by Reliable Source but Not Recovered
- Category 8 Undetermined, Too Decomposed
- Category 9 Other Undetermined

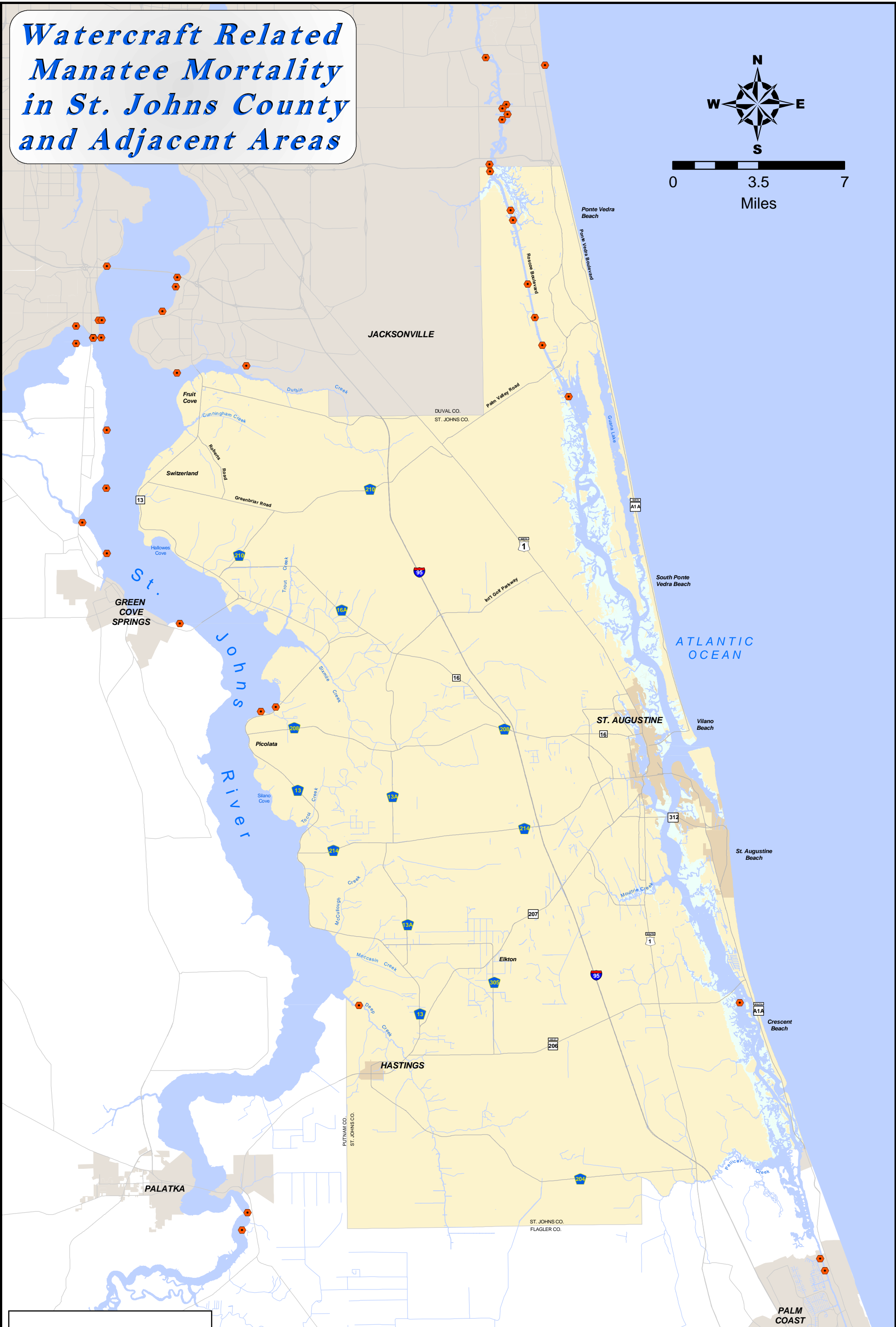
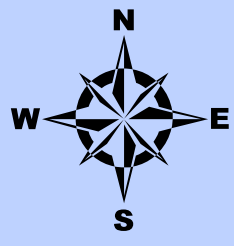
From April 1974 (when the State began tracking manatee deaths) through December 2004 (the last entire year for which data are available), there have been 65 manatee deaths recorded in St. Johns County waterways (Table 4). Additionally, although not directly 'assigned' to St. Johns County, there have been an additional 25 manatee deaths in the portions of the St. Johns River west of the County boundary with Clay and Putnam Counties and Julington Creek. Data for these adjoining counties are being included, but are shown as shaded boxes in Table 3. For the purpose of analyzing manatee mortalities in St. Johns County, these deaths were assigned to one of six categories: watercraft-related, other human related, perinatal, cold-stressed animals, other natural, and undetermined (FWC Categories 7, 8 and 9). FWC Categories 7, 8 and 9 have been combined because the distinctions among undetermined causes are not germane to this analysis. The location of dead manatees recovered by FWC from St. Johns County waterways is shown by mortality code in Figures 8-14.

**Table 4
Manatee Mortalities in the St. Johns County Area
April 1974 – December 31, 2004**

Year	Watercraft	Gate/Lock	Other Human	Perinatal	Cold Stress	Natural	Undetermined	Total (St. Johns)	Total (adj Co)	Total for Region
1974										
1975										
1976				1				1		1
1977							2 + [1]	2	[1]	3
1978							1 + [1]	1	[1]	2
1979										
1980										
1981	1					1		2		2
1982	1						2	3		3
1983				[1]		1		1	[1]	2
1984						1		1		1
1985	1							1		1
1986										
1987						[1]	[1]		[2]	2
1988				1	1		1 + [1]	3	[1]	4
1989	[1]				1	[1]		1	[2]	3
1990				1	[1]			1	[1]	2
1991	[1]								[1]	1
1992	[1]								[1]	1
1993							2 + [2]	2	[2]	4
1994										
1995	1					1 + [1]		2	[1]	3
1996							1	1		1
1997	[1]						4	4	[1]	5
1998	[1]					[1]	4 + [1]	4	[3]	7
1999	2				1 + [1]	1	4	8	[1]	9
2000	1			1	1		2	5		5
2001							5 + [1]	5	[1]	6
2002	3				1	1	2	7		7
2003	[1]			2	1 + [2]		2	5	[3]	8
2004	1 + [1]				2 + [2]	1	1	5	[3]	8
TOTAL	11 + [7]	0	0	6 + [1]	8 + [6]	7 + [4]	33 + [8]	65	[26]	91

[#] = Additional manatee deaths in the St. Johns River or Julington Creek in a County adjoining St. Johns County

Watercraft Related Manatee Mortality in St. Johns County and Adjacent Areas



Legend

Watercraft Death

Data Source: Florida Fish & Wildlife Conservation Commission
 Range of records: 1977 to 12/31/04

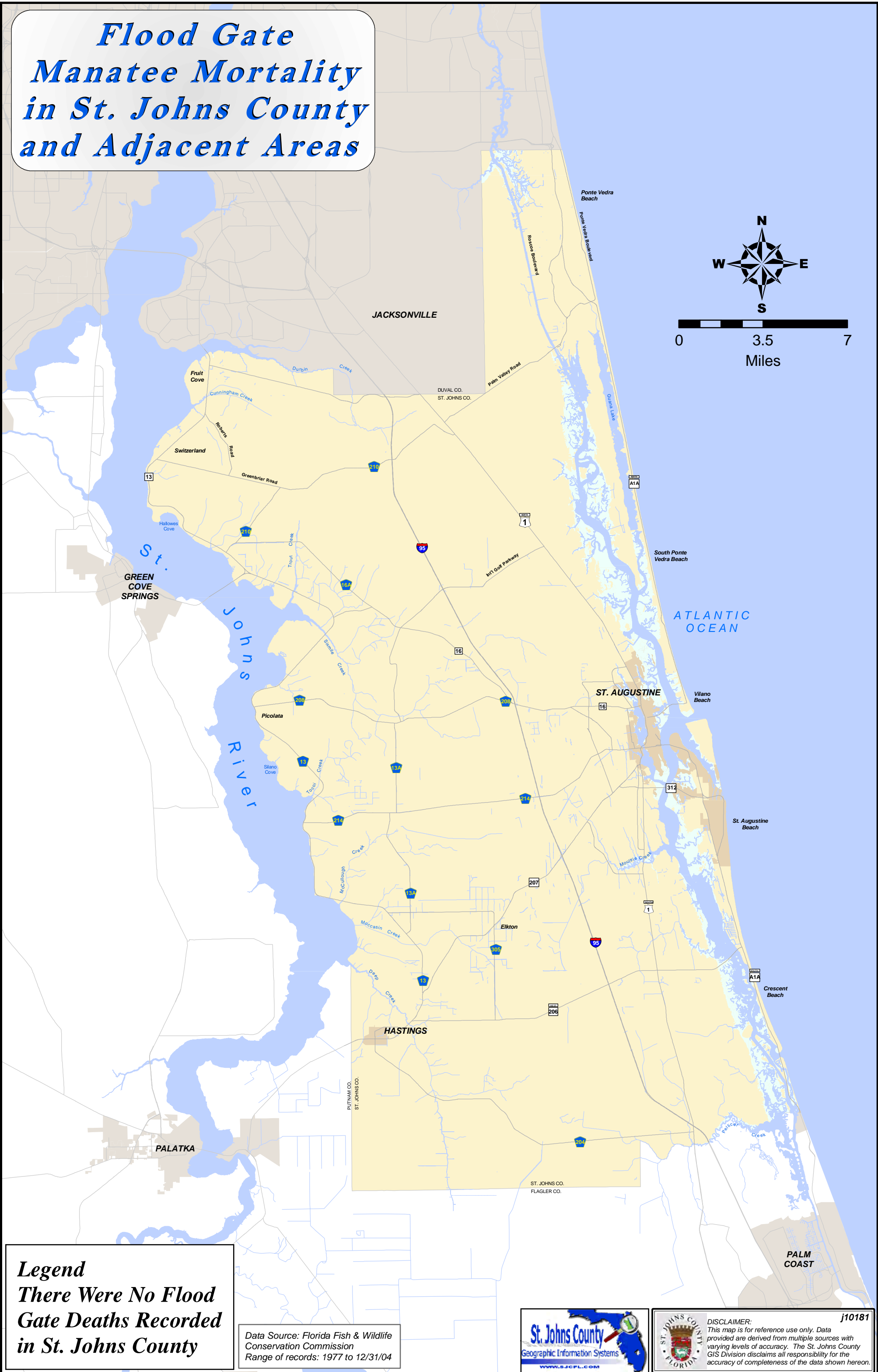


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Figure 8

Flood Gate Manatee Mortality in St. Johns County and Adjacent Areas



Data Source: Florida Fish & Wildlife Conservation Commission
Range of records: 1977 to 12/31/04



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Figure 9

Other Human Related Manatee Mortality in St. Johns County and Adjacent Areas

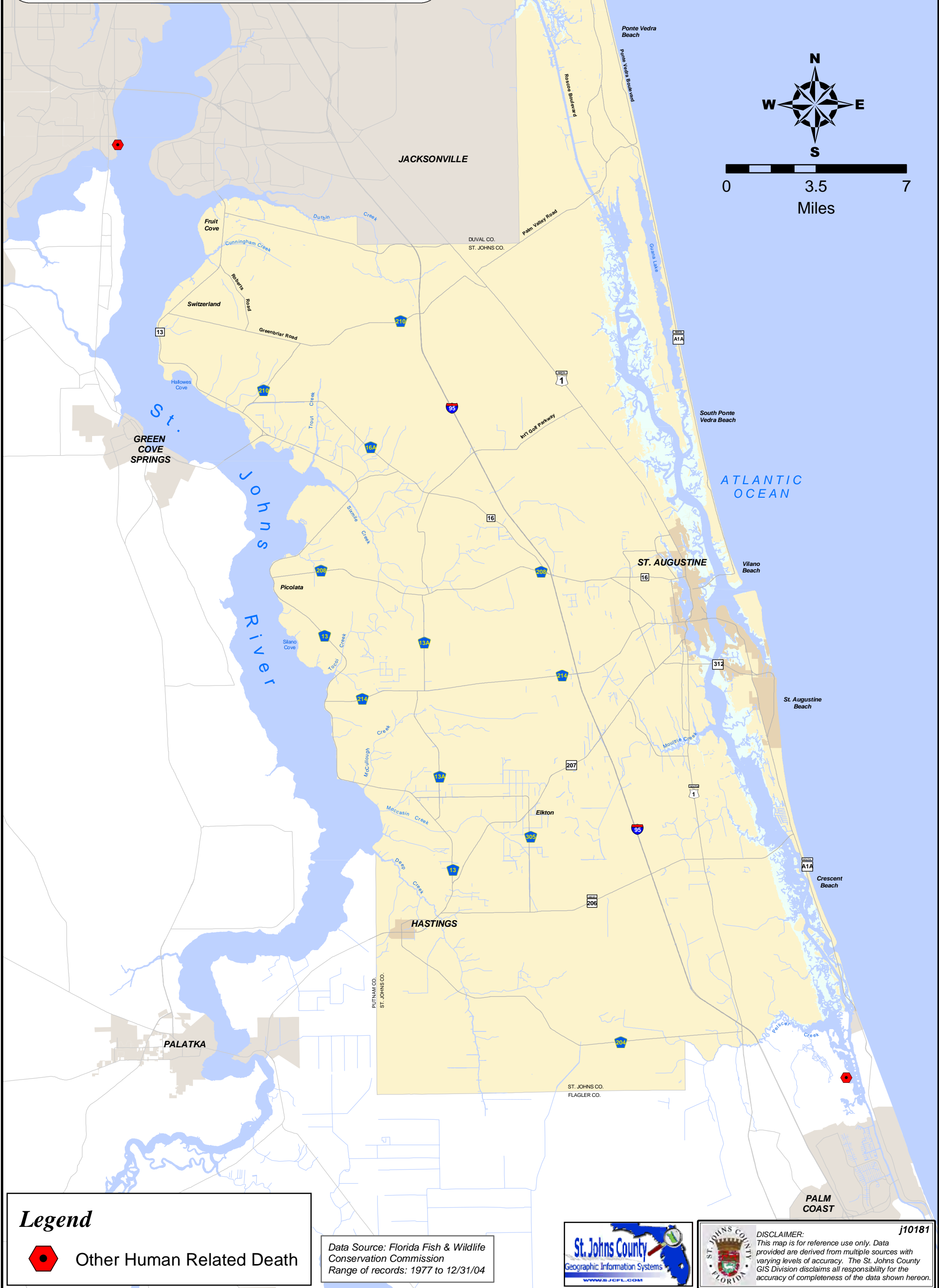
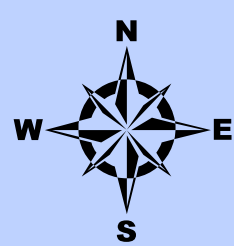
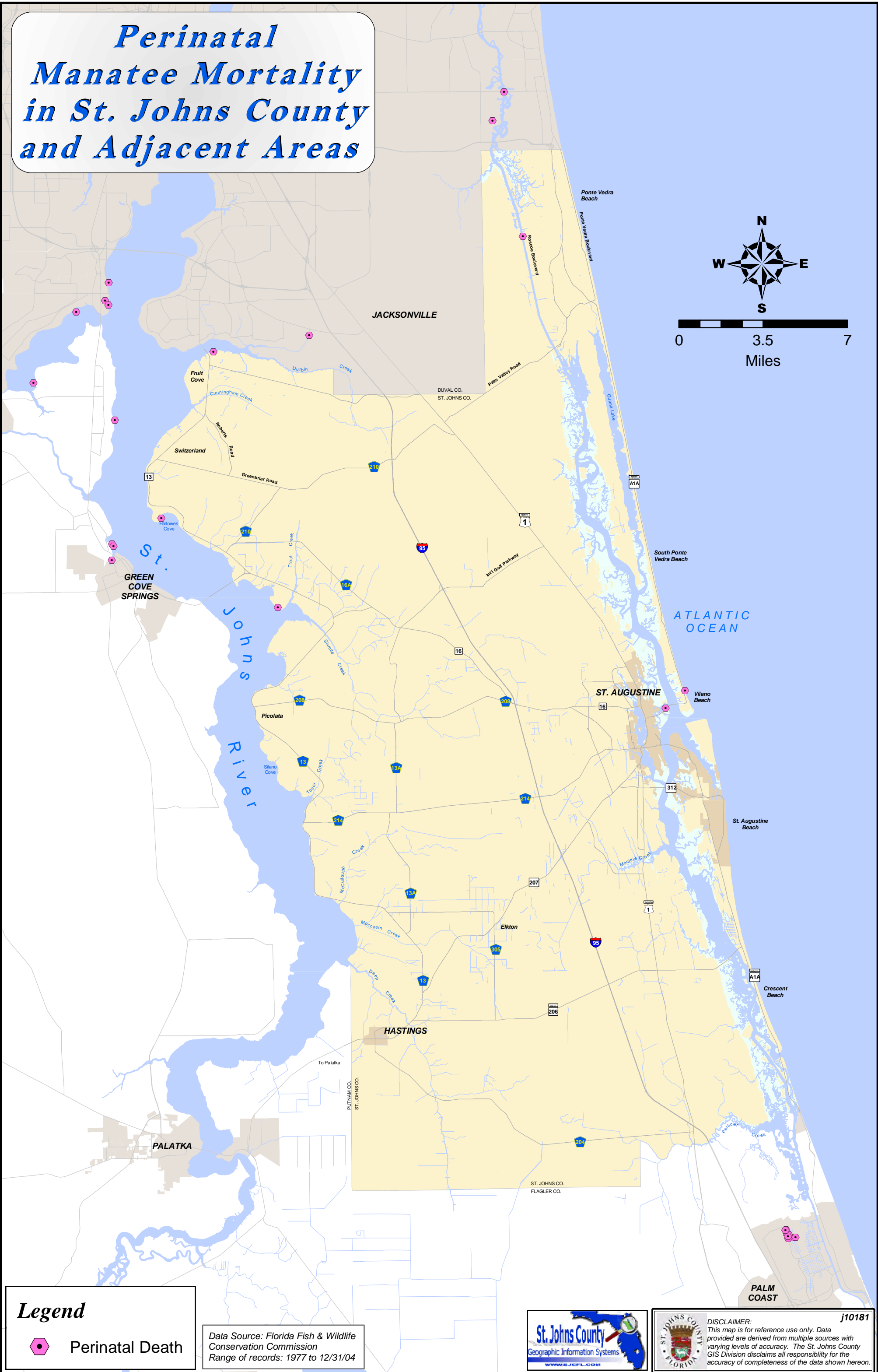


Figure 10

Perinatal Manatee Mortality in St. Johns County and Adjacent Areas



Legend

Perinatal Death

Data Source: Florida Fish & Wildlife Conservation Commission
 Range of records: 1977 to 12/31/04

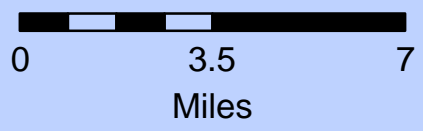
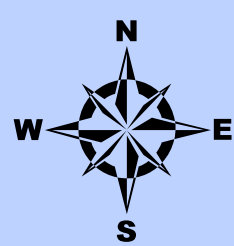
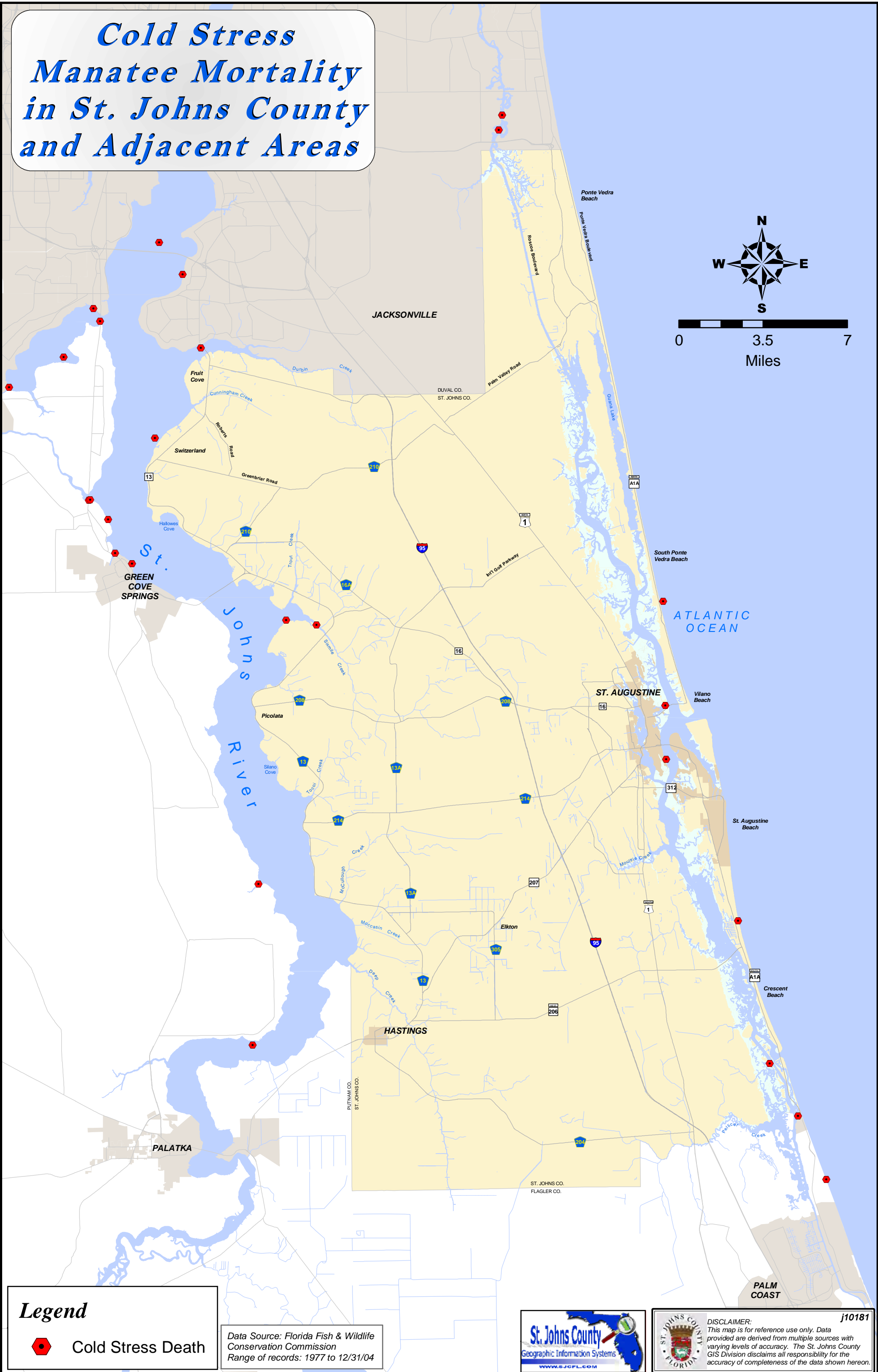


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Figure 11

Cold Stress Manatee Mortality in St. Johns County and Adjacent Areas



Legend

Cold Stress Death

Data Source: Florida Fish & Wildlife Conservation Commission
Range of records: 1977 to 12/31/04

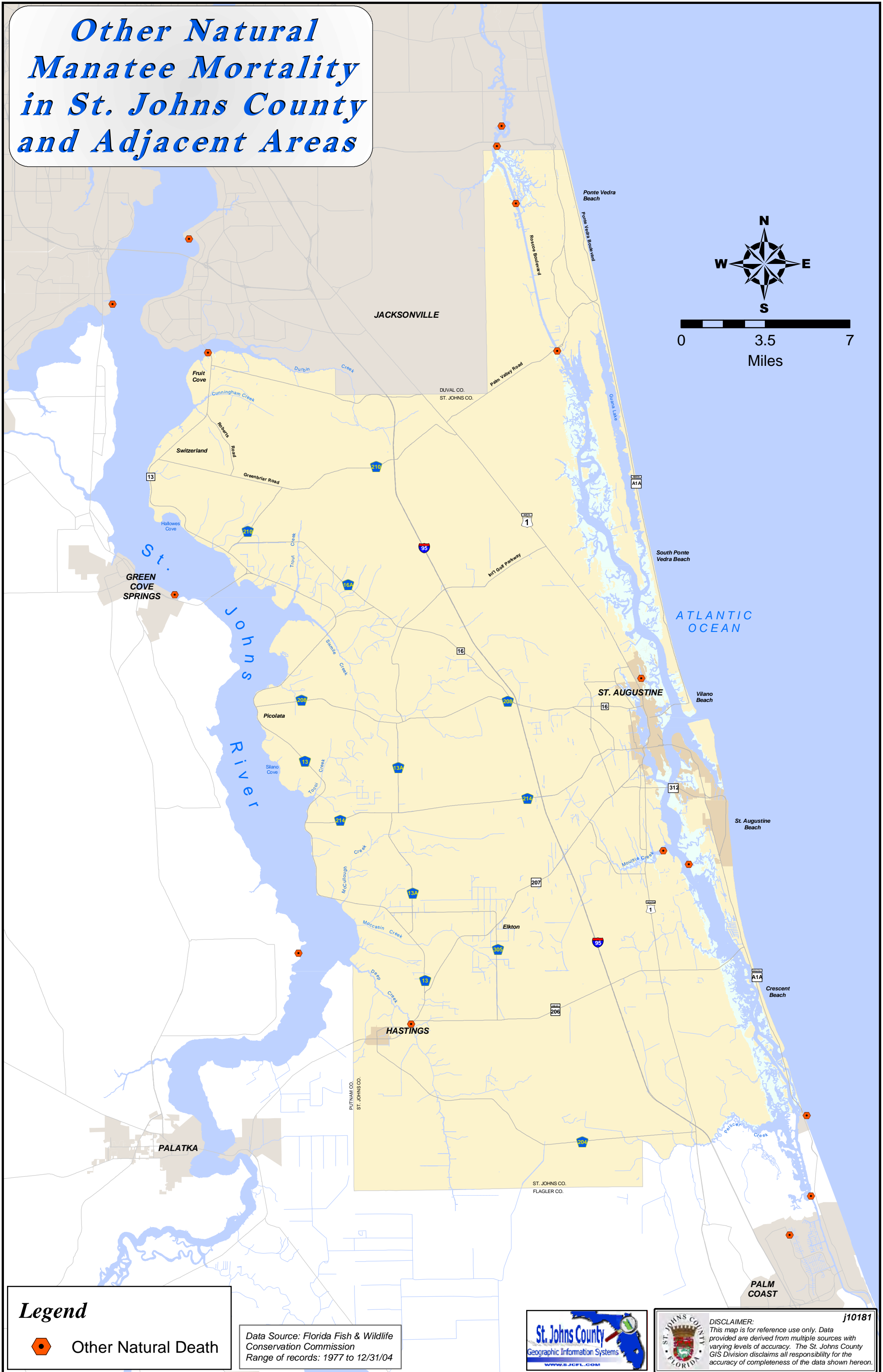


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Figure 12

Other Natural Manatee Mortality in St. Johns County and Adjacent Areas



Legend

 Other Natural Death

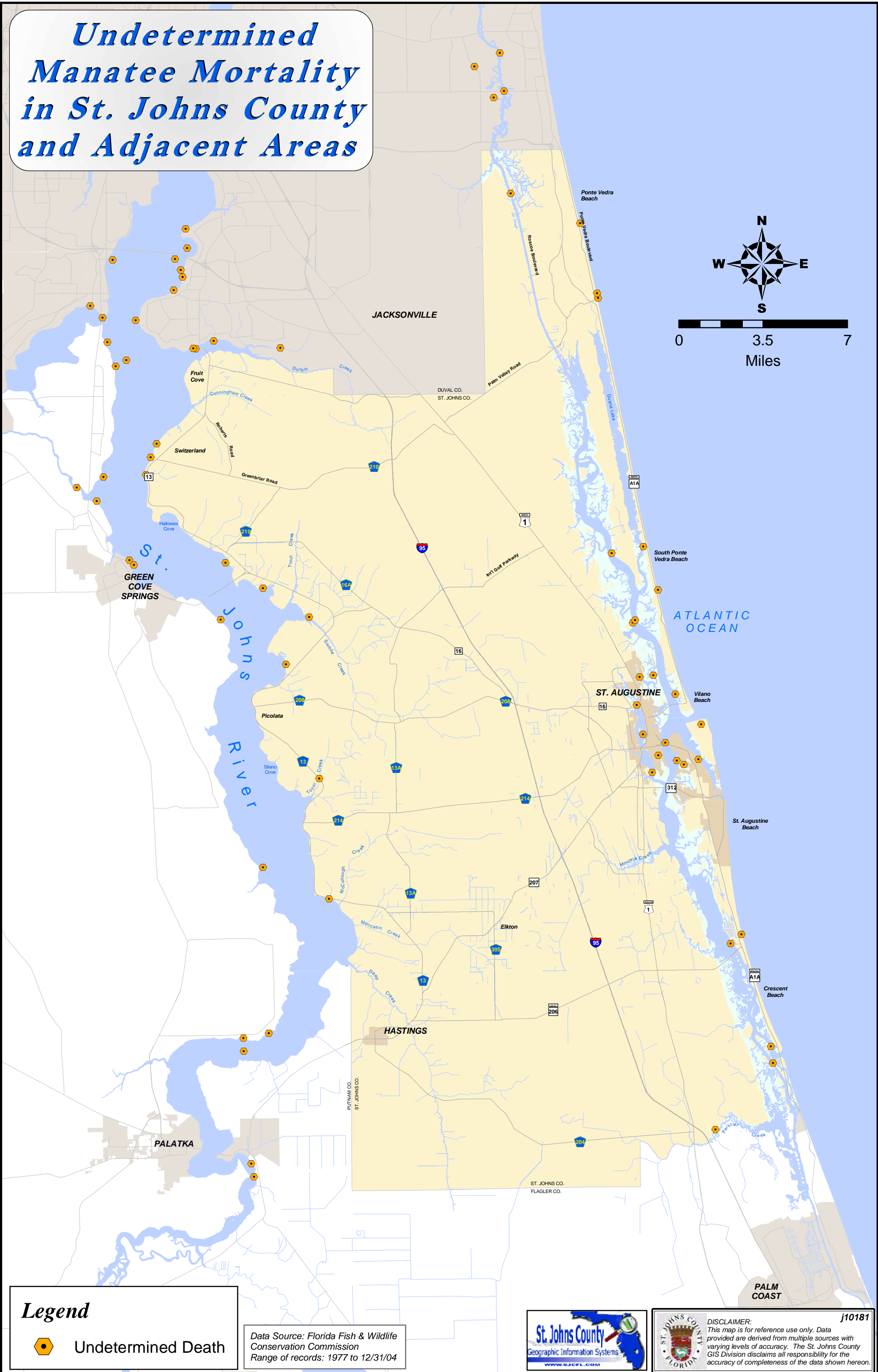
Data Source: Florida Fish & Wildlife Conservation Commission
Range of records: 1977 to 12/31/04



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Figure 13

Undetermined Manatee Mortality in St. Johns County and Adjacent Areas



Legend

 Undetermined Death

Data Source: Florida Fish & Wildlife Conservation Commission
Range of records: 1977 to 12/31/04



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Figure 14

As shown in Table 4, the number of annual manatee deaths in St. Johns County has varied from none (1979, 1980, 1986, 1987, 1991, 1992 and 1994) to eight (1999). Although state biologists attempt to determine the cause of every death, in many instances they are unable to do so, particularly if the carcass is in an advanced state of deterioration before it is recovered. A specific cause of death has not been determined in the majority (51%) of the manatee mortalities in St. Johns County. Approximately 30% of the cases where a cause of death has been determined have been firmly attributed to human-related causes (Figure 10). In other Florida counties, it is not uncommon for there to be situations in which manatees have died as a result of some human-related cause (e.g., getting caught in a crab trap line); but St Johns County is notable for having **no** human-related manatee deaths (except for watercraft-related mortalities) during the entire 30 years of records.

Perinatal mortality (the death of newborn and dependent calves) has accounted for 9 percent of the total manatee mortality, cold stress has caused 12% of the deaths, and 11% have died due to other natural causes. These mortalities occurred in equal numbers in the St. Johns River system and the Tolomato/Matanzas River systems. The extent to which creeks and other sheltered areas of these two water bodies provide pregnant and nursing mothers with refuge from boat traffic or the extent to which they are used for birthing is unknown.

2. Analysis of Manatee/Human Interaction

Manatees are present in St. Johns County waterways throughout the year. Although, manatee/human interactions are possible wherever manatees are present, the greatest potential sources of these interactions include:

- Watercraft
- Warm water discharges;
- Other congregating areas; and
- Introduced sources of water and food.

Watercraft

Recreational boating and commercial fishing are extremely important components of St. Johns County's culture and economy. The meandering St. Johns River and the coastal waterways including the Tolomato and Matanzas Rivers and their tributaries and the open Atlantic Ocean are all areas where manatees may be present. Simultaneously, portions of these waterways are heavily traveled by a variety of watercraft ranging in size from personal watercraft to ocean-going barges. Areas where boats are present in large numbers, such as in and around marinas and in navigational channels, increase the risk of harm to manatees.

In addition to these high use areas, there are a number of annual 'events' which attract varying numbers of boats and boaters. A list of notable on-the-water events and an estimate of the number of boats that participate in these events are identified in Table 5.

Table 5
Annual On-the-Water Events Held in the St. Johns County Area

Event	General time frame	Approx. Size
El Pescado Grande Tournament	Mid April	30 boats
Blue Water Tournament	Early May	150 boats
Jack Genung Memorial Fishing Tournament	Late May	25 boats
Ponce's Billfish Invitational	Early June	25 boats
Kingbuster Classic Tournament	Mid June	300 boats
A.C.G.F.A. Kingfish Challenge	July	250 boats
Greater Jacksonville Kingfish Tournament	July	400 boats
Blessing of the Fleet	Easter	100 boats
4 th of July Fireworks	July	30 boats
Regatta of Lights	Late December	30-50 boats

These events have the potential to draw large numbers of watercraft into relatively confined spaces for short periods. Watercraft-related manatee mortalities have occurred in the general time frames of some of these events, although the FWC data does not indicate that any watercraft-related mortality has occurred as a result of any of these events. Although powerboat races are not currently held in St. Johns County, they can pose a particularly serious threat to manatees. Consequently, whenever the U.S. Coast Guard permits one of these events, it must enter into a Section 7 Consultation with the FWS, as required under the Endangered Species Act, to ensure that adequate safeguards are implemented.

Because maintaining low levels of watercraft-related manatee mortality is a goal of this Plan, additional analysis is provided regarding the watercraft-related manatee deaths that have taken place in the St. Johns County Area. Since data have been systematically collected in 1974, 11 manatees have died from boat collisions in St. Johns County waterways and there have been seven additional deaths in waters immediately adjacent to St. Johns County in waters shared by St. Johns and a neighboring county.

Figure 8 showed the location of these watercraft-related manatee deaths in the St. Johns County area, and details regarding each of these instances were provided in Table 4.

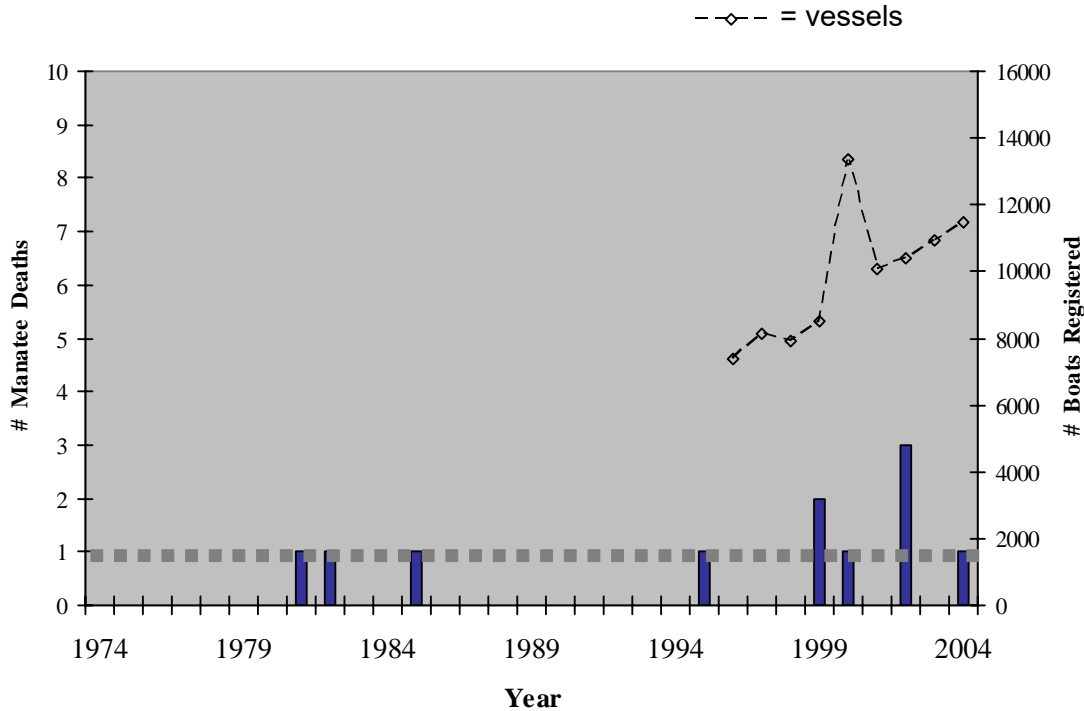
It must be recognized, however, that data points provided by FWC indicate the locations where manatee carcasses were recovered, not necessarily where the impacts actually occurred. Carcasses may be carried by water currents or pushed by wind, or an injured manatee may live for days and travel a considerable distance after it is injured and before it dies.

Five of the 11 watercraft-related manatee deaths in St. Johns County have occurred during the period from 2000-2004. During this period, however there has also been an increase in the number of vessels that are registered to residents of St. Johns County.

Figure 15 identifies the annual watercraft-related manatee deaths in relation to the increase in vessels registered in St. Johns County. (Because the number of watercraft registrations prior to 1995-96 could not be located, the data presented is only for the period from 1995-2005). In reviewing these data, however, one needs to be mindful that a variety of external factors also contribute to the number of boaters in St. Johns County. Although there is no easy way to

quantify the magnitude of their use, it is recognized that waterways in St. Johns County are also used by boaters whose vessels are not registered in the County. Some may be individuals who live in adjoining counties and have their boats registered in their home county. Others may be seasonal residents of St. Johns County who have their vessels registered in their 'home' state. Still others may be vacationers who use their vessels during visits to St. Johns County.

Figure 15. Watercraft-Related Manatee Deaths in St. Johns County and Registered Vessels



* The threshold to maintain a 'Medium Risk' Designation is one watercraft-related manatee mortality/year for the most recent 10 year period

Figure 16 shows watercraft-related manatee deaths in the St. Johns County area, including the portions of the St. Johns River in Putnam, Clay and Duval Counties adjacent to St. Johns County.

The manatee deaths in St. Johns County for the full period of record separated by cause of death are shown on Figure 17.

In 2001, the FWS assessed regional manatee populations, manatee ecology, and historic watercraft-related manatee losses throughout Florida, and delineated areas of relative mortality risk for manatees (FWS, 2001). High-risk areas were defined as those averaging one or more watercraft-related manatee mortalities per year during the past ten years. Medium risk areas averaged less than one, but more than zero, watercraft mortalities per year and low risk areas had no documented watercraft-related mortality. Based on these FWS criteria, St. Johns County has been a 'medium risk' area ever since the first watercraft-related mortality occurred in 1981. Watercraft-related manatee mortality has increased in recent years, however, and for the ten-year period from 1995-2004, the annual mortality rate is 0.8 deaths per year.

Warm-water Discharges

The potential for manatee/human interaction is relatively high in areas where manatees tend to congregate. Because manatees become physically stressed when water temperatures decrease below the mid-70s, they have been documented to have annual movements that increase their likelihood of surviving winters. For the most part, members of the Atlantic sub-population move southward, some traveling as far south as Miami-Dade County where they spend the winter. Members of the St. Johns River sub-population generally congregate near naturally occurring springs (e.g., Blue Springs State Park) where water temperatures are acceptable. Members of both of these sub-populations, however, may be attracted to locations where power plants or other industrial facilities create warm-water discharges as a by-product of their operation. For this reason, there is a high level of interest and manatee-related monitoring that takes place in the vicinity of these facilities.

Five industrial sites in **Duval County** (three power plants and two paper mills) have been documented to attract manatees during colder times of the year. These sites are:

- St. Johns River Power Park
- Southside Power Plant
- J.D. Kennedy Generating Station
- Seminole Kraft plant
- Jefferson-Smurfit Containerboard Corporation

None of these sites are in close proximity to the Duval/St. Johns County line and because there are no power plants or other industrial facilities that discharge warm water into waterways in St. Johns County, there are no known warm-water manatee attractants within the County.

Figure 16. Watercraft-related Manatee Deaths in St. Johns County Area
(Includes the western portions of the St. Johns River and Julington Creek north of County line)

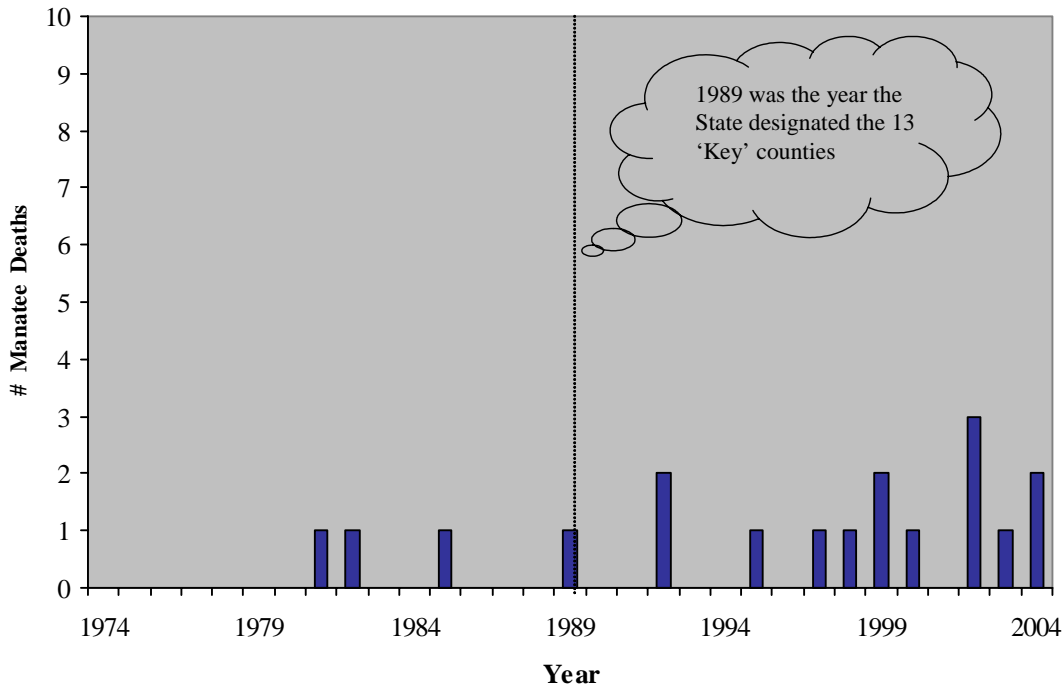
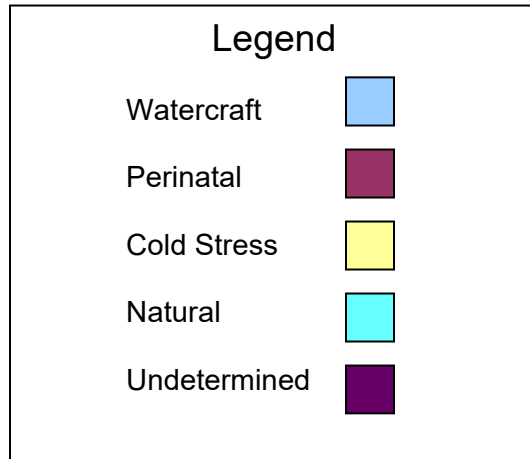
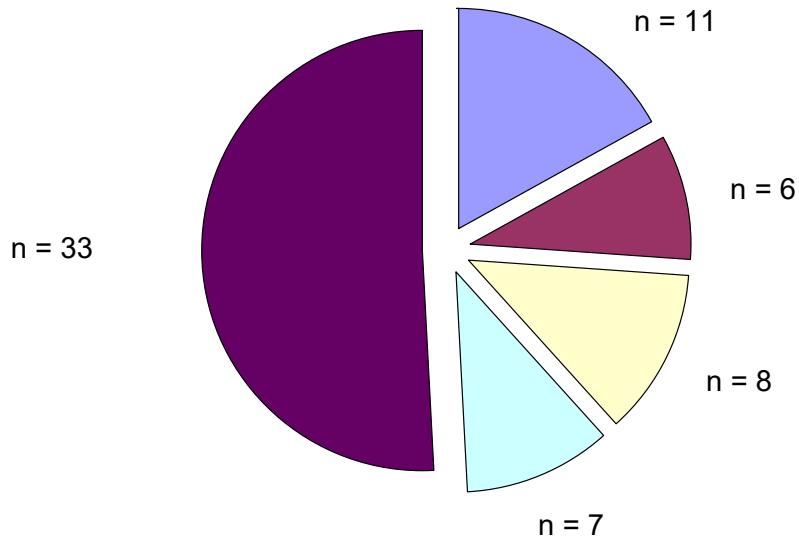


Figure 17
Manatee Mortality in St. Johns County
04/03/74 through 12/31/2004
Diagrams by Cause of Death



Other Congregating Areas

In addition to power plants, however, manatees are also known to congregate in areas where site-specific conditions may thermally stratify the water column during sudden cold weather events. This stratification typically occurs in deeper areas where fresh and salt waters mix, such as at the mouth of canals. Aerial surveys, which are conducted during the coldest times of every year, have not suggested that there are any such sites in St. Johns County, although little time is spent in St. Johns County conducting these surveys due to the absence of primary warm-water attractants.

Although manatees freely exist in freshwater, estuarine and/or marine areas, there is evidence that manatees in saline waterways will occasionally move to sources of fresh water. On a small scale, manatees have been observed to drink fresh water from hoses at fish-cleaning stations. On a larger scale, manatees may enter creeks or canals where they move upstream toward less-saline waters. There are a number of watercourses in St. Johns County that may provide sources of fresh water. These include Pablo Creek, Deep Creek, Capo Creek, Guana River, Sebastian River, Moultrie Creek and Pellicer Creek.

The extent to which people currently provide food and/or water to manatees in St. Johns County is not known.

3. Manatee Protection Areas, Refuges, Sanctuaries and Speed Zones

Both the federal government and the State of Florida have exercised their authority to designate specific areas in St. Johns County where they believe manatees are to be protected. Pursuant to their authority under 50 CFR Part 17, the FWS has promulgated and enacted a federal law establishing the 'Lower St. Johns River Manatee Protection Area'. Within the Manatee Protected Area (MPA) category, FWS has two classifications: sanctuaries and refuges. As defined by the U.S. Fish and Wildlife Service, a manatee "sanctuary" is an area where "all waterborne activities are prohibited". In some instances, these areas are also referred to as "motorboat prohibited zones". Often these are areas where manatees congregate, such as warm water discharges from power plants. A manatee "refuge" is an area where some "waterborne activities" may be allowed, subject to site-specific restrictions as are necessary to protect manatees. The single federally designated MPA in St. Johns County is the Lower St. Johns River Manatee Refuge. In April 2005, FWS amended this rule, and the final rule and map showing the boundaries of this Refuge are included in Appendix C. The majority of this Refuge, which extends in narrow bands along the eastern and western shorelines of the St. Johns River, is in Duval County, but it extends into St. Johns County in the Julington Creek Area. Within this area, vessels are to be operated at slow speed, which is defined by FWS as:

"Slow" speed is defined as the speed at which the watercraft proceeds fully off plane and is completely settled in the water. Since watercraft of different sizes and configurations may travel at different speeds, a specific speed is not assigned. However, a watercraft is NOT proceeding at slow speed if it is - 1) on plane, (2) in the process of coming up on or coming off of plane, or (3) is creating an excessive wake. A watercraft IS proceeding at slow speed if it is fully off plane and completely settled in the water, not plowing or creating an excessive wake. Exceptions to slow speed restrictions are contained in 50 CFR 17.105 and include activities "...reasonably necessary to prevent the loss of life or property due to weather conditions or other reasonably unforeseen circumstances or to render necessary assistance to persons or property."

At the State level, the Florida Manatee Sanctuary Act (Chapter 370.12(2) (b), Florida Statutes) declares Florida as a refuge and sanctuary for the manatee. In addition to this general declaration, the state has the authority to designate specific areas as refuges and sanctuaries. Criteria used to consider such designations include the extent to which a candidate site provides significant habitat for foraging, refuge during winter cold periods, seclusion for calving, nursing, mating and resting, and/or safe travel corridors to or from these areas.

FWC and FWS occasionally consider designating new sites in Florida that have been suggested as potential new sanctuaries or refuges. Sites that may be added typically include locations that serve as “secondary” or temporary thermal refuges, including locations where bathymetric conditions (i.e., deep-water areas) keep water temperatures slightly warmer than shallow exposed areas during cold periods. These areas may include dredged marina basins, canals and spillway structures. No information has been found which suggests that the state or federal government is considering designating any new areas within St. Johns County as a sanctuary, refuge or Manatee Protection Area.

Vessel Speed restriction categories that are presently in effect in Florida, include:

- No Entry Zone (year round);
- Motorboats Prohibited (November 15 through March 31)/Idle Speed (remainder of the year);
- Idle Speed (year-round);
- Slow Speed (year-round);
- Slow Speed (November 15 through March 31)/Maximum 30 mph Speed Zone (remainder of year);
- Slow Speed Zone (November 15 through April 15);
- Maximum 25 mph Speed Zone (year-round); and
- Maximum 30 mph Speed Zone (year-round).

One State-adopted vessel speed restriction zone has been designated in St. Johns County. A detailed description of this zone, which is in the Julington Creek area, is contained in Chapter 68C-22.027 F.A.C. (Appendix C), and is shown graphically on Figure 18. Within this single zone, there are four different types of restrictions:

- 300' Slow Speed Shoreline Buffer
- Slow Speed Within 450' of the S.R. 13 Bridge
- Slow Speed Shore-to-Shore
- Variable Width Slow Speed Buffer

It should be noted that although the boundaries of the state and federal zones in the Julington Creek area are similar, a major distinction is that the state zone extends out from shore a distance of 300' and the federal slow speed zone in the same area extends 1000' from shore. This inconsistency apparently causes some on-going confusion for boat operators and presents challenges for enforcement personnel.

Although they have been established for the purpose of increasing boater safety and not to protect manatees, six 'Boating Restricted Areas' have been designated in St. Johns County waters. Descriptions of these areas, which are primarily in the vicinity of bridges, are found in Chapter 68D-24.155 FAC, and are included in Appendix D.

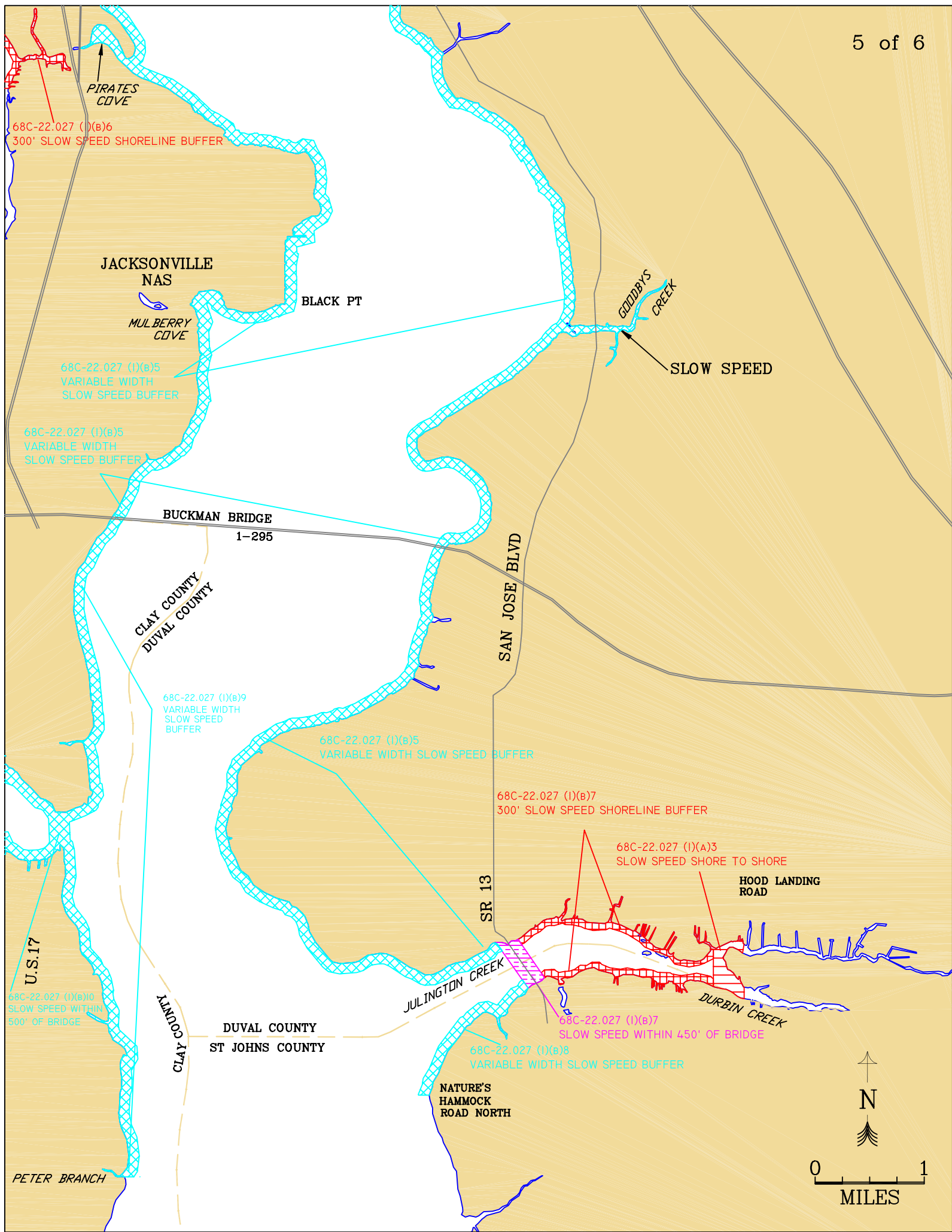


Figure 18. State Vessel Speed Restriction Zone at Julington Creek

Although these zones were not selected based on the need to protect manatees, they may be having a positive effect by reducing the likelihood of manatee injury or mortality.

4. Law Enforcement Activities

Six local, state and federal law enforcement entities have the authority to provide enforcement personnel for water-related regulations in St. Johns County:

- FWC Division of Law Enforcement (formerly Florida Marine Patrol)
- St. Johns County Sheriff's Office
- City of St. Augustine Police Department
- US Coast Guard
- U.S. Fish and Wildlife Service

The FWC Division of Law Enforcement

The FWC Division of Law Enforcement is the state agency responsible for enforcing state wildlife-related laws, including those that deal with manatee protection. FWC responsibilities for waterway issues in St. Johns County are separated into two regions: a) the eastern portion of the County, and b) the St. Johns River. The Intracoastal Waterway, the Tolomato and Matanzas Rivers, the inlets and the nearshore waters of the Atlantic Ocean (up to three miles from shore) are the responsibility of a five-person Jacksonville-based enforcement staff. These individuals are also responsible for enforcing game laws, and the amount of time spent on the water varies based on the time of year. During the most active 'boating season' of April-September, a greater proportion of their time is spent on the water. During the hunting season of October-January, a higher percentage of their time is spent on land-side patrols.

FWC's 'River Crew' consists of six officers who patrol a stretch of the St. Johns River from the Buckman Bridge to Lake George, which includes the entire portion of the river in St. Johns County. One of their vessels is kept at Pacetti's Fish Camp, (in the Trout Creek area on the East side of the St. Johns River) which helps in maintaining a consistent visible law enforcement presence in the area. Ensuring compliance with the vessel speed restriction zone in Julington Creek is a priority for FWC's river crew, and they routinely write warnings and citations due to non-compliance with the applicable regulations. FWC officers are 'deputized' to also enforce the federally designated zones.

Officers from these units also respond to calls from the public regarding injured and deceased manatees in their respective area of geographic responsibility.

St. Johns County Sheriff's Office

In the past, the St. Johns County Sheriff's Office (SJCSO) has had a very limited presence of on-the-water personnel. The Marine Unit presently consists of two officers who are used on a part-time basis to patrol waters that are within County jurisdiction. Three vessels, two 29' patrol vessels and one vessel that is specifically outfitted for rescues, are available for their use. The Sheriff's Office has requested additional staffing for 2005-06 and they are optimistic that at least one full-time officer will be added to the marine unit staff (Major West, pers. comm.). Their time on the water is split between the County's eastern waterways and the St. Johns River, but proportionally more time is spent on the busier easterly waterways.

The City of St. Augustine Police Department

The City of St. Augustine Police Department has the authority to enforce waterway regulations within City limits (which include manatee habitat areas), and they presently have ten officers who are part of their 'marine unit'. Although they mainly respond to waterway incidents, they collectively spend 10-15 hours per week on patrol in City waterways. The Police Department would be the first responders to calls regarding manatee injuries within City waters, but would call FWC personnel for assistance in manatee-related issues.

The U.S. Coast Guard

The U.S. Coast Guard (USCG) is responsible for enforcing federal laws on the St. Johns River, the Intracoastal Waterway, and the Atlantic Ocean along the eastern seaboard of the United States. USCG maintains an office and boats at their facility at Mayport near Jacksonville, from which they are responsible for approximately 240 miles of coastline, 300 miles of Atlantic Intracoastal Waterway and 160 miles of the St. Johns River. Their staff is primarily dedicated to 'Search and Rescue' missions, but they may be first responders to incidents regarding manatees. They coordinate with FWC on manatee issues, and would transfer responsibility of manatee issues to FWC upon FWC's arrival.

The U.S. Fish and Wildlife Service

The USFWS has designated a statewide 'Manatee Agent' who oversees all federal enforcement issues that involve manatees. This agent is based in Gainesville and the FWS presence on-the-water in St. Johns County is minimal.

Collectively, the six different local, state and federal agencies identified above provide law enforcement presence on St. Johns County waterways. Manpower resources vary considerably from agency to agency, and the majority of enforcement effort is focused on the waterways that are used most heavily by boaters, primarily the AICW, including the Matanzas River, the Tolomato River and their tributaries. The FWC takes the lead with regard to manatee protection issues, and although the other agencies may be 'first responders' to reports of injured, stranded and/or deceased manatees, FWC assumes responsibility upon their arrival.

C. Local Land Development

Development of land in St. Johns County is regulated through various federal, state, county and municipal laws, rules, codes and ordinances. This section identifies the elements of the St. Johns County Comprehensive Plan (Comp Plan) and Land Development Regulations (LDRs) that affect the protection of manatees and/or their habitat in St. Johns County.

1. Development Standards

Activities that affect the shoreline, submerged lands, and open-water manatee habitat have the potential to negatively impact manatees. Dredge/fill and shoreline stabilization activities may directly or indirectly affect the abundance, distribution, quantity and quality of food resources available for manatees and may lead to an overall degradation of habitat. Alteration of the shoreline and adjacent upland areas often destroys or reduces the natural function of wetlands and adjacent buffer areas. Replacement of mangroves and herbaceous shoreline vegetation

with vertical bulkheads, shoreline armoring and/or piers, docks and marina facilities may negatively affect a variety of natural coastal processes and may result in the loss of submerged or emergent aquatic vegetation that provide foraging habitat for manatees.

Several federal, state and/or local regulatory permitting programs currently provide protection for these sensitive natural resources. For example, property owners must obtain approvals from the U.S. Army Corps of Engineers (ACOE) for projects within “Waters of the United States”, which include all areas of manatee habitat in St. Johns County. Additionally, the State of Florida requires that approvals be obtained from FDEP or SJRWMD for projects that affect “Waters of the State”, which includes all areas of manatee habitat in St. Johns County. Additionally, for areas that are within state-designated boundaries of Aquatic Preserves, there is an additional level of protection that often requires approval from the Governor and Cabinet prior to conducting dredge/fill projects.

2. Comprehensive Plan

As part of the development of this MPP, the existing St. Johns County Comprehensive Plan has been reviewed in order to determine the extent to which existing Goals, Objectives and Policies either are consistent with (or are potentially in conflict with) manatee protection.

This analysis revealed that, in general, although the goals, objectives and policies were not developed specifically with protection of manatees in mind, nearly every Element includes items that benefit manatees either directly or indirectly. Specific pages of the Comprehensive Plan in which items are described that would have some effect on manatee or manatee protection are included in Appendix E, with pertinent line items highlighted. As an example, statements regarding the County’s desire to acquire conservation lands and/or improve the quality of surface waters can be found in Section D (Sanitary Sewer Sub-element), Section E (Conservation/Coastal Management Element), Section F (Recreation and Open Space), and Section G (Intergovernmental Coordination Element). Improving water quality within manatee habitat areas will have a positive effect on manatees.

Upon acceptance of the Manatee Protection Plan, the County is expected to amend their *Land Development Regulations* to specifically adopt provisions that would increase protection of manatees.

D. Education and Awareness

Educational information on manatees is available from a variety of public and private sources. Existing sources of information, materials and public awareness programs are presented in this section.

1. Florida Department of Environmental Protection

The FDEP is one of two state agencies primarily responsible for dissemination of environmental information. Within FDEP, the state park system provides a variety of materials describing the state’s flora and fauna. Three state parks are located in St. Johns County: Anastasia State Park, Faver-Dykes State Park, and Fort Mose Historic State Park. Manatee sightings are not uncommon at/near Anastasia and Faver-Dykes State Parks, and park management plans include information about manatees. Information about these parks is available at <http://www.floridastateparks.org/FindaParkRegion.cfm?Dist=Central>.

Additionally, in coordination with the state's five Water Management Districts, FDEP administers the Environmental Resources Permitting Program. This program incorporates site-specific environmental resource information, including manatee data, into its permitting decisions regarding activities potentially affecting Waters of the State.

Prior to a major reorganization of state agencies in July 1999, the majority of regulatory and public awareness activities regarding manatees in Florida were conducted by FDEP. However, the reorganization involved the transfer of most manatee-related activities to FWC, as described in the following sub-section.

2. Florida Fish and Wildlife Conservation Commission

Upon reorganization of the State of Florida's environmental agencies in 1999, activities concerning manatees were transferred to FWC. The primary FWC agencies involved with manatees are the Florida Wildlife Research Institute (FWRI) and the Imperiled Species Management Section of the Division of Habitat and Species Conservation. Although scientific information (e.g., mortality statistics) is compiled by FWRI, the majority of FWC's educational materials are made available through the Tallahassee-based Imperiled Species Management Section. These materials include a variety of posters, brochures, booklets and videos, many of which are identified on Table 6.

3. St. Johns County School System

Educational information concerning manatees is available to varying degrees at all levels in the St. Johns County School System. Although there is no established curriculum specifically focusing on manatees, some individual teachers have chosen to include manatee information in their biology or environmental science classes.

Several schools have established partnerships with the environmental education program of the St. Johns River Water Management District. The District provides classes for children through the Camp Wet (Water, Education and Training) program, and is also involved with training for St. Johns County teachers. There are on-going programs, through a Service Learning Grant, at three middle schools in St. Johns County. Although none of these programs are 'species specific' the underlying message is that projects that prevent degradation (or improve) surface waters benefit all marine life, including manatees.

Similarly, at the high school level, there are presently no 'units' within the existing curriculum that specifically focus on manatees. The closest thing to an organized manatee-specific program appears to be the result of the direct enthusiasm of high school marine science teacher Jenny Fagan. Ms. Fagan is also the leader of the SCUBA Club and, after introducing manatee biology to club members through the use of video tapes, she conducts an annual dive trip to Crystal River, where club members can SCUBA dive with manatees.

Table 6**Partial List of Manatee Information Available from FWC**

Videos	A Standing Snag
	Exploring Florida: Tracking Manatee
	General Rescue Guidance for Small Manatees
	Manatee Awareness, Airship Science Flight, and Animal Rescue Feature
	Manatee Messages: What You Can Do!
	Manatees: Preserving the Legacy
	Nickelodeon Wildside (with Manatee Segment)
	Roll on Manatee
	Silent Sirens
	The Best of Manatees
	What in the World is a Manatee?
	Posters
Mini-Poster: The Florida Manatee	
Miss Her Now, Miss Her Forever	
Sirenians of the World	
Brochures	Manatee Decal Collection
	Miss Her Now, Miss Her Forever
	The West Indian Manatee in Florida
	Tips for Protecting Manatees in Florida
	Where are the Manatees?
Fact Sheets	Manatees: Florida's Gentle Giants
	Attention: Swimmers, Boaters and Divers
	Commonly asked Questions about Manatees
	Manatee Antillano Fact sheet
	Manatee Fact Sheet
	Manatee License Plate Fact Sheet
	Marine Mammal Regulations
	Mind Your Waterway Signs
	Save the Manatee Trust Fund
Coloring/Activity Books	Travel Activity Sheet
Educational Guides	The Manatee, Florida's Endangered Marine Mammal: Student Activity Workbook for Middle and High School Students
	Ecoventures – Learning in Florida's Environment
	Manatees: A Guide for Boating, Diving & Snorkeling
	Manatees: An Educator's Guide
	Information on the Advisory Committee on Environmental Education (ACEE)
	Propeller Guard Issues
	Recommendations to Improve Boating Safety & Manatee Protection for Florida's Waterways
	Why Manatees Are Important: A Scientist's Perspective
Newsletter	Manatee News Quarterly

4. Florida Sea Grant

The Florida Sea Grant program, which was established as a component of the Florida Cooperative Extension Service in 1972, is a statewide, non-regulatory governmental entity that was designed to promote the wise use of marine and estuarine resources in coastal counties. Marine extension agents, along with extension specialists and campus coordinators in 30 colleges around the state, work to establish research and educational programs in areas of concern to coastal residents. Offices are located in some individual counties, and are occasionally responsible for multiple counties. The NE Florida Sea Grant program is based at the St. Johns County Agricultural Center and serves Nassau, Duval, St. Johns and Flagler counties.

The program works closely with commercial and recreational fishing groups, marinas, environmentally concerned groups, 4-H and other youth programs, local school teachers and marine researchers. Presently NE Florida Sea Grant personnel work with staff from the GTMNERR and other regional groups to promote the public's understanding and stewardship of coastal resources. In addition to participating in summer camps for children, specific programs that the NE Florida Sea Grant office administers that are related to protection of manatees and their habitat include:

1) *A Marine Debris Reduction Program.* Sea Grant worked to develop and implement a monofilament fishing line recycling program in northeast Florida. Discarded monofilament, which can cause environmental hazards for fish, turtles, birds and manatees, is collected at approximately 20 collections/recycling stations in St. Johns County. The recycling containers are maintained by volunteers and the line is collected routinely from these stations for recycling. Additional information about the program is available at: www.fishinglinerecycling.org.

2) *The Clean Marina Program.* Florida Sea Grant is a local partner in this program administered by FDEP through which marinas are encouraged to adopt environmentally sound best management practices. Participating marinas and boatyards receive incentives and may be eligible for discounted tax and/or insurance rates. Information about the Clean Marina program can be found at www.dep.state.fl.us/law/Grants/CMP/default.htm.

3) *Environmental Education.* The Sea Grant agent is available to hold workshops or participate in educational workshops for teachers and youth leaders. 4-H marine science summer camps for different age groups are held in several counties. Teacher workshops range from 2 hours to 3 days and topic areas include estuaries, coral reefs, field studies and aquaculture. The Sea Grant agent also helps develop study materials for the 4-H Marine Ecology Judging Event.

4) *Environmentally Responsible Boating.* With funding assistance provided by the St. Augustine Port, Waterway & Beach District, the NE Florida Sea Grant staff has recently coordinated the development and printing of a boater's guide entitled "Navigational, Historical, and Environmental Perspective of St. Augustine Waterways". The boater's guide (Appendix F) provides information specifically for boat operators to promote their stewardship of coastal resources, and includes general and site-specific information regarding manatees.

Additional information about the NE Florida Sea Grant program is available at <http://stjohns.ifas.ufl.edu/sea/seagrant.htm>

5. Local Electrical Utilities

The Jacksonville Electric Authority (JEA) and Florida Power and Light Company (FPL), the state's largest electric utility, are partners in the St. Johns River Power Park, an electricity generating facility located on Pelotes Island north of the St. Johns River in Jacksonville Florida. (FPL is the provider of electricity to St. Johns County residents and businesses, but there are no power generating plants in the County). A by-product of the generation of electricity is thermally enhanced water, and the warm-water discharges from several power plants, including the St. Johns River Power Park facility, have been documented to attract manatees, particularly during the colder months when ambient water temperatures would otherwise be in the 70's or less. Due to this interaction, the utilities have become involved in a variety of manatee-related research and public awareness programs. They routinely provide funding for aerial manatee surveys, produce and distribute manatee educational materials and support research projects. In 1989, FPL produced an informative educational booklet entitled "The West Indian Manatee in Florida". This publication is available through FPL's Environmental Services Department, P.O. Box 14000, Juno Beach, Florida 33408. Manatee related information is also provided on these utilities websites.

6. Save the Manatee Club

The Save the Manatee Club (SMC) is a non-profit organization based in Maitland, Florida, and is the single largest organization in the United States dedicated solely to the protection of manatees. SMC has developed a variety of public educational materials, and provides a variety of information on its website. Materials available through SMC include:

- Manatees – An Educator's Guide (5th Edition);
- Manatees: A Coloring and Activity Book;
- Adopt-a Manatee Program;
- Manatee Messages: What You Can Do (video);
- The Best of Manatees (video);
- The Manatee (book);
- Manatees and Dugongs (book);
- Sam the Sea Cow (book for young readers);
- J. Rooker Manatee (book for youths age 3-12); and
- Mary Manatee: A Tale of Sea Cows.

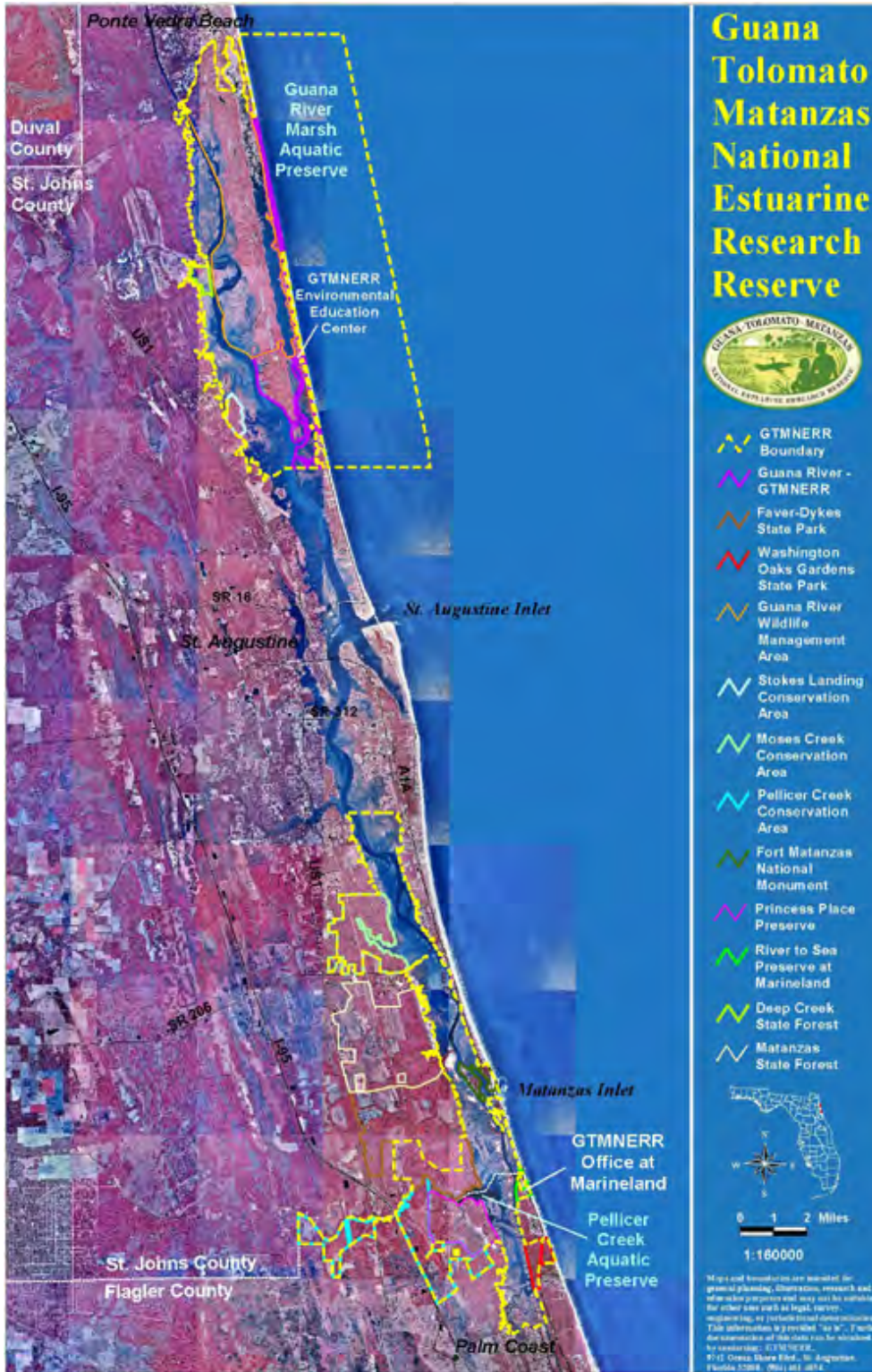
SMC also offers speakers for community and organization presentations and display booths for community events.

7. Other Local Conservation Organizations and Educational Initiatives

Guana-Tolomato-Matanzas National Estuarine Research Reserve

The GTMNERR is one of three National Estuarine Research Reserves in Florida, and is the only one on Florida's east coast. It is managed as a unit under FDEP's Coastal and Aquatic Managed Areas (CAMA) program. Encompassing a total of approximately 55,000 acres of uplands, wetlands, tidal marsh and open-water areas, the GTMNERR is separated into a northerly Guana Marsh Tract and a southerly tract (Figure 19). Established in 1999, the GTMNERR contains lands that had previously been state-owned, including the Guana River

Figure 19 - Boundary of the National Estuarine Research Reserve



State Park and Guana Wildlife Management Area. In addition to a variety of research and monitoring projects being conducted by staff, the GTMNERR also serves as a field laboratory where visiting scientists can conduct research on local flora, fauna, water quality and meteorological conditions. Current projects involve the development of a System Wide Monitoring Plan, and research on juvenile fishes, beach mice, sea turtles and glass eels. In September 2005, the GTMNERR plans to have the grand opening of their new education center, which will be located on the northerly tract, on the west side of SR A1A approximately 8 miles north of the Vilano Beach Bridge. Once open, the education center will be the venue for environmental education classes, lectures and other community presentations. Presently there is no research or monitoring being conducted by/at the GTMNERR regarding manatees, and there are no plans to add manatees as a species for research in the future.

St. Augustine Port, Waterway & Beach District

The St. Augustine Port, Waterway and Beach District is a local taxing district that is responsible for ensuring the navigability of waterways within its boundaries. The District uses taxes collected from local residents to perform projects including beach nourishment, construction and maintenance of boat ramps and removal of abandoned and derelict vessels. The District is not presently involved in any manatee-related education or awareness activities.

Safe Boating Courses

Although safe boating courses are available in many large cities through the United States Coast Guard Auxiliary and United States Power Squadrons, no such programs appear to be presently available in St. Johns County. The nearest opportunities for St. Johns County residents are in Jacksonville and Daytona Beach.

8. Other Regional, State and Federal Organizations

Information concerning manatees is also available from a variety of other sources. Some of these entities have interactive and static exhibits and/or educational programs that could be incorporated into curricula used by environmental educators in St. Johns County.

United States Fish and Wildlife Service (FWS)

The FWS, which is the primary federal agency involved in the conservation of the nation's wildlife, operates the National Wildlife Refuge System. The nearest National Wildlife Refuge to St. Johns County that also provides habitat for manatees is Lake Woodruff National Wildlife Refuge which is located near the community of Deleon Springs in Volusia County. Information about Lake Woodruff is available at <http://lakewoodruff.fws.gov> or 386-985-4673.

Additionally, FWS is responsible for enforcing the Endangered Species Act and the Marine Mammal Protection Act. FWS issues concerning manatee protection, such as the Recovery Plan, are administered at the FWS office in Jacksonville, Florida, <http://www.fws.gov/southeast/es/> or (904)-232-2580. Manatee protection issues associated with the review and issuance of permits for federal dredge/fill projects in St. Johns County are also the responsibility of USFWS staff in Jacksonville.

U.S. Geological Survey (USGS)

The USGS Sirenia Project is based in Gainesville Florida and conducts field research on manatees, including conducting the monitoring of manatees that are fitted with transmitters. Information regarding the Sirenia Project is available at http://cars.er.usgs.gov/Manatees/Manatee_Sirenia_Project/manatee_sirenia_project.html or (352)-372-2571.

U.S. Army Corps of Engineers (ACOE)

The ACOE is the federal agency responsible for reviewing and issuing permits for projects in the nation's rivers, lakes, harbors, navigation channels and wetlands. Although their primary responsibility with regard to manatee protection is permitting, information about manatees is available through the ACOE's Public Affairs Office, P.O. Box 4970, Jacksonville, Florida 32232, at <http://www.saj.usace.army.mil/> or (904)-232-1650.

St. Johns River Water Management District (SJRWMD)

SJRWMD is one of five water management districts in Florida. Together with the FDEP, the water management districts share in the responsibility for reviewing and issuing state permits for projects in waters and wetlands of the state. SJRWMD maps seagrasses in the Indian River Lagoon and owns and manages land and a number of water control structures that affect water quality in St. Johns County waterways. SJRWMD publishes and distributes a variety of brochures and environmental education information from their District headquarters located at 4049 Reid Street, in Palatka. The District also works with the St. Johns County school system in a variety of environmental education initiatives. Although these programs are water-based, and do include field studies and training for teachers, there is presently no 'unit' specifically focusing on manatees. Additional information is available at <http://sjr.state.fl.us/> or: (386)-329-4500.

Florida Inland Navigation District (FIND)

FIND is responsible for maintaining the AICW for navigation. Additionally, FIND installs and maintains the signs that identify the boundaries of manatee-related vessel speed restriction zones. FIND, which is based in Jupiter Florida also prints and distributes the pamphlets that identify speed zones on the east coast of Florida. These brochures are available by contacting FIND at 1314 Marcinski Rd., Jupiter, FL 33477, <http://www.aicw.org/> or (561)-627-3386.

Sea World of Florida

Sea World of Florida is one of several state-approved facilities that provides care and rehabilitation of sick and injured manatees in Florida. They maintain a large exhibit where manatees can be observed. The exhibit includes informational videos and signs. Manatee education information is available from Sea World of Florida, 7007 Sea World Drive, Orlando, Florida 32809, <http://www.seaworld.org/animal-info/info-books/manatee/index.htm> or (407)-351-3600).

Audubon of Florida

Audubon of Florida is a statewide alliance of over 40 local Audubon chapters and the National Audubon Society. Audubon is a recognized leader in natural resource protection and provides information on a variety of conservation issues. Additional information is available from Audubon of Florida, 444 Brickell Ave., Ste 850. Miami, FL 33131, www.audubonofflorida.org or (305)-371-6399. Information about the local chapter, the St. Johns County Audubon Society is available at <http://members.aol.com/sjaudubon/>, or at P.O.Box 965, St. Augustine, FL 32085.

E. Governmental Coordination

Governmental coordination concerning manatees typically consists of three inter-related components: 1) Coordination during the review of proposed facilities; 2) Long-range planning that will allow future development to take place in a manner that ensures adequate protection for manatees; and 3) Coordination with state and federal wildlife protection agencies. Both these topics are discussed in this section.

In addition to St. Johns County, there are three municipal governments within St. Johns County; the City of St. Augustine, the City of St. Augustine Beach and the Town of Hastings. Presently, there appears to be little coordination and communication between the cities and the County regarding the protection of manatees and their habitat. However, all boat docks, marinas and similar facilities must be permitted through the state and federal agencies previously identified, and the County and municipalities are offered opportunities to comment on permit applications within their jurisdictional boundaries.

Permit Procedures and Development Review

Currently waterfront projects that involve new construction or renovation of existing facilities are regulated through a myriad of federal, state, regional and local regulations. Although each level of government has adopted its own review criteria and permitting standards, prior to construction (unless otherwise meeting exemption criteria) a project that is proposed to be conducted within manatee habitat typically must receive multiple approvals and meet the most stringent of all applicable review criteria.

At the federal level the ACOE is the lead agency in reviewing and permitting most waterfront development/construction projects. Depending on various project thresholds (e.g., number of slips, shoreline frontage, surface area over water, presence/absence of submerged resources, etc.), projects may also undergo review by the FWS for potential impacts to federally designated endangered and threatened species, including manatees. Also depending on project thresholds, copies of permit applications and/or Public Notice summaries of projects may be transmitted to St. Johns County for review and comment.

At the regional and state level, FDEP and SFWMD share responsibilities for reviewing and permitting waterfront development/construction projects. Depending on various thresholds, projects may undergo review by the FWC for potential impacts to state-designated endangered and threatened species. Also depending on project thresholds, copies of permit applications and/or Public Notice summaries of projects may be transmitted to St. Johns County for review and comment.

In addition to these federal and state permitting processes, most waterfront development/construction projects also require that St. Johns County (or the applicable municipality) review the proposed development and issue the necessary permits/approvals prior to construction. Review within St. Johns County routinely involves staff from a variety of Departments in determining if the project is consistent with the Comp Plan and applicable Land Development Regulations and Ordinances. Depending on the magnitude of the proposed project, approvals may be required at one or more of the following levels: Development Review Committee, Local Planning and Zoning Board, and Board of County Commissioners. If the county determines that a proposed project does not meet the applicable Comprehensive Plan elements or Land Development Regulations, the project may be denied or returned to the applicant for revisions.

Long-range Planning - St. Johns County Water Dependent Use Study

St. Johns County is currently experiencing tremendous population growth. In order to assist the County in ensuring that adequate facilities will be in place to allow residents access to the county's public waterways, in 2002, St. Johns County contracted with Applied Technology and Management, Inc. (ATM) to identify and inventory existing water-dependent uses that were present within the County. The stated purpose of the study was to "...identify the future needs of St. Johns County for docks, ramps, public and new commercial marinas (wet and dry slips) based on the projected need, location and environmental constraints" (ATM, 2002). To fulfill this goal, ATM performed the following:

- Inventoried existing boat-related facilities, which were presented based on four regions:
 - Intracoastal Waterway North
 - Intracoastal Waterway South
 - St. Johns River North
 - St. Johns River South
- Identified present and future demand for water access, including analyzing the need for
 - Marina slips
 - Boat ramps
 - Private docks
 - Commercial boatyards and associated docks
- Identified boater activity patterns based on trip originations and destinations
- Developed a protocol for identifying site suitability based on
 - Environmental considerations
 - Developmental considerations
 - Potentially competing shoreline uses
- Analyzed existing Land Development Regulations (LDR's) and developed recommendations for modifications that would ensure continued public access to the waters
- Developed a Marine Facility Siting, Planning, Implementation and Control Manual, which consisted of :
 - A Marina Screening Checklist
 - An analysis of potential impacts on water quality, social issues and the local economy
 - An identification of mitigative measures that would minimize adverse environmental consequences
 - A summary of various design, construction and performance standards.

In October 2002, ATM provided a final report to the County. The study, which was accepted by the County Commission, is included in electronic format in Appendix G. The major conclusions and recommendations of the study were that:

“St. John’s County is one of the most rapidly growing counties in the state. As the population increases as much as 60% by 2015, the demand for new and expanded water dependent use facilities such as marinas and boat ramps will rise as well. To meet this demand, St. Johns County officials must begin to plan for these requirements immediately. Information provided in this study report is summarized below along with recommendations to assist the County.

- In 2000/2001, there were a total of 10,073 registered vessels in St. Johns County. That number is six predicted to increase to 15,564 vessels by 2015, an increase of nearly 65%.
- There are currently 1054, wet slips at marinas located within St. Johns County. Based on current boat registration and population trends, an increase of 575 slips will be needed to keep up with the existing level of availability by 2015.
- There is an anticipated future demand of as many as 14 new boat ramp lanes (a ramp may have more than one lane) and 718 parking spaces by the year 2015. Much of this demand may be met by expansion and upgrading of existing facilities. Some additional facilities will be required in regions showing future high use.
- Based on current permitting trends, it is estimated that an additional 375 private residential docks will be constructed by 2015, bringing the total from approximately 1200 in 2000 to 1575 in the year 2015.
- There are currently 400 dry boat storage units at marinas located in St. Johns County. Based on current boat registration and population trends, an increase of 218 units will be needed to keep up with the existing level of availability by 2015.
- The majority of wet slip holders in St. Johns County marinas are from outside of the County. As the county continues to grow, this relationship should swing back to St. Johns County registered vessels.
- Expansion and new construction potential for boat ramps is shown in Figures 21 through 24 in Appendix E Water-Dependent Uses Study. Expansion and new construction potential for marinas is shown in Appendix E, Figures 25 through 28. The potential for each location was based on suitability ratings as well as an evaluation conducted during site visits as part of this study.
- Two areas of the county are particularly in need of new facilities. The northern portion of the Intracoastal Waterway region (ICW-N1) has lost its only public boat ramp due to construction of the new Palm of Valley Bridge. Establishment of a new replacement ramp is critical in this area.

(Subsequent to the development of the Water Dependent Uses Study, this ramp was replaced and so a single-lane public ramp does exist in this area. This single lane, however, does not meet the long-range needs of the County for this area.)

- The northwestern portion of the County (SJR-N) has no launch facilities. Several new residential developments will be coming on line in the near future and will require construction of new facilities. The county should be actively looking for available land to construct a new ramp. There is currently one facility (Amity Inn Anchorage) that the county should investigate purchasing.
- The central portion of the Intracoastal Waterway-North region (ICW-N2) has two locations, which may be available for expansion. Oscars Fish Camp has an existing ramp that could be expanded by the County. Another option is to seek agreement with the St. Augustine Boating Club and combined their ramp with the County's adjacent Boating Club Road Ramp. One large ramp would be more beneficial than two smaller, inefficient ramps. A level "A" ramp in this area would greatly reduce the crowding at the Vilano Boat Basin ramp. This sub-region is considered poor for any new construction, so expansion of existing facilities is critical.
- Frank Butler Park in the southern portion of the Intracoastal Waterway (ICW-S) is ideal for expansion. Sufficient land exists for upland areas, and the water access can be easily improved. Expansion of this ramp would greatly alleviate crowding at the Vilano Boat Basin and other ramps.
- Two existing ramps on the St. Johns River are ideal for expansion. Palmo boat ramp has sufficient upland areas available to increase parking, and make it more user-friendly. Expansion and improvement of Riverdale Park is critical to meet future demands for boat ramps.
- St. Johns County should begin searching for parcels for future development of a ramp facility in the southern portion of the St. Johns River (SJR-S 2 & 3). While the demand in these areas is currently low, future growth will undoubtedly occur.
- The extreme southern portions of the Intracoastal Waterway (ICW-S 2 & 3) are some of the most environmentally sensitive in the County. In addition to Aquatic Preserves and protected waters, these sub-regions are active shellfishing areas and Class II waters. Therefore, these sub-regions are considered or for construction of new facilities.
- Care must be taken to utilize the remaining available parcels in the most efficient manner. Areas that meet the rigorous demands for marinas and ramps should be utilized for that purpose almost exclusively since the availability of these parcels is becoming scarce. Purchase of a parcel that meets the requirements for a new ramp, and then using the upland areas for playgrounds and picnic areas instead of trailer parking is not efficient use of the property. While these facilities are as important as boat ramps,

they should be constructed on parcels that do not meet the criteria for water depended uses.”

Updates of this 2001-2 report are not within the scope of the existing MPP development work effort.

Coordination with State and Federal Wildlife Protection Agencies

Aside from coordination between SJCSO and FWC law enforcement personnel, there is presently no coordination between the County and state or federal manatee protection agencies.

RECOMMENDED ACTION PLAN

In this Section, the results of analyses of existing conditions are used to develop and describe a comprehensive program to protect manatees and their habitat in St. Johns County while minimizing the impacts to boaters and owners of waterfront property. The goal of this MPP is to maintain or decrease the already low level of watercraft-related manatee mortalities in St. Johns County in order to keep the USFWS designation of St. Johns County as 'medium risk' for manatees.

Because watercraft-related manatee mortality in St. Johns County has been minimal (i.e., less than one/yr as an average over any ten-year period), no new zones are proposed and no changes are recommended to the current speed restriction zones. Recommendations are made, however, for a variety of actions the County could pursue when/if the rates of watercraft and/or other human-related manatee mortality increase or if the Commission chooses to do so.

Opportunities are identified and suggested for initiatives that will enhance public education and awareness about manatees and their habitat. Potential funding sources, including federal and state governmental entities and non-governmental organizations (i.e., foundations, trusts) that may provide financial assistance toward implementing components of this plan are also identified.

Because a significant proportion of manatee-related activities are beyond the sole control of St. Johns County, this Section also describes a process for enhancing inter-governmental communication and coordination.

A. Habitat Protection

This Section identifies and describes recommendations for initiatives that will maintain and enhance manatee habitat in St. Johns County.

1. Foraging Habitat

Analysis of manatee sighting records and the results of vegetation mapping suggest that relatively little is known about the foraging habits and habitats of manatees in St. Johns County. To address these shortcomings, the County could consider enlisting the support of environmental professional(s) and/or volunteers who would work under the direction of a suitably qualified environmental professional. Monitors could (with advance concurrence by FWC and FWS) follow individual manatees and, following a monitoring protocol, document foraging activities and other behavior. Understanding the feeding behavior and food resources (i.e., type, abundance, distribution, seasonal variation...) that are available at different times of the year would enhance the County's ability to protect manatees while they are in County waters. If and when such a study is developed and implemented, it should be developed and implemented in coordination with FWC and FWS. Due to the apparent higher numbers of manatees, it is suggested that implementing such a study in the St. Johns River would be a higher priority than the Matanzas-Tolomato-AICW complex. With adequate supervision, such a study could be conducted by volunteers with supervision by Sea Grant and/or GTMNERR staff.

Additionally, because it appears that little is known about the spatial (and seasonal) distribution of seagrasses (marine/estuarine waters) and eel grass (freshwater), it is recommended that research be conducted to better understand the local distribution of these species. A detailed literature search could be followed by field assessments, if necessary. SJRWMD would be a likely partner for such an endeavor in the St. Johns River; GTMNERR would be a likely partner in the Tolomato-Matanzas-Guana-AICW area. The St. Augustine the Beach, Port and Waterway District might also provide assistance (and/or funding) for such work.

2. Fresh Water Sources

Although in many areas of Florida, sources of fresh water (e.g., springs) provide considerable benefit for manatees, there are no springs in St. Johns County that have been documented to attract large numbers of manatees. There are, however two notable springs that discharge sizable volumes of fresh water into waterbodies that are accessible to manatees.

The first of these freshwater springs was described in the description of nearshore habitat (Section A), due to its location in the Atlantic Ocean approximately 2.5 miles east of Crescent Beach. The results of manatee surveys do not indicate that this offshore introduction of freshwater into the marine environment attracts manatees, but it could be that no manatees have been seen there because no surveys have been conducted at that location.

The second site is located approximately 1850' north of the Shands (S.R. 16) Bridge over the St. Johns River (Appendix A). An estimate of the rate of discharge that was made in 1996, suggested an extremely low flow of 1 ft³/sec. Perhaps attributable to this low flow and perhaps because of its location near the middle of the River (where manatees are rarely observed) this site has not been documented to attract manatees. However, due to consistent manatee presence in the shoreline areas of the River, it is likely that the area around the spring boil is not surveyed.

Manatees have been observed in upstream reaches of several creeks and waterways in both the western and eastern areas of the County (e.g., Trout Creek, Julington Creek, Moultrie Creek), but no data are available indicating that fresh water is the attractant in these areas. It is recommended that monitoring be done in these areas to determine and document the use (or lack thereof) by manatees.

3. Water Quality

As described previously, water quality varies considerably throughout St. Johns County. Areas that are below applicable standards have been identified through FDEP's identification of 'Impaired Waters' and action plans are in place to address the sources of pollutants. Examples of actions already underway include the SJRWMD's Surface Water Improvement Plan for the St. Johns River, the work of the Guana, Tolomato, Matanzas Shellfish and Water Quality Task Force focusing on its water bodies and the County's own initiatives to upgrade stormwater systems and replace septic systems with efficient water treatment facilities.

Based on these on-going activities, no additional water-quality related improvements appear necessary to ensure that manatees are not subjected to water quality that would result in sickness or death.

4. Habitat Acquisition Areas – Environmentally Sensitive Lands

As described in the Inventory of Existing Conditions, the County is presently involved in partnerships with a variety of federal, state and regional entities to identify and acquire environmentally sensitive lands. A significant proportion of the marshlands adjacent to the County's major waterways are already in public ownership and under governmental management. Acquisition of waterfront tracts in the St. Johns River that are already on the County's Greenways/Blueways Master Plan and St. Johns River Blueway Proposal (Appendix H) would also likely help to protect manatees.

Two potential improvement opportunities that the County could consider which would have the potential to improve conditions for manatees appear feasible:

1. The County could ensure that the presence of manatee habitat would be a positive review criterion for the LAMP, which would boost the chances of acquiring water front tracts.
2. Manatee presence data from FWC, Jacksonville University and the Sirenia project could be further analyzed to determine if there are secondary congregating areas (it is known that there are no primary sites in St. Johns County) and acquisition initiatives could then target preserving those secondary sites.

5. Contaminant and Pollution Exposure

Through St. Johns County's compliance with Section 303(d) of the Clean Water Act, waterways that are considered impaired have been identified, and steps are being developed or implemented to address these situations.

In addition to these impaired waterways where water quality problems are chronic, there is the potential for acute water pollution through catastrophic events (e.g., hurricanes, oil or fuel spills). To reduce the potential for negative impacts, the State of Florida (FDEP or WMD) currently requires that permit applicants who wish to construct a new or expand an existing marina develop a Fuel Spill Contingency Plan as part of the Environmental Resources Permitting process. St. Johns County has also made a commitment to seek implementation of 'Marine Best Management Practices'. Additional steps that St. Johns County could consider to further protect manatee from potential exposure to pollutants include:

- a) Urging/requiring existing marinas to make upgrades to meet 'Clean Marina' Standards.
- b) Urging/requiring existing marinas (and other facilities that store or sell fuel and which may be exempt from the *requirement* to develop petroleum containment plans) to voluntarily develop and implement such plans.
- c) To the extent that it has not already done so, through its Mosquito Control District and Public Works Departments, St. Johns County could work with FDEP, the University of Florida's Institute of Food and Agricultural Sciences, SJRWMD and other concerned agencies to limit the application of pesticides and herbicides that could potentially impact manatee habitat. Floating plants that are treated with herbicide may be carried into manatee habitat, may be ingested by manatees, and/or their decomposition by-products may result in unacceptable accumulations of

organic sediments on the bottom of local waterways. Consequently, St. Johns County could work with SJRWMD and others to explore methods (e.g., mechanical harvesting, biological controls) for removing floating vegetation from its waterways.

- d) Because non-point source pollutants are the most difficult to identify and address, St. Johns County could develop, distribute and/or make available brochures which identify practices for 'how to be a good neighbor' for waterfront property owners.

6. Resting, Loafing and Calving Areas

Because St. Johns County was not one of the 13 'key counties' where human-related manatee mortality was the highest, research and/or monitoring to document resting, loafing and calving areas has not been a priority in St. Johns County. In other areas of Florida, however, data have suggested that the narrow, comparatively quiet upstream waters of tidal and freshwater creeks provide important refuges for manatees, particularly during calving. It is possible that such sites exist in St. Johns County, but that there has been no research that would result in these locations being identified.

Manatees have been documented to be present in various canals creeks and waterways within the County, and the County could set up a program to document the specifics of manatee use at particular sites. If specific locations where manatees gather are identified, investigations could be made to help identify the factors (e.g., water flow (or lack thereof), thermal stratification, salinity variations...) which make the sites attractive. By recording the type of activity, frequency of use and travel patterns, the County would be in a more informed position to determine if any additional manatee protection initiatives are warranted. The County could consult with FWC to develop protocols for monitoring/observations to ensure that data collection practices are consistent with other programs and to prevent unnecessary disturbance of manatees. It is recommended that fieldwork could be conducted/organized by Florida Sea Grant staff and make use of volunteers who would likely be interested in becoming involved with such a project.

B. Manatee/ Human Interaction

In over 30 years of monitoring, there have been no instances in St. Johns County where there have been any manatee deaths as a result of any human-related cause other than watercraft. As the County's population increases, though, there is the likelihood of increased interaction between man and manatees. Two potential opportunities are suggested as methods that St. Johns County could implement to reduce the possibility that a human-related manatee death would occur:

- 1) As described more fully in the Section on Education, the County could advance the awareness of the public about the presence of manatees in local waters. Public Service announcements on radio, TV 'infomercials', including the County's television station and inserts into vessel registration mailers are examples of proactive initiatives that the County could consider as ways of trying to keep human-related manatee mortality non-existent.
- 2) In other areas of the state, manatees have become trapped in storm drains and culverts, and FWC has recommended that counties consider retrofitting these structures with grates to prevent manatee entrapment. Based on research performed during development of this Plan, it appears that this problem has only occurred in one instance

in St. Johns County, and because that incident did not result in a manatee death, no retrofitting has been performed. To be proactive, the county could seek guidance from FWC, FWS, SJRWMD and/or SFWMD as to design specifications for 'manatee-safe' culverts and water control structures, and then:

- a. Ensure that manatee-safe structures are used as the standard for new installations and for repair/replacement of existing structures that are in manatee habitat areas; and
- b. Retrofit existing structures that may be 'accidents waiting to happen'.

1. Port Facilities and Power Plants

In St. Johns County there are presently no ports, power plants or other industrial facilities that produce warm water that attract manatees.

In this age of deregulation of the power industry and high rates of human population increase, however, attempts are being made to site, license and construct power-generating stations at a variety of locations throughout the state. If St. Johns County is approached by an industrial facility or power producer concerning siting of a new facility, it is recommended that questions be posed regarding methods of dissipation of waste heat, and consideration given as to the extent to which heated effluent could serve as an attractant to manatees. Part of the reason that human-related manatee mortality in St. Johns County is so low is the fact that there are presently no warm water attractants. The introduction of a new source could result in increased manatee populations at locations outside of their normal range, which could present future challenges for manatee protection.

2. Site Specific Vessel Speed Restrictions

Compilation, review and analysis of data concerning human-related manatee mortality suggest that the development and implementation of the single site-specific vessel speed restriction zone has been effective in reducing watercraft mortality in St. Johns County waterways. No watercraft-related manatee mortalities have been recorded in Julington Creek since the adoption of speed zones in that area in December 1992.

Because investigation of the watercraft-related manatee mortalities in St. Johns County has not revealed any notable trends or repeated problems at *individual* sites, no additional speed restriction zones appear warranted at this time.

There have, however, been eight watercraft-related manatee deaths in a \pm 9.5 mile stretch of the Tolomato River in northern St. Johns County and an additional five watercraft-related manatee mortalities in Duval County in the contiguous \pm 4 miles of AICW immediately north of the county line (Figure 8). Because the majority of these manatee deaths have occurred within the last six years, this area appears to be an area of increasing concern. This is a narrow portion of the AICW and it is recommended that staff from St. Johns County meet with other governmental entities (i.e., FWC, FWS, Duval County and FIND) to discuss issues pertinent to the protection of manatees in this area. The goal of such a meeting would be to develop countermeasures (e.g., posting of 'caution' signs, increased boater awareness...), in an effort to prevent additional watercraft-related manatee mortalities, which could then result in the need to designate another speed restriction zone.

3. Speed Zone Signage

Throughout Florida, there is an inherent conflict between the need to post an adequate number of speed zone signs to make zone boundaries clear and understandable, and the recognition that too many signs could pose a hazard to navigation. Feedback on the adequacy and effectiveness of current speed zone signage has been received through comments from the enforcement entities that stop, warn and/or ticket speed zone violators. These responses suggest that existing signage is adequate to keep boaters informed of existing speed restriction zones, and therefore no additional signs appear to be warranted at the Julington Creek site.

The frequency of watercraft-related manatee mortalities in the northerly portion of the Tolomato River, however, suggests that some corrective action may be warranted at that location. In lieu of creating a new speed restriction zone, it is recommended that the County consider having manatee awareness signs posted in that area. On a statewide basis, there are problems with the variety of manatee-related signs that are used for differing purposes at different locations. In the interagency meeting recommended immediately above, it is suggested that the concept of sign posting be discussed as one possible method to increase awareness by boaters in the area of watercraft-related manatee mortality in the northern Tolomato. New signs should not be posted by the County. Decisions regarding the need, placement and wording of signs need to be the result of multi-agency discussion.

In addition to manatee-related vessel speed zones, St. Johns County has established water safety zones at six locations (e.g., near bridges) where reduced vessel speed is thought to enhance human safety. There appears to be some confusion regarding the presence and posting of such a zone in the Trout Creek area of the St. Johns River. The County should continue to work with FWC to rectify this problem area.

Regarding the physical placement of signs, FIND has established interlocal agreements through which they agree to install and maintain these waterway signs, even if the signs are not on waterways where FIND has other responsibilities. Although the primary purpose of posting these signs is not for manatee protection, the signs would likely have this effect by slowing vessel speeds and thereby reducing the risk of collisions with manatees. Having FIND post and maintain these signs (rather than each individual waterfront county or municipality) allows the signs to be placed and maintained in a more cost-effective and consistent manner than would otherwise be possible. Therefore, if a decision is made to add any new signs, it is recommended that St. Johns County work cooperatively with FIND to develop an interlocal agreement through which FIND will be responsible for installing and maintaining non-manatee-related vessel warning signs in County waterways. If situations arise in which a manatee-related speed zone overlaps with a non-manatee related speed zone, signs identifying the most restrictive limit will be installed and maintained. There has been some discussion that sign-posting responsibilities may be transferred to FWC, but this has not been verified.

4. Increased Law Enforcement Presence

Section B.4 in the Inventory of Existing Conditions Section identified and described the federal, state and local law enforcement agencies that contribute to enforcement of marine laws in St. Johns County. With only one existing boat speed restriction zone in the County, it appears that current levels of enforcement are adequate.

However, instances of repeat violations by the same individuals suggest that existing penalties may not be enough of a deterrent to prevent continued violations. It is recommended; therefore

that County staff meets with FWC law enforcement, FWS enforcement personnel and St. Johns County Sheriff's Office staff to discuss methods to increase compliance within the County's one speed restriction zone (i.e., Julington Creek). A two-fold approach of: 1) increasing public awareness efforts; and 2) prosecution using FWC's authority to enforce federal, state *and* County regulations could serve as the inducement to increase compliance. The County could consider adopting by ordinance county-specific speed zone restrictions and amend, as necessary from time to time, the penalties for violation of applicable speed zones. This ordinance could include penalties for repeat offenders that are more stringent than state standards, and FWC officers could be given authority to prosecute offenders under County regulations.

Although there are no manatee-related boat speed restriction zones in eastern St. Johns County, the St. Johns County Sheriff's Office has indicated on-going problems with unsafe vessel operation. Because fiscal constraints often limit the amount of on-the-water enforcement, St. Johns County might want to consider replicating at the local level the federal program through which marinas provide slip space for enforcement vessels at no charge. Through the development review and approval process, St. Johns County might want to consider requesting or requiring that such slip space be provided at new or expanding marina(s) if there is a need for such space. If adequate docking has been dedicated for marine law enforcement watercraft, the County could also consider funding offers that would provide additional enforcement on County waterways as mitigation for marina projects.

5. Sanctuary Designation by FWS and/or FWC

Both the state and the federal government have agreed that vessel speed restrictions are necessary to protect manatees in the Julington Creek area. Unfortunately, the widths and boundaries of the state and federal protection areas are not identical (See Figures in Appendix C). This inconsistency appears to present difficulties for vessel operators *and* enforcement personnel. It is suggested that County staff coordinate meetings with FWS and FWC personnel and the St. John County Sheriff's Office to seek modifications that would bring together the boundaries of the state and federal zones.

No new sanctuaries, refuges and/or manatee protection areas appear to be warranted at this time, but the results of the monitoring recommended previously may result in the need to evaluate new protection zones if specific areas are identified as being important for calving, resting or feeding.

C. Land Development

Section C in the Inventory of Existing Conditions summarized the existing manatee protection mechanisms in effect in St. Johns County. This section provides descriptions of mechanisms through which St. Johns County could consider making improvements to local development standards to reduce the potential for negative impacts on manatees.

1. Shoreline Development Standards

In general, St. Johns County and the municipalities in the County rely on state and federal regulations and permitting criteria to protect the natural resources of the shoreline. State and/or federal regulations provide protection for mangroves, seagrasses and other shoreline vegetation, and permits must be obtained for projects that involve water management systems

and/or discharges from these systems into jurisdictional waters. Regulations also dictate conditions concerning the construction of vertical bulkheads and other erosion control structures that could affect shoreline vegetation.

No changes in shoreline standards appear to be needed in order to protect manatees and/or manatee habitat.

2. Development Standards for Submerged Lands

The majority of the submerged lands in eastern St. Johns County that are accessible to manatees are lands that are owned or controlled by the State of Florida. The designation of approximately 55,000 acres of the Guana, Tolomato and Matanzas marshes as National Estuarine Research Reserve provides the State of Florida with additional control over activities affecting state-owned lands. Projects on/over submerged lands (e.g., marinas, utility installations) are reviewed by the FDEP Bureau of State Lands for compliance with various environmental and public interest criteria and in many instances must be approved by the Governor and Cabinet sitting as Trustees of the Internal Improvement Trust Fund. Additionally, dredge/fill activities proposed on submerged lands are independently reviewed by federal agencies, including ACOE, EPA, USFWS, NMFS and USCG. In addition to these state and federal reviews, St. Johns County has developed and implemented an approval process through which proposed projects must be reviewed and approved by the County prior to construction.

Based on these multi-agency jurisdictions, it does not appear that any changes are necessary in order to protect manatees and/or manatee habitat from development of submerged lands.

a. Marina Facility Siting Criteria

Marina facility siting criteria for the protection of manatees were considered in the Water Dependent Uses Study commissioned by the County in 2002. The Study appears to be an excellent planning tool to assist the County in being aware of the need to reserve area for future water access. The study would likely require additional manatee-related screening criteria if/when it needed to meet FWC standards as a Boat Facility Siting Plan.

b. Performance Criteria

The USFWS has developed a ranking system that describes the relative threat to manatees on a county-by-county basis (FWS, 2001). Counties that have had no watercraft related manatee mortalities are classified as low risk. Counties that where there has been some watercraft related manatee deaths, but less than one per year averaged over the last ten years are considered medium risk. Counties that have averaged more than one watercraft-related manatee death per year during the last ten years are considered high risk. Permits for waterfront construction are most difficult to obtain in high risk counties. St. Johns County's present designation by FWS is medium risk, and the County's watercraft-related manatee death rate is 0.8 manatees/year for the period from 1995-2004.

Because the County does not want to have waterfront construction restricted based on the manatee mortality criteria, it may be advisable for the county to voluntarily implement some or all of the measures identified previously in this section in order to help maintain the medium risk designation.

It is recommended that St. Johns County begin analyzing manatee mortality on an annual basis, with particular emphasis on the categories of 'watercraft-related' and 'other human-related'. Depending on what these data show, the County could then decide on an annual basis the extent to which corrective actions should be taken. A process flow chart describing the recommended sequence of events is provided on Figure 20.

c. "No Entry" Areas

In St. Johns County, there are no "No Entry" zones, and based on the results of surveys there are no manatee congregating areas that warrant such a designation.

d. Restriction of Coastal Construction

There is no evidence indicating that existing regulations pertaining to coastal construction are inadequate at protecting manatees and/or manatee habitat, and so no changes appear warranted.

D. Education and Awareness

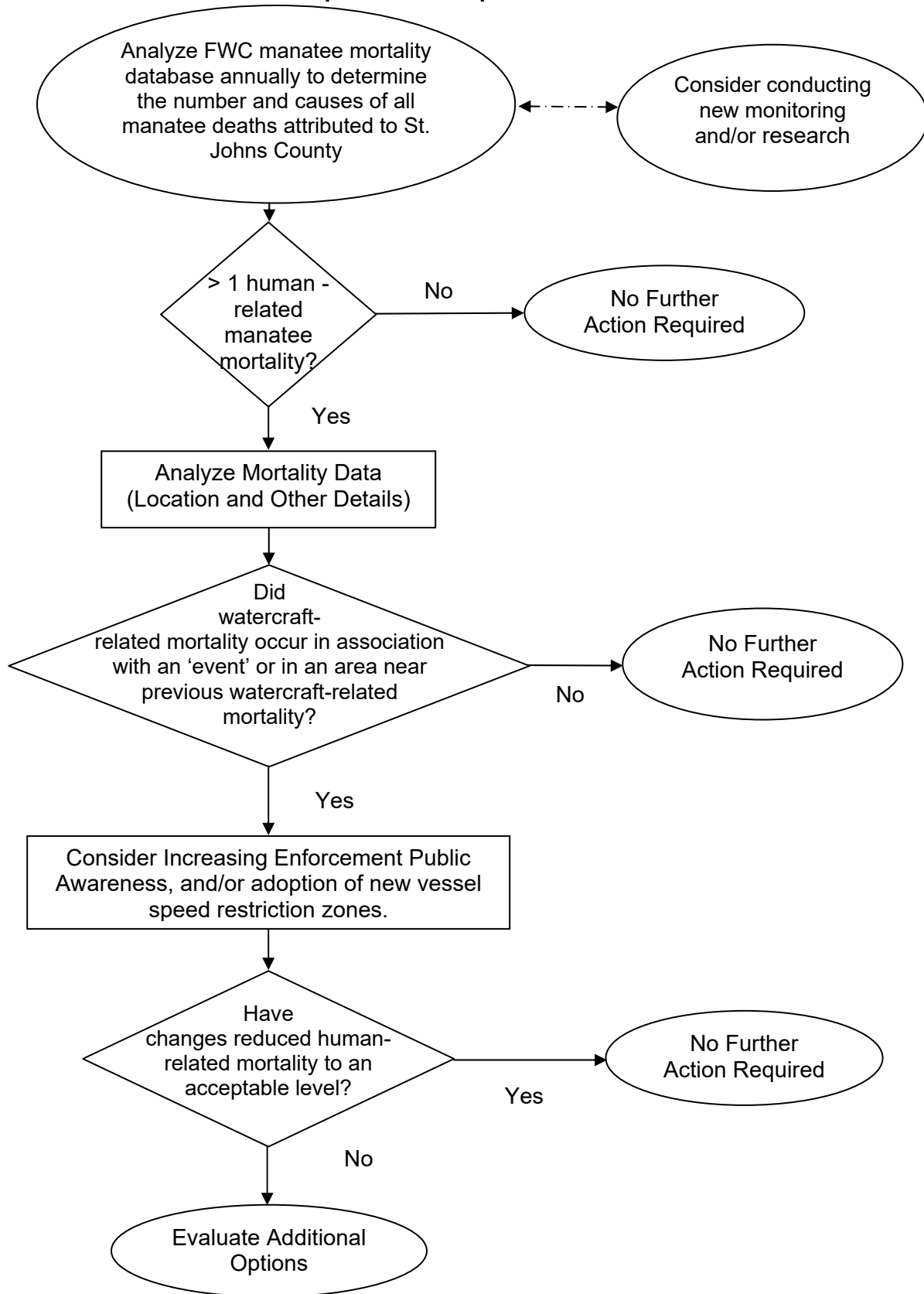
Section D (Education and Awareness) in the Inventory of Existing Conditions identified and described a variety of existing public education and awareness programs in St. Johns County that are available to the County and/or its residents. This Section uses that information to make recommendations for opportunities and initiatives to further improve this important aspect of manatee protection.

1. Educational Programs

Although there are a variety of education and awareness materials concerning manatees that are available for use in public education and awareness programs (Table 6), they appear to be little known and/or little used in St. Johns County. To address this improvement opportunity, it is suggested that St. Johns County consider developing a program to distribute educational materials about manatees. Key components of this initiative could include:

- Establishing and maintaining a publicly accessible physical or electronic reference library of educational materials concerning manatees;
- Using existing educational materials that are available from other organizations throughout the state to develop age-specific materials for life-long learning about manatees;
- Establishing a system for distributing educational materials to interested educators and individuals;
- Establishing and maintaining a "speaker's bureau" through which audience-specific programs are developed and offered to interested organizations; and
- Developing and distributing Public Service Announcements (PSAs) to local media (i.e., television, radio, newspaper) to promote coverage of critical manatee protection issues including speed zones, seasonal restrictions, locations of interest, and locations where manatees can be observed through non-obtrusive means. The existing PSAs developed by SMC should be considered as an initial inventory of potential materials.

**Figure 20
Proposed MPP Implementation Process**



New staff need not be hired to implement this initiative, as environmental education initiatives are within the current responsibilities of the NE. Florida Sea Grant agent who is based in St. Johns County. It is recommended that St. Johns County provide funds to allow the Sea Grant agent to dedicate additional time toward manatee related education and monitoring. Potential sources of funding could include but not be limited to a combination of: grants; a portion of penalties received from violations of speed zone restrictions; vessel registration fees; the assessment of an additional impact fee on all waterfront development; and other sources. The County could also seek financial support through FWC's Advisory Committee on Environmental Education (ACEE) or other similar environmental education grant programs.

2. Awareness Programs – Boat and Personal Watercraft

In addition to the lifelong learning materials and programs identified above, the County could consider developing and/or distributing public awareness materials of its own. These materials should be accessible, free or low-cost, easy to use and easy to understand by the general public. Distribution of the Sea Grant-produced Boater's Guide to St. Johns County would be an excellent start for such a program. A boat speed zone pamphlet with maps showing the boundaries of speed zones could also be distributed at the public boat ramps closest to the Julington Creek MPA. Options to improve public awareness could include the development, distribution and implementation of the following:

- Production and distribution of a single, two-sided laminated reference card showing vessel speed restriction zones in St. Johns County;
- Distribution of "Mind Your Waterway Signs" laminated cards that have been developed by the State of Florida;
- Posting and maintenance of manatee awareness and up-to-date speed zone signs at all public boat ramps; and
- Developing a program to ensure that public awareness materials are made available to all individuals who own, rent or otherwise use personal watercraft.

St. Johns County can consider making these materials available at the County Tax Collector's Office, where boat-owners must annually register their watercraft and where individuals born after September 30, 1980 can obtain their watercraft operator's certificate.

3. Coordination of Education, Awareness, Research and Monitoring

It is suggested that the County work with the Sea Grant Agent as the County's principal contact on all manatee-related issues. Because the Sea Grant Agent is responsible for a multi-county area, including Duval County (where manatee-related issues are at a considerably higher profile than in St. Johns County) there will be an added benefit of the Sea Grant Agent's ability to work with colleagues in the surrounding counties and other educational institutions to obtain existing materials, compile new documents and/or coordinate new research and/or monitoring programs.

Discussions with GTMNERR staff do not suggest that there is presently much interest in becoming involved in manatee-related issues, however, increased coordination between the County and GTMNERR could result in their agreeing to at least record manatee sightings and provide information to the county, even if they are unwilling to add manatees as a species worthy of their targeted research.

Jacksonville University conducts aerial manatee surveys as part of their work for Duval County. It is recommended that the County consider contracting with the University to expand the spatial

limits of their surveys to include portions the portions of the St. Johns River in St. Johns County. FWC is presently devising protocols for conducting new aerial censuses that will likely begin during 2006, and it recommended that the County become involved with this process. Until such research/monitoring is conducted, it must be acknowledged that there is more that is unknown about the spatial and temporal distribution and abundance of manatees in St. Johns County than there is information that is known.

4. Existing Grant Programs and Other Funding Sources

Conducting aerial surveys, monitoring manatee use at specific sites, developing presentations, printing and distributing manatee awareness materials all cost money, and it is acknowledged that presently St. Johns County is not in a position where such expenditures are mandatory. Consideration should be given, however, to the potential adverse impacts that could result from an increase in human-related manatee deaths, which would raise the county's designation from 'medium risk (0.8 watercraft-related deaths/year' to 'high risk' (≥ 1.0 watercraft-related deaths/year). In addition to, or in lieu of a budgeted line item specifically for MPP implementation, potential sources of funding include:

- A portion of (or surcharge on) boat registration fees;
- A portion of the income derived from enforcement-related penalties;
- Assessment of an additional impact fee on waterfront development; and
- Federal, state, regional, and local grant programs and foundations.

There are specific grant opportunities available from the state for manatee public awareness through FWC's Advisory Committee on Environmental Education (ACEE), and it is likely that the focused work of a professional grantwriter could identify a variety of other sources of funds for manatee protection. It is recommended that the county consider using the experience of their environmental planning staff to identify and pursue funding for MPP implementation.

Although there has been no attempt to verify that any of these programs are still functioning, several years ago a list of potential funding sources was developed as part of the MPPs for Martin and St. Lucie Counties. This list, which could serve as a 'starting point' for identifying potential funds for implementing the St. Johns County MPP, is included as Appendix I.

Additional information on these and other programs is available from various sources, including the Catalog of Federal Domestic Assistance, the Guide to Florida Foundations, 2005, and the Environmental Grantwriters Association.

IMPLEMENTATION SCHEDULE

The extent to which the recommendations contained in the St. Johns County MPP will be implemented is up to the discretion, judgment and leadership of the Board of County Commissioners. At this time, the rate of human-related watercraft manatee mortality in St. Johns County remains below the threshold at which the state and federal wildlife agencies will demand that corrective countermeasures be undertaken. Although some of the recommendations can be implemented relatively easily (e.g., compiling existing public awareness materials), implementing some of the MPP recommendations could be challenging, costly and time-consuming.

Although this Plan currently does not recommend any new vessel speed zones, additional restrictions may be warranted once additional data are collected in areas where manatees have been reported to congregate. In most cases, informed decisions concerning these additional designations cannot be made until a data-collection period of one year or more has been completed.

The primary mechanism for ensuring that at least some portions of the MPP are implemented is through the development and adoption of amendments to the County's Land Development Code. Recommendations for these changes are to be transmitted to the County in a Manatee Protection Plan 'Assessment Report' by September 30, 2005.

A recommended time line for implementation of the MPP is shown in Figure 21. It is expected, however that this MPP is a work-in-progress, and that the schedule for each step will be based upon the results of the previous step(s) and that it will be revised, as appropriate, to reflect new data, information and circumstances.

FIGURE 21. Proposed Timeline for Implementation of St. Johns County Manatee Protection Plan

ACTIVITY	2005			2006			2007			2008			2009		
Develop MPP; review by staff & BOCC															
Begin public awareness and public education initiatives															
Establish working relationships with FWC and FWS personnel															
Develop and implement a process for Inter-agency coordination															
Partner with FWC and Jax Univ. to update local database for manatee distribution and abundance															
Seek funding & conduct additional field monitoring															
Analyze Annual Watercraft-Related and human-related manatee mortality															
Make changes to Comp Plan and/or LDC															
Adjust MPP Goals, Objectives & Policies as Appropriate**															

**May occur earlier if watercraft-related manatee mortality approaches threshold.

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Appendix A

Freshwater Springs in St. Johns County

Springs of the St. Johns River Water Management District

ST. JOHNS COUNTY

Crescent Beach Submarine Spring

Location

The spring is located approximately 2.5 miles off the coast of St. Johns County in 59 feet of water (lat. 29°46'06" N, long. 81°12'30" W). The general location is shown in Figure 4 (Locations of Springs in the District, in Distribution of Springs section) and the detailed site map in Figure 1 (below). In Figure 2, the spring boil is shown as it appears at the sea surface on a calm day.

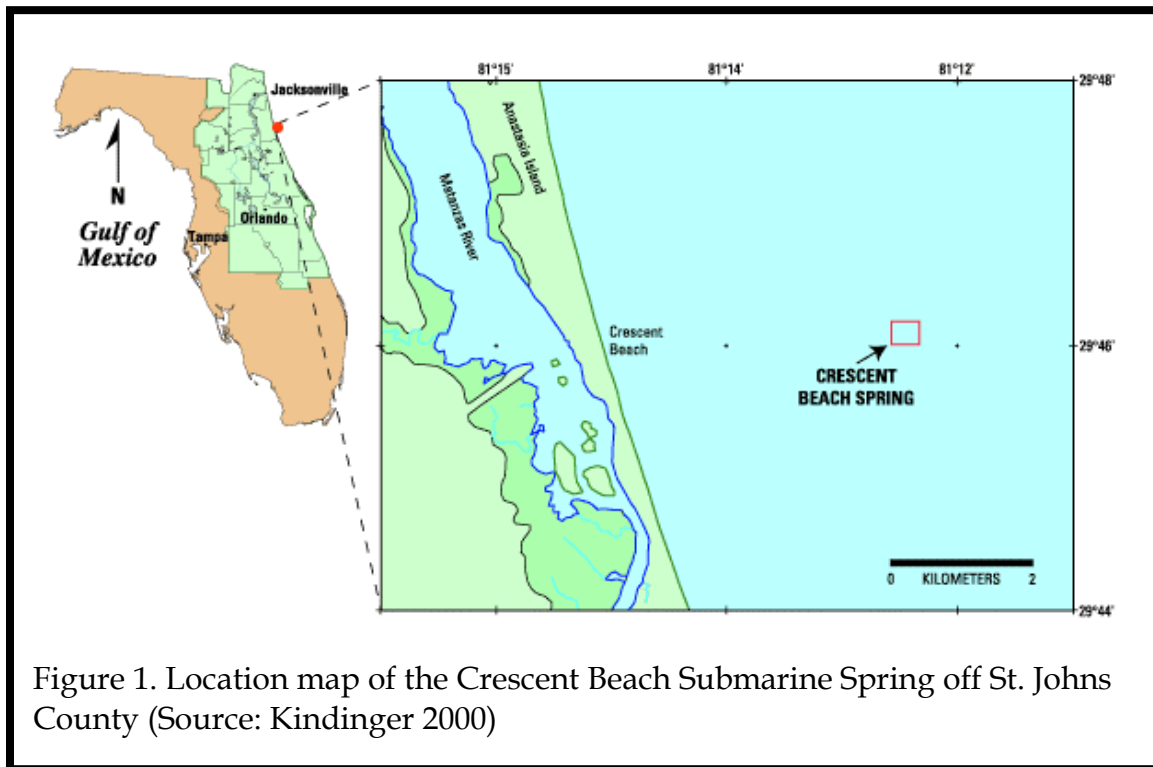


Figure 1. Location map of the Crescent Beach Submarine Spring off St. Johns County (Source: Kindinger 2000)



Figure 2. Crescent Beach Submarine Spring boil; Crescent Beach located in the background

Description

The sea floor around the spring is level. However, numerous subsurface structures appear around the area of the spring (Kindinger 2000). An interpreted seismic reflection profile is shown in Figure 3. The seismic reflection profile reveals a very well defined vent feature that appears to have been developed and maintained from submarine discharge of artesian water (Swarzemski et al. 2001). The profile also reveals multiple large collapse features directly adjacent to the Crescent Beach Spring vent, as indicated by the presence of a series of fractures. The density difference between the fresher water discharges from the spring can be seen in the seismic reflection profile in the water column. From seismic profiles, the spring appears to be a recent, incised spring vent rather than a collapse structure. The northern side of the vent is higher than the southern side. For a more complete discussion of the seismic profiling and the visual scuba observations, the reader is directed to Brooks (1961) and Kindinger (2000).

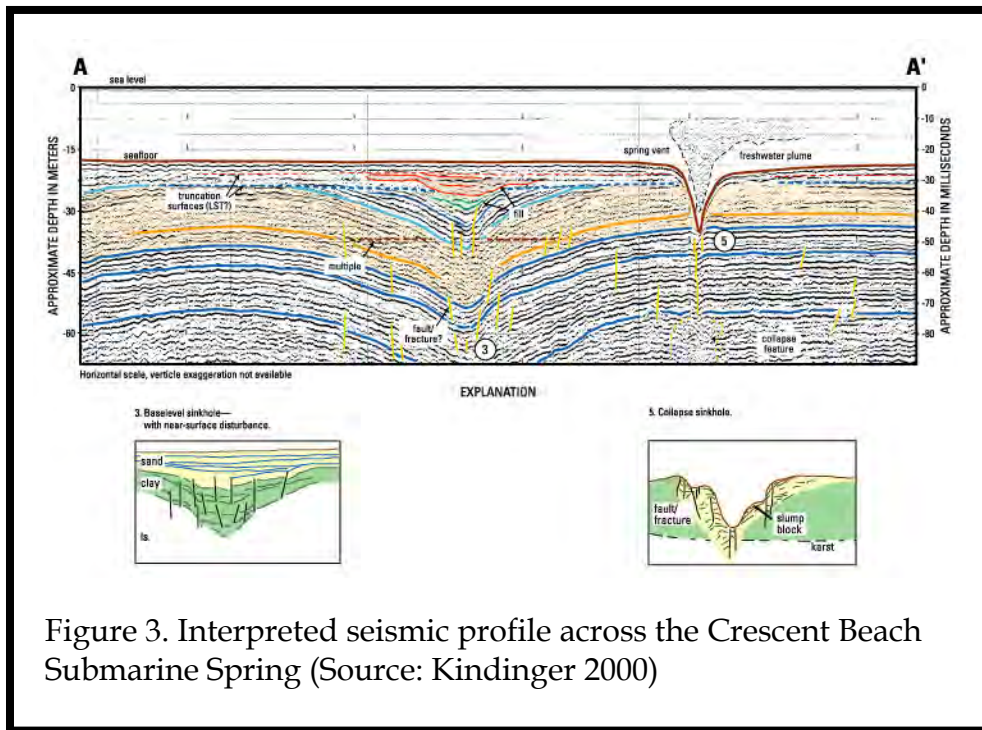


Figure 3. Interpreted seismic profile across the Crescent Beach Submarine Spring (Source: Kindinger 2000)

Utilization

None.

Discharge

No actual discharge measurements have been done. Brooks (1961) estimated the discharge by two methods. Based upon the estimated volume of water rising to the surface, a maximum possible discharge of 1,500 cubic feet per second (cfs) was estimated. Based upon the mixing ratio of spring water to seawater, a discharge of 40 cfs was estimated. All in all, Brooks felt that the “true discharge is certainly between 10 cfs and 300 cfs.”

Water Quality

A summary of the statistical measures of the water quality is given in Table 2. Divers from the Jacksonville Reef Research Team, Continental Shelf Associates, and the U.S. Geological Survey assisted in the sampling of Crescent Beach Spring.

Table 2. Water quality summary of discharge water at Crescent Beach Submarine Spring

Variable	Minimum	Mean	Median	Maximum	Count	Period
Water temperature, °C	28.7	28.7	28.7	28.7	1	1995
Specific conductivity, field, µmhos/cm at 25°C	13,010	13,010	13,010	13,010	1	1995
Specific conductivity, lab, µmhos/cm at 25°C	11,920	12,460	12,460	13,000	2	1995
pH	7.13	7.13	7.13	7.13	2	1995
Nitrate + nitrite, dissolved, as nitrogen, mg/L						
Nitrate + nitrite, total as nitrogen, mg/L						
Calcium, dissolved, mg/L	296	296	296	296	1	1995
Calcium, total, mg/L						
Magnesium, dissolved, mg/L	252.0	252.0	252.0	252.0	1	1995
Magnesium, total, mg/L						
Sodium, dissolved, mg/L	2,040	2,040	2,040	2,040	1	1995
Sodium, total, mg/L						
Potassium, dissolved, mg/L	64.1	64.1	64.1	64.1	1	1995
Potassium, total, mg/L						
Chloride, total, mg/L	3,630	3,815	3,815	4,000	2	1995
Sulfate, total, mg/L	816	818	818	820	2	1995
Fluoride, dissolved, mg/L						
Fluoride, total, mg/L	0.77	0.77	0.77	0.77	1	1995
Phosphorus, total, mg/L						
Orthophosphate, total as P, mg/L						
Total dissolved solids, mg/L	7,460	7,460	7,460	7,460	1	1995

Note: µmhos/cm = micromhos per centimeter
mg/L = milligrams per liter

Blank cells indicate no analysis.

A sand point was attached to weighted, clear vinyl tubing and the divers inserted the sand point into the sediment at the bottom of the spring. The tubing was extended to a peristaltic pump on board a boat. The discharge from the pump was then passed thorough a Hydrolab for measuring the field variables. Samples were taken for laboratory analysis when the field variables stabilized (Toth 1999).

Water Quality Trends

Not enough water quality analyses are available for trend testing.

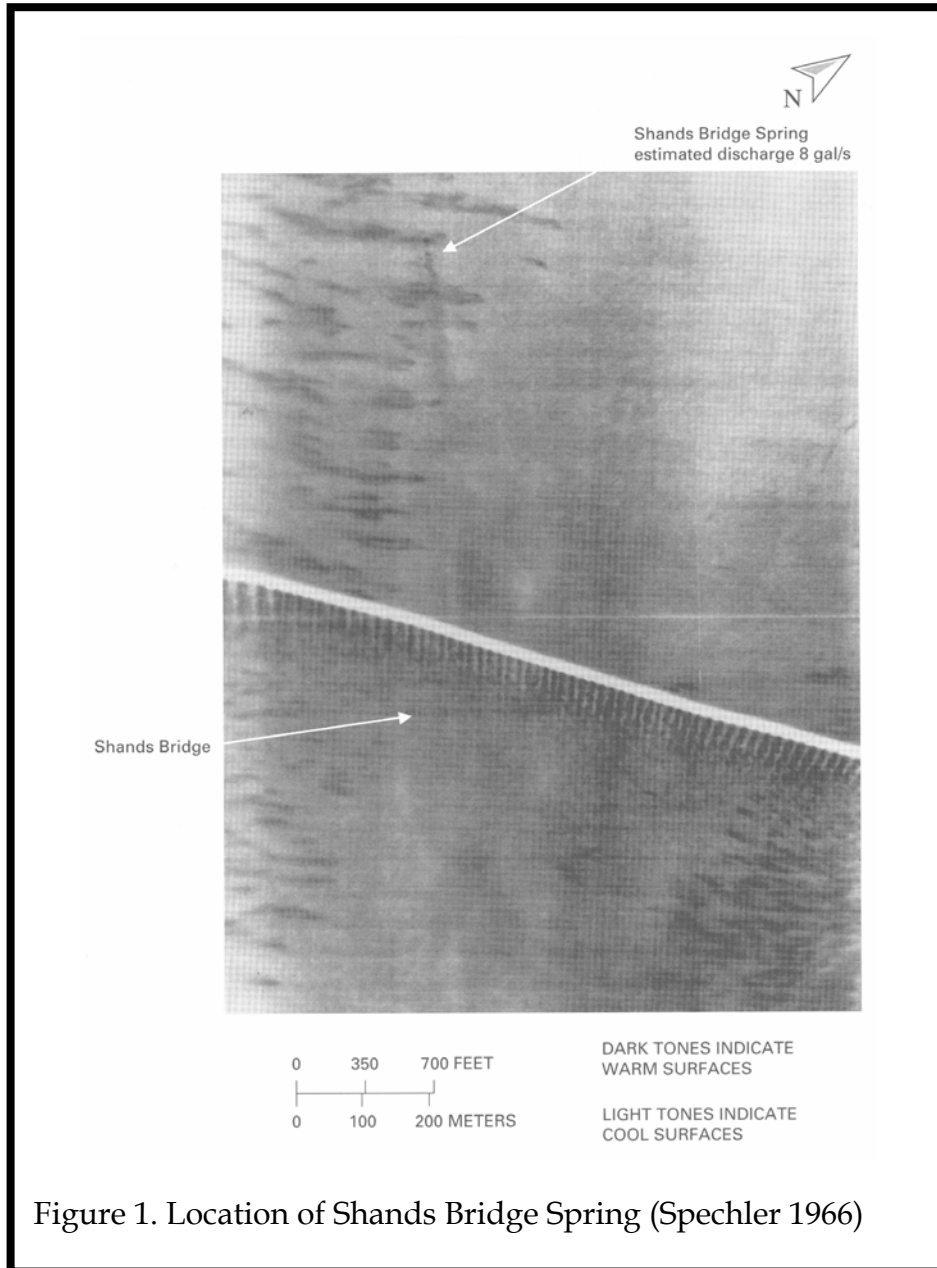
Age of Discharge Water

The age of water discharging from Crescent Beach Submarine Spring was determined by measuring the concentration of carbon-14 in the spring discharge in August 1995 (Toth 1999). Crescent Beach Submarine Spring had a carbon-14 concentration of 14.13 percent modern carbon, which suggests that the water is 10,453 years old. The age of the water suggests that Crescent Beach Spring has a deep flow system and a regional area of influence.

Shands Bridge Spring

Location

The submarine spring (lat. 29°59'16" N, long. 81°37'28" W) occurs about 1,850 feet north of the Shands Bridge and just west of Orangedale in the St Johns River.



Description

The spring is submerged. The river is about 17 to 20 feet deep in the vicinity of the spring. A nearly circular depression (recorded by a fathometer) was observed in the bottom of the river at the spring (Spechler 1966). Groundwater discharges from a vent at the deepest point in the spring (30 feet).

Utilization

None.

Discharge

Discharge in 1995 was estimated at 1 cubic foot per second (Spechler 1996).

Table 1. Summary of discharge of Shands Bridge Spring (in cubic feet per second)

<u>Minimum</u>	<u>Mean</u>	<u>Median</u>	<u>Maximum</u>	<u>Count</u>	<u>Period</u>
1.0	1.0	1.0	1.0	4	Estimated

Water Quality

Only one water quality analysis has been taken. The results are listed in Table 2.

Table 2. Water quality summary of discharge water at Shands Bridge Spring

Variable	Minimum	Mean	Median	Maximum	Count	Period
Water temperature, °C	25.1	25.1	25.1	25.1	1	1994
Specific conductivity, field, µmhos/cm at 25°C	826	826	826	826	1	1994
Specific conductivity, lab, µmhos/cm at 25°C						
pH	7.58	7.58	7.58	7.58	1	1994
Nitrate + nitrite, dissolved, as nitrogen, mg/L						
Nitrate + nitrite, total as nitrogen, mg/L						
Calcium, dissolved, mg/L	98	98	98	98	1	1994
Calcium, total, mg/L						
Magnesium, dissolved, mg/L	45	45	45	45	1	1994
Magnesium, total, mg/L						
Sodium, dissolved, mg/L	9.3	9.3	9.3	9.3	1	1994
Sodium, total, mg/L						
Potassium, dissolved, mg/L	2.7	2.7	2.7	2.7	1	1994
Potassium, total, mg/L						
Chloride, total, mg/L	12	12	12	12	1	1994
Sulfate, total, mg/L	340	340	340	340	1	1994
Fluoride, dissolved, mg/L	0.5	0.5	0.5	0.5	1	1994
Fluoride, total, mg/L						
Phosphorus, total, mg/L						
Orthophosphate, total as P, mg/L						
Total dissolved solids, mg/L						

Note: µmhos/cm = micromhos per centimeter
 mg/L = milligrams per liter

Blank cells indicate no analysis.

Water Quality Trends

There are not enough analyses for determining water quality trends.

Age of Discharge Water

No isotope analyses have been done.




APPENDIX B

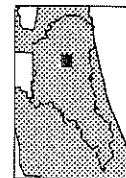
Submerged Aquatic Vegetation in the St. Johns River (Excerpts from Burns et al. 1997)

Figure 74.



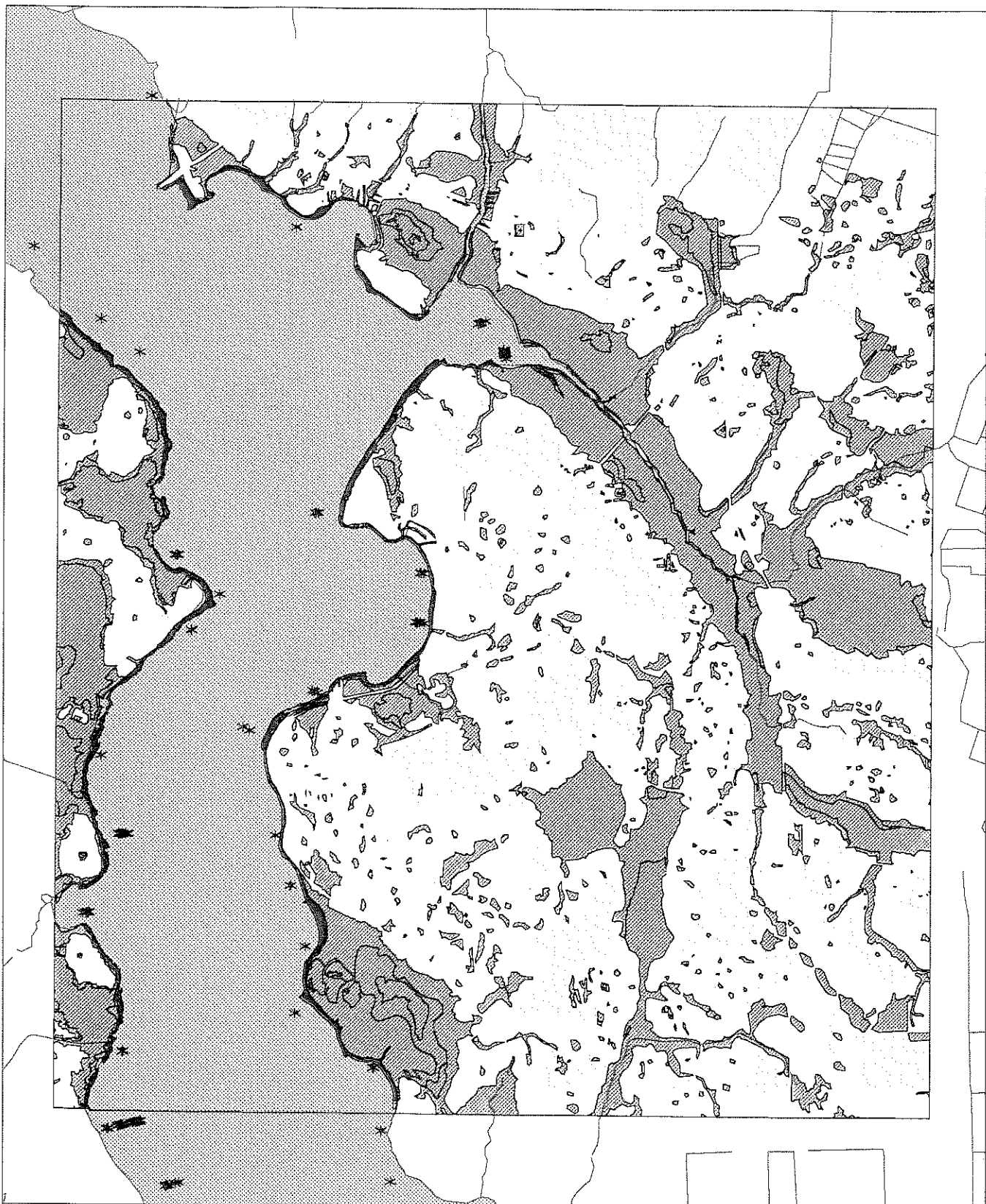
75 MINUTE SERIES QUADRANGLE
NAME - FLEMING ISLAND
NUMBER - 286

-  Submerged Aquatic Vegetation
-  Wetlands
-  Uplands
- * ~ 4.0 feet (NAVD 1988)







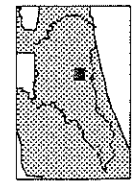
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Figure 77.



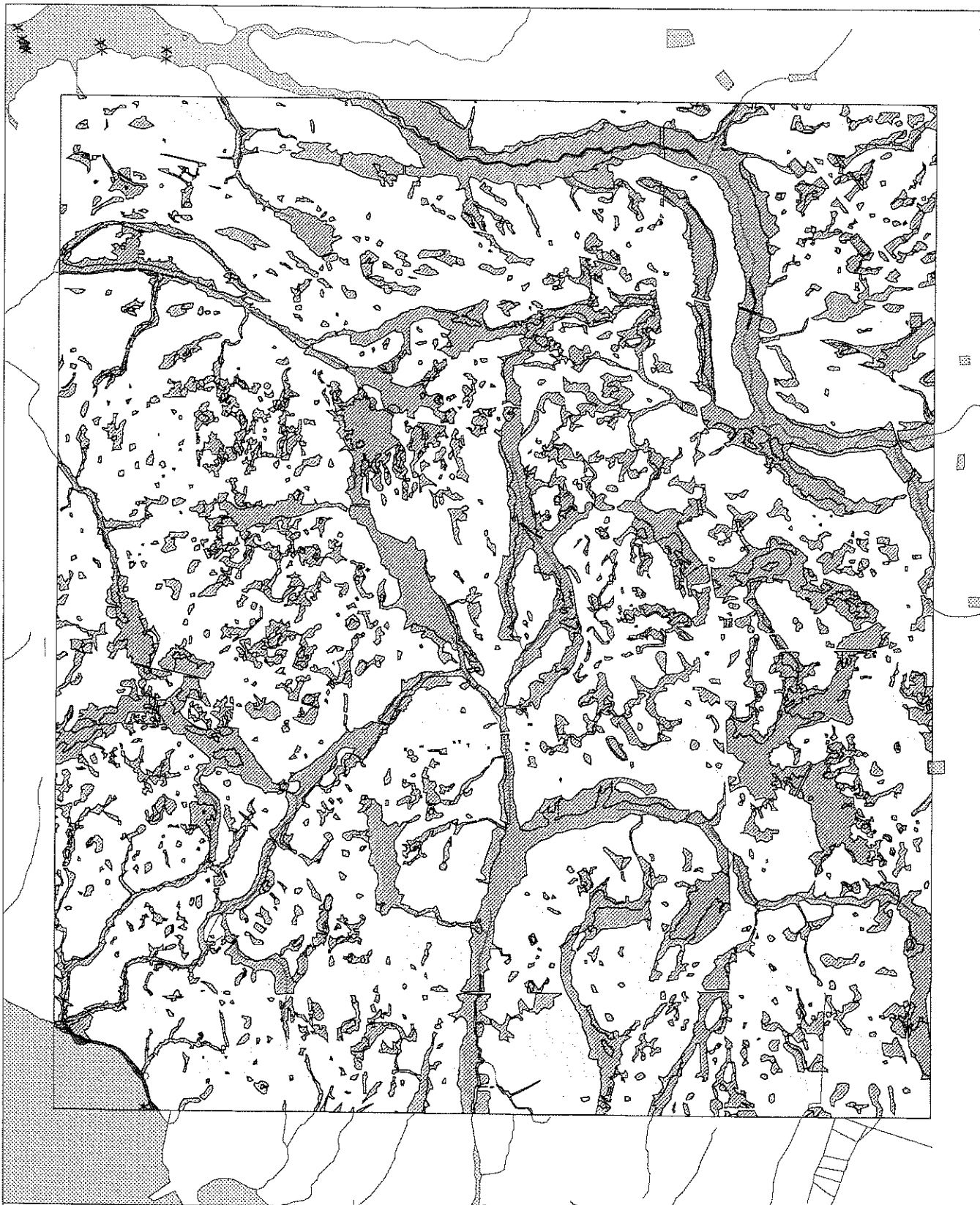
75 MINUTE SERIES QUADRANGLE
NAME - PICOLATA
NUMBER - 312

-  Submerged Aquatic Vegetation
-  Wetlands
-  Uplands
-  * ~ 4.0 feet (NAVD 1988)







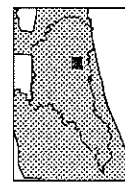
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Figure 75.



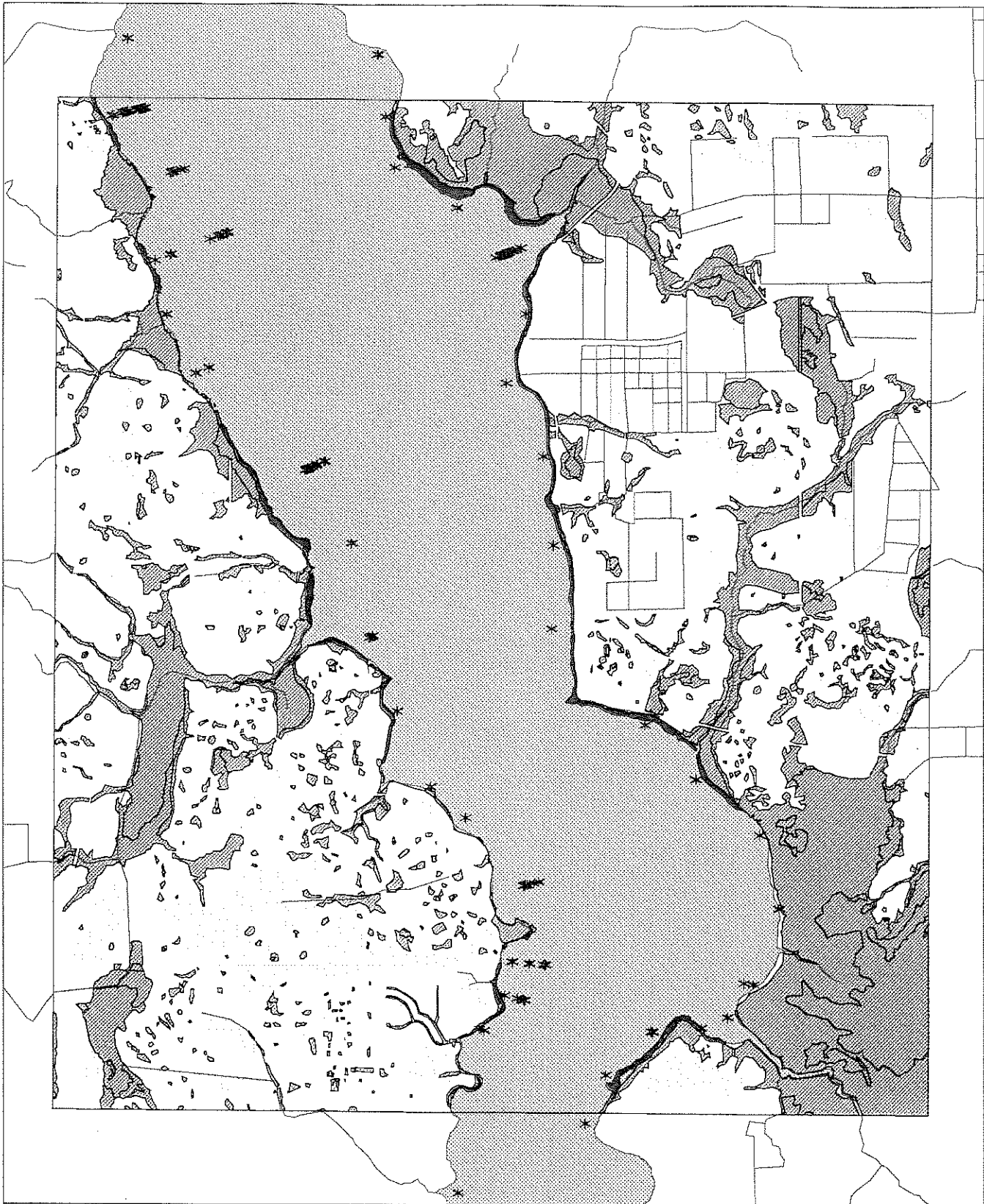
75 MINUTE SERIES QUADRANGLE
NAME - ORANGEDALE
NUMBER - 287

-  Submerged Aquatic Vegetation
-  Wetlands
-  Uplands
-  * ~ 4.0 feet (NAVD 1988)







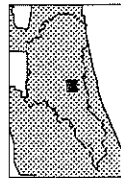
SCALE 1:75722

Figure 78.



7.5 MINUTE SERIES QUADRANGLE
NAME - RIVERDALE
NUMBER - 337

-  Submerged Aquatic Vegetation
-  Wetlands
-  Uplands
-  * - 4.0 feet (NAVD 1988)



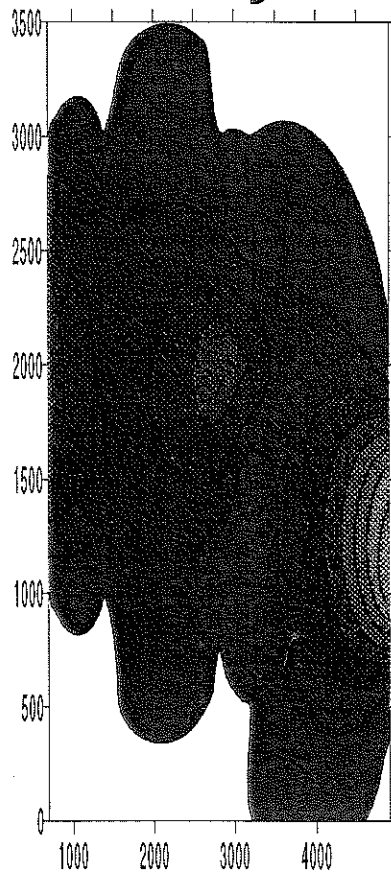
SCALE 1:75722

Figure 61

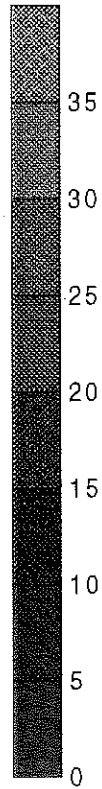
Canopy Height

Vallisneria americana

Old Bull Bay - Summer 1996



Canopy Height (cm)



Volume: $78.54 \pm 0.01 \text{ m}^3$

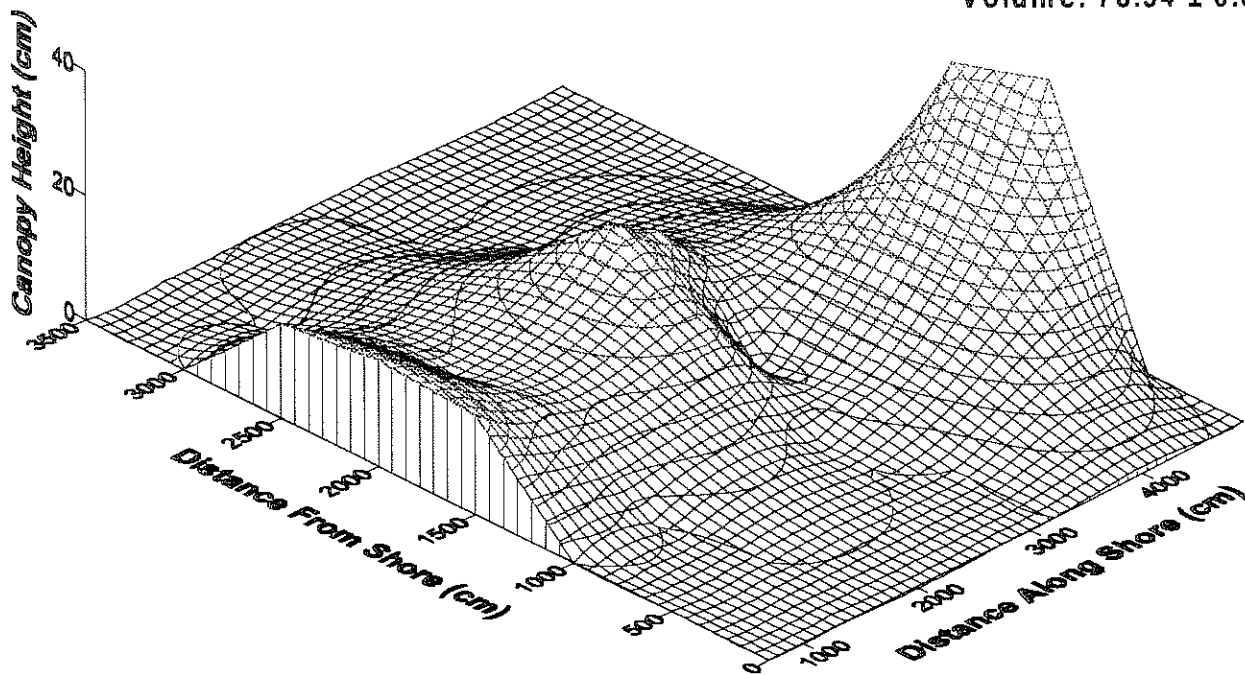


Figure 60

Canopy Height

Vallisneria americana

Old Bull Bay - Winter 1996

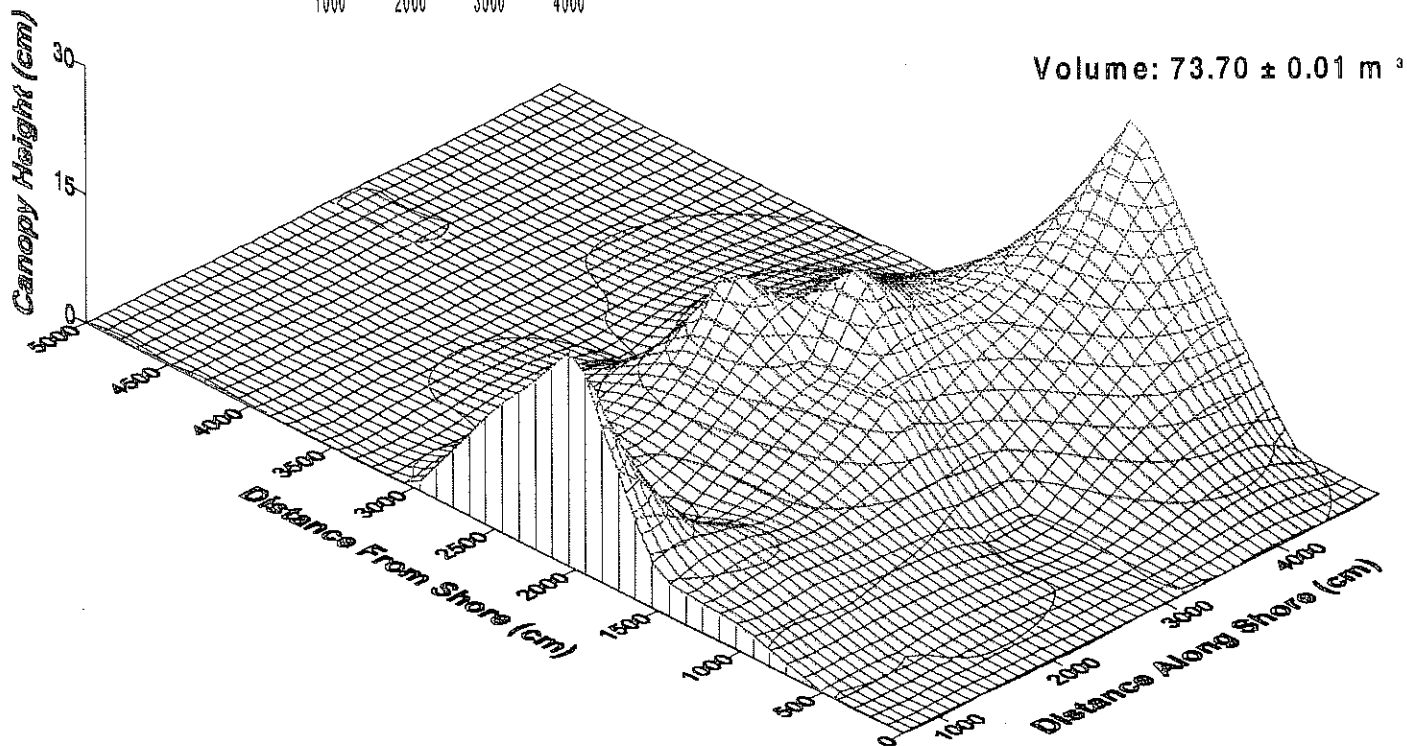
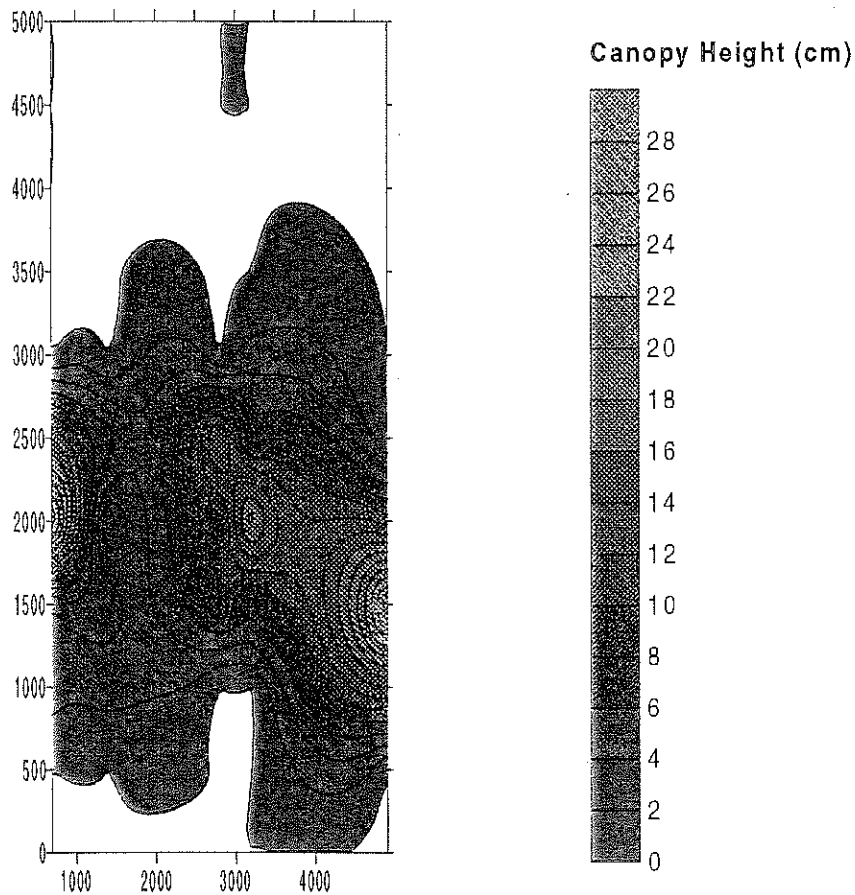


Figure 57

Canopy Height

Vallisneria americana

Orangedale - Summer 1996

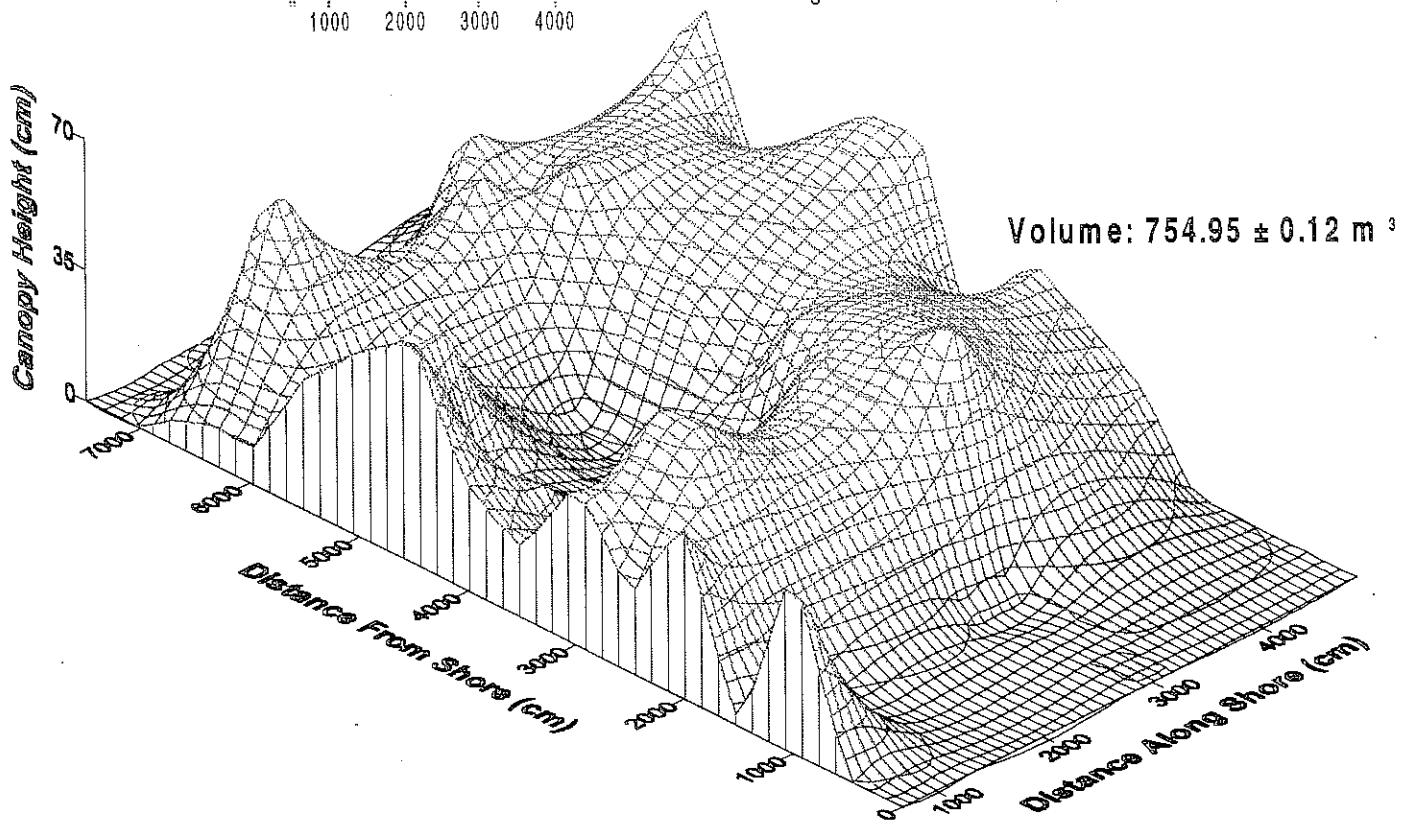
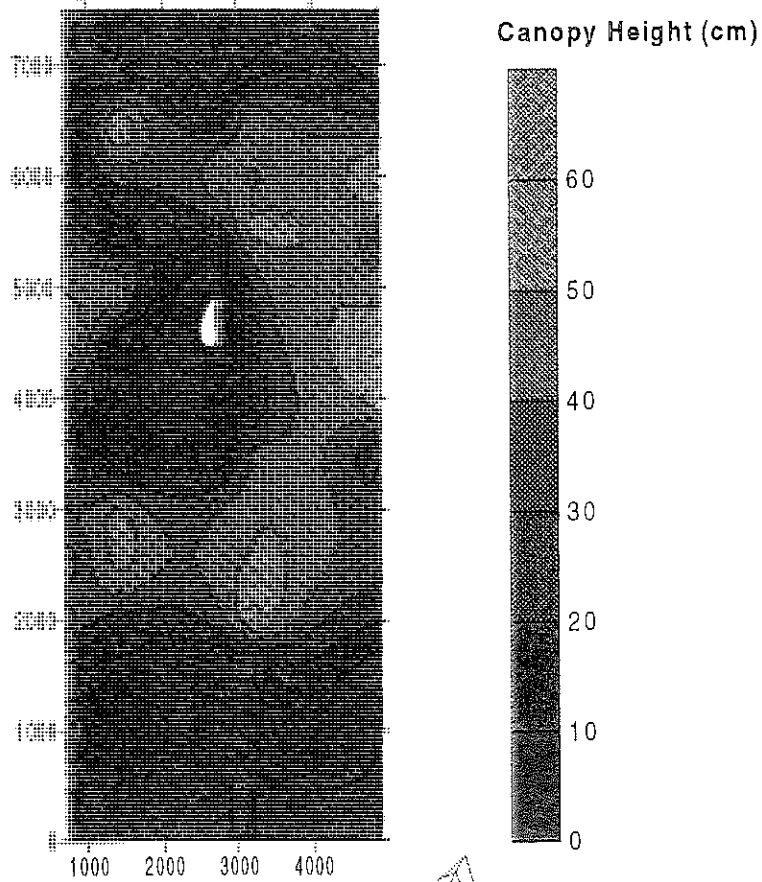


Figure 56

Canopy Height

Vallisneria americana

Orangedale - Winter 1996

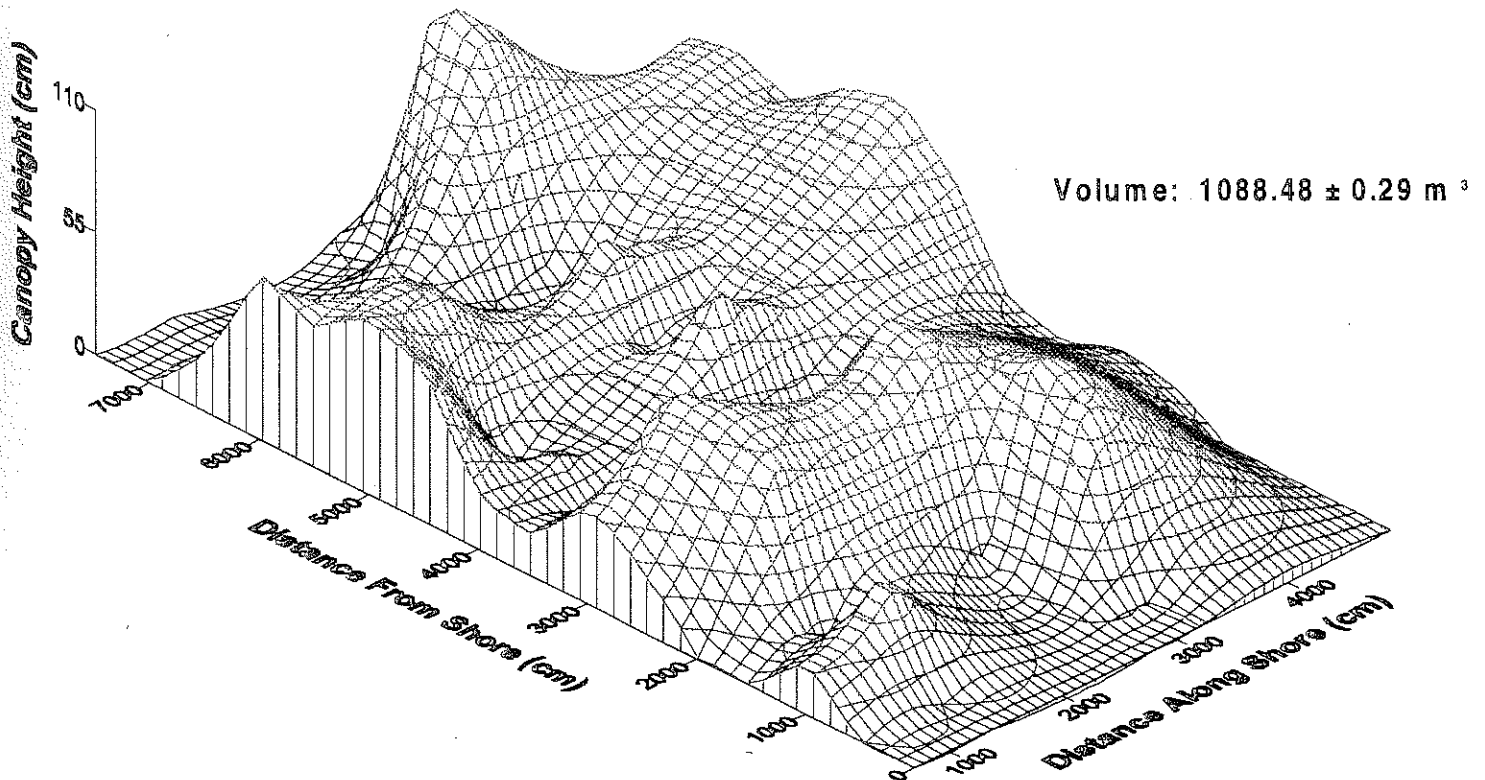
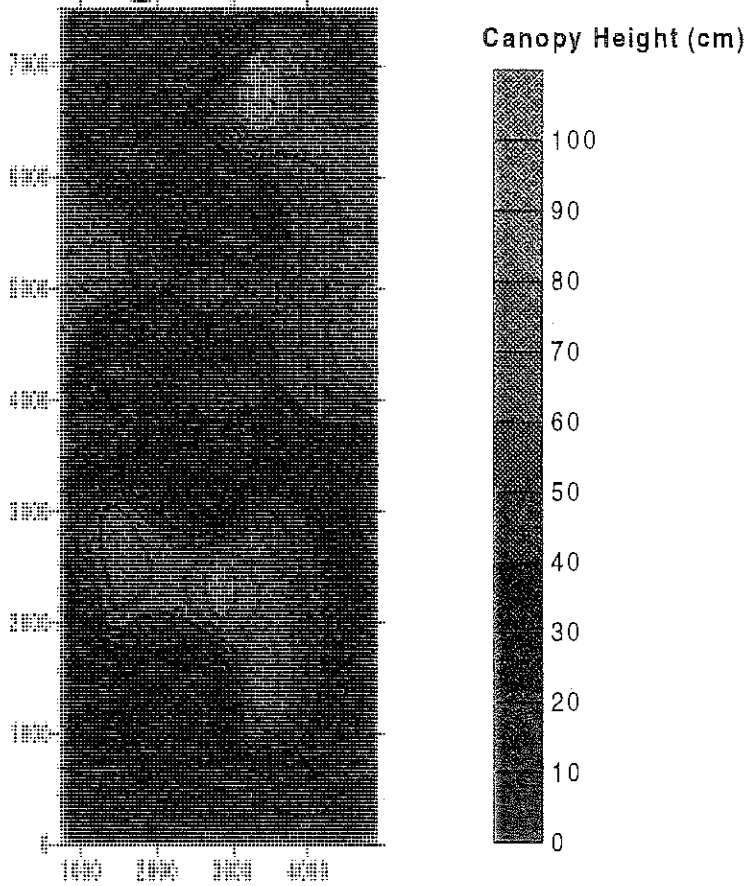


Figure 53

Canopy Height

Vallisneria americana

Ferriera Point - Summer 1996

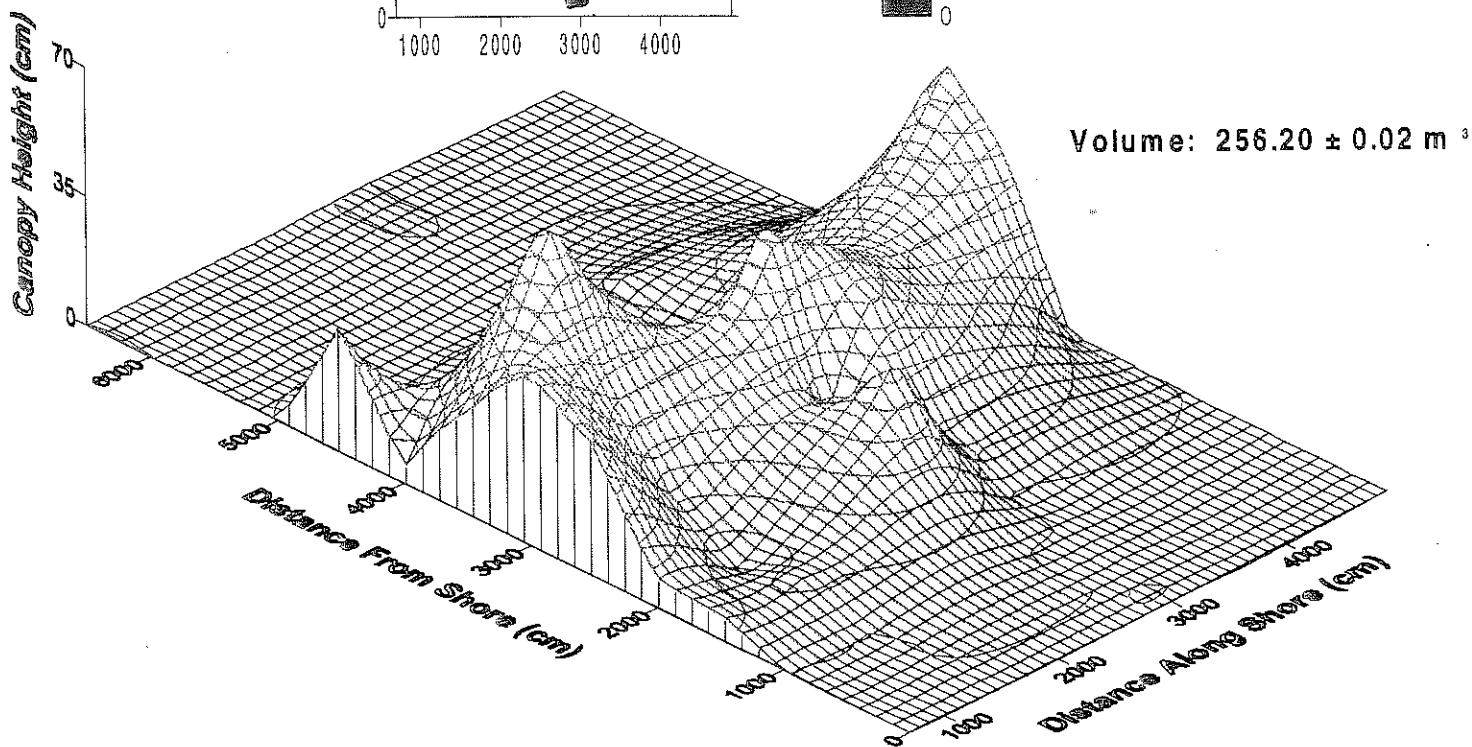
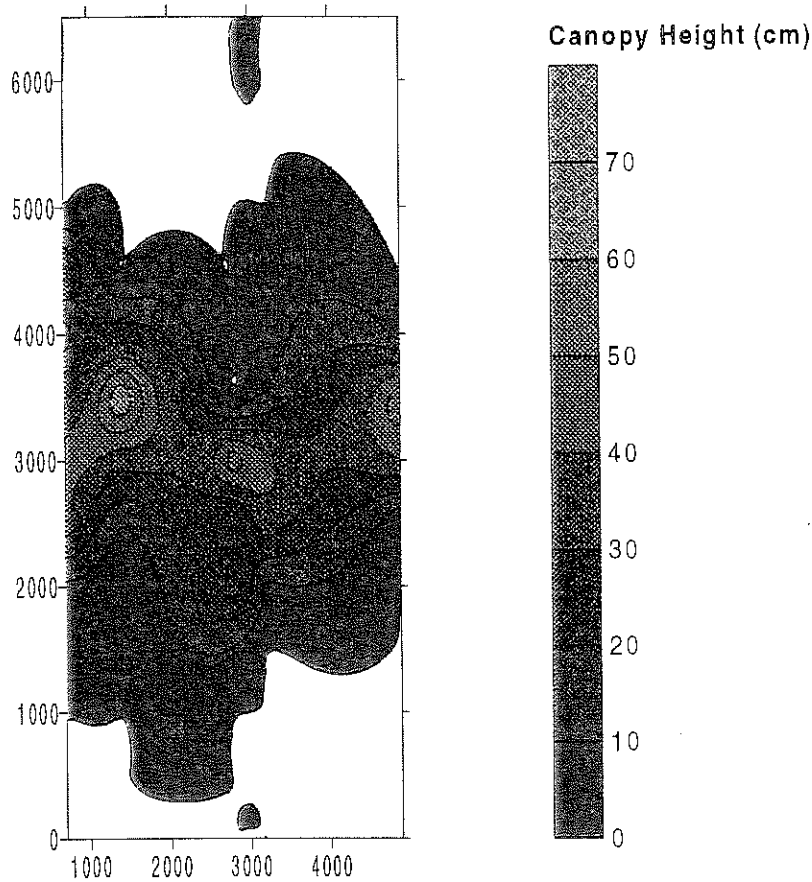
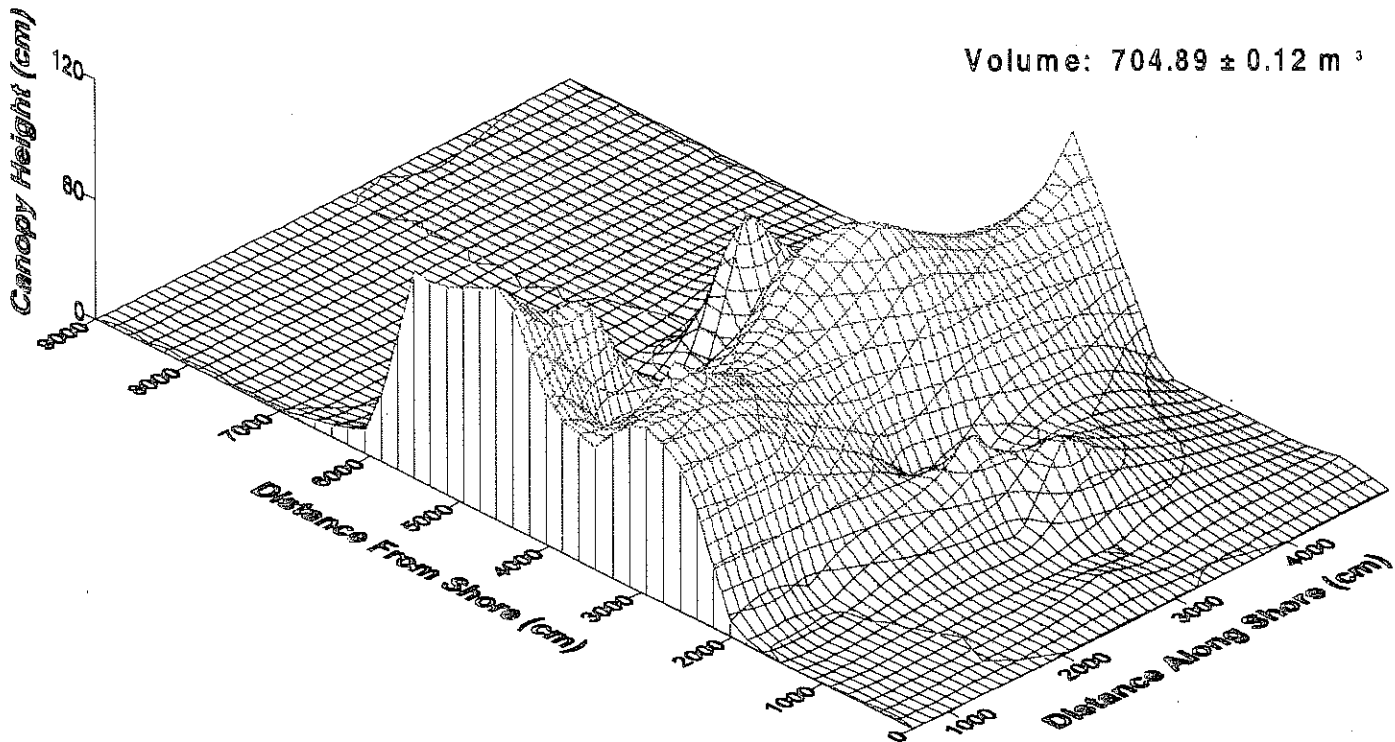
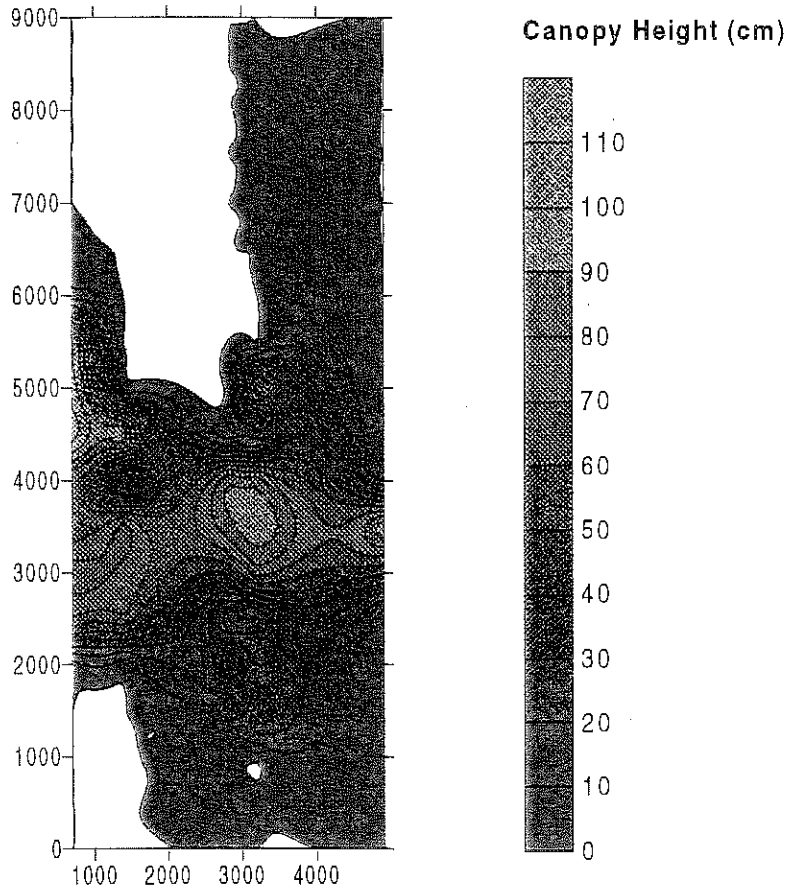


Figure 52

Canopy Height

Vallisneria americana

Ferriera Point - Winter 1996



APPENDIX C

FWS and FWC Regulations and Maps of the Julington Creek Manatee Protection Area



U.S. Fish & Wildlife Service

North Florida Field Office

Amendment to Lower St. Johns River Manatee Protection Area

[Federal Register: April 28, 2005 (Volume 70, Number 81)]

[Rules and Regulations]

[Page 21966-21971]

From the Federal Register Online via GPO Access [wais.access.gpo.gov]

[DOCID:fr28ap05-12]

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

Endangered and Threatened Wildlife and Plants; Amendment of Lower St. Johns River Manatee Refuge in Florida

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: The Fish and Wildlife Service is amending a portion of the Lower St. Johns River Manatee Refuge area in Duval County, Florida, to provide for both improved public safety and increased manatee protection through improved marking and enforcement of the manatee protection area. Specifically, that portion of this manatee protection area which lies downstream of the Hart Bridge to Reddie Point will be modified to allow watercraft to travel up to 25 miles per hour (mph) in a broader portion of the St. Johns River to include areas adjacent to but outside of the navigation channel. Watercraft traveling near the banks of the river will be required to travel at slow speed much as they do now. The primary exception will be around Exchange Island where the coverage of the existing State and local slow-speed zones will be expanded. However, in the main portion of the river, watercraft will be allowed to travel at speeds up to 25 mph. The manatee protection area will also be expanded approximately one mile further downstream, to the extent it was originally proposed (68 FR 16602; April 4, 2003), in order to be consistent with existing State and local governmental manatee protection measures and thereby facilitate compliance. This modification is supported by State and local government and parties to the March 18, 2003, Stipulated Order which resulted in the initial rulemaking for this manatee protection area. The current configuration of the manatee protection area is not supported by the State of Florida or Duval County. While the Service is committed to enforcing these current protection measures, State and local government would normally provide a substantial portion of the enforcement

[[Page 21967]]

effort. This rulemaking, through a minor modification in a small portion of the manatee protection area, resolves State and local objections and gains their support through education and enforcement throughout the extent of the manatee protection area. The modification will provide a substantial benefit to manatee conservation. Establishment of manatee protection areas is authorized under the Endangered Species Act of 1973, as amended (ESA), and the Marine Mammal Protection Act of 1972, as amended (MMPA), to further recovery of the Florida manatee (*Trichechus manatus latirostris*) by preventing the taking of one or more manatees. We also announce the availability of a final environmental assessment for this action. Under authority of 5 U.S.C. 553, we find good cause to make this rule final without prior opportunity for public comment because public notice and comment on the rule is contrary to the public interest. However, the public may provide comments on this final rule at any time to the address in the ADDRESSES caption below.

DATES: This rule is effective April 28, 2005.

ADDRESSES: The complete file for this rule is available for inspection, by appointment, during normal business hours at the Jacksonville Field Office, U.S. Fish and Wildlife Service, 6620 Southpoint Drive, South, Suite 310, Jacksonville, Florida 32216.

FOR FURTHER INFORMATION CONTACT: David Hankla or Chuck Underwood (see ADDRESSES section), telephone 904/232-2580; or visit our website at <http://www.fws.gov/northflorida>.

SUPPLEMENTARY INFORMATION: The West Indian manatee is federally listed as an endangered species under the ESA (16 U.S.C. 1531 et seq.) (32 FR 4001), and the species is further protected as a depleted stock under the MMPA (16 U.S.C. 1361-1407). Florida manatees, a native subspecies of the West Indian manatee (Domning and Hayek, 1986), live in freshwater, brackish, and marine habitats in coastal and inland waterways of the southeastern United States. The majority of the population can be found in Florida waters throughout the year, and nearly all manatees use the waters of peninsular Florida during the winter months. The manatee is a cold-intolerant species and requires warm water temperatures generally above 20 [deg]Celsius (68 [deg]Fahrenheit) to survive during periods of cold weather. During the winter months, most manatees rely on warm water from industrial discharges and natural springs for warmth. In warmer months, they expand their range and occasionally are seen as far north as Rhode Island on the Atlantic Coast and as far west as Texas on the Gulf Coast.

Human activities, and particularly waterborne activities, are resulting in the incidental take of manatees. Take, as defined by the ESA, means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or to attempt to engage in any such conduct. Harm means an act which kills or injures wildlife (50 CFR 17.3). Such an act may include significant habitat modification or degradation that kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass includes intentional or negligent acts or omissions that create the likelihood of injury to wildlife by annoying it to

such an extent as to significantly disrupt normal behavioral patterns, which include, but are not limited to, breeding, feeding, or sheltering (50 CFR 17.3).

The MMPA sets a general moratorium, with certain exceptions, on the take and importation of marine mammals and marine mammal products (section 101(a)) and makes it unlawful for any person to take, possess, transport, purchase, sell, export, or offer to purchase, sell, or export, any marine mammal or marine mammal product unless authorized. Take, as defined by section 3(13) of the MMPA means to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal. Harassment is defined under the MMPA as any act of pursuit, torment, or annoyance which--(i) has the potential to injure a marine mammal or marine mammal stock in the wild; or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering.

Humans can cause take of manatees by both direct and indirect means. Direct takings include injuries and deaths from watercraft collisions, deaths from water control structure operations, lethal and sublethal entanglements with recreational and commercial fishing gear, and alterations of behavior due to harassment. Indirect takings can result from habitat alteration and destruction, such as the creation and/or subsequent cessation of artificial warm water refuges, decreases in the quantity and quality of warm water in natural spring areas, changes in water quality in various parts of the State, the introduction of marine debris, and other, more general disturbances. Indirect takings may also result from the construction of docks, boat ramps, and marinas if they lead to increased boat traffic in areas of regular manatee use and manatee protection measures are not in place.

Collisions with watercraft are the largest cause of human-related manatee deaths. Data collected during manatee carcass salvage operations in Florida indicate that more than 1,200 manatees are confirmed victims of collisions with watercraft from 1980 through 2004. Collisions with watercraft comprise nearly 25 percent of all manatee mortalities in that timeframe. Approximately 75 percent of watercraft-related manatee mortality has taken place in 11 Florida counties (Brevard, Lee, Collier, Duval, Volusia, Broward, Palm Beach, Charlotte, Hillsborough, Citrus, and Sarasota) (Florida Fish and Wildlife Commission's Florida Wildlife Research Institute Manatee Mortality Database, 2005).

To minimize the number of injuries and deaths associated with watercraft activities, we and the State of Florida have designated manatee protection areas at sites throughout coastal Florida where conflicts between boats and manatees have been well documented and where manatees are known to frequently occur. Federal authority to establish protection areas for the Florida manatee is provided by the ESA and the MMPA, and is codified in 50 CFR, part 17, subpart J. We have discretion, by regulation, to establish manatee protection areas whenever substantial evidence shows such establishment is necessary to prevent the taking of one or more manatees (that is, to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or to attempt to engage in any such conduct).

We may establish two types of manatee protection areas: manatee refuges and manatee sanctuaries. A manatee refuge, as defined in 50 CFR 17.102, is an area in which we have determined that certain waterborne activities would result in the taking of one or more

manatees, or that certain waterborne activities must be restricted to prevent the taking of one or more manatees, including but not limited to, a taking by harassment. A manatee sanctuary is an area in which we have determined that any waterborne activity would result in the taking of one or more manatees, including but not limited to, a taking by harassment. A waterborne activity is defined as including, but not limited to, swimming, diving (including skin and scuba diving), snorkeling, water skiing, surfing, fishing, the use of water vehicles, and dredge and fill activities.

[[Page 21968]]

The Lower St. Johns River Manatee Refuge was established to prevent the taking of manatees resulting from collisions with watercraft. After public review and comment, the regulation establishing the refuge was published on August 6, 2003, in the Federal Register (68 FR 46869). The portion of this manatee protection area downstream of the Hart Bridge requires watercraft to travel at slow speed outside of the navigation channel of the St. Johns River and at not more than 25 mph in the navigation channel.

This rulemaking revises the restrictions downstream of the Hart Bridge. Watercraft traveling within 300 feet of the left descending bank of the river will be required to travel at slow speed ([see map](#) in the rule portion of this document). Watercraft traveling within an area approximately 1,000 feet from the right descending bank of the river, including that portion of the river between Exchange Island and the right descending bank, and approximately 300 feet channel-ward of Exchange Island, will also be required to travel at slow speed. However, in the remaining portion of the river, watercraft will be allowed to travel at speeds up to 25 mph.

This modification to the current configuration will eliminate some restrictions and provide a greater margin of safety between recreational boaters proceeding at speeds up to 25 mph and large private and commercial vessels. Under the current regulation, any boats traveling at greater than slow speed must travel in the channel. This means that operators of small recreational craft must choose either to share a relatively narrow channel with very large vessels, or travel perhaps several miles at slow speed. The State and county government officials believe that many will opt to share the channel with the larger vessels, unnecessarily placing them in a more dangerous environment. The Service is required under a March 18, 2003, Stipulated Order (*Save the Manatee Club v. Ballard*) approved by the Court to post this area as expeditiously as possible and will complete posting in the near future. This rule will allow the area to be posted in a revised configuration and prevent this safety issue from occurring.

The manatee protection area will also be expanded approximately one mile further downstream, to the extent it was originally proposed at Reddie Point (68 FR 16601; April 4, 2003). Thus, this rule adopts the current State and local speed zone buffer configuration along the shoreline of the river which will facilitate improved signage and enforcement. There were no comments regarding the Reddie Point boundary in the initial rulemaking. We revised the initial proposed boundary here (slow speed, 25 mph in the channel) because of limitations on our ability to mark the channel boundary.

This action will also allow for some signs on wooden posts marking the boundaries of the manatee protection area to be replaced with buoys. This will reduce the danger associated with a collision with these markers.

Finally, this modification also resolves objections of State and local enforcement agencies, who have agreed to assist in enforcing this area as modified. Increased enforcement will improve the effectiveness of the protection measures not only for the benefit of manatees, but for human safety as well.

Section 553(b) of the Administrative Procedure Act (APA) (5 U.S.C. 500 et seq.) allows Federal agencies to proceed immediately to a final rule "when the agency for good cause finds * * * that notice and public procedure thereon are impracticable, unnecessary, or contrary to the public interest." Due to the primary obligation of State and local officials to ensure boater safety and to avoid and minimize navigational problems in a heavily-used waterway that is shared by recreational and non-recreational vessels, we must give weight to statements from public safety and law enforcement officials when they anticipate navigational problems that present public safety concerns. The public safety component, along with the need for prompt implementation of State and local enforcement efforts to reduce or eliminate manatee injuries and mortalities from boat strikes, constitutes our basis for proceeding immediately with the final rulemaking process directly. For these reasons, we find good cause to make this rule final without prior opportunity for public comment.

The APA also provides that agencies must wait a minimum of 30 days before making a rule effective. However, as described above, this rule will modify the manatee protection area to prevent a public safety issue from occurring. The modification affects only a fraction of the overall manatee protection area and will be posted at the same time as the remainder of the area in order to meet the terms of the Stipulated Order. Because delay in implementing the revisions can only result in increased risks to both humans and manatees, it is appropriate to make the rule effective immediately. Therefore, pursuant to section 553(d)(3) of the APA, the Service is making this rule effective immediately. However, the Service will accept comments on this rule at any time.

Required Determinations

Regulatory Planning and Review

In accordance with the criteria in Executive Order 12866, this rule is not a significant regulatory action. The Office of Management and Budget makes the final determination under Executive Order 12866. This rule will not have an annual economic impact of over \$100 million or adversely affect an economic sector, productivity, jobs, the environment, or other units of government. A quantitative assessment of the costs and benefits is not required, nor is consideration of alternatives. No significant economic impacts would result from this modification of the existing manatee refuge impacting approximately 5.5 river miles in one county in the State of Florida.

The purpose of this rule is to modify an existing manatee protection area in the St. Johns River, Duval County, Florida, to provide for a greater margin of safety for recreational

boaters and improve manatee protection through better enforcement and compliance. The economic impacts of this rule are due to the previously described changes in speed zone restrictions in the manatee refuge. We will experience increased administrative costs of approximately \$365,000 due to modified posting requirements. Conversely, the rule may also produce some minimal though undeterminable economic benefits associated with recreational boating and commercial crabbing, as a result of faster travel times through a larger area.

The precedent to establish manatee protection areas has been established primarily by State and local governments in Florida. We recognize the important role of State and local partners, and we continue to support and encourage State and local measures to improve manatee protection.

This rule will not materially affect entitlements, grants, user fees, loan programs, or the rights and obligations of their recipients. Minimal restrictions to existing human uses of the sites will result from this rule. No entitlements, grants, user fees, loan programs or the rights and obligations of their recipients are expected to occur. This rule will not raise novel legal or policy issues. We have previously established manatee protection areas.

Regulatory Flexibility Act

For the reasons set forth in our rule of August 6, 2003 (68 FR 46896), we certify that this rule will not have a

[[Page 21969]]

significant economic effect on a substantial number of small entities as defined under the Regulatory Flexibility Act (5 U.S.C. 601 et seq.). An initial/final Regulatory Flexibility Analysis is not required. Accordingly, a Small Entity Compliance Guide is not required.

Small Business Regulatory Enforcement Fairness Act

This rule is not a major rule under 5. U.S.C. 804 (2). This rule:

- a. Does not have an annual effect on the economy of \$100 million or more. The primary effect of the rule is to ease restrictions on boat speeds in a portion of the river to improve safety. There will be no adverse effects on any businesses.
- b. Will not cause a major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no changes in costs or prices for consumers stemming from this rule.
- c. Does not have significant adverse effects on competition, employment, investment, productivity, innovation, or the ability of U.S.-based enterprises to compete with foreign-based enterprises. There will be no adverse effects to any segment of the community.

Energy Supply, Distribution or Use (Executive Order 13211)

On May 18, 2001, the President issued Executive Order 13211 on regulations that significantly affect energy supply, distribution, and use. Executive Order 13211 requires agencies to prepare Statements of Energy Effects when undertaking certain actions. Because this rule is not a significant regulatory action under Executive Order 12866 and has a limited effect on boat speeds, it is not expected to significantly affect energy supplies, distribution, and use. Therefore, this action is not a significant energy action and no Statement of Energy Effects is required.

Unfunded Mandates Reform Act

In accordance with the Unfunded Mandates Reform Act (2 U.S.C. 1501 et seq.):

a. This rule will not "significantly or uniquely" affect small governments. A Small Government Agency Plan is not required. The designation imposes no new obligations on State or local governments.

b. This rule will not produce a Federal mandate of \$100 million or greater in any year, i.e., it is not a "significant regulatory action" under the Unfunded Mandates Reform Act.

Takings

In accordance with Executive Order 12630, this rule does not have significant takings implications. A takings implication assessment is not required. The manatee protection area is located over State-or privately-owned submerged bottoms. Navigational access to private property is not affected.

Federalism

In accordance with Executive Order 13132, the rule does not have significant Federalism effects. A Federalism assessment is not required. This rule will not have substantial direct effects on the State, in the relationship between the Federal Government and the State, or on the distribution of power and responsibilities among the various levels of government. The State of Florida and local government support the development of this rule.

Civil Justice Reform

In accordance with Executive Order 12988, the Office of the Solicitor has determined that the rule does not unduly burden the judicial system and meets the requirements of sections 3(a) and 3(b)(2) of the Order.

Paperwork Reduction Act

This regulation does not contain collections of information that require approval by the Office of Management and Budget (OMB) under 44 U.S.C. 3501 et seq. The regulation would not impose new recordkeeping or reporting requirements on State or local governments, individuals, businesses, or organizations. We may not conduct or sponsor, and

you are not required to respond to, a collection of information unless it displays a currently valid OMB control number.

National Environmental Policy Act

We have analyzed this rule in accordance with the criteria of the National Environmental Policy Act. This rule does not constitute a major Federal action significantly affecting the quality of the human environment. An environmental assessment has been prepared and is available for review upon request by writing to the Field Supervisor (see ADDRESSES section).

Government-to-Government Relationship With Tribes

In accordance with the President's memorandum of April 29, 1994, "Government-to-Government Relations with Native American Tribal Governments" (59 FR 22951), E.O. 13175, and 512 DM 2, we have evaluated possible effects on federally recognized Indian tribes and have determined that there are no effects.

References Cited

A complete list of all references cited in this rule is available upon request from the Jacksonville Field Office (see ADDRESSES section).

Author

The primary author of this document is David Hankla (see ADDRESSES section).

Authority

The authority to establish manatee protection areas is provided by the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.), and the Marine Mammal Protection Act of 1972 (16 U.S.C. 1361- 1407), as amended.

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Regulation Promulgation

Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as follows:

PART 17--[AMENDED]

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361-1407; 16 U.S.C. 1531-1544; 16 U.S.C. 4201-4245; Pub. L. 99-625, 100 Stat. 3500; unless otherwise noted.

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2. Amend Sec. 17.108 as follows:

- a. By removing the map at paragraph (c)(11)(v) titled "St. Johns River Bridges Area";
- b. By redesignating paragraph (c)(11)(v) as paragraph (c)(11)(vi);
- c. By revising paragraphs (c)(11)(i) through (iv) and adding a new paragraph (c)(11)(v) to read as set forth below; and
- d. By adding a new map, as set forth below, between the two existing maps in the newly designated paragraph (c)(11)(vi).

Sec. 17.108 List of designated manatee protection areas.

(c) * * *

(11) The Lower St. Johns River Manatee Refuge.

(i) The Lower St. Johns River Manatee Refuge is described as portions of the St. Johns River and adjacent waters in Duval, Clay, and St. Johns Counties from Sandfly Point (the intersection of the right descending bank of the Trout River and the left descending bank of the St. Johns River) and Reddie Point, as

[[Page 21970]]

marked, upstream to the mouth of Peter's Branch, including Doctors Lake, in Clay County on the western shore, and to the southern shore of the mouth of Julington Creek in St. Johns County on the eastern shore. A map showing the refuge and two maps showing specific areas of the refuge are at paragraph (11)(vi) of this section.

(ii) In the St. Johns River from Sandfly Point on the left descending bank of the St. Johns River and Reddie Point on the right descending bank of the St. Johns River, upstream to the Hart Bridge, a distance of approximately 5.5 miles (8.8 km), watercraft are required to proceed at slow speed, year-round, within 300 feet (91 m) of the shoreline on the left descending bank of the St. Johns River and within a buffer as marked, typically about 1,000 feet (305 m) from the shoreline along the right descending bank of the river. The slow speed designation also includes that portion of the river between Exchange Island and the right descending bank, a marked buffer approximately 300 feet (91 m) along the west (channel-ward) shoreline of Exchange Island, and a portion of the Arlington River as marked. Watercraft are also required to proceed at not more than 25 miles per hour (40 km/h), year round, in the area posted as such between these slow speed shoreline buffers. See map of "[St. Johns River Bridges Area](#)" in paragraph (11)(vi) of this section.

(iii) From the Hart Bridge to the Main Street Bridge, a distance of approximately 2 miles (3.2 km), watercraft are required to proceed at slow speed, year-round, outside the marked navigation channel and at speeds of not more than 25 miles per hour (40 km/h) in the marked channel (from Channel Marker "81" to the Main Street Bridge, the channel is defined as the line of sight extending west from Channel Markers "81" and "82" to the fenders of the Main Street Bridge). See map of "[St. Johns River Bridges Area](#)" in paragraph (11)(vi) of this section.

(iv) From the Main Street Bridge to the Fuller Warren Bridge, a distance of approximately 1 mile (1.6 km), shoreline to shoreline, watercraft are required to proceed at slow speed (channel included), year-round. See map of "St. Johns River Bridges Area" in paragraph (11)(vi) of this section.

(v) Upstream of the Fuller Warren Bridge: for a distance of approximately 19.3 miles (31.1 km) along the left descending bank of the St. Johns River, watercraft are required to proceed at slow speed, year-round, in a 700-foot (213 m) to 1,000-foot (305 m) as-marked, shoreline buffer from the Fuller Warren Bridge to the south bank of the mouth of Peter's Branch in Clay County; for a distance of approximately 20.2 miles (32.5 km) along the right descending bank of the St. Johns River, watercraft are required to proceed at slow speed, year round, in a 700-foot (213 m) to 1,000-foot (305 m) as marked, shoreline buffer from the Fuller Warren Bridge to the south bank of the mouth of Julington Creek in St. Johns County (defined as a line north of a western extension of the Nature's Hammock Road North); and in Doctors Lake in Clay County watercraft are required to proceed at slow speed, year-round, in a 700-foot (213 m) to 900-foot (274 m) as-marked, shoreline buffer (approximately 12.9 miles (20.8 km)). See map of "[Lower St. Johns River](#)" in paragraph (11)(vi) of this section.

(vi) * * *

[[Page 21971]]

Dated: April 22, 2005.
Craig Manson,
Assistant Secretary for Fish and Wildlife and Parks.
[FR Doc. 05-8526 Filed 4-27-05; 8:45 am]

Appendix C

PIRATES COVE

68C-22.027 (I)(b)6
300' SLOW SPEED SHORELINE BUFFER

JACKSONVILLE
NAS

MULBERRY COVE

BLACK PT

GIDDYS CREEK

SLOW SPEED

68C-22.027 (I)(b)5
VARIABLE WIDTH
SLOW SPEED BUFFER

68C-22.027 (I)(b)5
VARIABLE WIDTH
SLOW SPEED BUFFER

BUCKMAN BRIDGE
1-295

CLAY COUNTY
DUVAL COUNTY

SAN JOSE BLVD

68C-22.027 (I)(b)9
VARIABLE WIDTH
SLOW SPEED
BUFFER

68C-22.027 (I)(b)5
VARIABLE WIDTH SLOW SPEED BUFFER

68C-22.027 (I)(b)7
300' SLOW SPEED SHORELINE BUFFER

68C-22.027 (I)(a)3
SLOW SPEED SHORE TO SHORE

HOOD LANDING
ROAD

SR 13

JULINGTON CREEK

DURBIN CREEK

68C-22.027 (I)(b)7
SLOW SPEED WITHIN 450' OF BRIDGE

68C-22.027 (I)(b)8
VARIABLE WIDTH SLOW SPEED BUFFER

NATURE'S
HAMMOCK
ROAD NORTH

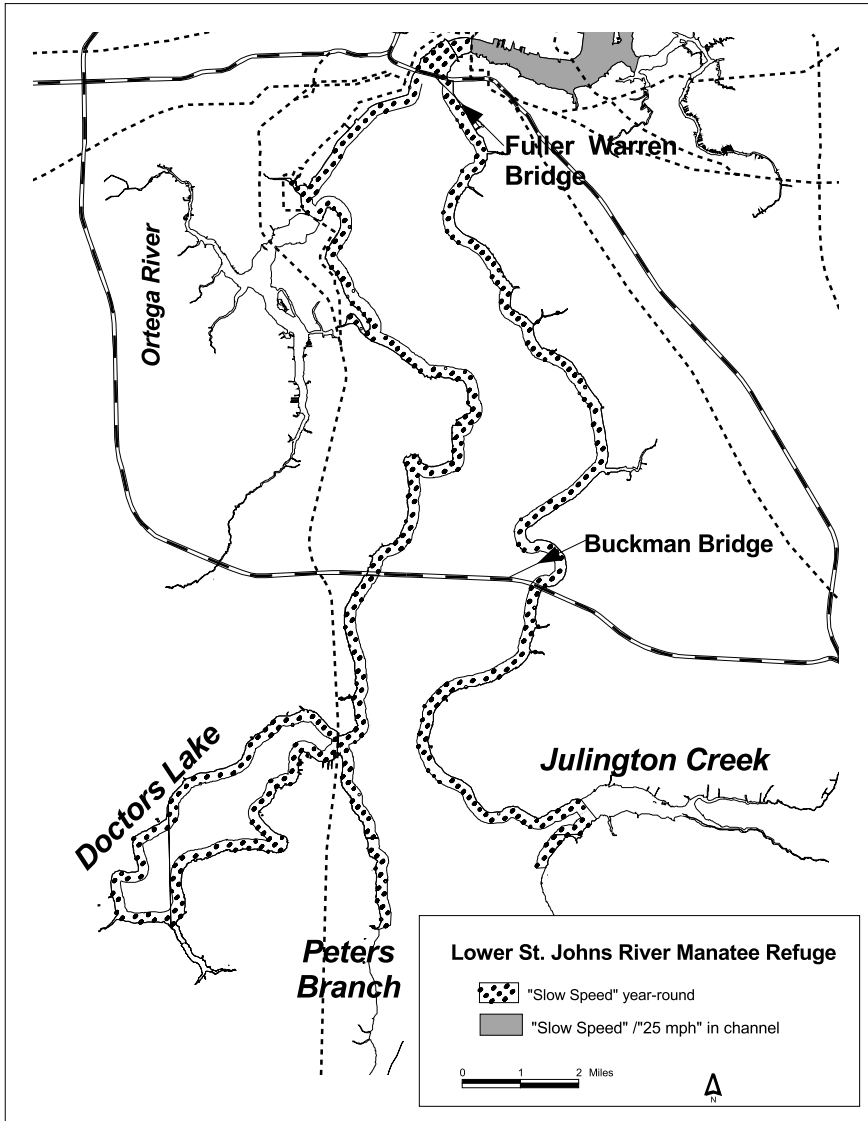
DUVAL COUNTY
ST JOHNS COUNTY

ALMODOY CLAY

U.S.17
68C-22.027 (I)(b)10
SLOW SPEED WITHIN
500' OF BRIDGE

PETER BRANCH





Lower St. Johns River

APPENDIX D

County-Adopted Boating Restricted Areas

68D-24.155 St. Johns County Boating Restricted Areas.

(1) For the purpose of regulating speed and operation of vessel traffic on the Florida Intracoastal Waterway within St. Johns County, Florida, the following boating restricted areas are established:

(a) 1. S. R. 210 – Palm Valley Bridge – An Idle Speed No Wake boating restricted area shoreline to shoreline, in and adjacent to the Florida Intracoastal Waterway, 500' north of the centerline of the S. R. 210 Bridge, south to 500' south of the centerline of the S. R. 210 Bridge, as depicted in Drawing A.

2. Vilano Beach Bridge (Tolomato River) – An Idle Speed No Wake boating restricted area shoreline to shoreline, in and adjacent to the Florida Intracoastal Waterway, 500' north of the centerline of the Vilano Beach Bridge, south to 500' south of the centerline of the Vilano Beach Bridge, as depicted in Drawing B.

3. Bridge of Lions (Matanzas River) – An Idle Speed No Wake boating restricted area shoreline to shoreline, in and adjacent to the Florida Intracoastal Waterway, 500' north of the centerline of the Bridge of Lions Bridge, south to 500' south of the centerline of the Bridge of Lions Bridge, as depicted in Drawing C.

4. S. R. 312 Bridge (Matanzas River) – An Idle Speed No Wake boating restricted area shoreline to shoreline, in and adjacent to the Florida Intracoastal Waterway, 500' north of the centerline of the S. R. 312 Bridge, south to 500' south of the centerline of the S. R. 312 Bridge, as depicted in Drawing D.

5. Crescent Beach Bridge at S. R. 206 (Matanzas River) – An Idle Speed No Wake boating restricted area in and adjacent to the Florida Intracoastal Waterway, 500' north of the Crescent Beach Bridge, south to 500' south of the centerline of the Crescent Beach Bridge, as depicted in Drawing E.

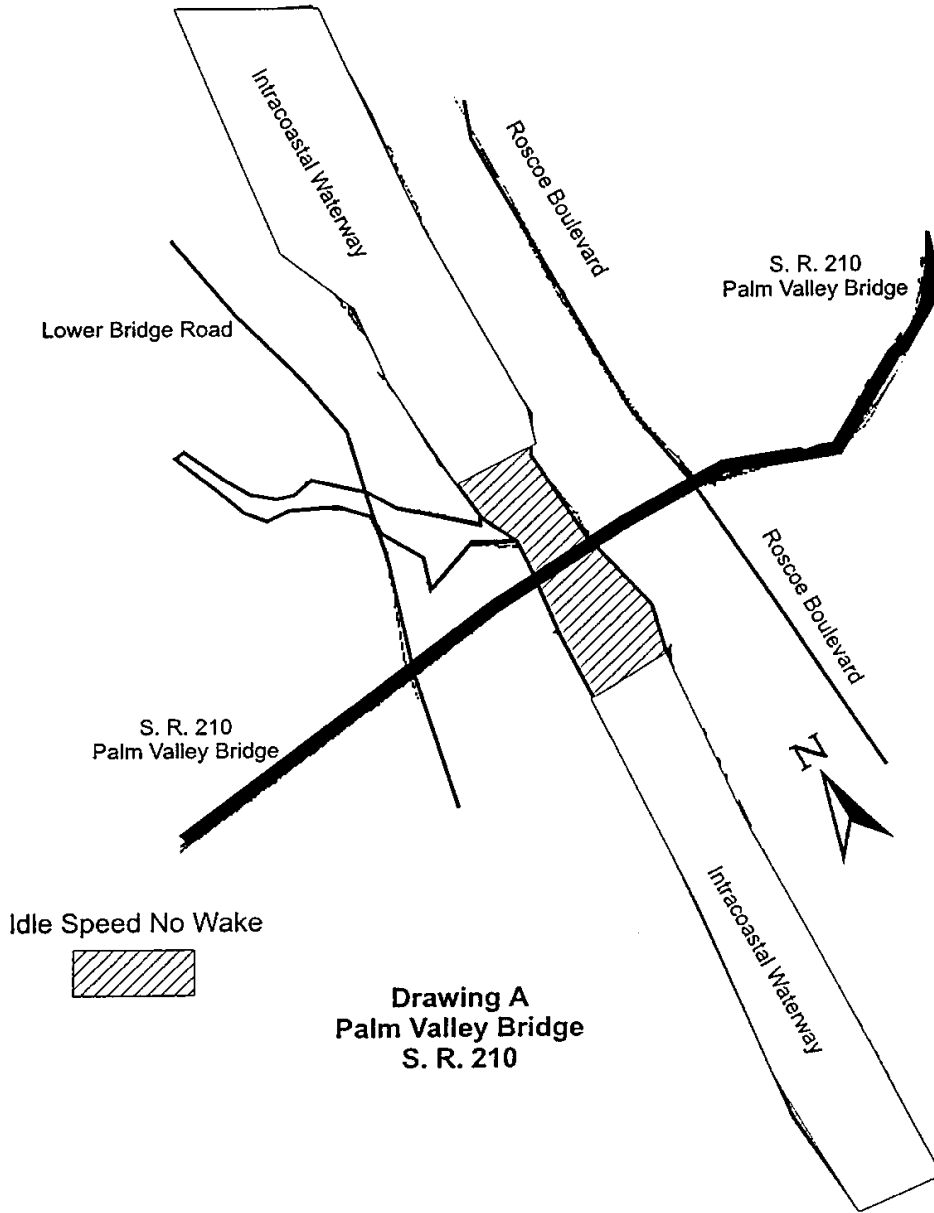
6. Devil's Elbow Boat Ramp – A Slow Speed Minimum Wake zone from 500 feet north ($29^{\circ}45'16\text{N}/81^{\circ}14'58\text{W}$) of the centerline of the Devil's Elbow Boat Ramp to 500 feet south ($29^{\circ}45'07\text{N}/81^{\circ}14'59\text{W}$) of the centerline of the Devil's Elbow Boat Ramp in and adjacent to the Florida Intracoastal Waterway as depicted in Drawing F.

(b) St. Johns County is authorized to install and maintain appropriate regulatory markers as directed by the Division of Law Enforcement within the boating restricted areas. St. Johns County may enter into agreements with public or private organizations or individuals to effect this purpose.

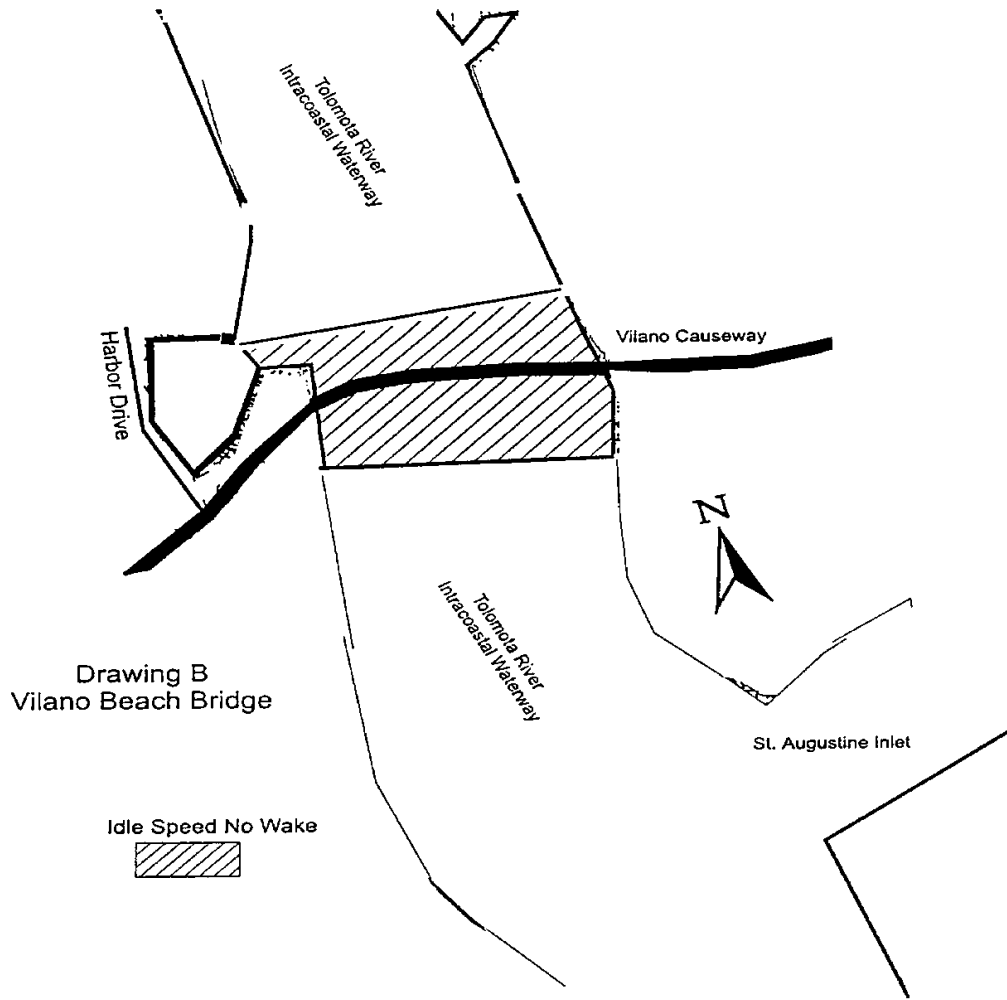
(2) The boating restricted areas are depicted on the following drawings:

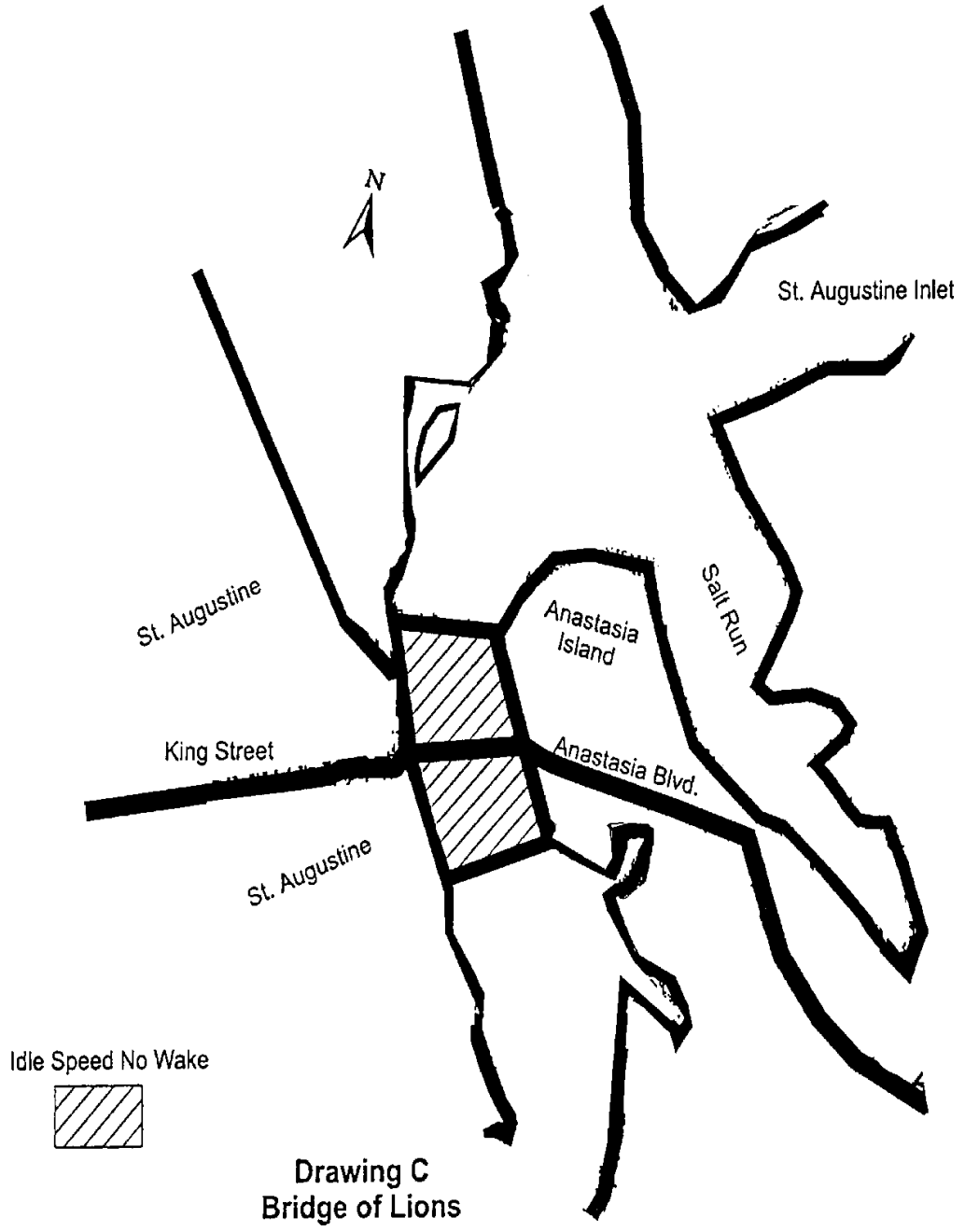
SEE FLORIDA ADMINISTRATIVE CODE FOR “DRAWINGS A THROUGH E”
Specific Authority 327.04, 327.46 FS. Law Implemented 327.46 FS. History—New 12-11-97, Formerly 62N-24.155, Amended 11-14-01.

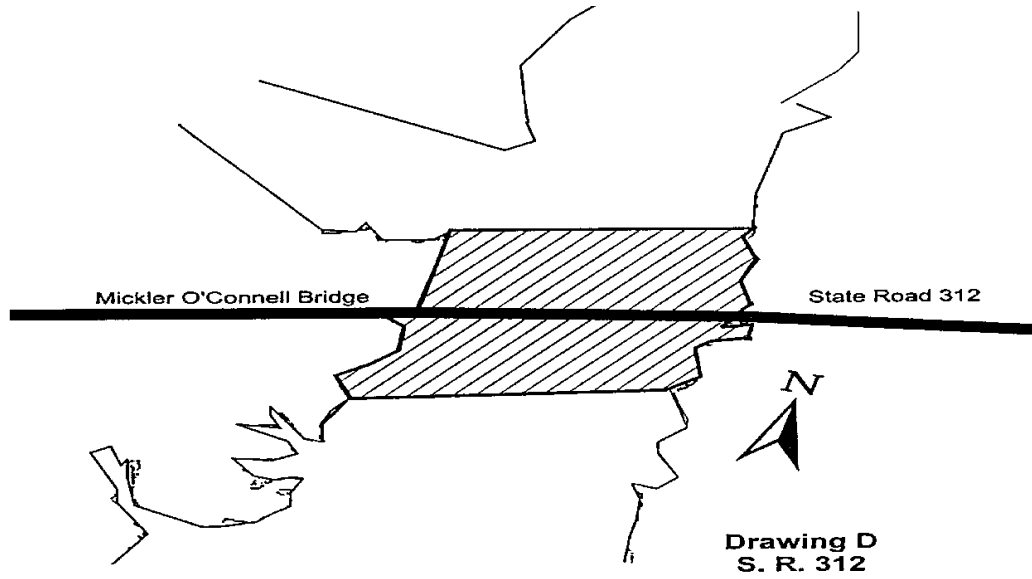




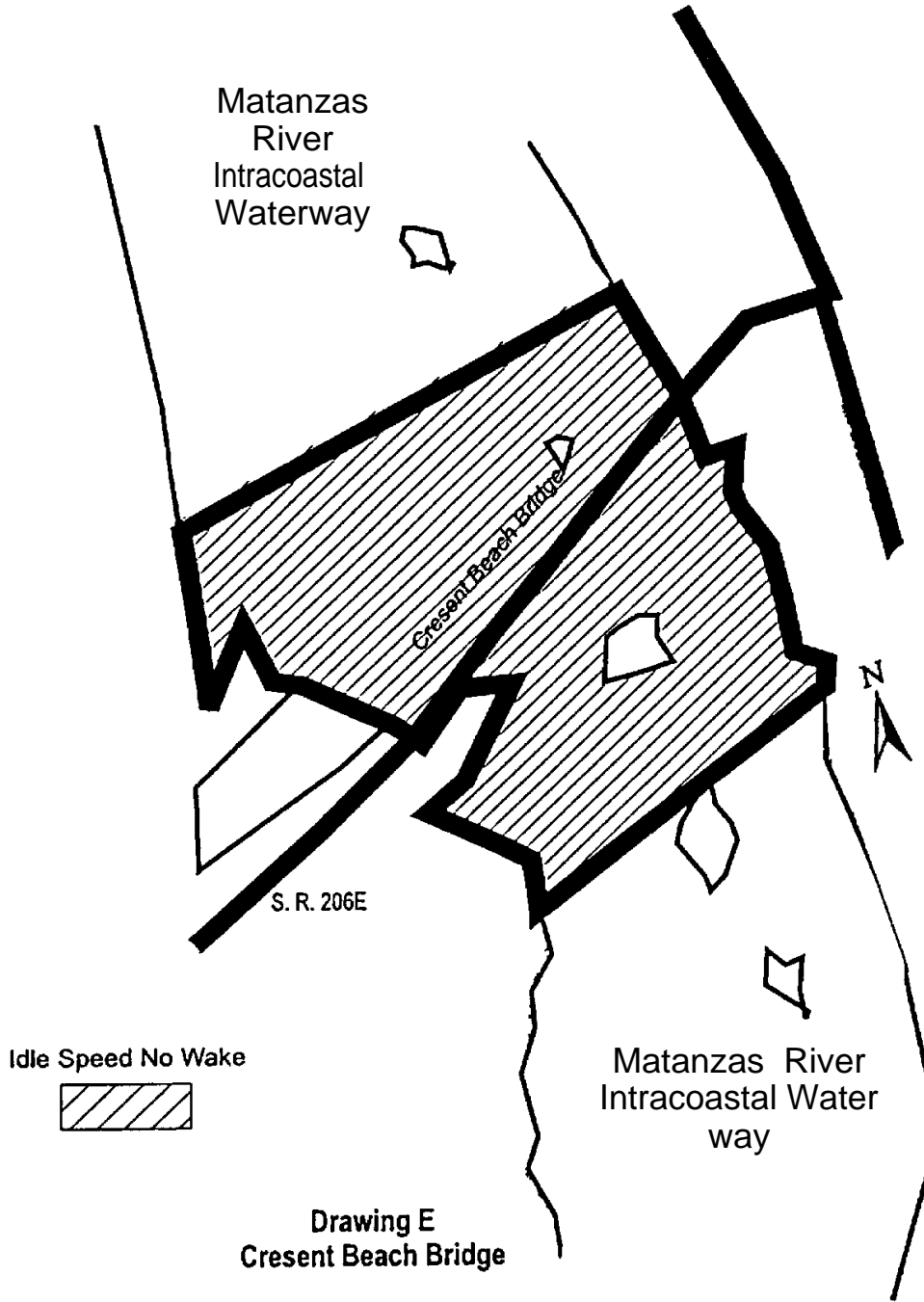
Drawing A
Palm Valley Bridge
S. R. 210







Idle Speed No Wake

*Specific Authority 327.04, 327.46 FS. Law
Implemented 327.46 FS. History—New 12-11-
97, Formerly 62N-24.155*

APPENDIX E

**Excerpts from the St. Johns County Comprehensive Plan
which have some relevancy to the protection of manatees
and/or their habitat**

A. LAND USE ELEMENT

Goal A.1

To effectively manage growth and development by designating areas of anticipated future development which satisfy demand where feasible, in a cost-efficient and environmentally acceptable manner. Encourage/accommodate land uses which make St. Johns County a viable community. Creating a sound economic base and offering diverse opportunities for a wide variety of living, working, shopping, and leisure activities, **while minimizing adverse impact on the natural environment.**

Objective A.1.1

Environmental Conditions

The County shall designate future land uses based upon environmental conditions and constraints including but not limited to: vegetation, topography, soil conditions, wildlife, aquifer recharge areas, and drainage. The County shall coordinate with state and federal agencies responsible for environmental and natural resource protection to include sharing of environmental data and studies to support the designation of appropriate land uses.

Policies

A.1.1.1 Protect estuaries by ensuring compliance with state and federal standards for wastewater discharge into Class II and III waters through coordination between the County's development review process and state and federal permitting requirements.

A.1.1.2 Protect natural resources by working closely with various local, state, and federal agencies in collecting information, coordinating development permitting and reporting violations of laws and regulations which would have a negative impact on the environment.

A.1.1.3 The County shall research and, consistently with applicable law, shall apply for state and federal grants to purchase open space natural resources for conservation.

APPENDIX E – Excerpts from the St. Johns County Comprehensive Plan

Objective A.1.5 Coastal Areas

Through the Future Land Use Plan, the County shall ensure safe evacuation of coastal areas and shall coordinate coastal area population densities with appropriate regional hurricane plans. The County shall limit increases in population density within the Coastal High Hazard Area.

Policies

- A.1.5.1 For the purposes of this Plan, the Coastal Planning Area (also "Coastal Area") shall mean that portion of unincorporated St. Johns County lying easterly of the mean high water line of the west shoreline of the Intracoastal Waterway.
- A.1.5.2 The Coastal High Hazard Area (CHHA) shall mean the evacuation zone for a Category I hurricane as established in the 1998 Hurricane Evacuation Study for Northeast Florida, as updated.
- A.1.5.3 Existing evacuation routes shall be mapped and physically posted. Special consideration for improvements to these transportation facilities shall be given within the County's Capital Improvement Program and in the priorities for funding for the FDOT Five-Year Work Program and MPO Transportation Improvement Program.
- A.1.5.4 The County shall update its hurricane evacuation plan and disaster preparedness plan consistent with state and federal requirements and also shall re-evaluate its effectiveness immediately after a major disaster event to recommend appropriate improvements.
- A.1.5.5 The County shall update its hurricane guide annually, if needed, showing: evacuation routes, hurricane hazards, safety procedures, shelters, and other pertinent information for its citizens.
- A.1.5.6 The County shall not approve Comprehensive Plan amendments that increase the residential density on the Future Land Use Map within the Coastal High Hazard Area (CHHA).
- A.1.5.7 The County shall prohibit new development of adult congregate living facilities, nursing homes for the aged, total care facilities, and similar developments within the Coastal High Hazard Area (CHHA).
- A.1.5.8 The County shall support programs of land acquisition in the Coastal Area for protection of natural resources and critical dune systems.
- A.1.5.9 Amendments to the Comprehensive Plan in the Coastal Area shall not be approved which will result in an increase in hurricane evacuation times, without mitigation of the adverse impact to evacuation times.

**Objective A.1.15
Comprehensive Plan Amendment and Review**

The County shall have a mechanism for review and amendment of the Comprehensive Plan.

Policies

- A.1.15.1 St. Johns County shall provide for the amendment of the Comprehensive Plan in accordance with the provisions of Chapter 163, F.S. Applications to amend the Future Land Use Map may be submitted by the owner, or agent for the owner, of property proposed for redesignation; by County Planning staff; by the Planning & Zoning Agency; or by the Board of County Commissioners. Applications to amend other portions of the Comprehensive Plan may be submitted by any interested party, the County Planning staff, by the Planning & Zoning Agency, or by the Board of County Commissioners. Applications will be charged an appropriate fee for the review of the proposed amendments.
- A.1.15.2 Applications requesting amendment to the Comprehensive Plan or Future Land Use Map shall be evaluated based upon criteria which shall include, but not be limited to the following:
- (a) consistency with the Goals, Objectives and Policies of the St. Johns County Comprehensive Plan;
 - (b) consistency with the adopted State Comprehensive Plan and Northeast Florida Strategic Regional Policy Plan;
 - (c) impacts on public facilities and services;
 - (d) environmental impacts; and,
 - (e) compatibility with surrounding areas.
- A.1.15.3 Unless exempted by Chapter 163, F.S., proposed amendments to the Comprehensive Plan shall be adopted no more than twice per year and applications to amend the Comprehensive Plan shall only be accepted during the months of December and June.
- A.1.15.4 Pursuant to applicable law, the County shall prepare and adopt an Evaluation and Appraisal Report (EAR) which shall evaluate the effectiveness of the Comprehensive Plan. The County shall prepare and adopt amendments to the Plan to address deficiencies of the Plan as identified in the Evaluation and Appraisal Report.

APPENDIX E – Excerpts from the St. Johns County Comprehensive Plan

LAND USE GOPs - As Amended 11/03/04 PAGE A - 38

Goal A.2

To ensure that the Northwest Sector of St. Johns County will grow in the form of complete communities and neighborhoods within a framework of connected development edges and recreational trails, an orderly roadway and transportation circulation system, that will sustain and provide a high quality of life, protection of the natural environment, a sound economy, efficient movement of goods, services, and people and provide a healthy social and cultural environment for all residents. For the purpose of this Goal, the Northwest Sector shall be defined as the area of St. Johns County bounded by Duval County, the St. Johns River, CR 208, and Interstate 95.

Vision Statement

The Northwest Sector Overlay provides St. Johns County with a community planning approach to respond to regional growth trends that are creating a sprawl development pattern of single use and disconnected residential "bedroom" subdivision development within the Northwest Sector. The Northwest Sector Overlay allows St. Johns County to make development decisions in the context of complete and sustainable communities and to understand the impact of the growth trends on community patterns, community life cycles, the environment, the economy and transportation networks.

Natural environmental features within the Northwest Sector and the goal to provide an interconnected transportation network guide the Northwest Sector Overlay vision. Environmental features will be incorporated into conservation areas, greenways, greenbelts, open space and recreation areas to create a development pattern that accommodates sustainable development while protecting the rural character held sacred by residents.

Proper design using the following goals, objectives and policies will allow a balance between development and the natural environment and adhere to the following Vision Principles:

- **Creation of a development edges and recreational trails system that connect the associated uplands, wetlands, recreational areas, and greenbelt corridors.**
- Provision of scenic edge along designated roadway corridors to maintain the rural character of existing and future roadways.
- Recognition of the need for compatibility between new and existing development within the Northwest Sector.
- Balance a variety of land uses and housing to reduce reliance on the regional roadway network.
 - Improve jobs-to-housing balance within the Northwest Sector of St. Johns County.
 - Provide commercial centers that include commercial, civic, cultural and recreational uses designed at a human scale and provide a sense of place.

APPENDIX E – Excerpts from the St. Johns County Comprehensive Plan

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Sector.

- (d) Development edges and recreational trails may also include hiking and biking trails, nature study areas, nature trails, historic areas and structures, community garden areas, and passive parks. Stormwater ponds may be allowed within the development edge when the pond is designed as an amenity to the neighborhood and is permanently protected from development.
- (e) Development edges and recreational trails shall be interconnected to areas outside the Northwest Sector and surrounding neighborhoods, where feasible.
- (f) PRDs within the Northwest Sector Overlay shall not be permitted to amend the Reserve Area of the PRD for development purposes if incorporated into the development edge or recreational trail system.
- (g) New road construction or reconstruction of existing roads that are designated on the Northwest Sector Overlay Map shall provide for pedestrian trails, bike trails, upland wildlife and wetland crossings to pass under the roadway.
- (h) Ravines along the St. Johns River shall be protected through the use of innovative design approaches that ensure protection of the ravines.

A.2.1.4 Northwest Sector Scenic Edges

- (a) Scenic edges shall be provided to preserve the rural character and preserve and enhance scenic viewsheds, such as, scenic vistas, the St. Johns River, natural areas, and agricultural areas within the Sector. The primary purpose of scenic edges is to screen development and designed in a way that creates a natural edge between development and the roadway through the use of a variety of native canopy trees, understory trees, bushes, shrubs, and ground cover. Scenic edges are also an integral part of the development edges and recreational trail system that provide trails, sidewalks, and cart paths.

Scenic edges shall be provided along all arterial, major collector, and proposed roads depicted on the Northwest Sector Overlay Map and shall provide for an average 75 feet in width located outside the road right-of-way. The specific width and extent of these scenic edges shall be determined and identified with the proposed development. The scenic edge shall be in addition to any required right- of-way dedication or reservation.

Within the Community Commercial Future Land Use Map designation located at SR 13 and Racetrack Road, or where the lot depth of a development parcel, or portion thereof, measured from the property line or reserved right-of-way is less than 500 feet, the scenic edge shall be allowed to be reduced to 30 feet through the application of performance standards that will provide sufficient landscaping to preserve or enhance the rural character along the roadway. These performance ...

LAND USE GOPs - As Amended 11/03/04 PAGE A-59

APPENDIX E – Excerpts from the St. Johns County Comprehensive Plan

shall work with School District to locate elementary schools in close proximity to neighborhoods to encourage walkability.

A.2.1.5 Northwest Sector Blueways

St. Johns County shall initiate planning for the creation of a Blueway System to include: riverfront parks and canoe trails from Durbin Creek south along the St. Johns River to Picolata. New development located along the St. Johns River shall reserve land for public access to the river, except where the County determines such access is not needed or is not appropriate.

A.2.1.6 Northwest Sector Greenways

The Northwest Sector Vision Process identified the need for a Greenway system, including wetlands and uplands, to provide wildlife habitat, recreational opportunities, natural corridors, aesthetics, and open space. In order to establish a greenway system it is necessary to identify funding sources to purchase these lands. When completed, St. Johns County shall use the Natural Communities and Wildlife Habitat Inventory, the Countywide Greenway Master Plan, and its Land Acquisition and Management Program (LAMP) Board to ascertain lands that provide a connected greenway system within the Northwest Sector. As such potential greenway land and funding sources become available the County may purchase these systems or provide tax incentives, transfers of development rights, or perpetual conservation easement to protect them.

New development within the Northwest Sector may contribute land or funding sources to the County to facilitate the creation of the greenway. Impact fee credits may be requested for the provision of this land pursuant to the requirements established in the County's Impact Fee Ordinances. In lieu of impact fee credits, the Board of County Commissioners may consider incentives in exchange for these lands. Such incentives may include but not limited to additional density, flexible setbacks, transfer of development rights or an accelerated timing and phasing of development.

A.2.1.7 Community Planning Public Participation

Proposed Comprehensive Plan amendments, planned development applications, and DRI applications shall provide for community public participation. Following pre-application submittal with the County but prior to the Planning and Zoning Agency and Board of County Commissioners public hearings, new development within the Northwest Sector shall be planned with community public participation comprised of the County, the applicant, existing residents and landowners. Community shall be defined at the time of the pre-application review for the planned development based upon impacts that may occur to the surrounding area. The boundaries of the community shall be provided within the planned development application.

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D. INFRASTRUCTURE ELEMENT SANITARY SEWER SUB-ELEMENT Goal D.1

St. Johns County shall maintain an efficient system of sanitary sewer disposal, which prevents the degradation of the existing resources, meets existing and projected demands, promotes orderly growth and development and protects the public health of the community.

Objective D.I.I Growth Management\ Concurrency Management

The County shall implement procedures which will coordinate the extension of sewer facilities, or the increase in capacity of sewer facilities, in order to: meet future needs, to correct existing sewer facility deficiencies, and to promote compact urban growth. All system improvements for replacement, expansion, or increase in capacity of sewer facilities shall comply with the existing or newly adopted level of service standards for the facilities.

Policies

D.1.1.I The County shall encourage growth management practices within the Development Areas which promote contiguous, compact development through the availability of utility services.

D.1.1.2 New public infrastructure shall be planned and designed to be compatible with adjacent land uses, both existing and future and shall not promote development located in Environmentally Sensitive Lands (ESL's).

D.1.1.3 The County shall, through its Future Land Use Map and Comprehensive Planning activities, direct new high density development to the Development Area Boundaries as designated on the 2015 Future Land Use Map.

D.1.1.4 New public infrastructure and public services shall be constructed and expanded in an orderly manner, with costs shared as appropriate, on a proportionate basis, by those benefiting from the service.

D.1.1.5 Both public and private sanitary sewer lines shall serve developments located within the Development Areas as identified by the 2015 Future Land Use Map. When it is necessary for potable water lines to be extended to connect one Development Area with another, the extension of such transmission lines shall not be construed as justification for development at intensities greater than is allowed in the Rural/Silviculture (R/S) or Agriculture-Intensive (A-I) areas as designated on the 2015 FLUM.

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D.1.1.6 In an effort to promote orderly contiguous compact development, the County shall adopt regulations establishing criteria identifying the extent of where sanitary sewer utility service areas will be located. Such regulations shall define the extent of where centralized potable water and sanitary sewer utility services will be provided by St Johns County Utilities, and/or by municipalities, and/or by utilities certified by the Florida Public Service Commission and/or utilities certified by the St. Johns County Water and Sewer Authority.

D.1.1.7 The extension of sanitary sewer services, beyond the Development Area Boundaries, shall be extended in a manner which prevents urban sprawl and leap frog development and is consistent with the adopted Utility Service Area ordinance. Such extensions must meet the following criteria:

(a) Wastewater treatment capacity must be available;

(b) The proposed extension is funded by the proposed development, or the project is adopted by the capital improvement schedule;

(c) The extension is consistent with the approval of a large scale comprehensive land use amendment as specified in the Future Land Use Element policies A.1.2.5. and A.1.2.6.

(d) The extension is of sufficient capacity to provide for the connection of adjacent systems.

Provisions for the extension of sanitary sewer services beyond the Development Area Boundaries may be waived in emergency situations, such as failure of package treatment plants or septic tank systems.

D.1.1.8 The development of growth management strategies shall be coordinated between the County Planning Department and the County Utility Department.

D.1.1.9 New public infrastructure within the Coastal Area shall be planned and constructed in a manner which minimizes the impact upon coastal marshes, wetlands and surface water. New infrastructure development within the Coastal Areas shall be subject to the Land Development Regulations.

D.1.1.10 Public expenditures within the Coastal High Hazard Areas (CHHA) shall be limited pursuant to Objective H.I.4. and supporting policies unless required for the health, safety or welfare of existing residents.

D.1.1.11 Sanitary sewer availability shall not provide justification for development approval.

D.1.1.12 Proposed developments in St. Johns County shall meet sanitary sewer concurrency

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management approvals as required by the Land Development Regulations:

- (a) prior to rezoning approval; or
- (b) prior to final development permit approval.

D.1.1.13 St. Johns County shall obtain quarterly Department of Environmental Protection (DEP) sanitary sewer data reports containing information on the total capacity and facility demand for each utility system in the county to assure that the adopted level of service (LOS) standards are maintained and the Concurrency Management System is up to date.

D.1.1.14 The County shall discourage the discharge of any new or upgraded public or private sanitary sewer facility into the estuarine waters of the County.

D.1.1.15 Coastal water and sewer development shall be subject to the County's Land Development Regulations, Utility Ordinance 97-63, Private Utility Ordinance 98-25 and the requirements established pursuant to Section 381.00655, F.S.

D.1.1.16 The location of the County's water and sewer lines can be obtained from the County's Utility Department upon request.

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Objective D.1.3. Wastewater Systems

St. Johns County shall continue to discourage the use of wastewater systems that are package treatment plants; but when necessary, the county shall require the package wastewater treatment systems be constructed to run efficiently and effectively to prevent water degradation.

Policies

- D.1.3.1 The County shall continue to replace package treatment plants with regional sewer facilities, and shall retire a minimum of 5 additional package treatment plants by the year 2005.
- D.1.3.2 The County shall ensure that, prior to the issuance of a development order or permit, the applicant has demonstrated that the project complies with Federal, State and Local permit requirements for wastewater systems (package treatment plants).
- D.1.3.3 St. Johns County shall require wastewater disposal agreements whereby package treatment plants may be interconnected and replaced by regional treatment facilities in order to improve operating efficiencies. Such wastewater agreements shall state that at the time deemed appropriate by the county, the wastewater system shall be acquired by the county for operation and maintenance.
- D.1.3.4 Wastewater Systems (package treatment plants) shall be allowed within the Development Areas only as a temporary measure and shall be built according to applicable state or local standards. Once centralized sanitary sewer is available, the County shall require private wastewater systems, through a wastewater disposal agreement, to be decommissioned and connected to the centralized utility system.
- D.1.3.5 By December 2001, all new package treatment plants constructed in the County shall be required to construct their proposed facilities according to the St. Johns County Utility Department's sanitary sewer facility construction standards with an overall goal of reaching Advanced Waste Treatment (A WT) standards for all plants. The St. Johns County Utility Department shall coordinate with DEP on the implementation of the County's mandatory package treatment plant construction standards.

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Objective D.1.4 Septic Tanks

The County shall continue to regulate the use of on-site disposal facilities to assure compliance with Federal, State, Regional, and County regulations, and install regional facilities in accordance with the Capital Improvements Element in order to reduce the number of septic tanks installed annually in new developments by 15% by 2002.

Policies

- D.1.4.1 Septic tanks, at a minimum, shall comply with established State standards, including suitable soil types and minimum lot sizes. The County shall continue to enforce established State standards through the St. Johns County Health Department review of applications for septic tanks.
- D.1.4.2 The County shall continue to apply the State established minimum setback for septic tank drain fields in areas adjacent to any stream, creek, pond or other open water body.
- D.1.4.3 Pursuant to applicable law as required by St. Johns County Land Development Regulations (LDRs), residents using septic tank systems shall be required to tie into centralized sewer systems once that system becomes available in the area.
- D.1.4.4 Septic Tanks and their associated drain fields shall be prohibited within wetland area depending on the specific regulatory agency's definition of wetlands.
- D.1.4.5 New developments above the St. Johns County Health Department's threshold(s) for septic tank use shall rely upon public or private sewer systems and wastewater treatment plants built to county/state specifications.
- D.1.4.6 In an effort to protect the health, safety and welfare of the citizens, the County shall strongly encourage the use of advance on-site treatment and disposal systems for new development located within 100 feet of the surface waters along the Guana, Tolomato, Matanzas and St. Johns Rivers which is not served by centralized sewer service. The lot size and proximity to surface water for new developments shall be considered in the review and pursue standards.
- D.1.4.7 By 2002, St Johns County shall encourage the use of advanced on-site treatment and disposal systems for new development on a parcel located within the Environmental Sensitive Lands (ESLs), as designated on the FLUM series, which does not have central sanitary sewer currently available.

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Objective D.1.5 Surface Water and Groundwater Quality

St. Johns County shall take measures to protect the surface and ground water quality from any further water quality degradation.

Policies

- D.1.5.1 St. Johns County shall support, encourage and coordinate the water quality monitoring by local, state and federal agencies which will identify and formulate plans to address point and non-point sources of surface water pollution.
- D.1.5.2 By December 2003 or sooner, St. Johns County in coordination with DEP shall adopt standards and procedures which promote and regulate the Marine Best Management Practices (BMPs).
- D.1.5.3 Disposal of sludge shall be allowed only in areas which will not adversely impact groundwater resources, recharge areas or watersheds that drain into the surface water supplies.

D. INFRASTRUCTURE ELEMENT

STORMWATER MANAGEMENT SUB-ELEMENT

Goal D.3.

St. Johns County shall provide an efficient and environmentally sound system of Stormwater Management. This system shall increase the efficiency of the existing system, afford reasonable protection from flooding, and protect the quality of surface water and groundwater in St. Johns County.

Objective D.3.1 Surface Water Management

By 2001, the County shall seek funding (i.e. stormwater utility or other revenue sources) so the County can work toward completing a County-wide Master Drainage Study. This Master Drainage Study shall include inventories of existing drainage facilities, geographic locations, land uses, operating entities, design capacities, existing capacity usage, general performance, impacts of the facilities on the natural environment, problems and opportunities solutions to the deficiencies. Upon completion of the drainage study, the County shall review and amend the Plan to include or implement the study's findings.

Policies

- D.3.1.1 The County shall coordinate with the Department of Environmental Protection (DEP) and the St. Johns River Water Management District (SJRWMD) in the identification of all drainage basins in the County to assure uniformity of basin designation.
- D.3.1.2 As the drainage studies for each sub-basin are completed, the County shall establish drainage facility priorities in the sub-basin based on the potential damage created by flooding, the water quality in the area, and the impacts to areas of special concern (e.g. OFW, Class II, etc.).
- D.3.1.3 Upon identification of deficiencies by the Master Drainage Study, the County shall take action to address such deficiencies throughout the establishment of stormwater utilities (including other revenue sources) for the affected areas, or other appropriate implementation mechanisms.
- D.3.1.4 By 2000, the County shall develop an inventory of all new private and public drainage facilities, easements and rights-of-way. By 2001, both private and public drainage facilities, easements and rights-of-way locations shall be mapped.

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- D.3.1.5 By 2003, the County shall develop a map identifying the existing drainage systems, land uses, soil types and topographical information.
- D.3.1.6 By 2003, the County shall develop a map identifying where the major drainage problems have occurred and what drainage problems the County has corrected.
- D.3.1.7 There shall be no reduction in the flood storage capacity or the other natural functions and values of the floodplain in St. Johns County in areas designated as regulatory floodway as updated by FEMA Flood Insurance studies in St. Johns County. Encroachments shall be prohibited within designated regulatory floodway including, but not limited to, fill, new construction and development improvements, that would result in any increase in flood levels.
- D.3.1.8 The County shall regulate development within the floodprone areas to minimize flood storage capacity reduction, so that post development equals pre- development standards which will afford protection to life and property within the floodplain.
- D.3.1.9 St. Johns County shall continue to coordinate with the SJRWMD and participate in the ongoing programs of the St. Johns River Surface Water Improvement Management (SWIM) program and the Northern Coastal Basins programs, and work with the SJRWMD on the long term ambient water quality monitoring program, establishing pollutant load reductions goals and monitoring freshwater inflow.
- D.3.1.10 St. Johns County shall continue to coordinate with Department of Environmental Protection (DEP) and participate in the ongoing programs recommended by the Guana, Tolomato, Matanzas (GTM) Task Force as established in their Recommendations and Conclusions.
- D.3.1.11 St. Johns County shall continue to coordinate with DEP and SJRWMD to utilize water quality data and other appropriate biological indicators to design water management practices that facilitate the maintenance and/or improvement of the existing water quality.
- D.3.1.12 St. Johns County shall continue to work with DEP and SJRWMD to develop management practices for water resources to mitigate urban and agriculture non-point sources of water degradation.
- D.3.1.13 The use, storage, transmission, or generation of hazardous substances, or substances which may artificially accelerate the eutrophication of the wetlands and water bodies, is prohibited within the wetland systems.

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- D.3.1.14 The County shall seek new funding sources to implement the best management practices for water resources identified as shellfish harvesting areas, Northern Coastal Basins Reconnaissance Report and the St. Johns River SWIM program.
- D.3.1.15 The County shall work with the St. Johns River Water Management District (SJRWMD) and the Department of Environmental Protection (DEP) and the Environmental Protection Agency (EP A) to educate and distribute information on the surface water resources in the County.
- D.3.1.16 The County shall prepare to address the National Pollution Discharge Elimination System compliance requirements of the Federal Clean Water Act amendments. The County will initiate program planning activities and implement a stormwater management program as defined by the Clean Water Act by 2002.

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Objective D.3.4 Correction of Existing Problems

By 2005, the County shall establish a program for the correction of existing stormwater management deficiencies. In addition, this program shall address anticipated future deficiencies and include a program for the correction of these problems.

Policies

- D.3.4.1 The County shall implement the recommendations of the Stormwater Management facility improvements of the Comprehensive Stormwater Management Program - Phase IB report and the future County-wide Master Drainage Study as funding becomes available.
- D.3.4.2 The County shall prioritize the correction of existing drainage problems beginning with those identified in this document and the Comprehensive Stormwater Management Program study. Priority should be given to those problems with the most severe problems.
- D.3.4.3 The program shall include a summary of drainage problems, recommendations for structural and non-structural actions for reducing drainage problems, proposing a schedule and budgeting corrective actions.
- D.3.4.4 At a minimum, the program schedule shall be reviewed every two years. This program shall establish a mechanism for increasing the priority of projects, as private or public donation of lands, or funds are made available which would significantly reduce the cost of implementing the project.
- D.3.4.5 All improvements for replacement, expansion of or increase in capacity for stormwater management facilities shall be compatible with the existing, or newly adopted, level of service standards for such facilities.

E. CONSERVATION\COASTAL MANAGEMENT ELEMENT

COASTAL

Goal E.1.

The County shall manage, use, conserve, protect, and enhance coastal resources, along with protecting human life from natural disasters.

Objective E.1.1 Public Beach Access

The County will maintain, improve, and increase public beach and waterway access through acquisition and other land use controls. At least one existing and/or new public beach and waterway access ways shall be improved and/or created per year beginning with the adoption of this plan amendment.

Policies

- E.1.1.1. As provided by the implementation regulations for the Optional Density Factors of the Future Land Use Element, the County will require the dedication of public access to beaches from developments located within the coastal area which receive the applicable density bonus.
- E.1.1.2. The County will not vacate or relocate existing easements, walkways and other access points to beaches, shores and waterways, without requiring the grant or dedication of equal or greater access points or easements as stated in the County's Beach Code and as amended.
- E.1.1.3. The County will promote increased facilities for public beaches and waterways through the implementation of Policy F.I.I.I, and through the implementation of regulations for the Optional Density Factors of the Future Land Use Element.
- E.1.1.4. Private landowners adjacent to public beach access points, including easements, will not be allowed to restrict public access to the beaches through such access points as stated in the County's Beach Code and as amended.
- E.1.1.5. In addition to those existing mechanisms, by December 2003, the County shall investigate and develop additional funding sources e.g., user fees, parking fees, grants and other additional funding sources for the purposes of funding beach and navigable waterway accesses, parking spaces, dune walkovers and other related facilities.

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- (c) Establishment of standards and enforcement mechanisms to prevent destruction of dune vegetation; and
 - (d) Continued enforcement of the County's requirements and prohibitions against uncontrolled vehicular beach access pursuant to Ordinance No. 73-2, and related ordinances; and
 - (e) Continued enforcement, through the development permit review process, of applicable Federal, State or Local coastal construction zone requirements; and
 - (f) Improvements to beach access and off-beach parking facilities as provided in Policy F.1.1.1.
- E.1.2.3. Seawall and other shoreline modifications shall be discouraged, or at a minimum set landward of, the mean high water line, except as provided by law. The County and other agencies having jurisdiction shall coordinate in establishing appropriate setbacks.
- E.1.2.4. No motorized vehicles will be allowed on dune systems except for emergency vehicles.
- E.1.2.5. The County shall work with the appropriate State agencies and the National Estuarine Research Reserve (NERR) manager to increase public awareness of the economic value of the County's coastal, estuaries, marine resources and coastal wildlife.

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Objective E.1.4 Water Dependent Uses and Marina Siting

The County will give priority to water dependent uses in order to maximize the beneficial use of coastal natural resources. A Marina Study will be prepared to identify the future need for water-dependent uses and wet and dry boat slips based on the quantity, location and environmental constraints. The results of the new Marina Study will be incorporated into the Coastal Management Element and the future Countywide Marina Siting Plan upon its completion.

Policies

E.1.4.1. By December 2001 or sooner, the County shall, initiate an update of the standards and procedures for development of water-dependent uses within those areas of the County which can accommodate such uses. The Land Development Regulations shall (as necessary or appropriate) address the following, including, but not limited to:

(a) The establishment of standards and/or criteria by which to assess the environmental suitability and location of proposed water-dependent uses, such as;

(1) Adequate water depths for channel navigation. A minimum of four feet below mean low water shall be required.

(i) Preference shall be given to the expansion of existing Marinas where additional dredging and filling is not required.

(ii) New marinas shall be located in areas where required dredging and maintenance of the channel is minimized and where aquatic resources shall not be adversely affected.

(2) Minimum tidal currents.

(3) Protection from hurricane vulnerability.

(4) Maintaining water quality characteristics.

(i) Fuel facilities shall be designed to contain spills on the landside of the facility and to prevent runoff into the surface waters.

(ii) Require all impervious surfaces in new marinas to be designed and constructed so that the run-off waters flow away from the surface waters and the wetlands.

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(iii) Marinas shall not be approved in areas where approved or conditionally approved shellfish harvesting would be severely impacted and/or sections closed to shellfish harvesting.

(iv) Marinas shall address pump-out facility needs.

(v) Anchorage areas shall be identified within each marina and anchorage standards shall be established.

(5) Preservation of water quality standards Outstanding Florida Waters (OFW's) Class II and Aquatic Preserves.

(6) Protection of Essential Habitat (threatened or endangered species and/or species of special concern). Marinas shall not be permitted in areas that have been determined by DEP, FWCC and the USFWS to be critical to the survival of these species.

(b) The establishment of standards or criteria by which to assess and address the following site characteristics and development standards:

- (1) Ingress/egress and parking standards; and
- (2) Buffering, landscaping and drainage facilities; and
- (3) Maintenance of applicable water quality and drainage standards for stormwater run-off; and
- (4) Height and other development intensity standards and/or requirements; and
- (5) Standards or requirements for fueling and wastewater pump-out facilities; and
- (6) Adequate location criteria in relation to land use type, surrounding land uses, zoning type, and functional access to the marina and the internal facilities; and
- (7) Future expansion of Marinas and their ability to provide maintenance; and
- (8) Travel time to popular boating areas.

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- (c) The establishment of definitions, criteria, and standards by which to determine the priority to be assigned to potentially competing shoreline uses.

E.1.4.2. By December 2000, the County shall, through the adoption of Land Development Regulations, initiate standards and procedures by which to address the siting of new commercial marinas. The Land Development Regulations shall (as necessary or appropriate) address the, definitions, criteria and standards that shall include, but not be limited to, the following:

- (a) land use compatibility, and buffering requirements for service facilities; and
- (b) availability, location, and type of upland support facilities, including standards and criteria for fueling and waste water treatment or pump-out facilities; and
- (c) the protected status, if applicable, of adjacent lands; and
- (d) the consistency of proposed marina facilities with the requirements of the applicable hurricane evacuation plan and storm contingency requirements; and
- (e) stormwater and drainage requirements, including standards and criteria for fueling and waste water treatment or pump-out facilities; and
- (t) for determining the environmental sensitivity of proposed marina sites, including standards to address water depth, grass bed, manatee habitat locations, the desirability of slow speed zones and anchorage areas; and
- (g) for determining the market need or feasibility of proposed marina facilities; and

E.1.4.3. Recommendations from the Marina Siting Plan shall be included in the Land Development Regulations (LDRs) and the Coastal Management Element upon completion.

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Objective E.1.5 Coastal Protection

The County shall cooperate with, and provide technical support and assistance to, the appropriate State and Federal regulatory agencies and it shall implement the requirements of Policy of E.1.5.3. (and other applicable Policies in other Plan Elements), in order to protect, enhance, and restore the environmental quality of the County's Coastal Area waterways and wildlife. Waters that flow into either the ocean or the estuary shall be protected through established conservation techniques identified in the County Land Development Regulations.

Policies

E.1.5.1. The County shall coordinate and provide technical assistance to Federal and State agencies preparing applicable studies which will maintain and increase water quality, based on established water body classification.

E.1.5.2. The County shall monitor and when necessary coordinate, permitting activities with other regulatory agencies for projects which may impact the quality of the Coastal Area Waterways.

E.1.5.3. The County shall protect or enhance Coastal Area water quality, for wildlife propagation, fishing, shell fishing, recreation, navigation and other related activities and shall improve Class II and Class III waters by:

- (a) Requiring septic tank users to connect to public or private waste water systems pursuant to Policy E.2.1.6; and
- (b) Requiring new development to meet the standards and requirements of the County's Land Development Regulations pursuant to the requirements of Objective 0.3.1. and supporting Policies; and
- (c) Once the County has completed its Master Stormwater Management Study, this plan shall be used to evaluate the stormwater design capacity of stormwater management systems so run-off shall not degrade the coastal resources.
- (d) Untreated direct discharge of stormwater runoff into Class II waters shall be prohibited for all new development.
- (e) Stormwater systems shall be designed to remove oil and suspended solids prior to discharge.
- (f) Requiring new development to meet the standards and requirements of the

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County's Environmentally Sensitive Lands (ESL's) Land Development Regulations (LDRs) to be adopted pursuant to Policy E.2.2.5; and

- (g) Implementation of the findings of the County's Health Department inspection program for the Intracoastal Waterway as provided in E.2.3.3; and
- (h) Coordinate with DEP on the enforcement of waste water discharge standards into Class II and Class III waters pursuant to Policy A.1.1.1; and
- (i) Continued pursuit of agreements with private land owners for land application and other alternative means of waste water re-use; and
- (j) Encourage new development to cluster in the Coastal Area through application of the County's Planned Development regulations and the Optional Density Factors established by the Future Land Use Element.

E.I.5.4. The County shall coordinate with the applicable State agencies so that docks and piers will not obstruct or alter natural water flow or restrict navigation routes.

E.I.5.5. Consistently with the requirements of Policy E.I.5.3, development orders shall be designed to protect the type, nature, and function of floodplain, wetlands, waterways, inlets, estuaries and lakes by limiting encroachment, removal of native vegetation, wildlife, pollution discharge, dredge and fill, drainage, or other impacts associated with development.

E.I.5.6. All new development shall be designed and constructed according to Federal, State and County specifications to minimize stormwater and pollutant discharge.

E.I.5.7 The County shall continue to coordinate with DEP's Guana, Tolomato, Matanzas Task Force (GTM Task Force) and SJRWMD's Northern Coastal Basin's (NCB's) studies) on water quality issues and their relationship to the land use densities and intensities.

E.I.5.8 By 2005, the County shall prepare a Coastal Area Plan in conjunction with DEP's GTM Task Force, SJRWMD's Northern Coastal Basins Reconnaissance Report (NCBR) and Water 2020 Water Supply Planning Work Group Area V. The plan shall analyze and evaluate the carrying capacity of the study area and the balance between land use densities and intensities and the coastal environmental constraints (i.e. flooding, hurricane evacuation routes, water supply and water quality). Land uses determined to adversely affect the quality and quantity of the water (i.e. ground water recharge areas, wellhead protection areas and surface waters) shall be restricted accordingly.

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E.I.5.9 St. Johns County shall support the SJRWMD's efforts to establish updated and accurate maps of submerged aquatic vegetation communities.

E.I.5.10. St. Johns County shall permit the utilization of local funds for shoreline stabilization and beach renourishment projects. Priority shall be given to those projects which demonstrate a high cost-benefit ratio while having the least impact to the offshore reef and near shore beach and dune ecological communities.

E.I.5.11. The County shall investigate alternatives to funding sources for projects in the Coastal Management Area such as: Tourist Development Tax or a Beach Taxing District to fund shoreline stabilization for the areas of critical erosion, improve and protect water quality, and manage coastal waterfront communities revitalization, redevelopment and hazard mitigation.

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CONSERVATION

Goal E.2

The County shall conserve, utilize, and protect the natural resources of the area, including air, water, wetlands, water wells, estuaries, water bodies, soils, minerals, vegetative communities, wildlife, wildlife habitat, groundwater recharge areas and other natural and environmental resources, insuring that resources are available for existing and future generations.

Objective E.2.1. Groundwater Protection/Conservation

The County shall coordinate with the SJRWMD to ensure that adequate quality and quantity of water supplies will meet existing and projected future demands by adopting policies which both agencies can mutually agree upon.

Policies

E.2.1.1. The County shall promote water conservation coordination with the St. Johns River Water Management District's Water Shortage Plan, as specified in Chapter 40C-21, F.A.C., in developing a local water shortage and conservation plan. This emergency water conservation plan shall include the following criteria:

- (a) SJRWMD's law enforcement procedures relating to the District's Water Shortage Plan;
- (b) Availability of public information on water conservation techniques; and
- (c) Advertisements of water restrictions required and water conservation techniques in the local media during drought conditions.

E.2.1.2. Free-flowing wells in the County shall be identified and plugged by the following measures:

- (a) The County's Health Department shall continue to work with the SJRWMD, to identify free-flowing wells and to recommend measures to plug the wells.
- (b) The County shall require new developments to identify repair or plug all free flowing wells located within the boundaries of a proposed development as a condition to the development approval.
- (c) Through an agreement with the SJRWMD, St. Johns County's Health Department will continue to implement the WMD's free-flowing well

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Objective E.2.2.

Native Forests, Floodplains, Wetlands, Upland Communities, and Surface Water

The County shall protect native forests, floodplains, wetlands, upland communities, and surface waters within the County from development impacts to provide for maintenance of environmental quality and wildlife habitats.

Policies

E.2.2.1. By December 1999, the County shall develop and adopt guidelines and standards for the preservation and conservation of silviculture and agricultural areas in addition to native forest through various land development techniques, as follows:

- (a) The County shall develop and adopt Planned Rural Development (PRD) Land Development Regulations; and
- (b) The County shall continue to work with the St. Johns County Cooperative Extension Service (SJCCES), the Natural Resources Conservation Service (NRCS), the Florida Department of Agriculture and Consumer Services, the Division of Forestry, the Land Acquisition Management Program (LAMP)/Environmental Advisory Board (EAB) to develop and implement strategies such as, but not limited to, Best Management Practices (BMPs), conservation easements, tax incentives and federal and state grants (i.e., forest legacy, stewardship incentive program, farmland protection, wildlife habitat incentive program, etc.) in an effort to maintain agriculture and silviculture activities as viable businesses in the County. **In addition, the County shall protect natural resources and wildlife habitats.**
- (c) **The County in cooperation with the St. Johns County Cooperative Extension Service (SJCCES), Natural Resources Conservation District (NRCD) and Florida Department of Agriculture and Consumer Services, Division of Forestry shall provide technical assistance to both agricultural and silviculture operations by implementing the Best Management Practices (BMPs) for each industry that are consistent with Stormwater Management GOPs.**

E.2.2.2. Within areas designated as Rural/Silviculture (R/S) or Agriculture Intensive (A-I) on the Future Land Use Map, the commercial harvesting of these trees shall follow the 1993 Department of Agriculture and Consumer Services Best Management Practices (BMP) as amended and updated.

Within areas designated as Conservation on the Future Land Use Map, the commercial harvesting of these trees shall follow Best Management Practices as amended and updated: (i) within 150 feet of the water course bank of the St. Johns

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River and the Intracoastal Waterway; and (ii) within 75 feet of the watercourse banks of the streams and creeks listed below which ever is more restrictive:

- a. 75 foot Buffer
 - 1. Julington / Durbin Creek
 - 2. Cunningham Creek
 - 3. Trout Creek
 - 4. Six Mile Creek
 - 5. Tocoi Creek
 - 6. McCullough Creek
 - 7. Moccasin Creek
 - 8. DeepCreek
 - 9. Pellicer Creek
 - 10. Cracker Branch
 - 11. Moses Creek
 - 12. Moultrie Creek
 - 13. Pablo/Cabbage Creek
 - 14. Sampson Creek
 - 15. Orange Grove Branch
 - 16. Petty Branch
 - 17. Turnbull Creek
 - 18. Town Branch
 - 19. Sixteen Mile Creek
 - 20. Paines Branch
 - 21. West Run/Cracker Branch
 - 22. Smith Creek
 - 23. Deep Creek
 - 24. Stokes Creek
 - 25. East Creek
 - 26. San Julian Creek

b. 150 foot Buffer

- 1. St. Johns River
- 2. Intracoastal Waterway

E.2.2.3. In order to protect the functional viability and productivity of forested wetland systems (FLUCCS 610, 620, and 630) as natural resources, silviculture activities within forested wetlands:

- (a) shall not significantly alter overall wetland community characteristics (i.e. hydrology, topography, plant species diversity, wetland forest composition, canopy cover or average forest age structure); and

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- (b) shall not result in the conversion of historical forested wetlands into either upland systems or other types of wetland systems, except pursuant to restorative silviculture activities; and
- (c) shall comply with the ACOE's, DEP's SJRWMD's and Department of Agriculture and Consumer Services, Division of Forestry's Best Management Practices (BMPs).

E.2.2.4 By December 2003, the County shall identify and describe the native vegetative communities and their associated wildlife species in St. Johns County. The County shall designate an Land Acquisition Management Program (LAMP)/Environmental Advisory Board (EAB) which shall make recommendations to the Board of County Commissioners (BCC) on additional vegetative communities, Strategic Habitat Areas, Biodiversity Hot Spots, Ecosystem Management Areas (EMA), Greenways and wetland habitats that may need further protection in the County. The appropriate state agencies (i.e., SJR WMD, DEP and FWCC) will assist the LAMP 1 EAB in their recommendations to the BCC.

E.2.2.5. The County shall protect Environmentally Sensitive Lands (ESLs) through the establishment of Land Development Regulations (LDRs) which address the alternative types of protection for each type of Environmentally Sensitive Land. Adoption and implementation of the Land Development Regulations shall, at a minimum, address the following issues:

(a) For Wetlands, Outstanding Florida Waters (OFW), and Estuaries:

(1) establish and maintain buffers between the wetlands/ OFW / estuaries and upland development as stated in the County's Land Development Regulations (LDRs), and as follows:

(a) A minimum natural vegetative upland buffer of 25 ft. shall be required and maintained between the developed areas and the contiguous wetlands to protect the water quality of the wetlands, except where buffer averaging may allow less than the required minimum of 25 feet in certain locations while achieving a greater buffer width or where a variance is granted. Except where a variance is granted, no buffer shall be reduced to less than 10 feet except in circumstances where an unavoidable wetland impact occurs such as but not limited to a road crossing. Such wetland buffer shall be measured from the jurisdictional wetland line as determined by the SJRWMD and FDEP.

(b) A minimum of a 50 ft. natural vegetative upland buffer shall be required and maintained between the development areas and the St. Johns, Matanzas, Guana and Tolomato Rivers and their associated tributaries,

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streams and other interconnecting water bodies, except where buffer averaging may allow less than the required minimum of 50 feet in certain locations while achieving a greater buffer width or where a variance is granted. Except where a variance is granted, no buffer shall be reduced to less than 25 feet except in circumstances where an unavoidable wetland impact occurs such as but not limited to a road crossing. Such wetland buffer shall be measured from the jurisdictional wetland line as determined by the SJRWMD and FDEP.

(2) add drainage requirements or standards (beyond applicable existing County ordinances) which seek to maintain (based on available information) the natural hydro-period and conditions as may be required by the type and nature of the wetland or water body which may be impacted; and

(3) continue to coordinate with DEP and SJRWMD on the status of the water quality data in all the County's major rivers, especially areas which abut designated shellfish harvesting areas. If the SJRWMD water quality data reveals the need for more stringent stormwater regulations or other water quality standards, the County will work with DEP and the SJRWMD in the development of these regulations. The need for these regulations shall be based on degraded surface water data and the analysis of the source of water degradation.

(b) For Coastal Barrier Resources and Beach & Dune Resources:

(1) coordinate the consistency with Federal and State regulations and requirements applicable to the coastal barrier resources; and

(2) coordinate the consistency with State DEP regulations and requirements applicable to the coastal construction control line (CCCL); and

(3) prevent County development activity which would negatively impact the beach and dune system or the coastal barrier resources, unless such activity is required to protect public health and safety.

(c) Threatened, or Endangered Species and Species of Special Concern Habitat:

(1) establish criteria that will be utilized in the development review process for the identification of potential habitat areas by proposed developments above ten (10) acres; and

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- (2) establish criteria for those areas of the County with a high probability of threatened and endangered species, and/or species of special concern habitat for additional review or habitat identification procedures based on St. Johns County's Native Vegetative Communities and Habitat Inventory Map, FWCC's wildlife data bases, the GAP report, DEP's greenways data and the Land Acquisition Management Program (L.A.M.P.) 1 Environmental Advisory Board (EAB) shall make recommendations to the BCC on the identification of the wildlife habitat protection areas; and
- (3) establish standards and procedures for the protection or acquisition of specific habitat areas which have been identified as necessary for the support of an existing threatened, or endangered and species of special concern population.

E.2.2.6 The Environmentally Sensitive Lands Map shall be updated by December 2003. The Map shall include wetlands, estuaries, OFWs, Class II waters and Coastal Barriers. Upon the completion of the County's Native Vegetative Communities and Habitat Inventory Map, this information will be added to the Environmentally Sensitive Lands Map within one year.

E.2.2.7 Environmental surveys shall be required for developments proposed in Environmentally Sensitive Lands (ESLs). The focus of these surveys shall be: jurisdictional wetland boundaries, natural vegetative communities, the presence of existing wildlife habitat and/or the presence of threatened, endangered species and species of special concern.

E.2.2.8. The County shall provide technical support and assistance to the Florida Fish and Wildlife Conservation Commission and the St. Johns River Water Management District in their inventory, assessment, and mapping of existing fish and wildlife habitat and significant upland communities. The County shall utilize all appropriate state agencies wildlife data in preparing the County's Habitat Inventory Map. Within one year of completion of the County's Habitat Inventory Map, the County's Land Acquisition Management Program (LAMP) /Environmental Advisory Board (EAB) and the Board of County Commissioners shall review their findings and shall (as necessary or appropriate) amend the plan to incorporate the identified areas and implement suggested protective measures.

E.2.2.9 By December 1999, the County shall develop and adopt guidelines and standards for the protection of wildlife corridors such as, but not limited to, the adoption of PRD land development regulations and implement the optional density bonus.

E.2.2.10. By December 2005 or sooner, the County shall develop and adopt guidelines and

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standards for the preservation and conservation of wetlands through various land development techniques including, but not limited to, the following:

- (a) The County shall protect wetlands, uplands and their associated wildlife habitats through the implementation of the Planned Development (PUD and PRD) land development regulations by requiring 25 percent preservation of open space. These preservation areas will be designed to complement the Florida Fish and Wildlife Conservation Commission's (FWCC) Strategic Habitat Areas (SHA) and Biological Hot Spots Ecosystem Management Areas (EMA) and Greenways so that these areas can be interconnected with adjacent developments.
- (b) The County shall protect wetlands, uplands and their associated wildlife habitats through the implementation of natural vegetative upland buffers, the preservation of Significant Natural Communities Habitat, and the protection of Listed Species within St. Johns County as provided in the County Land Development Regulations.
- (c) In recognition of the many natural functions and values of estuarine wetlands and the need to protect these resources from incompatible land uses, all estuarine wetland habitats shall be deemed as Environmentally Sensitive Lands (ESLs) as designated on the County Comprehensive Plan Map series.
- (d) Wetlands and natural functions of the wetlands shall be protected and conserved through the planning process which considers the type, value, function, size, condition and location of the wetlands.
- (e) Consistent with the Recreation and Open Space Element, the County will participate in various land acquisition programs (e.g., Conservation and Recreation Lands Program (CARL), Florida Forever (FF), Florida Communities Trust (FCT), Save our Rivers (SOR), Office of Green ways and Trails (OGT), Trust for Public Lands (TPL), and the Nature Conservancy (TN C» to acquire important undeveloped estuarine wetlands. The land acquisition consideration will be based on the Recreation and Open Space Policies F.1.3.2. through F.1.3.5.

E.2.2.11. Illegal development in wetland areas shall be reported. Consistent with applicable law, it will be required that these areas shall be restored and/or mitigated.

E.2.2.12. By December 1999, develop and adopt standards and procedures to ensure that stormwater management systems shall protect the hydrologic conditions of wetlands, through adoption of revisions to the County Land Development Regulations, as provided in Objective D.3.1 and supporting policies.

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E.2.2.13. By December 1999, the County shall develop and adopt guidelines and standards for the preservation and conservation of uplands through various land development techniques as follows:

(a) St. Johns County shall require a buffer zone adjacent to the wetlands and open water habitats on all new development sites as specified in the LDRs and policy E.2.2.5.

(b) The County shall recognize the following vegetative natural communities as Significant Natural Communities Habitat. Due to the rarity of these vegetative communities, a minimum of 10 percent of the total acreage of the Significant Natural Communities Habitat (excluding bona fide agriculture and/or silviculture operations) shall be preserved and maintained by the development.

(1) Beach Dune

(2) Coastal Grasslands

(3) Coastal Strand

(4) Maritime Hammock

(5) Sandhill

(6) Scrub.

Where on-site preservation of the native upland communities are not feasible, the County as an alternative shall accept a fee in lieu of preservation or off-site mitigation in accordance with the County Land Development Regulations.

E.2.2.14. By December 2003, the County shall establish a GIS computer mapping inventory of the County's native vegetative communities and their associated wildlife species based on information identified from the State agencies and the County. The County shall coordinate with the State and Federal agencies on new available vegetative and wildlife data at least once a year.

E.2.2.15. The County shall require the preservation of native vegetative communities on County owned land to the maximum extent feasible.

E.2.2.16. The County shall encourage cluster type developments in order to preserve large contiguous areas through implementation of PRD development controls, through the

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development review process, (as necessary or appropriate) and/or modification to the County's Planned Development (POD and PRD) regulations.

E.2.2.17. By 2005 or sooner, the County shall consider adoption of an Environmentally Sensitive Overlay Zone (ESOZ) for areas designated on the Environmentally Sensitive Lands Map

The ESOZ shall establish standards and procedures to address the following:

- (a) Protection of the County's shellfish harvesting areas;
- (b) Protection of surface water quality from contamination caused by pesticides, herbicides and fertilizers;
- (c) Protection of flood storage and floodplain capacity;
- (d) Protection of wetland dependent wildlife in addition to protecting the threatened and endangered species and species of special concerns habitat and unique vegetative communities;
- (e) Protection of environmental scenic views and vistas
- (f) Provisions for development mitigation, revegetation, buffering and setback measures within the ESOZ;
- (g) Provisions for building and development practices and techniques which protect the integrity of the ESOZ;

To achieve this policy, at a minimum the following guidelines and criteria will be addressed in the LDRs for areas located within the ESOZ:

- (1) Site analysis
- (2) Buffer Zones
- (3) Stormwater Management
- (4) Sewage Disposal Systems
- (5) Silviculture Practices Site Analysis

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Site analysis of the soil conditions, topographic relief, vegetative communities, wildlife, historical archeological resources, mean high water line (MHWL), 100 year floodplain as well as other pertinent site characteristics may be required as appropriate, to substantiate the effects of any proposed development. Documentation, utilizing a database acceptable to the County, of the types of vegetative communities present on site and the occurrence of any threatened and endangered species and/or species of special concern must be provided. If a site analysis is performed in connection with the subdivision platting, then subsequent individual lots need not perform an individual site analysis, but must adhere to the conditions in the original plat approval or development order.

Buffer Zones

Buffer zones shall be created in an effort to maintain and control erosion, sedimentation, attenuate flood waters and maintain or improve water quality.

Permits to remove aquatic vegetation shall be required from DEP prior to any vegetative removal in areas beyond a 25 foot access area or if non-mechanical/chemical removal methods are utilized.

For those parcels/ sites having disturbed or nonexistent littoral zone vegetation, adequate provisions must be made to allow natural vegetation of the disturbed areas.

Stormwater Management

Stormwater management systems shall be designed to mimic and use the features and functions of the natural drainage systems. Existing features such as natural drainage ways, depressions, wetlands, floodplain, highly permeable soils and vegetation shall be utilized. The County shall work with the SJRWMD to establish stormwater criteria which will achieve the specified intent.

Sewage Disposal Systems

Central sewer facilities shall be the preferred method of wastewater treatment for all development in the ESOZ. Alternative systems shall create an effluent quality comparable to that of a central wastewater treatment system or treatment system which removes nutrients based on site condition and density, may be allowed when built to the County specifications and where density requirements are met.

Where site conditions such as slope, soil conditions, infiltration rates, or natural drainage features so require, modified septic systems may be required. These system modifications can include, but are not limited to, lift pumps to remove effluent further from the high water line to a safe upland treatment and disposal site, effluent sand filters and aerobic systems.

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Silviculture Practices

In order to implement the purpose and intent of the ESOZ, the Best Management Practices (BMPs) and guidelines for silviculture activities as outlined in the 1993 Florida Department of Agriculture and Consumer Services, Florida Department of Agriculture and Consumer Services, Division of Forestry publication on Best Management Practices (BMP's) shall be mandatory in the ESOZ areas. The intent of this policy should not be construed to prohibit bona fide silviculture activities.

E.2.2.18. The County shall continue to investigate Outstanding Florida Water designation(s) for major stream systems within the County, particularly the Julington / Durbin and Six Mile Creek systems.

E.2.2.19. By March 2000, the County shall develop and prepare a detailed and comprehensive study for that area of St. Johns County west of I-95, east of the St. Johns River, north of CR 208/SR 16, and south of the Duval County line. The study shall inventory/address the following:

- (a) existing uses; and
- (b) an inventory of natural resources and environmentally sensitive lands; and
- (c) an inventory and analysis of existing and projected infrastructure needs; and
- (d) an analysis of existing and projected land use or development patterns; and
- (f) identification of proposed wildlife corridors and Greenways within the study area; and
- (g) development of scenic, historic, archeological, wildlife habitat and tree preservation techniques; and
- (h) any other issues deemed necessary or appropriate to provide a comprehensive overview of the study area. The study shall make recommendations for amendments to the Plan, which shall be forwarded to the PZA for review and recommendations. Within one year of the completion of the study, the County Commission shall review the study's findings and recommendations, and shall, as necessary or appropriate, amend the Plan to incorporate and make provisions for the implementation of the study's findings.

E.2.2.20. Dredge and fill activities shall be reviewed and permitted by the appropriate

regulatory agencies to assure that environmental impacts are minimized, and that the requirements of the County Land Development Regulations (LDRs) are met before final approval is granted.

E.2.2.21. By December 2003 or sooner, St. Johns County in coordination with DEP shall adopt standards and procedures which promote and regulate the Marine Best Management Practices (BMPs).

E.2.2.22. By December 2003 or sooner, signs shall be posted along the Intracoastal Waterways at appropriate locations stating that boaters have entered shellfish harvesting areas and that any over board sewage disposal is illegal. The County shall work with the appropriate Federal and State agencies in locating these signs.

E.2.2.23. By December 2002 or sooner, the County shall establish a Greenways program in coordination with DEP's Greenway Office. Such Greenways shall protect, enhance the natural, cultural and historical resources of the County while providing interconnecting accessways between public conservation and park lands. The established Greenways shall be coordinated with the surrounding counties and municipalities.

E.2.2.24. The County shall coordinate with the surrounding counties on protecting native vegetative communities, estuaries, surface waters, marine resources, wildlife habitats and reduce exposure to natural hazards that cross jurisdictional boundaries.

E.2.2.25. By December 2000, St. Johns County shall initiate a wetland banking system. This mitigation banking system shall gradually advance over the years and as it advances the county shall investigate funding sources to continue this program.

E.2.2.26. The County shall investigate Aquatic Preserve designation for the Matanzas River.

**Objective E.2.3
Surface Water Quality**

The surface waters of St. Johns County shall be protected to ensure that their quality is maintained. Waters that enter the estuaries and the ocean shall be improved, at a minimum, to the standards established by Chapter 62-302, FAC and the Clean Water Act, 33 V.S.C. 1251.

Policies

E.2.3.1 St. Johns County shall support and encourage continued water quality monitoring by local, state and federal agencies that will identify and formulate plans to address point and non-point sources of surface waters pollution.

E.2.3.2 St. Johns County shall continue to coordinate with the appropriate governmental agencies on the St. Johns River Surface Water Improvement (SWIM) program, the Northern Coastal Basins Reconnaissance Report, the NERR Management Plan, Pellicer Creek Aquatic Preserve Management Plan, Guana River Marsh Aquatic Preserve Management Plan, the GTM Task Force Progress Report, the Natural Resources of Regional Significance (NRRS), the St. Johns River American Heritage River designation and any future Management Plan, Habitat Conservation Plans, Manatee Protection Management Plan and Estuarine Sanctuary Plans to ensure that the County resource protection measures are implemented in conjunction with the existing resource protection plans.

E.2.3.3 St. Johns County shall enhance and/or restore the degraded natural areas in conjunction with the appropriate state agencies on County owned properties, or future County owned properties, adjacent to major waterways (including, by not limited to, the St. Johns, Guana, Tolomato and Matanzas Rivers) through the removal of non-native vegetation, reforestation, shoreline or dune restoration and/or the restoration of the natural hydrology.

E.2.3.4 The County shall work with Department of Environmental Protection (DEP) and St. Johns River Water Management District (SJRWMD) to develop native vegetative restoration plans for waterfront park sites within the County. All plans will include the removal of non-native vegetative plant materials, i.e., brazilian pepper, melaluca, exotic bamboo and bayberry. The non-native vegetative plant materials shall be replaced with the appropriate native species.

E.2.3.5 There shall be no reduction in the flood storage capacity or the other natural functions and values of the floodplain in St. Johns County by regulating development in areas designated as regulatory floodway as updated by FEMA Flood Insurance Studies in

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St. Johns County. Encroachments shall be prohibited within designated regulatory floodway including, but not limited to, fill, new construction, development improvements, that would result in any increase in flood levels.

E.2.3.6 The County shall regulate development within the flood prone areas to minimize flood storage capacity reduction and to afford protection to life and property within the floodplain.

E.2.3.7 Land uses should be restricted if they adversely affect the quality and quantity of the water resources such as natural groundwater recharge areas, wellhead protection areas and surface waters.

E.2.3.8 The County shall seek new funding sources to implement the Best Management Practices for water resources identified as shellfish harvesting areas, Northern Coastal Basins Reconnaissance Report and the St. Johns River SWIM program.

E.2.3.9 The County shall work with the St. Johns River Water Management District (SJRWMD) and the Department of Environmental Protection (DEP) and the Environmental Protection Agency (EPA) to educate and distribute information on the surface water resources in the County.

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Objective E.2.6 Stormwater

The County shall protect and appropriately use estuarine and fresh water systems. Policies

- E.2.6.1. By December 1999, the County Land Development Regulations (LDRs), shall be reviewed and amended as provided in Objective D.3.1. and supporting Policies.
- E.2.6.2 St. Johns County shall continue to coordinate with the SJRWMD and participate in the ongoing programs of the St. Johns River Surface Water Improvement Management (SWIM) program and the Northern Coastal Basins programs, and work with the SJRWMD on the long term ambient water quality monitoring program, establishing pollutant load reductions goals and monitoring freshwater inflow.
- E.2.6.3 The use, storage, transmission, or generation of hazardous substances, or substances which may artificially accelerate the eutrophication of the wetlands and water bodies, is prohibited within the wetland systems.
- E.2.6.4 St. Johns County shall continue to coordinate with Department of Environmental Protection (DEP) and participate in the ongoing programs recommended by the Guana, Tolomato, Matanzas (GTM) Task Force as established in their Recommendations and Conclusions.
- E.2.6.5 The County shall seek new funding sources to implement the best management practices for water resources identified as shellfish harvesting areas, Northern Coastal Basins Reconnaissance Report and the St. Johns River SWIM program.
- E.2.6.6 St. Johns County shall continue to work with DEP and SJRWMD to develop management practices for water resources to mitigate urban and non-point sources of water degradation.

Objective E.2.7
Acquisition and Protection

The County shall provide technical assistance to other governmental agencies and the private sector in the identification, acquisition, preservation or protection of Environmentally Sensitive Lands (ESLs).

Policies

- E.2. 7 .1. By December 2003, the County will inventory and identify Environmentally Sensitive Lands (ESLs) in the County. Upon their identification, the County shall amend the Plan as necessary or appropriate, to designate the identified areas for protection, preservation, or acquisition.
- E.2. 7 .2. For areas of the County identified pursuant to Policies E.2.2.8 and E.2. 7.1, the County shall encourage and pursue the acquisition of the identified Environmentally Sensitive Lands (ESLs) through existing state acquisition programs such as, but not limited to, Conservation and Recreation Lands (CARL), Florida Community Trust (FCT), Office of Greenways and Trails (OGT), Trust for Public Lands (TPL), the Nature Conservancy (TNC), Save our Rivers (SOR), and Florida Forever programs, or through local acquisition programs to be funded through grants, bond issues, land trust funds, or other appropriate local funding mechanisms.
- E.2. 7 .3. In addition to pursuing acquisition of Environmentally Sensitive Lands (ESLs), the County shall continue to protect such areas through application and enforcement of the Land Development Regulations (LDRs) outlined in Objective E.2.2.5.and supporting Policies.
- E.2. 7 .4. The County shall identify areas within the Development Area Boundaries appropriate for infilling and establish incentives to encourage the development of these areas.
- E.2. 7.5 In selecting future park sites for public acquisition the County shall give full consideration to acquiring new lands according to the Recreation and Open Space Element's Policies F.I.3.2, F.I.3.3, F.I.3.4 and F.I.3.5.
- E.2.7.6 The County shall continue to review its land acquisition selection criteria on a regular basis and shall update this criteria, as deemed appropriate.

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Objective E.2.8 Threatened and Endangered Species

The County shall protect habitats of populations of existing threatened or endangered species and species of special concern.

Policies

- E.2.8.1. By December 2003 or sooner, the County shall work with the Florida Fish and Wildlife Conservation Commission (FWCC) and other appropriate governmental agencies in the creation and adoption of a Manatee Protection Plan (MPP), which at a minimum, will consider performance criteria for siting marinas and other water dependent facilities; in addition to the placement of signs at strategic locations along the Tolomato and Matanzas Rivers (Intracoastal Waterway) in addition to the St. Johns River.
- E.2.8.2. Marinas and ports shall not be located in, or immediately adjacent to, Florida Fish and Wildlife Conservation Commission (FWCC) designated manatee-sanctuaries. If the inventories being conducted pursuant Policies E.2.2.8 and E.2.5.1. identify additional manatee habitat areas, this Policy shall apply to such identified areas.
- E.2.8.3. The County shall work with FWCC to monitor applications for marina construction permits filed with applicable state agencies, and shall comment on such applications during the permit review process to ensure that local knowledge of manatee foraging areas is appropriately addressed during such review.
- E.2.8.4. Upon the completion of the Manatee Protection Plan, the County shall, adopt appropriate Land Development Regulations (LDRs), which will include methods of alerting boaters of the possible presence of manatees.
- E.2.8.5. All species of sea turtles which nest on the sand beaches fronting the Atlantic Ocean shall be protected from human interference including, but not limited to, beach renourishment, beach front lighting, coastal construction, armoring, erosion control structures (sandbags, geoweb), mechanical beach cleaning, and unregulated vehicular traffic which could harm sea turtles and their nesting sites during nesting season.
- E.2.8.6. The County shall work with the appropriate State agencies when revising the Beach Traffic Patterns and Lighting Management Plan Ordinances. St. Johns County shall also work with FWCC on the enforcement and protection of sea turtles during their nesting times.
- E.2.8.7. Development of vacant lands adjacent to "Outstanding Florida Waters," Aquatic Preserves, Wildlife Sanctuaries, State Preserves, Sanctuaries, National Estuarine

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Research Reserve and Wildlife Management areas, as shown on the Environmentally Sensitive Lands (ESLs) Map, shall be designed to a scale and intensity which is consistent with the existing adjacent uses pursuant to the adopted Land Development Regulations (LDRs); and shall be required, at a minimum, to meet all applicable Federal, State and Local drainage and water quality standards.

E.2.8.8. The County shall provide support and technical assistance to state agencies (such as DEP, SJRWMD, and FWCC) to develop a wildlife corridor plan linking public lands of appropriate size (viable) to maintain species viability and diversity. The Land Acquisition Management Program (LAMP) 1 Environmental Advisory Board (EAB) will use this information, in addition to the County's Habitat Inventory Map to make a recommendation to the BCC on the county's wildlife habitat protection strategy, including wildlife corridors. Wetlands provide an important wildlife habitat. Until this is amended, wetlands shall be regulated according to the adopted LDRs and policy E.2.2.5. Upon completion of the wetland buffer study and the wildlife habitat study, the County will review the findings and shall as necessary or appropriate, amend the Comprehensive Plan and Land Development Regulations (LDRs) and will initiate these changes within two years of their completion. Such wetland buffers and wildlife preservation techniques shall include; but not limited to, conservation easements, mitigation banks (on-site or off-site), tax incentives, or density bonuses, identification and utilization of mitigation funds, management agreements and best management practices (BMPs).

E.2.8.9 The County shall work with the FWCC and the SJRWMD to educate the public on implementing practices and on the value of wildlife, native vegetative communities, and other natural resources through the creation of information flyers, brochures, interpretive displays and the development of trails at appropriate County park sites. The County shall also, through the Tourist Development Council work to promote Eco-tourism.

E.2.8.10. The County shall develop an information and education program, in cooperation with the Natural Resources Conservation Service, Agricultural Extension Service, and others, to provide suggestions and guidance to the agricultural and silviculture communities on methods for incorporating wildlife corridors in the management of their lands.

E.2.8.11. The protection of critical habitat shall be evaluated on a site development basis. For developments on property known to support endangered and threatened species and species of special concern of plants or animals, the developer shall be required to notify the appropriate Federal, State and Regional agencies and must comply with the appropriate guidelines and laws that protect endangered or, threatened species and species of special concern.

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E.2.8.12. Recognizing that sea grass beds protect water quality by stabilizing sediments and absorbing nutrients and provide essential habitats for many species of wildlife, the County, in cooperation with the SJR WMD, shall adopt regulations to protect seagrass beds by 2005. In the mean time the wetland buffer will to some degree protect water quality. Until such seagrass regulations are established, wetlands shall be regulated according to the LDRs and policy E.2.2.5. In the creation of new seagrass and wetland regulations, water quality and wildlife habitat preservation shall simultaneously be addressed.

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- (h) The County shall continue researching and applying for grants and other available funding to acquire and construct parking and access at chosen points.

F .1.1.2 All new development with frontage along the St. Johns River and Intercoastal Waterway shall provide at least one public access for every 750 feet of such frontage, suitable for the construction of a boat ramp or dock where appropriate.

F .1.1.3. The County shall provide for the handicapped and elderly; parking, accessibility to facilities, and recreational opportunities.

F .1.1.4. The County shall not vacate existing easements, walkways, and other access points to beaches, and waterways without equivalent or greater mitigation.

F .1.1.5. The County shall protect the accessibility of public beach access points and easements by:

- (a) Identifying public beach access ways with some type of signage or other mechanisms which will make constructed dune cross overs obvious to all of the public. All constructed public dune cross overs shall be posted.
- (b) Continuing to develop dune cross overs where the County owns beach access ways at 1 dune cross over per year.
- (c) Continuing to pursue additional beach access way funding sources.
- (d) Encouraging new development to provide beach parking at a ratio of 3 parking spaces for every 100 square feet of dune cross over.

F .1.1.6 The County shall protect its public beaches by pursuing additional funding sources to assist funding for future beach renourishment projects.

F .1.1.7 St. Johns County shall study the location, spacing and construction styles of the dune walkovers. The study results will be documented, community guidelines will be coordinated with the appropriate state agencies.

F .1.1.8 St. Johns County shall require the design of parking areas and accessways to be constructed so that it enhances and protects the waterways adjacent to lands within St. Johns County. Such parking areas shall be designed to include (but not be limited to) existing trees and use of pervious parking where ever feasible.

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Objective F .1.2. Coordination of Public and Private Recreation and Open Space Facilities

Through the planning and development process, the County shall coordinate the provision of needed parks and recreation facilities through both public and private sources, which will at a minimum assure consistency with the LOS standards established in F .1.3.1.

Policies

- F .1.2.1. The County shall strive to maintain the existing interlocal agreement with St. Augustine St. Augustine Beach and the Town of Hastings concerning the mutual use and support of recreational facilities.
- F .1.2.2. The County shall continue working with the School Board to provide recreational programs and facilities.
- F .1.2.3. The County shall continue to seek citizen advice for the development of recreational opportunities and facilities.
- F .1.2.4. The County shall continue to coordinate with the Tourist Development Council to provide tourist related recreational opportunities.
- F .1.2.5. The County shall continue to pursue other funding sources such as, but not limited to, the Conservation and Recreation Lands Program (CARL), Florida Community Trust (FCT), Office of Green ways and Trails (OGT), the Trust for Public Lands (TPL), the Nature Conservancy (TNC) and Save Our Rivers (SOR), for the acquisition and development of parks and open space areas.
- F .1.2.6. The County shall coordinate and support future park acquisitions with St. Johns County, Land Trust Program, Resource Protection Plan, Aquatic Preserve Management Plans, SWIM Plan, Habitat Conservation Plans, Guana River Wildlife Management Plan, Manatee Protection Plan, future National Estuarine Research Reserve Management Plan, the future Northern Coastal Reconnaissance Management Plan, future Scenic and Historic AIA Management Plan and future William Bartram Trail Management Plan.
- F .1.2.7. The County will coordinate future land acquisitions for greenways with the Office of Greenways and Trails.
- F .1.2.8. The County will coordinate future land acquisitions with the newly established Land Acquisition Management Program (LAMP) Board/Environmental Advisory Board and/or the North Florida Land Trust.

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guide for development of facilities in new parks.

For purposes of issuing development orders, the County shall apply standard only within the unincorporated area.

- F.1.3.2. In selecting future park sites for public acquisition the County shall give full consideration to serving the population in the high growth areas as indicated in the Recreation and Open Space background Element, the Future Land Use background Element and on the Future Land Use Map including, but not limited to, the Northeast Planning District, the Northwest Planning District and around the City of St. Augustine's Development Area.
- F.I.3.3 The County shall give consideration to developing at least one activity-based Community Park in the County Northeast Planning District by the year 2005.
- F.1.3.4 In selecting future park sites for site improvements, the County shall give full consideration to those planning district which require immediate construction, maintenance or rehabilitation of existing facilities.
- F.I.3.5 In selecting future park sites for public acquisition, the County shall give full consideration to acquisitions that support the National Estuarine Research Reserve (NERR), the St. Johns American Heritage River designation, the County's Historical! Archeological and Culture Sites, the SWIM designation, Greenways, Rails-to- Trails, Florida Fish and Wildlife Conservation Service's (FWCC's) Strategic Habitat Areas, SJR WMD's designated ground water recharge areas, FNAI's 1998 identified imperiled native vegetative communities, NEFRPC's National Resources of Regional Significance and other recommendations made by the County's Land Acquisition Management Program (LAMP) Board/Environmental Advisory Board, North Florida Land Trust, Visioning Groups and Scenic Corridor Advocacy Groups ('v'Scenic and Historic AIA and William Bartram Trail).
- F.I.3.6. By the year 2005, the County shall have prepared a Parks and Recreation MasterPlan which shall function as a long range policy plan for the County's park system. This Master Plan shall evaluate the County's existing park acreage by re-inventorying the condition and type of the County's existing facilities, population projection needs (i.e., unincorporated County or total County and/or seasonal population), specific park needs based on the individual planning districts and unique population characteristics (based on studies, public meetings, questionnaires, surveys and/or interviews with the Recreation and Parks Department). In addition the Master Plan shall include an inventory of the capital improvement needs required to maintain existing parks, a re-evaluation the LOS standards, a re-evaluation of existing impact fee amounts, a re-evaluation of resource and park management operations, a re-

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Objective F.1.4. Provision of Open Space

Through the planning and development process, the County shall coordinate the provision of needed open space through both public and private sources, which will at a minimum assure consistency with the LOS standards established in F.1.3.1.

Policies

- F .1.4.1. Upon plan implementation, incentives shall be incorporated in the Land Development Regulations, to both encourage and require public and private developments to provide open space and protect natural resources.
- F .1.4.2. Upon Plan implementation, the land development shall incorporate open space definitions and standards for the provision of open space.
- F .1.4.3. Compact development shall be encouraged through the requirements and incentives reflected in the density Charts contained in the Textual Appendix, Planned Developments and cluster type developments since they can provide areas of open space, through negotiation, as well as, recreational facilities concurrent with community access and other community needs they create.
- F.1.4.4. By the year 2001, the County shall support the acquisition of environmentally sensitive lands which can be set aside as open space, through such programs as State purchase plans, the Community Trust Program, the Land Acquisition Management Program (LAMP), the North Florida Land Trust and local bonding programs as well as OGT, FCT, TPL and TNC.
- F.1.4.5. By the year 2001, the County shall pursue grant sources, including but not limited to CARL, FCT, OGT, TPL, TNC and SOR for the acquisition and development of recreational sites and open space.

**G. INTERGOVERNMENTAL COORDINATION ELEMENT
Goal G. 1.**

Effective Intergovernmental Coordination programs which aid in the provisions of services and management of growth.

Objective G.1.1

Coordination and Review Procedures of All Local Plans

By December 2001, the County shall establish coordination and review procedures of the County Comprehensive Plan with the plans of the School Board, municipalities within the County, independent authorities, Duval, Flagler, Clay and Putnam Counties, and regulatory agencies.

Policies

- G.1.1.1 The County shall continue its participation in the information-sharing activities of the Intergovernmental Coordination Committee (ICC). By December 2001, the ICC shall establish a broader purpose for the group, particularly as it relates to the formal responsibilities of coordinating the plans of the School Board, municipalities, independent authorities, Flagler, Duval, Clay and Putnam Counties, and the State regulatory agencies with the County's Comprehensive Plan. Procedures will be established for joint planning areas, especially for the purpose of municipal annexations, municipal incorporation, and joint infrastructure service areas. If an agreement on these additional responsibilities is not reached to the mutual satisfaction of all parties, the County shall initiate the formation of another similar committee for the purpose of plan coordination, or implement a dispute resolution process pursuant to Policy G.1.4.
- G.1.1.2 Pursuant to the new Inter-Local Agreement (adopted March 17, 1999), the County shall continue to meet with the School Board in scheduled joint workshop sessions on a quarterly basis to provide opportunities to discuss issues of mutual concern. In addition, the Boards will evaluate mutually agreed upon criteria in their review of development plans, selection of school sites and construction of schools.
- G.1.1.3 The County shall maintain its membership on the Northeast Florida Regional Planning Council, the Metropolitan Planning Organization, and other active multi-regional and multi-jurisdictional bodies.
- G.1.1.4 The County shall review the County's Comprehensive Plan and Plan amendments for consistency with the State Comprehensive Plan and the Strategic Regional Policy Plan.

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- G.I.I.5 By December 2001, St. Johns County shall propose and offer to execute interlocal agreements and/or Memorandums of Agreement with all adjacent local governments to formally notify each other of formal meetings/workshops held during the early planning stages of site identification for annexations, land use amendments, and Locally Undesirable Land Uses (LULUs). Accordingly, LULUs located within two miles of an adjacent local government's boundaries shall notify the surrounding governments of this proposal. If an agreement on these issues is not reached to the mutual satisfaction of all involved parties, the County shall implement a dispute resolution process pursuant to Objective G.I.4.
- G.I.I.6 St. Johns County, through the local Intergovernmental Coordination Committee, shall coordinate with adjacent governments for the management of joint beaches, shorelines and waterbodies.
- G .1.1.7 The County shall coordinate intergovernmental planning efforts with the St. Augustine - St. Johns County Airport Authority and other applicable agencies directed towards improving mass transit and transportation.
- G.I.I.8 St. Johns County shall coordinate with the St. Augustine - St. Johns County Airport Authority on changes to the St. Augustine Airport Master Plan Update and the FAA Part 150 Noise Study, and shall recommend proposed changes to the Airport Overlay District.
- G.I.I.9 St. Johns County shall continue to maintain an inventory and have available comprehensive plans from adjacent local governments.

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Objective G.1.7 Improve Communication

By the year 2001, the County shall improve communication, coordination and cooperation among the various governments, authorities and agencies.

Policies

- G.1.7.1 Implementation of the County Comprehensive Plan shall involve communication, coordination and cooperation between the County and municipalities, adjacent counties, and those authorities and agencies providing facilities and services.
- G.1.7.2 The County shall develop an Intergovernmental and Private Entity Publication which includes identification of programs, statutes and rules, location, contacts, and any special committees on relevant issues within the County.
- G.1.7.3 The County shall continue to actively participate on the Northeast Florida Regional Planning Council (NEFRPC).
- G.1.7.4 The County shall participate in the NEFRPC's Dispute Resolution Program, when needed.
- G.1.7.5 The County shall ensure consistency between new school construction and related public facilities.
- G.1.7.6 Upon application for initial staff review of plan amendments, actions affecting municipal boundaries, zoning, subdivision, site plan review processes, and special exception requests located approximately one-half mile from any jurisdictional boundary, the County shall notify applicable municipalities and counties and then provide each with the opportunity to provide input regarding the planning or zoning changes. The municipalities and adjacent counties shall be requested to reciprocate by notifying the County on such changes requested within their jurisdiction, and by providing the County with an opportunity to provide input regarding those changes.
- G.1.7.7 The County shall ensure that amendments to its Comprehensive Plan are consistent with the Strategic Regional Policy Plan; the State Comprehensive Plan (Chapter 187, F.S.); the Local Government Comprehensive Planning and Land Development Regulation Act (Chapter 163, F.S.); and the Minimum Criteria for Review of Local Government Comprehensive Plans and Plan Amendments and Determination of Compliance (Florida Administrative Code, Rule 9J-5).
- G.1.7.8 The County shall request that all annexations by municipalities be consistent with the provisions of Chapter 171, F.S. In addition, County staff shall attend appropriate public meetings concerning potential annexations, if needed.

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Objective G.1.9 Growth Management/Environmental Coordination

By December 2001, the County shall establish and implement Growth Management/Environmental Coordination Mechanisms.

Policies

G.1.9.1 The County shall utilize its LAMP Conservation Board to oversee a Land Acquisition and Management Program for the unincorporated County and participating municipalities.

G.1.9.2 The County shall coordinate future land acquisitions for greenways with the Office of Greenways and Trails.

G.1.9.3 The County shall support the acquisition of Environmentally Sensitive Lands which can be set aside as open space, through such programs as State purchase plans, the Community Trust Program, the Land Acquisition Management Program, the St. Johns County Land Trust, and local bonding programs, as well as the Office of Greenways and Trails (OOT), the Florida Community Trust (FCT), the Trust for Public Lands (TPL), and The Nature Conservancy (TNC).

G.1.9.4 The County shall work with other public agencies for the development of compatible multi-use programs for the public lands within the County.

0.1.9.5 The County shall coordinate with the St. Johns River Water Management District (SJRWMD), to ensure that adequate water supplies will meet existing and projected future demands by adopting policies which both agencies can mutually agree upon.

G.1.9.6 By December 2003 or sooner, St. Johns County in coordination with the Florida Department of Environmental Protection (DEP), shall adopt standards and procedures which promote and regulate the Marine Best Management Practices (BMPs).

0.1.9.7 By December 2003 or sooner, signs shall be posted along the Intracoastal Waterways at appropriate locations stating that the boaters have entered shellfish harvesting areas and that any overboard sewage disposal is illegal. The County shall work with the appropriate Federal and State agencies in locating these signs.

0.1.9.8 St. Johns County shall support and encourage continued water quality monitoring by local, state and federal agencies that will identify and formulate plans to address point and non-point sources of surface water pollution.

0.1.9.9 The County shall promote water conservation coordination with the St. Johns

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River Water Management District's Water Shortage Plan, as specified in Chapter 40C-21, F.A.C., in developing a local water shortage and conservation plan, with criteria as enumerated in Conservation Policy E.2.1.1.

- G.1.9.10 The County, in cooperation with the St. Johns County Cooperative Extension Service, the Florida Department of Agriculture and Consumer Affairs (Division of Forestry), the Natural Resources Conservation Service (NRCS), and the St. Johns River Water Management District (SJRWMD), shall provide technical assistance to agriculture operations and other large irrigation water users in the design of low- volume irrigation systems.
- G.1.9.11 St. Johns County shall coordinate with the School Board to ensure that future school facilities are located outside areas susceptible to hurricane and/or storm damage and/or areas prone to flooding, or as consistent with Chapter 235, F.S. and Rule 6A- 2, F.A.C., regarding flood plain and school building requirements.
- G.1.9.12 By December 2003 or sooner, the County shall work with the Florida Fish and Wildlife Conservation Commission (FWCC), and other appropriate governmental agencies in the creation and adoption of a Manatee Protection Plan (MPP), which will consider performance criteria for siting marinas and other water dependent facilities, in addition to the placement of signs at strategic locations along the Intracoastal Waterway and the St. Johns River.
- G.1.9.13 The County shall work with the appropriate State agencies when revising the Beach Traffic Patterns and Lighting Management Plan Ordinances. St. Johns County shall also work with the FWCC on the enforcement and protection of sea turtles during their nesting times.
- G.1.9.14 By December 2003 or sooner, the County shall identify and describe the native vegetative communities and their associated wildlife species in St. Johns County. The County shall designate a Land Acquisition Management Program (LAMP) /Environmental Advisory Board (EAB), which shall make recommendations to the Board of County Commissioners (BCC) on additional vegetative communities, Strategic Habitat Areas, Biodiversity Hot Spots, Ecosystem Management Areas (EMA), Greenways and wetland habitats that may need further protection in the County. The St. Johns River Water Management District (SJRWMD), the Florida Department of Environmental Protection (DEP), the Florida Fish and Wildlife Conservation Commission (FWCC), and other appropriate state agencies shall be requested to assist the LAMP/EAB in their recommendations to the Board of County Commissioners (BCC).
- G.1.9.15 The County shall provide technical support and assistance to the FWCC and the SJRWMD, in their inventory, assessment, and mapping of existing fish and wildlife habitat and significant upland communities, as provided in Conservation Policy

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E.2.2.8.

- G.1.9.16 By December 2002 or sooner, the County shall establish a greenways program in coordination with DEP's Greenway Office. Such greenways shall protect and enhance the natural, cultural and historical resources of the County while providing interconnecting accessways between public conservation and parklands. The established greenways shall be coordinated with the surrounding counties and municipalities.
- G.1.9.17 The County shall provide technical support and assistance to applicable State and Federal agencies in identifying and inventorying all beaches and dune systems, so that they may be protected, enhanced and renourished.
- G.1.9.18 St. Johns County shall continue to coordinate with the appropriate governmental agencies on the St. Johns River Surface Water Improvement (SWIM) program, the Northern Coastal Basins Reconnaissance Report, the NERR Management Plan, Pellicer Creek Aquatic Preserve Management Plan, Guana River Marsh Aquatic Preserve Management Plan, the GTM Task Force Progress Report, the Natural Resources of Regional Significance (NRRS), the St. Johns River American Heritage River designation and any future Management Plan, Habitat Conservation Plans, Manatee Protection Management Plan and Estuarine Sanctuary Plans to ensure that the County resource protection measures are implemented in conjunction with the existing resource protection plans.
- G.1.9.19 Recognizing that sea-grass beds protect water quality by stabilizing sediments and absorbing nutrients and provide essential habitats for many species of wildlife, the County, in conjunction with the SJRWMD, shall adopt regulations to protect sea-grass beds by 2005.
- G.1.9.20 The County shall coordinate with the Florida Department of Agriculture and Consumer Services, Division of Forestry, to ensure that appropriate fire prevention methods are implemented for the burning of land clearing debris within the RuraVSilviculture areas.
- G.1.9.21 St. Johns County shall study the location, spacing and construction styles of dune walkovers. The study results will be documented, community guidelines will be established, and this information will be coordinated with the appropriate state agencies.
- G.1.9.22 The County shall develop and adopt guidelines and standards for the preservation and conservation of silviculture and agriculture in addition to native forest through various land development techniques, including coordination with the St. Johns County Cooperative Extension Service, the Natural Resources Conservation Service (NRCS), the Florida Department of Agriculture and Consumer Services (Division of Forestry),

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and the Land Acquisition Management Program (LAMP)/Environmental Advisory Board.

G.1.9.23 The County shall adopt Land Development Regulations which address alternative types of protection for each type of Environmentally Sensitive Lands (ESL), and which include the intergovernmental coordination processes provided in Conservation Policy E.2.2.5, as they pertain to water quality in the County's major rivers, and consistent regulations for coastal barrier resources.

G.1.9.24 The County shall develop an information and education program, in cooperation with the Natural Resources Conservation Service, Agricultural Extension Service, and others, to provide suggestions and guidance to the agricultural and silviculture communities on methods for incorporating wildlife corridors in the management of their lands.

G.1.9.25 The County shall coordinate with appropriate agencies to implement all of the other objectives and policies of the Coastal/Conservation Element and the Recreation and Open Space Element.

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Objective G.1.10 Improvements to Coastal and Waterfront Areas

By December 2001, the County shall establish agreements or other mechanisms to obtain grant resources for planning activities to improve coastal and waterfront areas including, but not limited to boat ramps, beach parking, dune cross overs, public access signage, beach renourishment and waterfront redevelopment.

Policies

G.1.10.1 The County shall improve physical access to parks and recreational sites by researching and applying for grants and other available funding to acquire and construct parking and access at chosen locations.

G.1.10.2 The County shall continue to protect the accessibility of public beach access points and easements by pursuing additional beach accessway funding sources.

G.1.10.3 The County shall protect its public beaches by pursuing additional funding sources to assist funding for future beach renourishment projects.

G.1.10.4 By December 2003 or sooner, the County shall investigate and develop additional mechanisms, such as user fees, parking fees, grants and other sources, for the purposes of funding beach and navigable waterway accesses, parking spaces, dune walkovers and other related facilities.

G.1.10.5 By 2001 or sooner, the County shall develop standards and procedures, through the adoption of Land Development Regulations, to ensure the protection, enhancement or restoration of the County's dune systems. Among other things (as enumerated at Coastal Management Policy E.1.2.2), these procedures or regulations shall provide for continued enforcement of Federal, State or Local coastal construction zone requirements, and the County's use of beach ramp fees or tolls, consistent with applicable law, for dune restoration and enhancement programs, which prevent further dune damage by controlling beach access.

G.1.10.6 St. Johns County shall permit the utilization of local funds for shoreline stabilization and beach renourishment projects. Priority shall be given to those projects which demonstrate a high cost-benefit ratio while having the least impact to the offshore reef and near shore beach and dune ecological communities.

G.1.10.7 The County shall investigate alternative funding sources for projects in the Coastal Management Area such as a Tourist Development Tax or a Beach Taxing District to fund shoreline stabilization for the areas of critical erosion; improve and protect water quality; and manage the revitalization, redevelopment and hazard mitigation efforts of coastal waterfront communities.

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G.I.10.8 The County shall seek new funding sources to implement the "Best Management Practices" for water resources identified as shellfish harvesting areas, Northern Coastal Basins Reconnaissance Report and the St. Johns River SWIM Program.

G.I.10.9 The County shall encourage and pursue the acquisition of Environmentally Sensitive Lands (ESLs) through state or local acquisition programs.

G.I.1,10.10 The County shall continue to pursue funding sources for improvements along waterfronts.

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Objective G.1.12

Responsible Infrastructure Improvements

The County shall initiate Intergovernmental Coordination programs and policies which contribute to the improvement and expansion of public facilities and services, while protecting, managing and conserving the natural groundwater resources of the County.

Policies

- G.1.12.1 The County shall coordinate with the Florida Department of Environmental Protection (DEP), the St. Johns River Water Management District (SJRWMD), and other applicable agencies to implement the objectives and policies contained in the Infrastructure Element.
- G.1.12.2 In an effort to promote orderly contiguous compact development, by 1999, the County shall define the extent of where centralized potable water and sanitary sewer utility services will be provided by the various service providers.
- G.1.12.3 The County shall ensure that, prior to the issuance of a development order or permit, the applicant has demonstrated that the project complies with the Federal, State and Local permit requirements for wastewater systems (package treatment plants).
- G.1.12.4 The County shall establish public education programs on the proper use, inspection requirements, maintenance, and abandonment of septic tanks. The abandonment process shall be based on applicable state and local regulations.
- G.1.12.5 St. Johns County shall support, encourage and coordinate the water quality monitoring by local, state and federal agencies which will identify and formulate plans to address point and non-point sources of surface water pollution.
- G.1.12.6 By December 2003 or sooner, St. Johns County in coordination with DEP shall adopt standards and procedures which promote and regulate the Marine Best Management Practices.
- G.1.12.7 The County shall pursue federal, state and local funding sources available for the improvement and expansion of utilities.
- G.1.12.8 The County shall seek new funding sources to implement the Best Management Practices (BMP) for water resources identified as shellfish harvesting areas, Northern Coastal Basins Reconnaissance Report and the St. Johns River SWIM program.
- G.1.12.9 The County shall encourage the Florida Department of Environmental Protection (DEP) to perform regular inspections of large quantity hazardous waste generators

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(LQOs) and private licensed waste handlers to ensure that bio-hazardous waste which is generated by medical establishments and handled by private firms is properly managed. When improper management of these bio-hazardous wastes are found, the private waste handler shall be fined.

- G.1.12.10 The County shall cooperate with the Northeast Florida Regional Planning Council, and other counties in the region, to investigate solid waste funding options.
- G.1.12.11 The County shall coordinate with the DEP and the SJRWMD to identify all drainage basins in the County to assure uniformity of basin designation.
- G.1.12.12 St. Johns County shall continue to coordinate with the SJRWMD in the ongoing programs of the St. Johns River Surface Water Improvement Management (SWIM) Program, and the Northern Coastal Basins programs, and to work with the SJRWMD on the long term ambient water quality monitoring program.
- G.1.12.13 St. Johns County shall continue to coordinate with the DEP and participate in the programs recommended by the Guana-Tolomato-Matanzas (OTM) Task Force.
- G.1.12.14 St. Johns County shall continue to coordinate with the DEP and the SJRWMD to utilize water quality data and other appropriate biological indicators to design water management practices that facilitate the maintenance and/or improvement of the existing water quality.
- G.1.12.15 St. Johns County shall continue to coordinate with the DEP and the SJRWMD to develop management practices for water resources to mitigate urban and agricultural non-point sources of water degradation.
- G.1.12.16 The County shall work with the SJRWMD, the DEP, and the Environmental Protection Agency (EPA), to educate and distribute information on the surface water resources in the County.
- G.1.12.17 The County shall establish a coordination mechanism between the Planning and Engineering Departments to ensure that plans developed for drainage facilities are consistent with and support the Future Land Use Element.
- G.1.12.18 By 2005 or sooner, the County shall establish a mechanism (e.g., an Overlay District), to preserve the SJRWMD's Designated Surficial and Floridan Aquifer Recharge Areas. The County will work with the SJRWMD to educate the public on major groundwater issues of concern in the county.
- G.1.12.19 St. Johns County shall request the SJRWMD to establish maximum well depths by rule for St. Johns County, in order to protect water supplies from the upconing of salt water. The County shall coordinate with the SJRWMD on their recommended rule

APPENDIX F

'Boater's Guide'

**Navigational, Historical, and Environmental Perspective of
St. Augustine Waterways**

APPENDIX G

St. Johns County Water Dependent Uses and Marine Study



Board of County Commissioners St. Johns County, Florida

Water Dependent Uses and Marine Study St. Johns County Planning Division



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October 2002

ST. JOHNS COUNTY WATER DEPENDENT USE STUDY
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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

This Water Dependent Uses and Marine Study has been undertaken to help St. Johns County officials plan for the anticipated growth of the County, and the future needs for water dependent use facilities such as boat ramps, marinas, private docks and commercial facilities. With an expected growth in population of 60% by the year 2015, St. Johns County will quickly exceed the capacity of the existing water dependent use facilities available to the general public. This Study has utilized a scientific and statistical approach to determine the future requirements for wet slip and dry slip (dry stack) units located at marinas, boat ramp lanes, boat ramp parking, private docks, and commercial facilities.

To meet these demands for new water dependent use facilities, locations of new and expanded facilities have been determined based on environmental and developmental constraints currently existing in the County. These constraints include, but are not limited to, manatee mortality, submerged aquatic vegetation, population center locations, water quality classifications, shellfish harvesting, vehicle access and waste water treatment availability.

To ensure that new facilities contribute minimal adverse effects to the environment, and are properly constructed and sited, a Marina Facility Siting, Planning, Implementation and Control element has been incorporated into this Study. This element will help the County establish realistic requirements that should be incorporated into all new and expanded facilities, and provide guidance for County Planners and Regulators when reviewing new marine development projects.

SECTION 1.0

INTRODUCTION

1.0 INTRODUCTION

Applied Technology & Management, Inc. (ATM) has completed this Water Dependent Uses and Marine Study for the St. Johns County Planning Department under the direction of Vickie Renna. The study should serve as a baseline for the planning of future water dependent uses in St. Johns County. Chapters of this report address the existing facilities within the County, future demands for new and expanded boat ramps and marinas, siting considerations for public and commercial water dependent uses, and proposed regulations for the planning of new facilities.

For many citizens not living on waterfront property, boat ramps and marinas provide the only access to the waters of St. Johns County. It is imperative that sufficient facilities exist to provide this access. Interest in protecting the County's water resources, wildlife, flora/fauna and water quality can only be achieved through careful marine management.

1.1 Purpose

St. Johns County is one of the fastest growing counties in Florida and the Southeastern United States. According to the Bureau of Economic and Business Research (BEBR, 2001), the projected population in the County may increase by 60% by the year 2015. Because of the vast amounts of water surrounding the County, St. Johns County has a high ratio of registered vessels per resident (nearly one registered vessel for every ten citizens). With this projected growth, existing water use facilities will not be able to meet the demand of County residents. Figure 1 shows the County's most recent existing land use map. Comparing the 2015 Future Land Use map to Figure 2, it is apparent that the County is aware that it will be experiencing continued rapid growth. Figure 3 shows where the currently planned major developments will occur. In order to address the need for future water dependent use facilities such as boat ramps and marinas, the County must start planning now for this future growth.

The purpose of this Water Dependent Uses and Marine Study is to identify the future needs of St. Johns County for docks, ramps, public and new commercial marinas (wet and dry slips) based on the projected need, location and environmental constraints. In part, this Study functions as a continuation of the 1990 State Blue Ribbon Marina Siting study which inventoried and assessed the need for additional marinas in the State of Florida.

1.2 Water Dependent Use Geography of St. Johns County

St. Johns County is different from most counties in the State from a water use perspective in that it has two distinct and separate major water bodies that are not interconnected within the County. The eastern portion of the County is focused on the Intracoastal Waterway (ICW), which is comprised of the Tolomato, Guana, and Matanzas Rivers and their tributaries. The ICW stretches south from the Duval County line for approximately 52 miles to the Flagler County line. It encompasses two Atlantic Ocean inlets (St. Augustine and Matanzas), and untold miles of tributaries and creeks, including the San Sebastian River, Guana River, Pellicer Creek, and others. At the present time, nearly 80% of the County's public and private water dependent use facilities (boat ramps/marinas) are concentrated on the ICW.

The St. Johns River borders the County on its western boundary. There are very limited facilities on the River, and only two older marinas exist within the County. The northwestern portion of the County will see significant growth in the near future, and the St. Johns River will be the primary source of water access for many new residents.

1.3 Goals and Objectives of this Study

This Water Dependent Uses and Marine Study inventories and assesses the need for additional docks, ramps and public marinas (wet and dry slips) within the County. This demand for facilities is balanced with the environmental and developmental constraints within specific regions of the County, and takes into account such critical criteria as water quality, sea grasses, manatees, shell fish harvesting, storm protection, bathymetry and other suitability criteria. Specific elements of this Study include:

- A profile of the supply and demand characteristics of boaters
- Inventory and mapping of existing water dependent use facilities such as ramps, docks, and marinas
- Suitability evaluation of potential sites for expansion
- Identification of regulatory criteria that affect development and protection of the County's marine resources
- Creation of new water-dependent use standards and procedures
- Proposed Water Dependent Uses and Marine Land Development Regulations (LDRs)

The results of this Study will assist the county in determining how to achieve sustainable coastal development, guide the future uses along the shoreline, prioritize water dependent and water related uses, and provide guidance for the creation of new land development regulations. This Study is a requirement of the St. Johns County 2015 Coastal/Conservation Element of the Comprehensive Plan.

1.4 Rationale of Procedure

Within the State of Florida, several Counties have developed and undertaken projects similar to this Water Dependent Uses and Marine Study. Because St. Johns County has experienced accelerated growth rates (within the last 7 years), obtaining background information to base this study on has been difficult, to non-existent. There is very limited reliable information on boating statistics and trends in the County. Previous reports conducted on a statewide basis have grossly underestimated the future needs of St. Johns County for water dependent use facilities. This Study will serve as a baseline for future work in the County.

The basic procedures for conducting this Study are based on other Florida County's work, but the information has been altered to address the unique characteristics of St. Johns County. While previous studies have focused mainly on statistics and mathematical interpretation of data, care was taken during this study to become

exceptionally familiar with the intrinsic details and special conditions in this area. A large amount of time was spent in the field visiting sites and approaching the project as citizens of the County and patrons of the facilities. Another critical element of this study was input from all affected parties, including St. Johns County staff, the Florida Department of Environmental Protection (FDEP), St. Johns River Water Management District (SJRWMD), University of Florida (UF), Department of Community Affairs (DCA), and private citizens. Where precise information and data was missing, input from these contacts filled the gaps.

Instead of investigating individual parcels for suitability for new and expanded facilities, a Regional and sub-regional approach was undertaken. The County was separated into four Regions (Intracoastal North and South, St. Johns River North and South) and then sub-regions. The sub-regions were not based on geographical size, but rather similar characteristics such as water quality, future growth, etc. Each sub-region was assigned scores for different environmental and developmental criteria. These scores were based on available information and input from local specialists. The combined scores were then tabulated and each sub-region was rated accordingly. While some of the criteria is subjective due to the lack of available information and interpretation, the final scores and ratings are clearly delineated into specific rating groups.

The results of this Study will assist St. Johns County Planners in addressing the future water dependent use needs of this rapidly growing County.

SECTION 2.0

EXISTING FACILITIES INVENTORY

2.0 EXISTING FACILITIES INVENTORY

As part of this study, all of the existing water dependent use facilities in St. Johns County were visited, including marinas, boat ramps, commercial docks, and boat yards. Both private and public facilities were assessed and documented. Site assessment forms for individual sites are located in Appendix A. Facilities were classified as “Public” if they were open for use by the general population, even if a fee were required such as a fish camp. “Private” facilities were limited to use only by patrons who were members, such as condominium associations, and yacht clubs, etc.

Boat Ramp facilities have been rated using a system which describes the usability of the ramp by the general public. Ramps rated an “A” are considered to be able to handle any trailerable boat. A “B” classified ramp is generally limited to boats 22 feet or less in length, depending on individual boat drafts and launch vehicle considerations (4 wheel drive, etc.). A ramp rated with a “C” is considered unimproved, or unsuitable for most trailered boats. Any ramp which is not paved is considered a “C” ramp. There are several areas in St. Johns County where residents launch small boats off the side of the road, such as near Matanzas Inlet and along portions of the St. Johns River. These areas are too numerous to count and were not considered for obvious reasons. Only County, State, or privately owned and maintained ramps were considered. For the purpose of this study, the waterfront areas of the County were separated into specific aquatic regions as shown in Figure 4.

A detailed inventory of the existing facilities in each of the four major regions (ICW-N, ICW-S, SJR-N and SJR-S) is provided in the following sections. Table 2-1 summarizes the existing marina facilities in St. Johns County, and Table 2-2 summarizes the existing boat ramps in St. Johns County. The total number of existing wet slips, dry slips, private docks, ramp lanes and trailer parking spaces is shown in Table 2-3. Information regarding future proposed expansion of any of these facilities is also addressed. Locations of facilities are shown in Figures 5 - 8.

2.1 Intracoastal Waterway – North (ICW-N)

This area of the ICW running from the Duval County boundary line south to St. Augustine Inlet has two public marinas (Comachee Cove and Sea Love Marina) with a total of 335 wet slips, almost all of which are at Comachee Cove (325 slips). Sea Love Marina, which is located under the eastern side of the SR A1A bridge, houses several charter fishing vessels and is considering an expansion of several slips. However no detailed planning or permitting has begun, and the increase in slip counts is unknown. Both marinas are at nearly 100% occupancy. A third, smaller private marina is in the permitting stage just north of Sea Love Marina. The original permit for a 20-slip marina has expired, and landowners are currently seeking to re-permit the site for the original 20 slips. This area of the ICW also has two private marinas (Marsh Landing and Villages of Vilano) with a total of 140 wet slips. The slips at Marsh Landing are for larger vessels in the 40+ foot range, while Villages of Vilano slips are in the 18 – 45 foot range. Occupancy rates at these facilities vary heavily with seasonal fluctuations, with most slips full in the winter months.

There are six public boat ramps in this region, providing a total of nine launch lanes and 323 trailer parking spaces. However, two of these ramps (1 lane each) are considered

unimproved, “C” rated ramps and are limited to very small motorized vessels or canoes/kayaks. These two unimproved ramps located within Guana River State Park are owned and maintained by the State. This leaves four ramps with a total of seven lanes available to the general public. Four of these lanes are located at Vilano Basin (“A” ramp), the most popular and largest ramp in St. Johns County. This facility currently has approximately 250 parking spaces; however, a planned expansion in 2002 will add another 50 spaces at the ramp. The other public ramps, with one lane each, are Pine Island Fish Camp (“B” ramp), Oscars Fish Camp (“B” ramp), Boating Club Road (“B” ramp).

Two private boat ramps are also located in this region, each with one lane. St. Augustine Boating Club (“A” ramp) which is located directly adjacent to Boating Club Road Ramp is used only by club members. Villages of Vilano Condominium (“A” ramp) also has a ramp in the marina basin which can be used only by condominium residents.

A new public ramp is planned for the Palm Valley Bridge area to replace the private ramp which was closed to facilitate new bridge construction. According to U. S. Army Corps of Engineers (USACE) officials, the new ramp should be completed by fall of 2002 if funding is secured. If constructed, this ramp would alleviate many of the water access deficiencies in the ICW-N region. This is critical, considering the existing growth of Palm Valley/Ponte Vedra Beach, and the planned Nocatee development.

There are approximately 446 private docks in this region, most of which are associated with single-family dwellings. This number was ascertained from a visual count using detailed aerial photography provided by the county. Dock counts from permits were considered inconclusive due to inconsistencies in permitting and construction verification. Most inhabited parcels along the waterfront in this region have some form of private dock.

2.2 Intracoastal Waterway – South (ICW-S)

The Intracoastal Waterway – South Region extends from St. Augustine Inlet south to the Flagler County line. The majority of St. Johns County’s water dependent use facilities are located in this Region, with the largest concentration in the City of St. Augustine general area.

The San Sebastian River is home to all commercial facilities in the County, including four boat yards and one commercial dock. The boatyards (St. Augustine Marina, Symi/Xynides, High Tide Boat Works, and Luhrs) provide new construction and major repairs of larger vessels. Symi/Xynides caters exclusively to repair and outfitting of commercial vessels (mostly fishing), while High Tide Boat Works and St. Augustine Marina cater to both commercial and private vessels. Luhrs is a major manufacturer of large offshore recreational private fishing vessels. None of these facilities have permanent wet or dry slips for any vessels other than those under going repair or construction.

St. Johns County’s only fully commercial dock is also located in the San Sebastian River. Marine Supply and Oil owns the large dock paralleling the river on the north side. Portions of this dock and the adjacent upland parcels are rented to various tenants, including a wholesale fish supplier, marine repair and equipment supplier, and other vendors supplying materials for the commercial fishing fleet.

Within this region, there are eight public marinas with approximately 396 wet slips available. One of these eight, Sebastian Harbor Marina, has no wet slips, but provides the County with the only readily accessible dry storage units (150 units). St. Augustine Marina, which was discussed above and is classified as a boat yard for this study, is currently undergoing permit review for the addition of 250 dry storage units. According to FDEP sources, this expansion will likely be approved, bringing the total number of dry storage units to 400, all located in the San Sebastian River. Oasis Boat Yard & Marina has only 20 wet slips, however the upland parcel provides storage for many sailboats. These vessels must be launched with a travel lift, and it is not intended for daily use. The largest marina in this region is Conch House Marina, located in Salt Run. This facility currently has 104 wet slips and is in the process of adding an additional 43 slips. This expansion should be complete in 2002. Other public marinas in the St. Augustine area include St. Augustine City Marina (85 slips), Hidden Harbor Marina (42 slips), Oyster Creek Marina (80 slips), and Fish Island Marina (50 slips). Private marinas include Views at Baypointe Condominiums (24 slips), and English Landing (38 slips).

Further South, near County Road 206, are two smaller marinas. Genung's Fish Camp/Coastal Outdoor Center is a newly renovated marina for smaller boats and canoe/kayak rentals. It has capacity for 15 boats less than 20 feet in length. A second private marina basin is located at the Sunrise Harbor Condominiums. The marina is defunct, and docks and bulkheads are beyond repair. However, the basin could be redeveloped into a viable small private or public marina. For this study, it is considered to have no usable slips. In the extreme southern portion of this region is Marineland Marina. Although it is actually located in Flagler County, it is considered a marina of regional impact. This facility has been permitted for re-development of an 85-slip marina. Actual construction dates have not been determined. When complete, this facility will provide additional slips for the southern portion of the County.

There are eight public boat ramps in the ICW-S Region providing a total of 10 launching lanes and approximately 117 trailer parking spots. Of these eight, five of the ramps are "C" rated ramps and not suitable for general public boat launching. Favor Dykes State Park has a ramp which is shallow and is generally limited to very small boats and canoes/kayaks. Green Street Ramp in Crescent Beach is a well-constructed ramp, however it is located in a residential area, and no parking is available. A third, un-named "C" rated ramp is located along the northern shore of Moultrie Creek. It has limited parking, and is too shallow for most trailered boats.

Doug Crane Park on the western shore of the ICW and Palmetto Road Ramp on the eastern shore provide "B" rated launch facilities, however there is limited depth and parking at both of these sites. Future plans call for upgrading the parking at Doug Crane Park; however, no additional spaces are planned.

Lighthouse Park ("A" rated ramp) provides the best launching facilities in the northern portion of this region, while Frank Butler Park provides "B" level launching capabilities. Frank Butler Park is very suitable for expansion. Further south is Devils Elbow Fish Camp ("B" rated ramp), which has a planned expansion and upgrades scheduled for 2002.

There are 204 private docks in this Region. The smaller amount of docks in this region compared to the ICW-N Region is due in part to the wide tracts of marsh and wetlands between the upland parcels and the open water.

2.3 St. Johns River – North (SJR-N)

The northern portion of the St. Johns River in the County extends along the eastern shore from the Duval County line to the Shands Bridge. While this area of the County is experiencing very large growth, there is only one facility offering wet slips. The Amity Inn Anchorage is an older marina with 48 available slips. It has limited amenities, and shoaling in the area has limited the number of usable slips. There are no other public or private marinas in this region.

In addition to the lack of wet slips in the SJR-N region, there are also no dry storage facilities or boat ramps. The only alternative for resident boater access in this region is to travel north to Duval County or facilities in the southern portion of the River.

As with other areas in the County, the majority of occupied or developed waterfront parcels have private docks. There are approximately 268 docks in this region. Many of these docks have boathouses or lift capabilities.

2.4 St. Johns River – South (SJR-S)

The SJR-S region extends from the Shands Bridge south to the County line. In this region, there is one public marina offering wet slips. Pacetti's Campground has approximately 30 slips. The facility has limited amenities, and many of the docks need refurbishment. A newly planned development called Rivertown Estates has recently applied to FDEP for the construction of 4 temporary wet slips within the project area. These new slips, if approved, will have no effect on the regional impact. A similar development in this region had obtained permit approval for the construction of a marina with 50 –60 wet slips. However, due to several reasons, the marina was never constructed, and the permit has expired. There are no other public or private marina facilities in this region.

There are currently six public boat ramps in the SJR-S region, providing seven launch lanes and approximately 95 trailer parking spaces. Of these six, 2 are considered "C" level ramps, and are not readily usable for most boaters. The Moody Canal ramp is located in a residential subdivision at the end of a canal. Although partially improved, it has no on-site parking and limited depth. It is used almost exclusively by local residents launching and retrieving their boats on a seasonal basis. The second "C" ramp is located at Six Mile Marina on Six Mile Creek. This facility, also referred to and owned by The Outback Crab Shack, is a limited use ramp for canoes, kayaks, and very small boats. It is only open for launching during the weekdays and is not available on weekends.

There are two ramps located near the mouth of Trout Creek. Trout Creek Park is a two-lane facility owned by the County which provides the best access to the River for St. Johns County boaters. This "A" rated ramp has approximately 40 parking spaces or more, and adequate depth for all trailered boats. Pacetti's Campground has a ramp associated with the marina. This "B" rated ramp is usable for a fee and has room for

approximately 20 parking spaces. Also located in this vicinity of the River is Palmo Boat Ramp ("B" rated), another County owned ramp. Planned expansion for this ramp includes acquisition of adjacent property for parking and maintenance dredging. Further south is Riverdale Park ("B" rated ramp), which has limited parking and water depth launching capabilities. Future expansion plans call for maintenance dredging and ramp improvements under Phase I, and additional parking areas under Phase II sometime in 2003.

There is one private ramp in this region. The old Tocol Fish Camp has been sub-divided to private units. The ramp remains in place, but is only available to residents, and has little or no parking.

There are 286 private docks in this region, and no boat yards or commercial docks.

Table 2-1 St. Johns County's Existing Marinas/Boatyards/Commercial Docks

Facility Name	GIS/ID	Zone	Type	# Wet Slips	# Dry Units	Expansion Potential	Size Range	Occupancy	Notes
St. Augustine City Marina	PBM-01	ICW-S(1)	Public	85	0	2 (wet)	20'-110'	80%	Caters to larger vessels and transients; prone to storm damage
Oasis Boat Yard & Marina	PBM-02	ICW-S(1)	Public	20	0	1 (both)	20'-60'	90%	Boat yard with repair & lift facilities.
Hidden Harbor Marina	PBM-03	ICW-S(1)	Public	42	0	2 (wet)	Unl.	100%	Newer Facility at former commercial boat dock
Oyster Creek Marina	PBM-04	ICW-S(1)	Public	80	0	2 (wet)	30'-110'	90%	Busy wet slip facility with abandoned or un-used boat ramp
Sebastian Harbor Marina	PBM-05	ICW-S(1)	Public	0	150	3 (N/A)	30' max	80%	Dry Stack Only.
Sea Love Marina	PBM-06	ICW-N(3)	Public	10	0	1 (wet)	Unl.	100%	Planned Expansion in Future.
Comanchee Cove	PBM-07	ICW-N(3)	Public	325	0	2 (wet)		95%	Haulout & Repairs; Full Service.
Conch House Marina	PBM-08	ICW-S(1)	Public	104 (+43)	0	1 (wet)	120' max	80%	Planned Expansion to 147 slips.
Fish Island Marina	PBM-09	ICW-S(1)	Public	50	0	2 (wet)	30'-50'	100%	Quiet facility on east side of ICW with protected basin
Coastal Outdoor Center	PBM-10	ICWS(2)	Public	15	0	3 (N/A)	<20'	95%	Newly Renovated Marina
Views at Baypoint	PVM-01	ICW-S(1)	Private	24	0	3 (N/A)	40' max	100%	Private Dockominium w/ Condo.
English Landing	PVM-02	ICW-S(1)	Private	38	0	3 (N/A)	50' max	100%	Private Marina.
Villages of Vilano	PVM-03	ICW-N(3)	Private	40	0	3 (N/A)	18'-45'	90%	Facility also has ramp.
Sunrise Harbor	PVM-04	ICW-S(2)	Private	-	-	3 (N/A)	-	-	Facility destroyed; For Sale & Repair.
Marsh Landing Marina	PVM-05	ICW-N(1)	Private	100	0	3 (N/A)	17'-85'	80%	Private Marina.
St. Augustine Marina	BOATY D1	ICW-S(1)	Boat Yard	-	(250)	-	-	-	Boat Repair Facility; planned addition of 250 dry slips under permit review
Symi/Xynides	BOATY D2	ICW-S(1)	Boat Yard	-	-	-	-	-	Boat Repair Facility (Commercial).
Luhrs Boat Yard	BOATY D3	ICW-S(1)	Manufacture	-	-	-	-	-	Manufacture & Repair Facility.
High Tide Boat Works	BOATY D4	ICW-S(1)	Boat Yard	-	-	-	-	-	Limited Boat Repair Facility (No direct water access capability).
Marine Supply & Oil	CMDOC K1	ICW-S(1)	Commercial Docks	-	-	-	-	-	Seafood, supplies, fuel, commercial facility.
Amity Inn Anchorage	PBM-A	SJR-N(2)	Public	48	0	1 (wet)	20'-46'	85%	Needs dredging and dock improvement.
Pacettis Camp Ground	PBM-B	SJR-S(1)	Public	30	0	2 (wet)	17'-30'	80%	Needs new docks.

Marina Notes:

- 1) Public - Open to anyone; May or May Not Require Fee
- 2) Dry Units - Number of storage units dedicated to boats that can be put in water at Facility

Table 2-2 St. Johns County's Existing Boat Ramps

Facility Name	GIS/ID	Zone	Type	Rating	# Lanes	Estimated Parking	Expansion Potential	Notes
Pine Island Fish Camp	PBR-01	ICW-N(2)	Public	B	1	20	Fair	Limited depth and navigation
Doug Crane Park	PBR-02	ICW-S(1)	Public	B	1	20	Fair	Limited depth and navigation, planned parking upgrade
Un-named - Moultrie Creek	PBR-03	ICW-S(1)	Public	C	1	5	Fair	Very limited depth.
Six-Mile Ramp - Guana River	PBR-04	ICW-N(2)	Public	C	1	15	Poor	Access only to Guana Lake
Guana Dam Ramp	PBR-05	ICW-N(2)	Public	C	1	20	Poor	Lake access only; 10 hp or less restriction
Oscars	PBR-06	ICW-N(3)	Public	B	1	10	Good	Expansion possible if acquisition of adjacent property.
Boating Club Road	PBR-07	ICW-N(3)	Public	B	1	8	Good	Expansion possible if combined with adjacent ramp.
Vilano Boat Basin	PBR-08	ICW-N(3)	Public	A	4	250 (+50)	Fair	Planned parking expansion; Ocean access.
Lighthouse Park	PBR-09	ICW-S(1)	Public	A	3	30	Fair	Located within Recreation area
Palmetto Road Boat Ramp	PBR-10	ICW-S(2)	Public	B	1	4	Poor	In residential area; very limited parking.
Frank Butler Park	PBR-11	ICW-S(2)	Public	B	1	30	Good	Very high expansion potential, would need ramp improvement
Green Street Ramp	PBR-12	ICW-S(2)	Public	C	1	3	Poor	In residential area; limited use.
Devils Elbow Fish Camp	PBR-13	ICW-S(2)	Public	B	1	20	Good	Planned expansion. May add additional ramp.
Favor Dykes State Park	PBR-14	ICW-S(3)	Public	C	1	5	Poor	State Park access to Pellicer Creek.
St. Augustine Boating Club	PVR-01	ICW-N(3)	Private	A	1	30	Good	Combination with Public Ramp on Boating Club Road. (PBR-07)
Tradewinds Condominiums	PVR-02	ICW-S(2)	Private	B	1	0	Poor	Private; little upland.
Villages of Vilano	PVM-03	ICW-N(3)	Private	A	1	0	Poor	Private in condo; Also Private Marina (PVM-03).
Moody Canal Road	PBR-A	SJR-S(1)	Public	C	1	0	Poor	In residential area; no parking.
Trout Creek Park	PBR-B	SJR-S(1)	Public	A	2	40	Fair	Well maintained ramp.
Six Mile Marina Ramp	PBR-C	SJR-S(1)	Public	C	1	10	Poor	Associated with restaurant; limited use.
Palmo Boat Ramp	PBR-D	SJR-S(1)	Public	B	1	10 (+15)	Good	Used primarily by commercial fishermen; planned expansion.
Riverdale Park	PBR-E	SJR-S(3)	Public	B	1	15	Good	Very high expansion potential, would need ramp improvement.
Deep Creek Ramp	PBR-F	SJR-S(3)	Public	C	1	5	Fair	Planned landing improvements
Old Tocol Fish Camp	PVR-A	SJR-S(3)	Private	B	1	0	Poor	Private for condos.
Pacettis Campground	PBM-B	SJR-S(1)	Public	B	1	20	Good	Associated with Marina and Camp.

Ramp Rating Code:

- A Unlimited Use - all trailerable boats
- B Generally Limited - boats ~<22 ft
- C Limited by depth, access, parking, etc.

Table 2-3 Facility Totals for St. Johns County (Existing)

Zone	Total Public Ramps (lanes)	Total Public Ramps Parking	Public Ramps A/B Rated (lanes)	Public Ramps A/B Rated Parking	Private Ramps (lanes/parking)	Public Wet Slips	Public Dryslips	Private Docks
ICW-N	6 (9)	323	4 (7)	288 (+50**)	2 (2/30)	335	0	446
ICW-S	8 (10)	117	5 (7)	104	1 (1/0)	396	150 (+250*)	204
Total ICW	14 (19)	440	9 (14)	392 (+50)	3 (3/30)	716	150 (+250*)	650
SJR-N	0	0	0	0	0 (0/0)	48	0	268
SJR-S	6 (7)	95	4 (5)	85 (+15**)	1 (1/0)	30	0	286
Total SJR	6 (7)	95	4 (5)	85 (+15)	1 (1/0)	78	0	554
GRAND TOTAL	20 (26)	535	13 (19)	477 (+65**)	4 (4/30)	794	150 (+250*)	1204

SECTION 3.0

PRESENT AND FUTURE WATER ACCESS DEMAND

3.0 PRESENT AND FUTURE WATER ACCESS DEMAND

As St. Johns County and Northeast Florida grow, the demand for boat ramps, marinas and water use facilities will continue to increase. For many citizens, these facilities provide the only access to water areas in the County.

Keeping in stride with the State of Florida and the Southeast in general, the population of St. Johns County continues to grow rapidly. The 2000 census counted approximately 123,135 county citizens, which is projected to increase by as much as 60% by the year 2015. The graphic and table below show long-term population predictions for St. Johns County from the University of Florida’s Bureau of Economic and Business Research.

Graph 3-1 St. Johns County Population Predictions

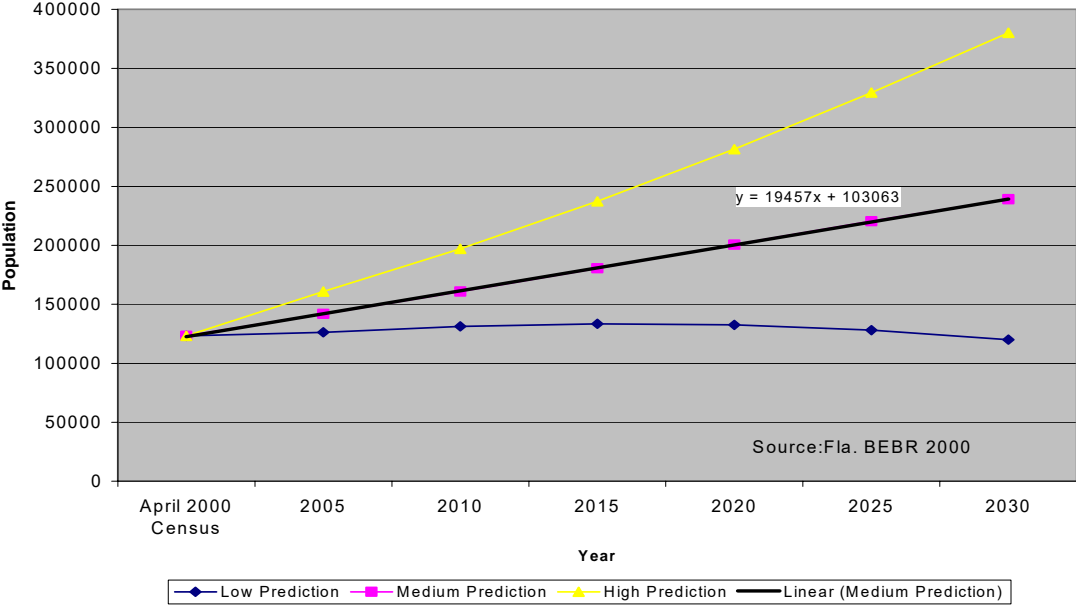


Table 3-1 St. Johns County Population Prediction Data

	April 2000 Census	2005	2010	2015	2020	2025	2030
Low Prediction	123,135	126,200	131,300	133,400	132,500	128,100	120,000
Medium Prediction	123,135	141,800	160,800	180,400	200,600	220,500	239,000
High Prediction	123,135	160,700	196,900	237,200	281,500	329,500	380,100

Source: BEBR 2000

3.1 General Demand

Due to St. Johns County’s numerous expanses of water bodies and year-round temperate climate, boating access is extremely important. As the population grows, the number of boaters requiring water access grows, either in the form of marinas and dry storage, or through boat

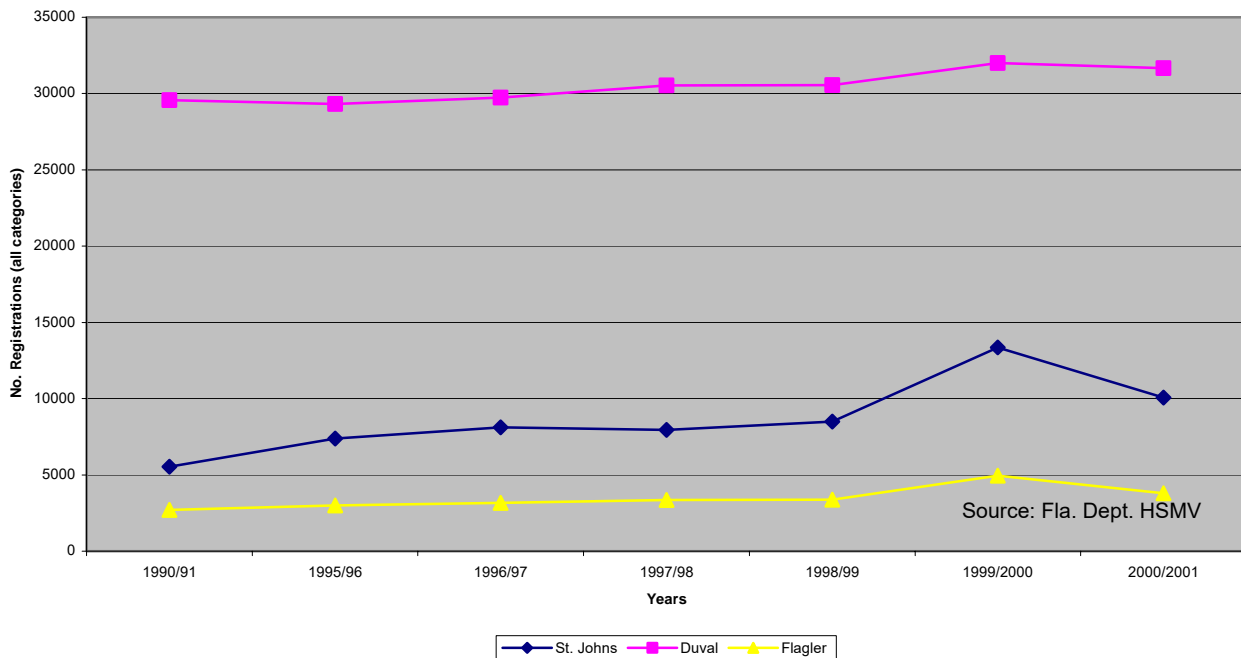
ramps. The ratio of registered boats to citizens in St. Johns County is approximately 1:10. This compares with 1:25 in Duval County and 1:11 in Flagler County.

The Florida Department of Highway Safety and Motor Vehicles (HSMV) provided the Florida County boater registration statistical data presented in this section. Graphs 3-2 and 3-3 below show a breakdown of all registered vessels in northeast Florida from 1990 and 1995 to 2001, and a breakdown of vessel types in St. Johns County. The statistics clearly show that the majority of vessels registered in the County are in the less than 26 feet range, making them ideal for trailering. Tables 3-2 “A-G” give detailed registrations by year and classification.

The apparent rise in boater registration shown for the fiscal year 1999-2000 is not real. Although the 1999-2000 fiscal year boater registration data is shown, it should be noted that this data was not used in calculation of the projected number of registered boaters for specified years due to the inflation of boater registration totals caused by a change in accounting methods by the Florida HSMV for this year.

Population growth was reported to increase at a linear rate over the next 30 years as reported by the Florida BEBR. Therefore, as illustrated later in this section, it was determined a linear relationship could be established to project the future estimate of registered boaters in the County for specific years with reasonable confidence.

Graph 3-2 Boat Registrations for Coastal NE Florida



Graph 3-3 St. Johns County Boat Registrations 1995 - 2000

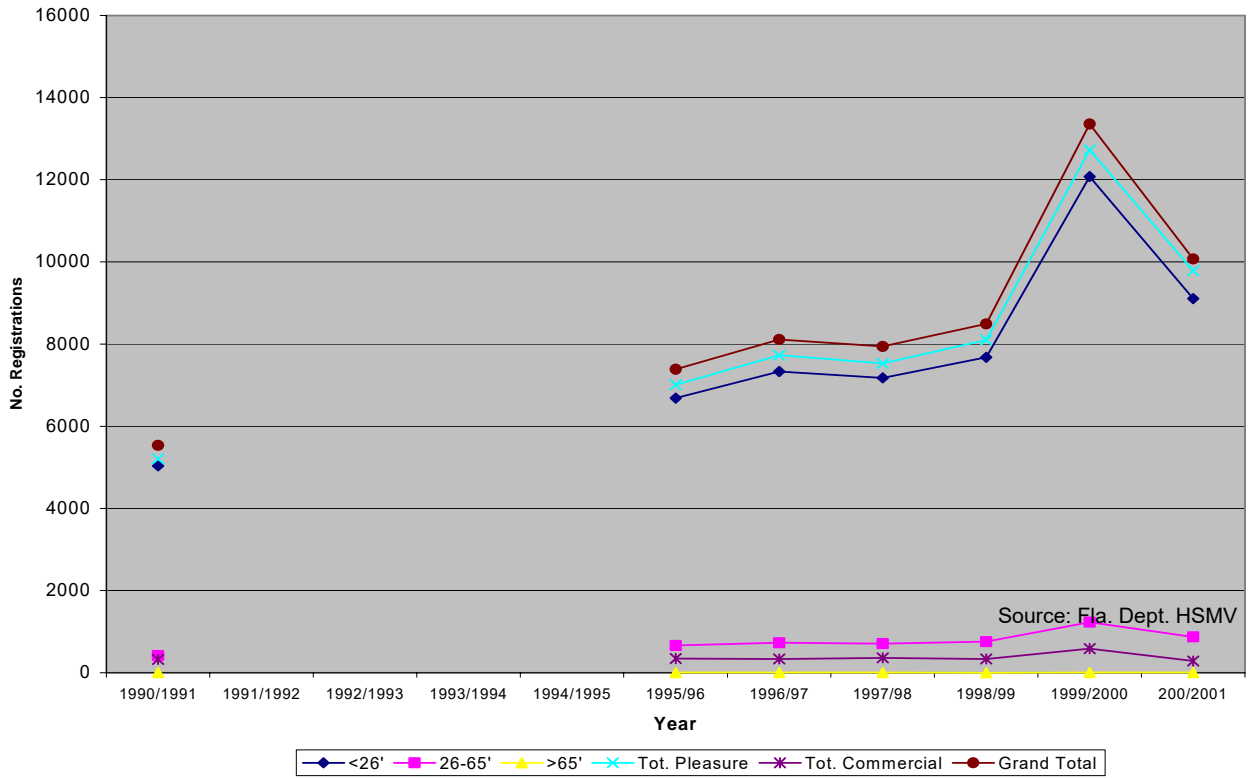


Table 3-2A Florida Boater Registration Data for Fiscal Year 1990-1991

COUNTY	CLASS A-1		CLASS A-2		CLASS 1		CLASS 2		CLASS 3		CLASS 4		CLASS 5		CANOES		DEALER	TOTAL	TOTAL	GRAND
	Pleas	Comm	Pleas	Comm	Pleas	Comm	Pleas	Comm	Pleas	Comm	Pleas	Comm	Pleas	Comm	Pleas	Comm		PLEASURE	COMMERCIAL	TOTAL
DUVAL	2,384	15	11,888	227	12,337	385	1,357	136	205	84	4	41	1	0	379	9	116	28,672	897	29,569
FLAGLER	211	2	1,028	38	1,146	33	173	7	32	3	1	8	0	10	18	0	21	2,630	83	2,713
ST. JOHNS	406	10	2,405	126	1,963	125	301	36	63	20	0	8	0	0	44	0	27	5,209	325	5,534

Source: Fla. Dept. HSMV

Table 3-2B Florida Boater Registration Data for Fiscal Year 1995-1996

COUNTY	CLASS A-1		CLASS A-2		CLASS 1		CLASS 2		CLASS 3		CLASS 4		CLASS 5		CANOES		DEALER	TOTAL	TOTAL	GRAND
	Pleas	Comm	Pleas	Comm	Pleas	Comm	Pleas	Comm	Pleas	Comm	Pleas	Comm	Pleas	Comm	Pleas	Comm		PLEASURE	COMMERCIAL	TOTAL
DUVAL	3,802	26	9,888	128	12,701	326	1479	126	261	68	3	51	1	0	338	1	116	28,473	726	29,315
FLAGLER	307	4	1,049	41	1,250	30	200	8	50	4	1	1	0	0	27	1	22	2,884	89	2,995
ST. JOHNS	862	14	2,662	122	2,839	134	513	41	79	30	2	4	0	0	51	0	37	7,008	345	7,390

Source: Fla. Dept. HSMV

Table 3-2C Florida Boater Registration Data for Fiscal Year 1996-1997

COUNTY	CLASS A-1		CLASS A-2		CLASS 1		CLASS 2		CLASS 3		CLASS 4		CLASS 5		CANOES		DEALER	TOTAL	TOTAL	GRAND
	Pleas	Comm	Pleas	Comm	Pleas	Comm	Pleas	Comm	Pleas	Comm	Pleas	Comm	Pleas	Comm	Pleas	Comm		PLEASURE	COMMERCIAL	TOTAL
DUVAL	4,194	25	9,598	115	12,956	323	1,554	114	255	74	6	46	1	0	339	0	138	28,903	697	29,738
FLAGLER	361	2	1,088	33	1,314	35	224	10	52	8	1	1	0	0	24	0	23	3,064	89	3,176
ST. JOHNS	1,020	16	2,794	105	3,190	140	554	45	105	25	1	5	0	0	66	0	49	7,730	336	8,115

Source: Fla. Dept. HSMV

Table 3-2D Florida Boater Registration Data for Fiscal Year 1997-1998

	CLASS A-1		CLASS A-2		CLASS 1		CLASS 2		CLASS 3		CLASS 4		CLASS 5		CANOES		DEALER	TOTAL	TOTAL	GRAND
	Less than 12'		12' to 15'11"		16' to 25'11"		26' to 39'11"		40' to 64'11"		65' to 109'11"		110' or more		Pleas	Comm		PLEASURE	COMMERCIAL	TOTAL
COUNTY	Pleas	Comm	Pleas	Comm	Pleas	Comm	Pleas	Comm	Pleas	Comm	Pleas	Comm	Pleas	Comm	Pleas	Comm				
DUVAL	4,590	20	9,483	112	13,452	307	1,613	118	243	69	5	47	0	0	333	0	136	29,719	673	30,528
FLAGLER	411	9	1,092	39	1,382	48	244	9	66	2	2	0	0	0	24	0	23	3,221	107	3,351
ST. JOHNS	988	27	2,664	103	3,177	153	540	48	92	27	0	5	0	0	69	0	50	7,530	363	7,943

Source: Fla. Dept. HSMV

Table 3-2E Florida Boater Registration Data for Fiscal Year 1998-1999

	CLASS A-1		CLASS A-2		CLASS 1		CLASS 2		CLASS 3		CLASS 4		CLASS 5		CANOES		DEALER	TOTAL	TOTAL	GRAND
	Less than 12'		12' to 15'11"		16' to 25'11"		26' to 39'11"		40' to 64'11"		65' to 109'11"		110' or more		Pleas	Comm		PLEASURE	COMMERCIAL	TOTAL
COUNTY	Pleas	Comm	Pleas	Comm	Pleas	Comm	Pleas	Comm	Pleas	Comm	Pleas	Comm	Pleas	Comm	Pleas	Comm				
DUVAL	4,619	29	9,028	98	13,779	296	1,724	108	259	67	4	47	0	0	352	0	153	29,765	645	30,563
FLAGLER	447	6	1,069	29	1,436	31	251	10	45	2	4	0	0	0	26	0	24	3,278	78	3,380
ST. JOHNS	1,110	18	2,756	94	3,487	136	579	54	95	29	0	2	0	0	75	0	54	8,102	333	8,489

Source: Fla. Dept. HSMV

Table 3-2F Florida Boater Registration Data for Fiscal Year 1999-2000

	CLASS A-1		CLASS A-2		CLASS 1		CLASS 2		CLASS 3		CLASS 4		CLASS 5		CANOES		DEALER	TOTAL	TOTAL	GRAND
	Less than 12'		12' to 15'11"		16' to 25'11"		26' to 39'11"		40' to 64'11"		65' to 109'11"		110' or more		Pleas	Comm		PLEASURE	COMMERCIAL	TOTAL
COUNTY	Pleas	Comm	Pleas	Comm	Pleas	Comm	Pleas	Comm	Pleas	Comm	Pleas	Comm	Pleas	Comm	Pleas	Comm				
DUVAL	4,921	96	8,718	104	14,966	293	2,004	111	295	76	5	61	0	0	250	0	111	31,159	741	32,011
FLAGLER	644	22	1,467	21	2,218	33	409	7	72	4	6	0	0	0	33	0	15	4,849	87	4,951
ST. JOHNS	1,769	75	4,053	144	5,726	234	922	87	179	43	1	2	0	0	79	0	43	12,729	585	13,357

Source: Fla. Dept. HSMV

Table 3-2G Florida Boater Registration Data for Fiscal Year 2000-2001

	CLASS A-1		CLASS A-2		CLASS 1		CLASS 2		CLASS 3		CLASS 4		CLASS 5		CANOES		DEALER	TOTAL	TOTAL	GRAND
	Less than 12'		12' to 15'11"		16' to 25'11"		26' to 39'11"		40' to 64'11"		65' to 109'11"		110' or more		Pleas	Comm		PLEASURE	COMMERCIAL	TOTAL
COUNTY	Pleas	Comm	Pleas	Comm	Pleas	Comm	Pleas	Comm	Pleas	Comm	Pleas	Comm	Pleas	Comm	Pleas	Comm				
DUVAL	4,921	15	8,677	110	14,937	298	1,892	105	297	35	19	39	1	0	165	0	155	31,064	602	31,666
FLAGLER	522	1	1,125	14	1,689	33	284	7	58	2	2	0	0	0	27	0	27	3,734	57	3,791
ST. JOHNS	1,427	16	2,978	77	4,484	124	676	37	124	28	2	2	0	0	39	0	59	9,789	284	10,073

Source: Fla. Dept. HSMV

3.2 Marina and Wet Slip Demand and Deficiencies

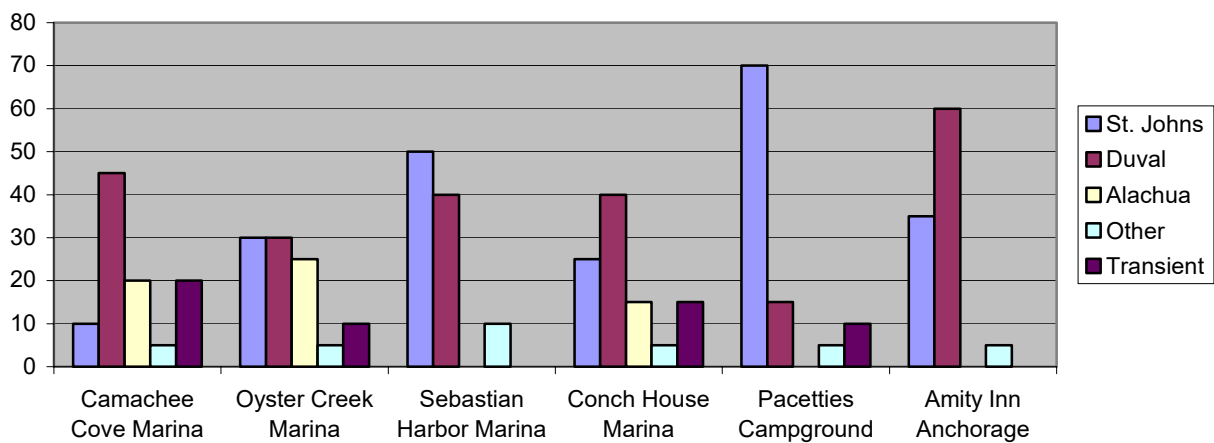
As part of this study, a survey was taken of the major existing marinas to determine the general distribution of demand for boat slips (wet and dry) by counties in Florida. The information below indicates a surprising statistic. At the major marinas, less than 50% of the slip holders are from St. Johns County. The majority of the owners are from Duval, with smaller amounts from other nearby counties. The two exceptions are Sebastian Harbor, which is dry stack only, and Pacetti's Campground, which is one of only two marinas on the St. Johns River. Although recognized as a critical element in the St. Johns County boating scene, the St. Augustine City Marina was not available to provide information for this portion of the study.

Table 3-3 St. Johns County Marina Use Survey for April 2002

Marine Facility	Percentage of Users by Florida County					
	St. Johns	Duval	Alachua	Other	Transient	Total
Camachee Cove Marina	10%	45%	20%	5%	20%	100%
Oyster Creek Marina	30%	30%	25%	5%	10%	100%
Sebastian Harbor Marina	50%	40%	0%	10%	0%	100%
Conch House Marina	25%	40%	15%	5%	15%	100%
Pacetti's Campground	70%	15%	0%	5%	10%	100%
Amity Inn Anchorage	35%	60%	0%	5%	0%	100%

Source: Independent Survey - ATM

Graph 3-4 St. Johns County Marina Use by Florida County April 2002



Source: Independent Survey - ATM

Table 3-3 and Graph 3-4 illustrate the diverse nature of the market for wet and dry slip marine facilities in St. Johns County. Although the market for these facilities is diverse, it was determined the best method to predict the demand for future facilities based on the ratio of boaters registered in St. Johns County to the present number of wet and dry slips available to the current market.

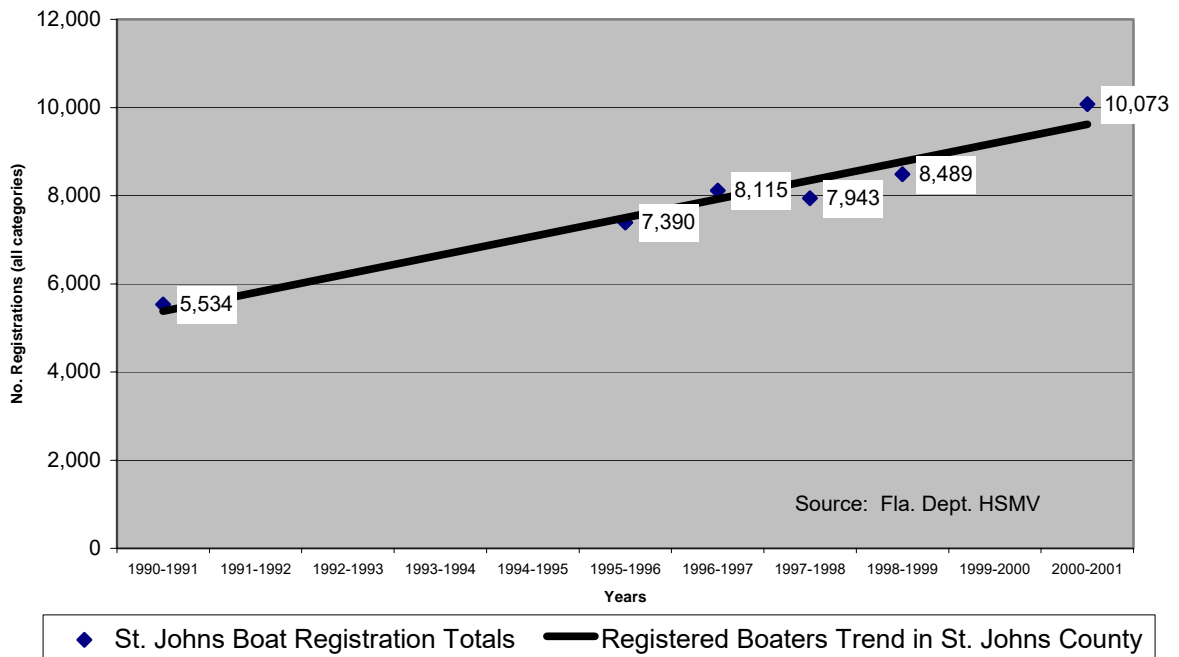
3.2.1 PROJECTED WET AND DRY SLIP FACILITIES DEMAND FOR ST. JOHNS COUNTY

The projected dry and wet slip facilities demand for St. Johns County is presented in this section. The projected demand for slips in St. Johns County was based on the 2001 ratio of slips available to registered boaters in St. Johns County.

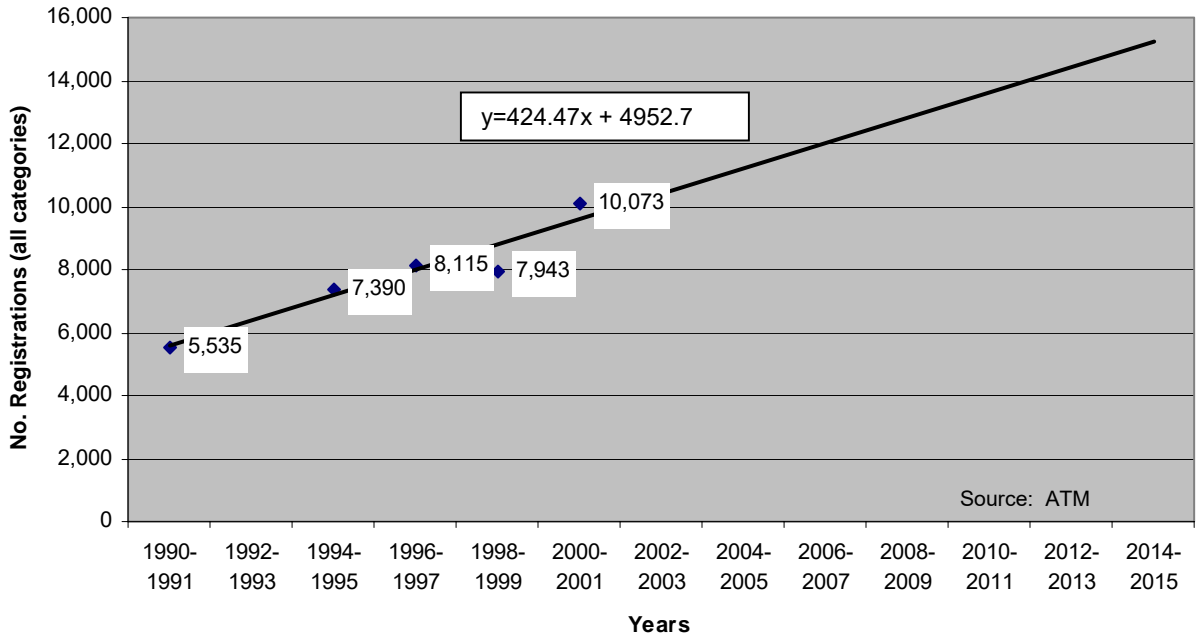
Graph 3-5 illustrates the trend in boaters registered in St. Johns County over the last ten years. The total boater registration data from fiscal year 1999-2000 was not included due to the change in the accounting of boater registration data by the Florida Department of Highway Safety and Motor Vehicles (DHSMV). The data used to generate the graph is presented in Tables 3-2 “A-F.”

Based on the trend identified in Graph 3-5, projection of future boater registration statistics were calculated for the years 2005, 2010, and 2015. Graph 3-6 shows the anticipated trend for boat registrations in St. Johns County, while Graph 3-7 illustrates the actual projected total numbers of registered boaters for St. Johns County for the years 2005, 2010, and 2015.

Graph 3-5 Historic Boat Registration Totals for St. Johns County 1990-2001

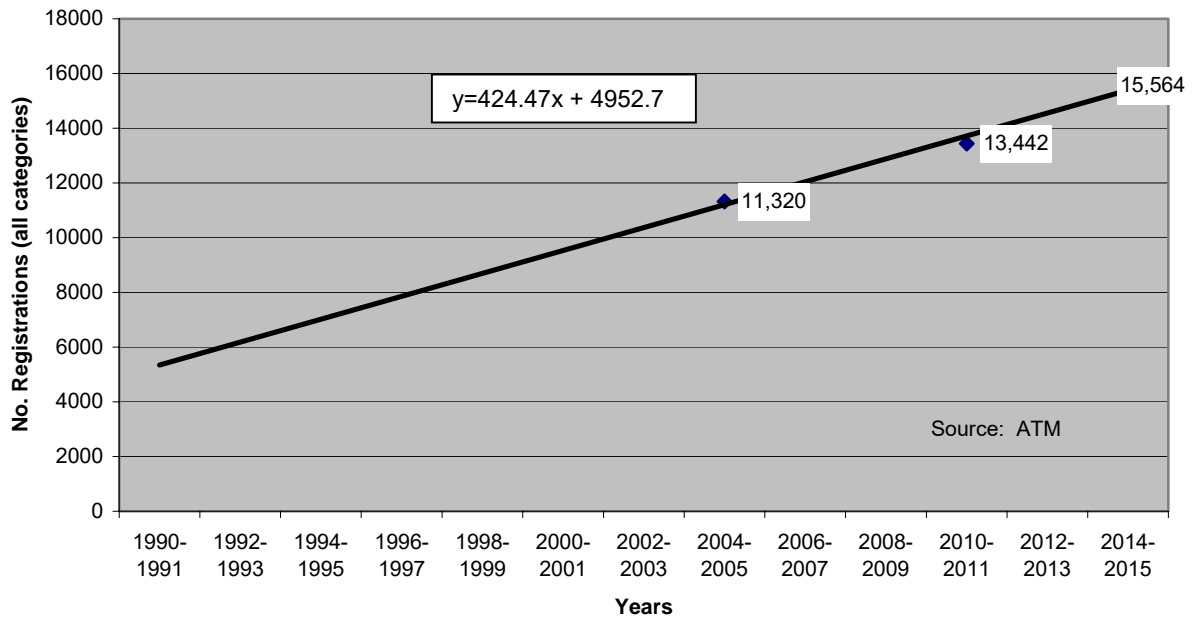


**Graph 3-6 Projected Boat Registration Trend for St. Johns County
Years 2005, 2010 and 2015**



◆ St. Johns Boat Registration Totals — Registered Boaters Trend in St. Johns County

**Graph 3-7 Projected Boat Registrations for St. Johns County
Years 2005, 2010 and 2015**



◆ Projected Number of Boaters Registered in St. Johns County — St. Johns County Registered Boaters Trend

As illustrated in Graph 3-7 the projected number of boaters registered in St. Johns County for the following years are respectively:

<u>Year</u>	<u>Projected Number of Boats Registered</u>
2005	11,320
2010	13,442
2015	15,564

The projected number of registered boaters for each year was determined using the following equations based on the trend in boater registration from 1990 and 1995 through 2001. The equation is presented as follows:

$$y = 424.47 x + 4,952.7$$

where y = the number of projected boaters registered in St. Johns County for a given year

and

x = the number of years from 1990

For example for the year 2005:

$$y = 424.47 (15) + 4952.7$$

$$y = 11320$$

3.2.2 METHODOLOGY FOR ESTIMATING FUTURE WET AND DRY SLIP FACILITIES NEEDS

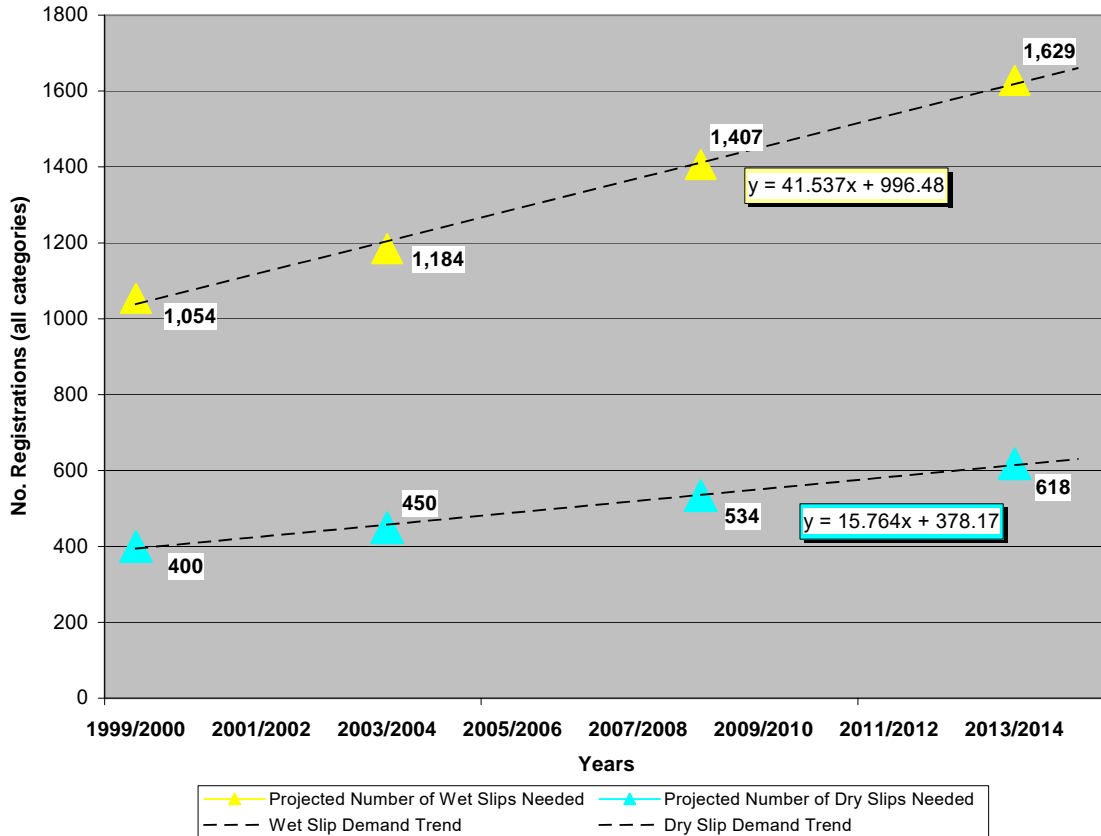
The following statistics are the basis for the calculations and are taken from the fiscal year reports of the Florida Department of Highway Safety and Motor Vehicles (DHSMV) and from ATM's inventory of current marina facilities in St. Johns County, shown in Table 3-4. The results of these calculations are presented below and in Graph 3-8.

SJC total dry slips 2001	400
SJC total wet slips 2001	1,054

SJC total registered vessels 2000/2001	10,073
--	--------

2001 Ratio of wet slips to registered boats (SJC)	1 : 9.557
2001 Ratio of dry slips to registered boats (SJC)	1 : 25.185

**Graph 3-8 Projected Wet and Dry Slip Demand for St. Johns County
Years 2005, 2010 and 2015**



As illustrated in Graph 3-8 the resultant projections for wet and dry slips in St. Johns County are as follows.

Projected Total Number of Wet Slips needed in	2005	1,185
Projected Total Number of Wet Slips needed in	2010	1,407
Projected Total Number of Wet Slips needed in	2015	1,629

Presently there are 1,054 wet slips available in St. Johns County. In order to meet demand projections St. Johns County will need to add to the present number: **131** slips by **2005**, **353** by **2010** and **575** by **2015**.

Projected Total Number of Dry Slips needed in	2005	450
Projected Total Number of Dry Slips needed in	2010	534
Projected Total Number of Dry Slips needed in	2015	618

Presently there are 400 dry slips available in St. Johns County. In order to meet demand projections St. Johns County will need to add to the present number: **50** slips by **2005**, **134** by **2010** and **218** by **2015**.

Wet Slip Demand

In calculating wet slip demand, it was assumed that the percentage of St. Johns County registered boaters, as compared to the percentage of registered boaters from other Florida counties, (using St. Johns County marina facilities) would remain constant. It was also assumed that the supply of wet slips available in St. Johns County meets the demand of the current market wet slip boating needs and that the current ratio of wet slip versus dry slip demand would remain the same.

Using these assumptions it was calculated that the demand for wet slips needed in the coming years for St. Johns County was generally a function of:

$$y = 41.437 x + 996.48$$

When

- y = the projected demand for wet slips in St. Johns County
- x = the number of years beyond 2000

Dry Slip Demand

Similarly, in calculating future dry slip demand it was assumed that the percentage of St. Johns County registered boaters, as compared to the percentage of registered boaters from other Florida counties, (using St. Johns County marina facilities) would remain constant. It was also assumed that the supply of dry slips available in St. Johns County meets the demand of the current market dry slip boating needs and that the current ratio of wet slip versus dry slips would remain the same.

Using these assumptions it was calculated that the demand for dry slips needed in the coming years for St. Johns County was generally a function of:

$$y = 15.764 x + 378.16$$

When

- y = the projected demand for dry slips in St. Johns County
- x = the number of years beyond 2000

Other counties also contribute to the demand for wet and dry slips in St. Johns County, especially those adjoining counties. The projection of the demand for boat slips assumes that the percentage of St. Johns County registered boaters, as well as other surrounding counties boat users, use of the St. John County's marine facilities, will remain constant.

The total number of dry and wet slips available for St. Johns County's boaters use, including those dry stack facilities that are currently under permit review, were utilized to project future boat slip (dry and wet) needs.

The following table summarizes the inventory of significant available and proposed wet and dry slip marina facilities for St. Johns County.

Table 3-4 St. Johns County Marina Facilities Inventory Summary

Facility Name	Zone	No. Wet slips	No. Dry Units	Size Range	Occupancy	Notes
St. Augustine City Marina	ICW-S(1)	85	0	20'-110'	80%	
Oasis Boat Yard & Marina	ICW-S(1)	20	0	20'-60'	90%	Boat Yard with Repair & Lift Facilities.
Hidden Harbor Marina	ICW-S(1)	42	0	unlimited	100%	Waiting List.
Oyster Creek Marina	ICW-S(1)	80	0	30'-110'	90%	
Sebastian Harbor Marina	ICW-S(1)	0	150	30' max	80%	Dry Stack Only.
Sea Love Marina	ICW-N(3)	10	0	unlimited	100%	Planned Expansion in Future.
Comachee Cove	ICW-N(3)	325	0		95%	Haulout & Repairs; Full Service, Waiting list.
Conch House Marina	ICW-S(1)	104 (+43)	0	120' max	80%	Planned Expansion to 147 slips.
Fish Island Marina	ICW-S(1)	50	0	30'-50'	100%	Waiting List
Coastal Outdoor Center	ICWS(2)	15	0	<20'	95%	Newly Renovated Marina
Views at Baypoint	ICW-S(1)	24	0	40' max	100%	Privately owned docks.
English Landing	ICW-S(1)	38	0	50' max	100%	Waiting List.
Villages of Vilano	ICW-N(3)	40	0	18'-45'	90%	Facility also has ramp.
Sunrise Harbor	ICW-S(2)	-	-	-	-	Facility destroyed; For Sale & Repair.
Marsh Landing Marina	ICW-N(1)	100	0	17'-85'	80%	Private Marina.
St. Augustine Marina	ICW-S(1)	-	(250)	-	-	Planned addition of 250 dry slips under permit review
Symi/Xynides	ICW-S(1)	-	-	-	-	Boat Repair Facility (Commercial).
Luhrs Boat Yard	ICW-S(1)	-	-	-	-	Manufacture & Repair Facility.
High Tide Boat Works	ICW-S(1)	-	-	-	-	Limited Boat Repair Facility
Marine Supply & Oil	ICW-S(1)	-	-	-	-	Seafood, supplies, fuel, commercial facility.
Amity Inn Anchorage	SJR-N(2)	48	0	20'-46'	85%	Needs dredging and dock improvement.
Pacettis Camp Ground	SJR-S(1)	30	0	17'-30'	80%	Needs new docks.
Total Quantity of Slips		1054	400	Total includes existing and planned wet and dry storage facility units		

Source: Independent Survey - ATM

3.3 Boat Ramp Demand and Deficiencies

For this Water Dependent Use Study, projections of the number of boat ramps needed in the future were determined using the methodology presented below in Section 3.3.1. These projections were compared to projections made earlier by a Florida Sea Grant Study. Using updated population data, the Sea Grant methodology would produce very similar results to the projections presented in this Water Dependent Use Study.

The Florida Sea Grant Study (Bell, 1995) surmised that a good rule of thumb for sufficient ramp access is one ramp lane (a ramp may have more than one lane) for every 6,700 people in a county. Using this very basic relationship and St. Johns County's median projected population of 180,400 by the year 2015, St. Johns County would need as many as 13 additional new ramp lanes, for a total of 27 boat ramp lanes, according to Bell's Study. Currently, there are 14 "A" and "B" rated public ramp lanes in the County.

The Sea Grant Study presented a detailed methodology for predicting the number of lanes each County would likely need in the year 2010. Unfortunately, the projected growth of St. Johns County at the time the study was completed vastly underestimated the number of boat lanes needed, and the conclusion was that little or no ramps would be needed in the County. This same study, however, suggested that as many as 70 new lanes would be necessary in neighboring Duval County. Certainly, the number of lanes required in both of these Counties is somewhere in between. Much of the population that was predicted to reside in Duval County will likely end up in St. Johns County, skewing the Sea Grant Study numbers.

Because St. Johns County is unlike most counties in that it has two distinct water bodies, and is undergoing extreme growth, a slightly different and site-specific approach for estimating the boat ramp needs of the County was undertaken. It has been found that at most ramps, the limiting factor for ramp use is the number of trailer parking spaces. A common problem with boat ramps is that the ramp itself is well constructed and can handle a large number of boats; however, there is insufficient parking for trailers at the facility. The following calculations summarize the methodology used to determine St. Johns County ramp needs in the future.

3.3.1 METHODOLOGY FOR ESTIMATING FUTURE RAMP NEEDS

The following statistics are the basis for the calculations and are taken from various sources, including Florida Department of Transportation (FDOT), Florida Fish and Wildlife Conservation Commission (FWCC), University of Florida (UF), and others.

SJC April 2000 Census:	123,135
SJC Medium population prediction for 2015:	180,400
SJC total registered vessels (2000):	13,357 (90% < 26')
SJC total registered vessels < 26' (trailerable)	12,021
Ratio of boats to population (SJC)	~ 1:10
Ratio of boats to population (Duval)	~1:25
Ration of boats to population (Flagler)	~1:11
Total No. ramp lanes (A/B) St Johns	14
Total No. ramp parking spaces (A/B) SJC	~477

It can be assumed that 90% of vessels <26 feet in length are trailered. This estimate is based on the existing number of dry stack spaces currently available in the County and an observation of the number of vessels in marinas and docks which are less than 26 feet in length.

Therefore, the number of County residents trailering boats = 90% x 12,021 registered boats less than 26 feet = 10,820 trailered boats.

Other counties also contribute to the demand at local ramps, especially those adjoining counties also facing ramp deficiencies. It has been estimated from other studies and interviews with ramp users that 15% of Duval County boaters and 60% of Flagler County boaters use St. Johns County ramps, most frequently Vilano Boat Basin and Trout Creek Park.

Vessels under 26': Duval County: 29,348 vessels x 15% use in SJC = 4,402
Flagler County: 4,438 vessels x 60% use in SJC = 2,662

Using these estimates and ignoring other counties and out of state boaters, there are potentially 17,884 trailered boats in St. Johns County.

Next, the actual boat use trends must be examined. The boating industry experts generally estimate that each boater participates in approximately 31 outings annually. This number is probably low for St. Johns County and Florida in general, but can be used as a conservative estimate. Multiplying the number of outings annually by the number of trailered boats in the County gives:

31 outings x 17,884 trailered boats = 554,404 potential ramp users annually

Other considerations which aid in the ramp requirement calculations are:

1. Assume that each parking space at the ramp is used 1.75 times a day. This covers the early morning fishermen, afternoon cruisers, and those boaters on all day trips.
2. Assume that adequate parking is the limiting factor for ramp usage, as reported during boater surveys.

Typically, some parking spaces may be used twice a day – by morning boaters and afternoon boaters. A standard usage factor of 1.75 uses for each space per day is acceptable.

Taking the number of available parking spaces in the County and multiplying by the usage rate of 1.75 yields:

477 available spaces x 1.75 = 835 optimum spaces available on a daily basis (A/B ramps only)

When these numbers are extrapolated on an annual basis, the number of boat trailer tips can be estimated:

52 weeks x 7 days x 835 spaces = 303,940 boat trailer trips

This number varies seasonally and daily since weekends are obviously busier than weekdays. However, it serves as a base for estimating future ramp needs.

3.3.2 EXISTING RAMP DEFICIENCIES

In order to determine ramp requirements, a comparison must be made between the potential number of ramp users and the existing optimum boat use on any given day. As discussed above, currently St. Johns County has 554,404 potential annual trips, or outings. The current optimum use for County ramps based on available parking is 303,940 annual trips. Subtracting the optimum use from the potential use:

Using year 2000 numbers:

Number of Potential Ramp Users = 554,404 trips
<u>- Current Optimum Boat Use/day = 303,940 trips</u>
Existing Deficiency of Ramps = 250,464 trips

Using the same numbers, the deficiency of the number of required parking spaces to can be calculated:

$$250,464 \text{ trips} / (52 \text{ weeks} \times 7 \text{ days} \times 1.75 \text{ parking trips}) = 394 \text{ spaces}$$

Assuming that the maximum ramp lane level of service approaches 50 launches/retrievals per day (industry recommendation is 30 - 50), then the number of deficient ramp lanes can be computed:

$$394 / 50 \text{ spaces per lane} = \sim 8 \text{ lanes}$$

3.3.3 FUTURE RAMP DEFICIENCIES

Projecting future ramp needs are based on the methodology, population predictions and the statistics summarized above. Using medium population predictions for the County, the number of trailerable boats (boats less than 26') in 2015:

St. Johns County = (180,400 people) / (10 people per boat) x (90 % boats < 26') x (90% boats trailered) = 14,612 trailered County boats (compared to 10,820 in year 2000)

Similar calculations for adjacent County boaters using St. Johns County ramps gives a conservative estimate of additional boaters:

Duval: 36,888 registered boats < 26 feet x 15% use factor = 5,533 trailered boat users
Flagler: 7,381 registered boats < 26 feet x 60% use factor = 4,428 trailered boat users

Adjacent county use factors may actually be higher based on the knowledge that only one new ramp is currently being planned in Duval County. Adding all of the county's contributions, the total number of potential trailered boats in St. Johns County in the year 2015 is:

$$14,612 \text{ (SJC)} + 5,533 \text{ (Duval)} + 4,428 \text{ (Flagler)} \text{ in 2015} = 24,573 \text{ (17,937 in year 2000)}$$

Using the same assumptions as above,

31 annual outings x 24, 573 = 761,763 potential boat trailer trips

In the year 2015, based on medium population predictions:

Number of Potential Ramp Users = 761,763 trips
- Current Optimum Boat Use/day = 303,940 trips (from above)
Estimated Deficiency of Ramps = 457,823 trips

As before, the number of parking spaces necessary to meet this demand can be calculated:

457,823 trips / (52 weeks x 7 days x 1.75 parking trips) = 718 parking spaces

718 parking spaces / 50 spaces per lane = 14 new lanes.

Table 3-5 summarizes the numbers used in the above calculations.

3.3.4 SUMMARY OF RAMP NEEDS

Boat ramps in St. Johns County provide the only access to the water for many residents and non-residents alike. The number of boat ramp lanes currently existing do not sufficiently meet today's demand for access. This is especially true on the St. Johns River side of the County, where there is only one existing ramp which provides adequate parking. Because this area of the County will see extreme growth in the coming years, the demand for new ramp lanes and associated parking is critical. To meet this demand, St. Johns County will need to acquire as many as 14 additional ramp lanes, and 718 trailer parking spaces by the year 2015, bringing the total number of lanes to 28. This estimate is quite realistic, especially if the rule of thumb of one lane per 6,700 residents is followed which projects a need of 27 total lanes.

A large majority of these new ramp lanes and parking areas should come from expansion of the existing facilities. The facilities which are best suited for expansion are discussed in Section 7 of this report. Other additional ramps and parking may be the responsibility of entities other than St. Johns County, such as the City of St. Augustine, new residential developers, and other commercial providers like fish camps and marinas.

Table 3-5 Existing and Projected Boat Ramp Deficiencies

	St. Johns County's Trailered Boats Using Ramps	Duval County's Trailered Boats Using Ramps	Flagler County's Trailered Boats Using Ramps	Total Trailered County Usage	Annual Boat Participation	Existing Parking	Optimum Space A/B Available	Total Annual Potential Boat Trips	Current Optimum Boat Trips	Ramp Trip Deficiencies	Ramp Parking Deficiencies	Boat Ramp Deficiencies
Existing	10,820	4,402	2,662	17,884	31	477	835	554,404	303,940	250,464	394	8
Future (2015)	14,612	5,533	4,428	24,573	31	477	835	761,763	303,940	457,823	718	14

Source: ATM

3.4 Private Docks

There are approximately 1,200 private docks located in St. Johns County associated with private residences. As shown in Table 2-3, almost 37% of these docks are located in the ICW – North region which extends from the Duval County line to the St. Augustine Inlet. A smaller percentage, approximately 17%, is located in the southern portion of the ICW from St. Augustine Inlet to the Flagler County line. The remaining private docks (46%) are located along the St. Johns River and its tributaries.

A simple estimate of the number of private docks in future years in the County can be made by examining the number of dock permits typically processed annually by FDEP and SJRWMD, which is roughly 25. Using this number, an approximate projection for future years yields:

Year	No. of Private Docks
2000	1200
2005	1325
2010	1450
2015	1575

These estimates will vary depending on the number of waterfront parcels sold.

Observations made in the field and supported by County real estate data indicate that nearly every improved lot abutting navigational waters in both the Intracoastal Waterway and St. Johns River has some form of dock. These docks range from elaborate structures with boatlifts and multiple slips to simple wooden access piers extending past the high-water line. In projecting the demand for future private docks, it is a safe assumption that nearly every new waterfront property developed will eventually seek construction of some form of a private dock, whether the resident owns a boat or not.

Permitting and construction of private docks is well regulated by the St. Johns River Water Management District, Florida Department of Environmental Protection, the U.S. Army Corps of Engineers. For the permit to be approved, the builder must show that adequate water depth exists, seagrass bed impacts are minimized, navigational areas are not impeded, and other regulations are met. Additional restrictions are placed on new docks in Outstanding Florida Waterways and Aquatic Preserves. In the State of Florida, riparian rights favor the landowner, and placing additional restrictions on private facilities can require unwanted litigation. A complete listing of the requirements can be found in the Florida Administrative Codes (FAC 62-302). In St. Johns County, as with other counties in Florida, the primary focus for the County should be to ensure that all new private docks have been properly permitted by the appropriate agency, and constructed according to plan. The County should refrain from placing additional restrictions on private docks.

3.5 Commercial Boatyards and Docks

There are four commercial boatyards and one commercial dock located in St. Johns County. All of these facilities are located in the San Sebastian River in the ICW-N(1) sub-region. A commercial boatyard or dock is considered any facility that does not cater primarily to the storage of individual boats, such as a marina. Instead, they provide

construction, repair, supplies and purchasing for the commercial fleet, which is primarily fishing in St. Johns County. Commercial facilities impact the environment, especially water quality, and as such, are regulated accordingly. The locations of these commercial facilities are dependent on St. Johns County's Future Land Use Map's land use designations, Comprehensive Plan's goals, objectives and policies (GOP's), and land development code regulations.

The demand for new commercial boatyards and docks is waning throughout the U.S., including northeast Florida. In contrast to public marinas for which there is an increasing demand, many commercial facilities are closing down. Others are redeveloping to become public marinas, such as Hidden Harbor Marina in St. Augustine, which was redeveloped three years ago. St. Augustine Marina, also in St. Augustine, is currently adding new dry storage facilities to meet the local boating demand. Previously this facility performed only repair work.

Changes in demand for commercial facilities may occur in the year 2015, however they are hard to predict. If future demand for commercial facilities increases, new boatyards should be limited to the San Sebastian River area. The location of these commercial uses needs to be consistent with the appropriate land use designations and zoning categories as identified on the St. Johns County's 2015 Future Land Use Map and the Land Development Code regulations.

3.6 Trip Origins and Destinations

The large expanses of water bodies within St. Johns County make it difficult to ascertain meaningful boat trip statistics for planning the expansion of shore facilities such as marinas, private docks and boat ramps. Urbanizing Florida Cities and Counties in the state have acquired large data pools. The data is drawn upon when creating planning information. For this study, trip origins and destination information was based primarily on informal boater surveys, information from local marina operators/managers, and local knowledge and observations.

Trip origins within St. Johns County are very closely tied to boat size and regional location. Larger vessels are obviously more likely to originate from marinas rather than boat ramps. For St. Johns County, that means that nearly all large vessel boat trips originate from the St. Augustine area (including Comachee Cove and Sea Love Marina) since the County has no other areas providing large slips. The exception to this is Marsh Landing Marina in northern St. Johns. However, local observations and lack of a primary destination for these vessels indicate that the percentage of boat trips from this location is relatively small, and accounts for less than 3% of all boat trips. Overall, it is estimated that 15 to 20% of all boat trips originate and return to marinas. Private docks also account for some trip origins; however, it is generally accepted that this percentage hovers around 12 to 15%.

This means that the remaining boat trips, or approximately 65 to 73% of all trips, originate from boat ramps. This figure compares favorably with a study conducted by the Florida Department of Economics (Bell, 1994), which suggested that 70% of boaters in Florida use boat ramps. St. Johns County boaters are more likely to use boat ramps for primary water access points compared to other counties due to the limited marina facilities, especially on the St. Johns River.

Within the boat ramp user group, it is estimated 80% of all ramp trips originate from one of two locations, depending on the region of use. Within the ICW regions, the majority of ramp usage is at the Vilano Boat Basin due to its nearly direct ocean access, excellent ramp conditions, and fairly adequate parking. On the St. Johns River side, nearly 99% of all ramp trip origins are from the Trout Creek/ Six Mile Creek area south of the Shands Bridge, which is the home for five of the County's seven ramps on the River. Of those trips, the majority originate from Trout Creek Park which provides the best facilities and parking.

The fourth boat traffic origin route identified in the County is seasonal, north-south boat commuters.

As the County undergoes continued development, the percentage contribution of boat traffic from each area and type of facility will likely change. However, by the year 2015 these percentages should be fairly close.

SECTION 4.0

SITE SUITABILITY AND FACILITY SITING

4.0 SITE SUITABILITY AND FACILITY SITING

This chapter addresses the siting for new facilities and expansion of existing facilities based on environmental and developmental criteria. Each region and sub-region was analyzed and assigned a score based on how it compared with other areas of the County. These scores were then totaled, and suitability ratings were established.

4.1 Regional Descriptions and General Suitability

For the purpose of this study, St. Johns County was divided into four separate regions for analysis of site suitability. Each region was further broken down into two or more sub-regions based on similarities and unique characteristics within that area. The dividing lines were based on site location within the County, water body classifications, projected growth distribution, water use areas, and other environmental and developmental similarities.

St. Johns County is fortunate in that it has two distinct water bodies – the St. Johns River, on its western border, and the waters comprising the Guano, Tolomato, and Matanzas Rivers and their tributaries in the eastern portion of the County. These are two very separate and different ecosystems that must be analyzed independently. This distinction is the basis for the regional/sub-regional type analysis for the site suitability portion of this study, and future water dependent use planning.

A detailed description of the regions and sub-regions follows. Refer to Figure 4 for the locations of these areas. Figures 5-8 break out the individual sub-regions and existing facilities.

4.1.1 ST. JOHNS RIVER – NORTH (SJR-N)

The St. Johns River – North region starts at the Duval County line and runs south to the Shands Bridge at State Road 16. The River is very wide in this region, but can be shallow close to the shoreline. There are several coves and protected areas, and State Road 13 hugs the riverbank in most areas, with residential parcels on both sides of the road. Boat traffic is mostly limited to the navigation channel and protected coves for skiing, fishing and other water use activities.

SJR-N(1) – Julington Creek and Tributaries

Julington Creek and its tributaries comprise the sub-region referred to as SJR-N(1). This area is characterized by waterfront homes and protected waters. Duval County has a small boat ramp with limited parking on the north side of the Creek. The Creek is reported to support a stable manatee population and is popular with boaters. Boat traffic can be heavy on busy weekends and holidays.

SJR-N(2) – Entrance to Julington Creek South to Shands Bridge

From the entrance to Julington Creek south to Shands Bridge is sub-region SJR-N(2). It encompasses all of the waters of the St. Johns River and its tributaries south to the bridge. The shoreline in the northern part of this sub-region is comprised of residential houses, each with private docks. There are still some vacant parcels in this area; however, the demand for new home sites has gradually taken up the majority of once

vacant parcels. There are several coves offering good protection; however, the depth in these coves is likely limited.

4.1.2 ST. JOHNS RIVER – SOUTH (SJR-S)

The portion of the St. Johns River from Shands Bridge South to the Putnam County line is referred to as the SJR-S Region. Like the northern portion of the river, this region is characterized by a meandering shoreline with several coves and protected areas. Sea grass becomes more abundant as the salinity drops, and the general upland vicinity becomes more rural with timber and pasturelands. The river remains wide in this region, and boat traffic tends to become thinner.

SJR-S(1) – Shands Bridge South to Picolata (CR 208)

The area of the St. Johns River between Shands Bridge and Picolata is one of the busiest water use areas along the River in St. Johns County, and is referred to as sub-region SJR-S(1). There are five boat ramps in this sub-region, and the protected waters at the mouth of Trout Creek and Six Mile Creek provide good areas for water recreation. The area is also home to the majority of the commercial fishing population in this portion of the County, including crabbing and baitfishing.

SJR –S(2) – Picolata South to Lane Landing

The area of the river between Picolata and Lane Landing South of Tocoli Creek is referred to as SJR-S(2), and is comprised of a mix of low/medium density residential housing, recreation lands, and agriculture/forest. County Road 13 departs from the shoreline for a large portion of the area, and direct access to the water is limited. As with other areas of the river, the depth is relatively shallow close to shore, and boat traffic is concentrated in the navigation channel.

SJR-S(3) – Lane Landing South to County line

From Lane Landing south to the Putnam County line is considered SJR-S(3). Large homes abut the water in most of this sub-region, with a mix of agriculture and recreational areas in the southern portion. Deep Creek drains into the River in the very southern area and is bordered on both sides by forested land. County Road 13 hugs the shoreline in the northern part of this sub-region, and then departs well inland, making direct access to the River difficult. Sea grass beds are more predominant in this area as well.

4.1.3 INTRACOASTAL WATERWAY – NORTH (ICW-N)

The Intracoastal Waterway – North region encompasses the Tolomato and Guana Rivers, as well as the narrow portions of the ICW north of Palm Valley. This region is generally characterized by shallow areas outside of the marked channel and high boat traffic on weekends and during seasonal migration of winter transients. Overall, the waters are well flushed and there are no stagnate areas.

ICW-N(1) – Duval County line South to Palm Valley Bridge (SR 210)

The portion of the ICW from the County line South to the Palm Valley Bridge is lined with private docks on nearly every parcel along the east side of the ICW. These private docks extend nearly to the edge of the channel, and in some instances may overlap the USACE recommended maintenance setback. The majority of the west side of the ICW is

privately held land which currently is undeveloped. The USACE is developing plans to perform maintenance dredging along this portion of the ICW, although existing depths are sufficient for most boat and commercial barge traffic. Due to the confined nature of the waterway, new marinas are not possible without utilizing an upland cut basin. This area is suitable for public boat launch facilities to meet the increased demand in this sub-region.

ICW-N(2) – Palm Valley South to Vilano Beach (ICW marker “55”)

South of the Palm Valley bridge (SR 210), the Tolomato River opens up and becomes less confined. However, areas outside of the ICW channel are still relatively shallow. Marsh areas and natural tributaries and creeks become prevalent, and upland parcels are set back from deeper water. South of ICW marker “47”, in the vicinity of Ximanies Creek, and further South near Pancho and Robinson Creeks, certain portions of the waters are classified as Conditionally Approved for shellfish harvesting. This sub-region also includes the Guana River, which is classified as an Outstanding Florida Waterway (OFW) and Aquatic Preserve (AP). A large portion of this sub-region also encompasses the newly created Guana-Tolomato-Matanzas National Estuarine Research Reserve (NERR). While the area is well flushed and open, large permanent marine facilities would be difficult to construct due to required dredging and potential water quality degradation. The sub-region is well suited for boat launch facilities, and several boat ramps currently exist in the area (see Section 2).

ICW-N(3) – Vilano Beach from ICW marker “55” to St. Augustine Inlet

This portion of the Tolomato River is wide, with adequate depths and exceptional flushing characteristics. Shellfish beds are not prevalent, and upland areas are generally commercially zoned. Although vessel traffic can be congested due to the proximity to the St. Augustine Inlet and the City of St. Augustine, the river is wide enough in certain places to accompany expansion of existing facilities. Currents are relatively strong, and the area is generally susceptible to severe storm events. Boat launching facilities and marinas would likely require protection. In the ICW-North Region, this sub-region is the most adaptable for new or expanded facilities based on water quality, existing upland zoning, access, and water depth.

4.1.4 INTRACOASTAL WATERWAY – SOUTH (ICW-S)

The Intracoastal Waterway South of St. Augustine Inlet is characterized by wide areas in the North adjoined by large portions of vacant land. Most of the development is centered around St. Augustine. At the southern portion of the County, the barrier island as well as the ICW become narrow, and private docks line the water. A large portion of the river South of SR 206 is Conditionally Approved for Shellfish Harvesting, and several active leases are present.

ICW-S(1) – St. Augustine Inlet South to ICW marker “29”

This sub-region is the most developed, and includes a large majority of St. Johns County’s in-water marine facilities, specifically along the San Sebastian River. Several ongoing expansion projects of marinas are underway in this region, as well as new facilities. Adequate depths, flushing, and limited environmentally sensitive areas make this region excellent for new and expanded marinas, boat ramps, and commercial facilities. It is also central to County urban areas and newly planned developments, providing excellent access points for the public.

ICW-S(2) – ICW marker “29” South to Pellicer Creek

All water bodies South of ICW marker “29” are Class II waters. Additionally, a large portion of the Matanzas River south of SR 206 is Conditionally Approved for Shellfish Harvesting, and is part of the NERR. The upland areas along the western shore in this sub-region are predominantly state lands or undeveloped areas. The eastern shore contains residential areas and wetlands. Outside of the channel, water depths in this region are extremely shallow. Construction of new in-water facilities would be difficult due to potential water quality degradation, disruption of approved shellfish harvesting areas, inadequate depths and other environmentally sensitive conditions. The lack of large urban developments in this region also lessens the need for new in-water facilities. Existing ramp locations should be sufficient if updated and properly maintained.

ICW-S(3) – Pellicer Creek and its tributaries

This sub-region is environmentally sensitive. It is part of the NERR, as well as being an Outstanding Florida Waterway. The area is relatively pristine, with little development other than some private docks on the western (upriver) portion of Pellicer Creek. Navigation on the eastern portions of the creek where it joins the Tolomato River is challenging and requires detailed local knowledge of the creek. Favor Dykes State Park is located on a portion of the northern shore of Pellicer, and provides ramp access for smaller boats. Due to the sensitivity, shallow depths, and limited upland access, this area is considered poor for marina and trailer boat access. It is very suitable for non-motorized vessel access, such as kayaks and canoes.

4.2 Detailed Site Suitability Analysis

The goal of the detailed site suitability analysis is to evaluate the potential for an area to be used as a marina, boat ramp, private dock, or other water dependent use facility. For this study, specific parcels were not evaluated individually due to the rapidly changing conditions regarding ownership, zoning, and future growth. Rather, specific areas of St. Johns County exhibiting similar conditions were grouped together in regions and sub-regions and evaluated as a whole. This approach allows the County to evaluate more than one parcel at a time. Because of the unique characteristics of St. Johns County and diverse regional areas, this regional approach to the Site Suitability Analysis will be more useful to county planners.

Following similar work by Florida Sea Grant (Antonini, et. al. 1997), a development suitability rating (Preferred Water-Dependent Use, or PWDU) is assigned to each region and sub-region. This rating is based on several factors including water quality, infrastructure, wetlands and submerged aquatic vegetation, access, Outstanding Florida Waterways and Aquatic Preserves, and other factors. The higher the score, the better the suitability rating. Sites with low scores are not considered suitable for intense uses such as marinas and commercial docks, but may be considered for less intense uses such as boat ramps, waterfront parks, fishing areas, and other small commercial uses.

Table 4-1 summarizes the criteria used to evaluate the suitability of the various regions. A detailed discussion of each criterion and basis for scoring is also provided. The criteria rating points assigned for each sub-region are interpretive, and are based on comparisons within the County. For some subjective categories, the scores were developed based on available information and direct solicitation from various sources. These sources included St. John’s County staff, St. Johns River Water Management District (SJRWMD), Florida Department of Environmental Protection (FDEP), Florida

Fish and Wildlife Commission (FWCC), U.S. Army Corps of Engineers (USACE), private citizens, and other relevant data sources.

Table 4-1 Site Suitability Criteria

CRITERIA	ASSESSMENT POINTS
Environmental Considerations	
Historical Manatee Mortality Rate	0 – 4 points
Wetlands	0 or 2 points
Shellfish Harvesting Areas	0, 2, or 4 points
Outstanding Florida Waterways, Aquatic Preserves and Water Quality Classifications	0, 2, or 4 points
Submerged Aquatic Vegetation	0 - 2 points
Suitable Water Depths without Significant Dredging	0 or 2 points
Maximum Achievable Assessment Points	18 points
Developmental Considerations	
Existing Infrastructure (roads, water, sewer)	0 – 4 points
Existing Facility Density and Demand	0 – 4 points
Surrounding Population Density or Projected Growth	0 – 4 points
Available Vacant Property in Sub-Region	0 – 4 points
Storm Protection	0 – 4 points
Maximum Achievable Assessment Points	20 points

The suitability criteria were grouped into two categories. The first category is environmental considerations and includes criteria that are based solely on natural environmental conditions at the time of this assessment. These are also the criteria that would be closely evaluated from permitting agencies (FDEP, SJRWMD, USACE) for any new or expanded construction of water-dependent facilities. A second category of criteria is evaluated under developmental considerations. These criteria are based on supply and demand, access, and other developmental constraints. A detailed description of the criteria and basis for scoring is discussed below.

4.2.1 ENVIRONMENTAL CONSIDERATIONS

For each sub-region, specific environmentally sensitive criteria were examined. The rating points assigned to each criterion were developed independent of the region's other criteria. For example, shellfish harvesting areas were examined independently from water body classifications. Environmental criteria will be a large part of any permitting review by appropriate agencies.

Historical Manatee Mortality Rate

Using information obtained from the Florida Fish and Wildlife Conservation Commission, Florida Marine Research Institute's 2000 Atlas of Marine Resources, manatee mortality reports were analyzed. This information, shown in Figure 9, was used to rate each region on the following basis:

No reported deaths	Score = 4
One to Four deaths	Score = 2

More than Four deaths Score = 0

Causes of death were not incorporated in this rating score, and these statistics are not meant to be a comprehensive study of manatee mortality in St. Johns County. It should also be noted that some regions might soon contain manatee refuge areas or other boating restrictions which would alter the assigned score in the future.

Wetlands

It is generally regarded that most areas of St. Johns County along water bodies have some form of wetlands or salt marsh areas on site. An attempt to use information from the National Wetland Inventory and other sources was inconclusive for St. Johns County due to the lack of coverage, unsubstantiated ground truthing, and dated information. Therefore sites were assigned either a 2 or a 0, based on whether large tracts of undisturbed wetlands were observed on a majority of the waterfront parcels in the sub-region.

Shellfish Harvesting Areas

Information from the Florida Department of Agriculture and Consumer Services shellfish harvesting areas was utilized to assign ratings for each region, as shown in Figure 10. Conditionally approved areas were scored 0, conditionally restricted areas were assigned a value of 2, and prohibited or unclassified areas were assigned a value of 4.

Outstanding Florida Waterway (OFW), Aquatic Preserve (AP), and Water Classification

Using information provided by FDEP and the Florida Administrative Code (FAC), a sub-region was assigned either a 4 if it is not part of an OFW or AP, or a 0 if it is within either of these water body classifications. Sub-regions containing Class II waters that are not otherwise Outstanding Florida Waters or Aquatic Preserves were scored a 2. These water body classifications are shown in Figures 11 and 12. There are no Outstanding Florida Waterways or Aquatic Preserves on the St. Johns River within St. Johns County.

Submerged Aquatic Vegetation Coverage

As with wetland information, detailed sea grass and submerged aquatic vegetation information was limited, and insufficient for rating all portions of St. Johns County. Detailed mapping is currently being conducted by the St. Johns River Water Management District (SJRWMD); however, this information is not suitable for interpretation at this time. Therefore, regions were scored from 0 - 2, depending on observed submerged aquatic vegetation during site visits and the overall potential for sea grass beds. Generally, none of the ICW regions exhibit high sea grass potential. Within the St. Johns River, the potential becomes greater further up-river, but is dependent on flushing, salinity, turbidity and other factors. Locations of submerged aquatic vegetation may vary drastically over time.

Suitable Depths without Significant Dredging

Detailed bathymetry of all of St. Johns County is not readily available. For this analysis, regions which were known to be overall shallow and would require significant dredging for any improvements were assigned a score of 0, while areas that were known to have acceptable water depths were assigned a score of 2, depending on the average depths. This criterion is obviously site specific, however scores were developed based on the general depths and conditions within the sub-region.

4.2.2 DEVELOPMENTAL CONSIDERATIONS

Criteria listed under developmental considerations are based on factors that influence the actual need and constructability of a new facility. They consider projected growth, availability of existing facilities, and access. This criteria is more likely to influence long term regional planning within St. Johns County.

Infrastructure (roads, water, sewer)

Regions were assigned scores ranging from 4, if suitable infrastructure was currently in place, to 1, if roads, water service and sewers were not available or major construction was required to make the area accessible. Information for this criterion was obtained from local maps, service areas, and site visits.

Existing Facility Density and Demand

The necessity of new or expanded facilities is partly dependent on existing facility density and regional demand. Regions with no, or limited facilities were given higher scores than those regions currently having more facilities. The range for this criterion was from 0 to 4, dependent on existence and conditions of existing facilities, and existing demand. Future demand is more a function of projected growth, and was examined under that criterion.

Surrounding Population Density or Projected Growth

Construction of new facilities should take place as close to population centers (existing and planned) as possible. Areas with high growth rates were assigned scores of 3 and 4, while regions with little or no planned growth were assigned scores of 0 – 2. Growth was predicted based on future planned developments (PUDs and DRIs).

Available Vacant Property in Sub-Region

Planned new construction of water dependent facilities is dependent on available property. Regions with little or no available water frontage were assigned lower scores than those areas with ample potential for new or expanded facilities. Due to the different geographical sizes of the sub-regions, the scores were based on percentage of available land in each one. State and County owned lands which may be available for water dependent uses were also examined.

Storm Protection

Although a smaller consideration for overall planning, regions with no protected areas for mooring or other water dependent uses were scored lower than regions displaying adequate storm protection characteristics. Wide-open coasts were given lower scores than regions with sheltered areas from wind and tidal surge.

4.3 Competing Shoreline Uses

As the growth in St. Johns County continues, there will be an increasing demand for waterfront property. This demand will be in the form of residential homes, commercial establishments such as restaurants and hotels, boat ramps, marinas, and other recreational facilities. For many citizens not living on waterfront property, new facilities will provide the only access to the waters of St. Johns County. It is imperative that sufficient facilities exist to provide this access.

The County should make every effort to acquire as much waterfront property as feasible. The criteria for determining suitable parcels for acquisition should be based on results of this study as well as other needs of the County, such as passive parks, preserves, and conservation areas. As the pool of available property shrinks, care should be taken to ensure that acquired areas are best utilized for the overall needs of the County residents.

The requirements for marinas are the strictest from an environmental and developmental standpoint. They require sufficient depth, access, protection, and adjacent upland area. There are few available parcels that can support these demands, and therefore these should be a priority for siting of new marinas. While the County is not in the business of constructing, owning or operating marinas, it should facilitate expansion and new construction of marinas in suitable areas.

The requirements for siting of boat ramps are not as strict or intensive as marinas, however, they must meet certain criteria such as access and suitable depth for navigation. While many of the existing ramps in the County can be expanded and upgraded, there will be a need for new ramps in the near future. Available parcels in high growth areas that can support the requirements for new ramps should be acquired as soon as possible.

Passive parks, preserves, and other recreational areas along the shoreline not used for boat ramps or marinas have the least constraining requirements, and therefore are more readily available. The County may also share in the financial responsibility and acquisition with other State, local and Federal agencies.

Care must be taken to utilize the remaining available parcels in the most efficient manner. Areas that meet the rigorous demands for marinas and ramps should be utilized for that purpose almost exclusively since the availability of these parcels is becoming scarce. Purchase of a parcel that meets the requirements for a new ramp, and then using the upland areas for playgrounds and picnic areas instead of trailer parking is not efficient use of the property. While these facilities are as important as boat ramps, they should be constructed on parcels that do not meet the criteria for water dependent uses.

4.4 Discussion of Results

The environmental and developmental suitability scores are provided in Tables 4-2 and 4-3 along with the basis for the assigned scores. Table 4-4 shows a summary of the overall combined scores for each region and sub-region. It should be noted that the suitability ratings are for comparison purposes only, and actual scores are not as important as the grouping of scores (e.g., high range vs. low range). Each project should be evaluated on its own merit using the established criteria.

Table 4-2 Site Suitability Ratings - Environment Considerations

Region	Sub-Region	ENVIRONMENT CONSIDERATION												Total Environmental Score
		Historical Manatee Mortality	Score	Wetlands	Score	OFW, AP, Classification	Score	Shell Fish Harveting	Score	Submerged Aquatic Vegetation (SAV)	Score	Suitable Depth	Score	
ICW-N	1	Four reported deaths, two of which were related to watercrafts; limited refuge along ICW at lower tides.	2	No large tracts of native wetlands along waterways.	2	No OFW's, AP's, or Class II waters in this sub-region.	4	Sub-region is unclassified, and no active shellfish harvesting being conducted.	4	Insignificant observed or reported seagrass beds.	2	Any new facilities will require extensive dredging in this sub-region.	0	14
	2	Five reported deaths, one related to watercraft, three undetermined.	0	Majority of this sub-region contains large tracts of wetland areas.	0	This sub-region contains an AP, an OFW and a large portion are Class II waters.	0	Several active and conditionally approved shellfish harvesting areas in this sub-region.	0	Insignificant observed or reported seagrass beds.	2	Any new facilities will require extensive dredging in this sub-region.	0	2
	3	Two report deaths, one undetermined, one cold stress related.	2	No large tracts of wetlands on existing vacant parcels.	2	No OFW's, AP's, or Class II waters in this sub-region.	4	All areas of this sub region prohibited for shellfish harvesting.	4	Insignificant observed or reported seagrass beds.	2	Sufficient depths may exist in available areas for development without significant dredging.	2	16
ICW - S	1	Seven report deaths, all but one undetermined, mostly due to excessive decomposition; one natural death.	0	Majority of sub-region is urbanized, and large track of wetlands non-existent.	2	Majority of sub-region is unclassified. One small area of Class II waters in Salt Run.	4	Most of sub-region is restricted with exception of small area within Salt Run.	4	Insignificant observed or reported seagrass beds.	2	Sufficient depths may exist in available areas for development without significant dredging.	2	14
	2	Three reported deaths, two undetermined cause and one watercraft related.	2	Several areas in this sub-region have wetlands or other sensitive vegetation habitats.	0	Majority of sub-region is Class II waters, and portion is within Guana-Tolomato-Matanzas NERR.	2	Large tracts of active shellfish harvesting areas within this sub-region.	0	Insignificant observed or reported seagrass beds.	2	Sufficient depths may exist in available areas for development without significant dredging.	2	8
	3	No manatee mortalities reported in this sub-region.	4	Several areas in this sub-region have wetlands or other sensitive vegetation habitats.	0	Majority of sub-region is Aquatic Preserve on OFW.	0	Most of sub-region is unclassified, with some areas listed as conditionally restricted.	2	Insignificant observed or reported seagrass beds.	2	Majority of sub-region is extremely shallow, and would require significant bottom impacts.	0	8
SJR - N	1	One reported manatee death; portions of this sub-region may be classified as manatee refuge in future.	2	Some sporadic wetland areas, but majority urbanized.	2	No OFW's, Aquatic Preserves, or Class II waters in this region.	4	No known shellfish harvesting areas or restrictions.	4	Some sporadic seagrass beds observed or reported.	1	Although shallow near shore, acceptable depths can be achieved further out into the river.	2	15
	2	Three reported deaths, none directly classified as watercraft related.	2	Several areas in this sub-region have wetlands or other sensitive vegetation habitats.	0	No OFW's, Aquatic Preserves, or Class II waters in this region.	4	No known shellfish harvesting areas or restrictions.	4	Some sporadic seagrass beds observed or reported.	1	Although shallow near shore, acceptable depths can be achieved further out into the river.	2	13
SJR-S	1	Five reported manatee deaths, one directly related to watercraft.	0	Several areas in this sub-region have wetlands or other sensitive vegetation habitats.	0	No OFW's, Aquatic Preserves, or Class II waters in this region.	4	No known shellfish harvesting areas or restrictions.	4	Several areas of existing seagrass beds reported or observed; specific areas vary.	0	Although shallow near shore, acceptable depths can be achieved further out into the river.	2	10
	2	No manatee mortalities reported in this sub-region.	4	Several areas in this sub-region have wetlands or other sensitive vegetation habitats.	0	No OFW's, Aquatic Preserves, or Class II waters in this region.	4	No known shellfish harvesting areas or restrictions.	4	Several areas of existing seagrass beds reported or observed; specific areas vary.	0	Although shallow near shore, acceptable depths can be achieved further out into the river.	2	14
	3	Three reported manatee deaths, one of which directly related to watercraft.	2	Several areas in this sub-region have wetlands or other sensitive vegetation habitats.	0	No OFW's, Aquatic Preserves, or Class II waters in this region.	4	No known shellfish harvesting areas or restrictions.	4	Several areas of existing seagrass beds reported or observed; specific areas vary.	0	Although shallow near shore, acceptable depths can be achieved further out into the river.	2	12

Table 4-3 Site Suitability Ratings - Development Considerations

Region	Sub-Region	DEVELOPMENTAL CONSIDERATION										Total Development Score
		Infrastructure	Score	Existing Facility Density & Demand	Score	Projected Growth	Score	Vacant Property	Score	Storm Protection	Score	
ICW-N	1	Current roads and planned expansion (Palm Valley Bridge) are sufficient. Sufficient service of water and sewer.	4	While there are some existing private wet slips, there are no ramps or public wet slips.	3	Several large PUD's and DRI's planned, including Nocatee development.	4	Limited amount of vacant parcels readily available.	2	Well protected from surge and wind.	4	17
	2	Although some existing roads and service, road access to water areas is limited. Limited sewer and water.	1	While there are no public wet slips, there are several ramps.	2	Portion of Nocatee included in this sub-region, as well as other smaller PUD's.	3	Some parcels available; large private tracts maybe purchased.	3	Large fetch areas; limited coves or other protected areas.	2	11
	3	Majority of sub-region is currently serviced and accessible.	3	Dense concentration of ramps and slips, with some planned expansion.	2	Majority of sub-region has reached maximum build out; No new developments planned.	2	Some parcels currently available.	3	Susceptible to large surge and extremal winds.	1	11
ICW - S	1	Majority of sub-region is currently serviced and accessible.	3	Dense concentration of marinas and ramps in area.	1	Majority of sub-region has reached maximum build out; No new developments planned.	2	Some vacant parcels, as well as County & State owned land.	3	Susceptible to large surge and extremal winds.	1	10
	2	Some areas of this sub-region are easily accessed by roads, while other areas are not. Water and sewer limited.	2	Sufficient ramps, however limited number of wet slips available.	2	No new major developments, PUD's or DRI's planned.	2	Some vacant parcels, as well as County & State owned land.	3	Large fetch areas storm surge.	2	11
	3	Very limited water and sewer infrastructure to this sub-region.	1	Little or no demand for new marinas or ramps in this area.	1	No projected growth for this sub-region.	1	Some vacant parcels, as well as County & State owned land.	3	Fairly well protected.	3	9
SJR - N	1	Majority of sub-region is currently serviced and accessible.	3	No existing facilities in this sub-region.	4	Several large developments planned in this sub-region.	4	Some vacant parcels, as well as County & State owned land.	3	Fairly well protected.	3	17
	2	Majority of sub-region is currently serviced and accessible.	3	No existing ramps in this sub-region. Very limited wet-slips.	4	Several large developments planned in this sub-region.	4	Some vacant parcels, as well as County & State owned land.	3	Large open areas susceptible to fetch and surge.	2	16
SJR-S	1	Some areas of this sub-region are easily accessed by roads, while other areas are not. Water and sewer service limited.	2	Largest concentration of facilities on SJR, however still limited.	2	Closest water areas to World Golf Village and other area developments.	3	Limited amount of vacant parcels readily available.	2	Fairly well protected.	3	12
	2	Most of this sub-region is located away from any main roads and service.	1	No ramps or marinas in this sub-region; little demand.	2	Limited projected growth in this sub-region.	2	Some vacant land, as well as purchasable parcels.	3	Large open areas susceptible to fetch and surge.	2	10
	3	Some areas of this sub-region are easily accessed by roads, while other areas are not. Water and sewer service limited.	2	One limited public ramp, no wet slips or marinas, little demand.	2	Little or no projected growth in this sub-region.	1	Some vacant land, as well as purchasable parcels.	3	Large open areas susceptible to fetch and surge.	2	10

Table 4-4 Site Suitability Rating Combined Scores

Region	Sub-Region	Environmental Consideration Score	Development Consideration Score	Combined Score	Rating
ICW-N	1	14	17	31	Good
	2	2	11	13	Poor
	3	16	11	27	Good
ICW - S	1	14	10	24	Fair
	2	8	11	19	Poor
	3	8	9	17	Poor
SJR - N	1	15	17	32	Good
	2	13	16	29	Good
SJR-S	1	10	12	22	Fair
	2	14	10	24	Fair
	3	12	10	22	Fair

Interpretation of the suitability scores ranged from 13 to 32, with distinct ranges of scores for the different sub-regions. In general, combined scores of less than 20 were considered poor for new facilities, while scores greater than 25 were considered good for new facilities. Scores between 20 and 25 were considered fair. While this approach is somewhat subjective, it allows room for variance if specific criteria change. The combined score for any sub-region should remain within its grouping (e.g., good, fair, poor) even if individual criteria scores change. Figures 13 - 16 show the ratings for each sub-region.

The highest scores using the developmental criteria were in the sub-regions that are experiencing the greatest growth in the northern part of the County, including SJR-N(1) and (2), and ICW-N(1). These three sub-regions also have fair environmental criteria scores as well, giving them the highest combined scores for both criteria.

Another important sub-region which showed a high environmental criteria score is the ICW-N(3) near the north side of St. Augustine Inlet. This sub-region scored well due to the lack of shellfish harvesting areas, Class II waters, Outstanding Florida Waters or Aquatic Preserves. The developmental score was not quite as high as other sub-regions in the North due to lack of vacant areas and high storm potential. Also, growth in this part of the County is not as high as the northern regions.

The three lowest scoring areas were the two southernmost sub-regions of the Intracoastal Waterway and the mid-region of the northern part of the Intracoastal Waterway {ICW-S(1), ICW-S(2), and ICW-N(2)}. These areas typically scored low due to the environmental considerations. All three sub-regions have Outstanding Florida Waterways, Aquatic Preserves, shellfish harvesting areas, Class II Waters, or some combination thereof. In addition, developmental consideration scores were somewhat low due to the lack of some key infrastructure requirements, lack of demand, and potential growth.

Finally, the upper reaches of the St. Johns River, or southern sub-regions in St. Johns County along the River, exhibited slightly lower scores than the northern region. This is

due to the higher potential for sea grass beds, lack of suitable depths close to shore, and lack of demand or potential area growth.

Figures 17 – 20 show when the vacant water front parcels currently exist in the county. These parcels show locations that the county may consider for purchase of new facilities.

Figures 21-24 show the expansion and new construction potential for public ramps in the various sub-regions, while Figures 25-28 show the expansion and new construction potential for public marinas.

SECTION 5.0

TYPICAL MARINE CHALLENGES AND POSSIBLE SOLUTIONS

WATER DEPENDENT USES AND MARINE LAND DEVELOPMENT CODE (LDC) REGULATIONS

5.0 MARINE USE REGULATIONS

Florida Statutes (F.S.) Chapter 163 requires that local governments prepare a Coastal Management Element and Goals Objectives and Policies. Basically, the Legislature recognizes there is significant interest in the resources of the coastal zone of the State. Further, the legislature recognizes that, in the event of a natural disaster, the state may provide financial assistance to local governments for the reconstruction of roads, sewer systems and other public facilities. Therefore, it is the intent of the Legislature that local government comprehensive plans restrict development activities where such activities would damage or destroy coastal resources. Such plans protect human life and limit public expenditures in the area that are subject to destruction by natural disaster.

The Florida Administrative Code (Rule 9J-5 (specifically 9J-5.012)) states the purpose of the Coastal Management Element is to plan for and where appropriate restrict development activities where such activities would damage or destroy coastal resources and protect human life and limit public expenditures in the area subject to destruction by natural disaster.

Applicable Coastal Management Element Data and Analysis requirements must include the following:

- (a) Coastal land uses shall be inventoried. Conflicts among the shoreline uses shall be analyzed and the need for the water-dependent and water-related development sites shall be estimated. A map, or map series showing existing land uses and detailing existing water-dependent and water-related uses shall be prepared.
- (b) Inventories and analysis of the effect of the future land uses are required to be shown on the future land use map, or map series on the natural resources in the coastal planning area shall be prepared including vegetative cover, including wetlands; areas subject to coastal flooding; wildlife habitats; and living marine resources. Maps shall be prepared of vegetative, wildlife habitat, areas subject to coastal flooding and other areas of special concern to the local government.
- (c) An inventory and analysis of the impacts of development and redevelopment proposed in the future land use element.
- (d) An inventory and analysis shall be prepared of estuarine pollution conditions and actions needed to maintain estuaries including: an assessment of general estuarine conditions and identification of known existing point and non-point source pollution problems; impacts on infrastructure and the environment; identification of the actions needed to remedy existing pollution problems.

Requirements for the Coastal Management Goals, Objectives and Policies (GOPs) are as follows:

- (a) The Coastal Management Element shall contain one or more goal statements that establish the long-term end toward the Legislature in enacting Section 163.3178, Florida Statutes, that local governments in their comprehensive plans restrict development activities that would damage or destroy coastal resources and protect human life and limit public expenditures in the area subject to destruction by natural resources.

- (b) The element shall contain one or more specific objectives for each objective statement which includes, but is not limited to the following:
- Protect, conserve, or enhance remaining coastal wetlands, living marine resources, coastal barriers and wildlife habitat;
 - Maintain or improve estuarine environmental quality;
 - Provide criteria or standards for prioritizing shoreline uses, giving priority to water-dependent uses;
 - Direct population concentrations away from known or predicted coastal high-hazard areas;
 - Maintain or reduce hurricane evacuation times;
 - Increase the amount of public access to the beach or shorelines consistent with the estimated public needs.
- (c) The element shall contain one or more policies for each objective which shall include, but shall not be limited to, the following:
- Establishing priorities for shoreline land uses, providing for siting of water dependent and water-related uses, establishing performance standards for shoreline development, and establishing criteria for marina siting, including criteria consistent with the countywide marine siting plan if adopted by the local government, which address: land use compatibility, availability of upland support services, existing protective status or ownership, hurricane contingency planning, protection of water quality, water depth, environmental disruptions and mitigation actions, availability for public use and economic need and feasibility;
 - Providing, continuing, and replacing adequate physical public access to the beaches and shoreline; enforcing public access to beaches renourished at public expense; enforcing the public access requirements of the Coastal Zone Protection Act of 1985; and providing transportation or parking facilities for beach and shoreline access;
 - Protecting estuaries which are within the jurisdiction of more than one local government, including methods for coordinating with local governments to ensure adequate sites for water-dependent uses, prevent estuarine pollution, control surface water runoff, protect living marine resources, reduce exposure to natural hazards and ensure public access; and
 - Demonstrating how the local government will coordinate with existing resource protection plans such as resource planning and management plans, aquatic preserve management plans and estuarine sanctuary plans.

Local governments within the coastal area that participate in a countywide marina siting plan, shall include the marina siting plan as a part of this element.

Based on the State's requirements of the Florida Statutes (F.S.) Chapter 163 and the Florida Administrative Code (F.A.C.) Rule 9J-5, St. Johns County adopted 2015 Conservation/Coastal Management Element's Objective E.1.4 and corresponding Policies E.1.4.1, E.1.4.2 and E.1.4.3 requiring a Water-Dependent Use and Marine Study be prepared by the County. The specific Conservation/Coastal Management Element's objective and corresponding policies are identified in the following sections.

St. Johns County adopted 2015 Conservation/Coastal Management Element's Objective E.1.4 and corresponding Policies E.1.4.1, E.1.4.2 and E.1.4.3 are as follows:

Objective E.1.4 – Water Dependent Uses and Marina Siting

The County will give priority to water dependent uses in order to maximize the beneficial use of coastal natural resources. A Marina Study will be prepared to identify the future need for water-dependent uses and wet and dry boat slips based on the quantity, location and environmental constraints. The results of the new Marina Study will be incorporated into the Coastal Management Element and the future Countywide Marina Siting Plan upon its completion.

Policies

E.1.4.1

By December 2001 or sooner, the County shall initiate an update of the standard sand procedures for development of water dependent uses within those areas of the County which can accommodate such uses. The Land Development Regulations shall (as necessary or appropriate) address the following, including, but not limited to:

- (a) The establishment of standards and/or criteria by which to assess the environmental suitability and location of proposed water-dependent uses, such as:
 - 1) Adequate water depths for channel navigation.
 - 2) Minimum tidal currents.
 - 3) Protection from hurricane vulnerability.
 - 4) Maintaining water quality characteristics.
 - 5) Preservation of water quality standards Outstanding Florida Waters (OFW's) Class II and Aquatic Preserves.
 - 6) Protection of Essential Habitat (threatened or endangered species and/or species of special concern). Marinas shall not be permitted in areas that have been determined by DEP, FWCC and the USFWS to be critical to the survival of these species.
- (b) The establishment of standards or criteria by which to assess and address the following site characteristics and development standards:
 - 1) Ingress/egress and parking standards;
 - 2) Buffering, landscaping and drainage facilities;
 - 3) Maintenance of applicable water quality and drainage standards for stormwater run-off;
 - 4) Height and other development intensity standards and/or requirements;
 - 5) Standards or requirements for fueling and wastewater pump-out facilities;
 - 6) Adequate location criteria in relation to land use type, surrounding land uses, zoning type, and functional access to the marina and the internal facilities;
 - 7) Future expansion of marinas and their ability to provide maintenance; and
 - 8) Travel time to popular boating areas.

- (c) The establishment of definitions, criteria, and standards by which to determine the priority to be assigned to potentially competing shoreline uses.

E.1.4.2

By December 2000, the County shall, through the adoption of Land Development Regulations, initiate standards and procedures by which to address the siting of new commercial marinas. The Land Development Regulations shall (as necessary or appropriate) address the, definitions, criteria and standards that shall include, but not be limited to, the following:

- (a) land-use compatibility, and buffering requirements for service facilities;
- (b) availability, location, and type of upland support facilities, including standards and criteria for fueling and waste water treatment or pump-out facilities;
- (c) the protected status, if applicable, of adjacent lands;
- (d) the consistency of proposed marina facilities with the requirements of the applicable hurricane evacuation plan and storm contingency requirements;
- (e) stormwater and drainage requirements, including standards and criteria for fueling and waste water treatment or pump-out facilities;
- (f) for determining the environmental sensitivity of proposed marina sites, including standards to address water depth, grass bed, manatee habitat locations, the desirability of slow speed zones and anchorage areas; and
- (g) for determining the market need or feasibility of proposed marina facilities.

E.1.4.3.

Recommendations from the Marina Siting Plan shall be included in the Land Development Regulations (LDRs) and the Coastal Management Element upon completion.

Further analysis of the St. Johns County 2015 adopted Future Land Use Element's (FLUE's) map and goals, objectives and policies indicates that marinas are allowed within the designated land use categories of Intensive Commercial and Airport District (further regulated by the Land Development Code's Airport Overlay District). The respective corresponding zoning categories that marinas are allowed within are Commercial, Highway and Tourist (CHT) and Airport Development (AD). In addition, marinas are allowed as a Special Use in the zoning categories of Commercial, Intensive (CI), Commercial, Rural (CR), Industrial, Warehousing (IW) and Plan Unit Development (PUD), subject to consistency with the 2015 Future Land Use Element's GOPs and corresponding land use categories of Intensive Commercial and Airport District as shown on the 2015 FLUE's Map.

Further analysis of the St. Johns County 2015 Future Land Use adopted map and goals, objectives and policies indicates that boat ramps are allowed within land use categories designated as Agricultural-Intensive and Rural/Silviculture, Conservation, Parks and Open Space on the 2015 FLUE's Map.

5.1 Typical Marine Challenges and Possible Solutions

The siting of new marinas and other boating facilities such as boat ramps and the expansion of existing facilities often creates conflicts between development and environmental resources. While recognizing restrictions imposed by aquatic preserve management plans, it is a major objective of St. Johns County to develop a marina siting element that balances the need for environmental protection with the demands for public as well as private boating facilities.

As the population of the boating public increases in St. Johns County, so does the demand for marina facilities. This increase in demand creates a need for site selection based on economic, social and environmental concerns.

The recommendations in this section of the water dependent use study are designed to identify important issues facing the County in the area of marina siting and to guide the development of this planning element and future Land Development Regulations (LDR's). General issues and actions by the County are described below. Section 5.1 provides suggestions for language that the County may want to incorporate into the County's Land Development Code. These suggestions have been culled from various municipalities that have similar environmental and developmental issues as St. Johns County.

Title: Marina Siting

Issue: The determination of suitable locations for potential marinas are necessary and important, both to avoid environmental degradation and other adverse impacts associated with marina development and to provide for adequate facilities for the future population of St. Johns County.

Action: Prospective marina developers should complete the "Preliminary Screening Checklist For Marinas" and review the information with County Planning staff to discuss the potential issues for development of marinas in the St. Johns, Guana, Tolomato, and Matanzas Rivers. An official pre-application meeting should be held with the St. Johns County Planning staff for early identification of siting issues.

Title: Land Use

Issue: Recreational boating facilities should be located in areas that provide for good access to waterways and in areas compatible with commercial or recreational activities such as parks, green spaces, and boat rental centers.

Action: Marina areas shall be compatible with the St. Johns County adopted 2015 Future Land Use Map shown in Figure 2, and applicable land development regulations in terms of the types and intensities of uses that are permitted.

Title: Marina Development (New Facilities)

Issue: Construction of new marine facilities will create certain environmental impacts. Some unavoidable habitat destruction will occur as the result of the construction and operation of new facilities.

Action: New marine facilities should be located in areas that minimize the adverse environmental impacts as defined in the Marina Siting Study. New marinas, ramps, and other water dependent use facilities should be sited as shown in Figures 21-28, to the maximum extent possible. Variations to this siting location should clearly demonstrate the advantages of not using these areas.

Title: Existing Marina Facilities

Issue: The development of new marine facilities can present several problems, which are not associated with the expansion of existing facilities. The development of new facilities may create more problems related to environmental degradation, financial risk, and adjacent use compared to expanding existing facilities.

Action: St. Johns County shall give special consideration to the expansion of existing marina facilities or development in disturbed areas. However, this is not meant to exclude development in other areas provided siting requirements are satisfied. Figures 21-28 show these locations recommended for expansion. Figures 13-16 show the regions where developmental and environmental scores are highest, indicating recommended areas for expansion and re-development.

Title: Marina Fueling Facilities

Issue: Marina fueling facilities have the potential for release of fuel and lubricants into local waters and may cause water pollution.

Action: Adequate and effective measures shall be taken to prevent contamination of area waters from spillage or tank storage leakage. These measures must include spill containment devices and booms, overflow protection, and early detection systems as stated in EPA and FDEP regulations. A Spill Control Counter-Measures Plan (SPCC) must be prepared by the facility owner for all new fueling operations in St. Johns County. The plan will include operations and safety procedures and contingency plans for clean up of any potential spills. A plan approved by FDEP and other agencies shall be judged sufficient for St. Johns County. Section 5.1 gives appropriate language for this LDR.

Title: Continued Existence of Marine Industries

Issue: Boat sales and maintenance create an ongoing demand for the continuation of marine services. Many factors (environmental, social, and economic) are placing pressure upon marina facilities, owners, and operators, making it increasingly more difficult to remain in business. Marina facilities are necessary for safe, efficient and effective operation of all vessels. Existing facilities should be allowed to continue their operation provided these facilities meet current standards. New facilities should be allowed after a thorough evaluation of all factors.

Action: Due to the direct economic impact of this industry, St. Johns County should encourage continued orderly growth of the marine industry. This would include coordination and promotion of marine economic vitality with the St. Johns County Chamber of Commerce and the St. Johns County Economic Development organization.

Title: Marinas and Associated Business

Issue: Marinas and ancillary businesses to marinas such as, but not limited to, marine equipment suppliers, accessories manufacturers and suppliers, wearing apparel, fishing tackle, bait producers, food suppliers, marine financing, insurance, charter boat operators and publishing firms, provide economic growth and ancillary uses to areas associated with marinas. These businesses increase demands for marine facilities and advance the economic impact of the marina industry. The State of Florida has conducted some preliminary studies to determine the economic contributions made by marinas and support industries. Refinement of these studies in St. Johns County should be encouraged in an orderly manner to better define the importance and economic significance of marinas and related industries in the County and the surrounding region.

Action: St. Johns County should consider financial and business interactions between marinas and associated industries and the economic benefits accrued to the County from these interactions during the marina siting and planning process. The County may consider conducting an Economic Development Study for this aspect of the planning stage. Additional coordination with the St. Johns County Chamber of Commerce and the Economic Development organization should be encouraged for each new project.

Title: Dry Stack Storage

Issue: The limited amount of suitable areas for marina development dictates a limited number of wet slips available within the County. Marinas that are entirely dry storage, or largely dry storage, may have fewer impacts than wet storage marinas. They require less dock space and reduce discharges and leachates from the boats stored there.

Action: New and expanded marina facilities should utilize dry storage, where possible. St. Johns County should encourage the use of dry storage where practicable and possibly adopt performance standards to protect the environment and adjacent property owners. These should address standards such as setbacks, height limitations, parcel size, color, maintenance, etc. All new drystack facilities must meet County building codes, including utility requirements and fire protection.

Title: Zoning of Marine Industries

Issue: By developing performance standards different types of facilities may be located in a variety of zones with some assurance of consistent quality.

Action: The County's Future Land Use Map (FLUM) designations dictate what land uses are allowable in what locations, and the zoning must be consistent with the adopted FLUM.

Title: Mixed Uses

Issue: Single marine use developments create social, environmental and aesthetic problems, which may be avoided or at least mitigated through mixed-use development. Non-marina businesses may be situated to buffer marine activities from adjoining properties. Having mixed uses tends to keep quality of marine development high. This idea has been incorporated into successful downtown marine redevelopment projects elsewhere.

Action: St. Johns County should encourage mixed-use development where it does not preclude the use of waterfront property by water dependent businesses. Preference for new and expanded facilities shall be given to those that are in the best interest of the general public. Section 5.2.2 gives appropriate language for this LDR.

Title: Water Dependent Structures

Issue: Shoreline development, including structures over the water causes disturbances of aquatic ecosystems. Once such alteration has occurred, the functions and values of these types of systems are impaired, if not lost. Restaurants, bait and tackle shops, gift shops and similar types of uses should be built on uplands. Constructing these facilities on uplands would not affect the function. Only structures whose function depends on being over the water shall be allowed on riparian lands.

Action: Only structures, which are truly water dependent, shall be located over the water and away from Aquatic Preserves. Non- water dependent uses such as restaurants and bait and tackle shops should be situated on uplands, unless it can be demonstrated that it is in the best interest of the public.

Title: Industrial Uses of Marine Resources

Issue: Industrial marine uses should be located so it does not adversely affect surrounding (less industrialized) businesses. Industrial operations, such as major repair facilities, boat building, seafood producing operations, freight activities and tourism (cruise ships), located within high quality environmental areas create negative impacts on surrounding areas.

Action: All new facilities must conform to the St. John County Comprehensive Goals, Objectives and Policies (GOP's) and the Land Development Code requirements. In Florida, the County's Comprehensive Future Land Use Map (FLUM) designations dictate what land uses are allowed in what locations in the County, and the zoning must be consistent with the adopted FLUM.

Title: Public Access

I. Existing Facilities

Issue: Existing marinas, boat ramps and docking facilities may be expanded, renovated, converted into other uses, or made private and removed from public use as development occurs in the County. These actions may reduce the availability for existing public access.

Action: St. Johns County should encourage the preservation of public access through existing facilities to water bodies, as stated in County's 2015 Comprehensive Plan.

St. Johns County may consider innovative incentives which encourage a certain percentage of public boat slips to be constructed within private marina facilities.

Title: Public Access

II. New Facilities

Issue: As development continues to occur along the water bodies of St. Johns County, visual access to these water bodies will be curtailed.

Action: St. Johns County should require that some public visual access from public right-of-way to water bodies be maintained by limiting structure heights, requiring open space on both sides of new structures, and prohibit barriers (i.e., fences and shrubs) that block the view of the water.

St. Johns County should encourage new development to provide public access to water bodies. Preference for construction of new facilities will be given to those projects which serve in the best interest of the general public based on the amount of access, parking or upland staging areas, and quality of available public land use.

St. John County should make provisions for public access through canoe or boat rentals at selected county facilities.

Title: Boating Launching Facilities

Issue: Private and public boat launching ramps provide essential public access to the various water bodies in the county. Associated with boat ramps are many other facilities, which contribute to the economic growth of an area. Regardless of the classification (private or public) boat launching facilities provide economic benefits.

Action: St. Johns County should continue to provide guidance, regulation and support to the siting of boat launching facilities. Methods of support vary and include taxation, user fees, assessments, donation, state, federal and private funding sources. Section 4 discusses the siting recommendations for new and expanded facilities. Specific sites are shown in Figures 21-28.

Title: Inspection of Marina Facilities

Issue: Marinas are inspected by a number of agencies, however there is no coordination of these inspections and requirements. Potential operational and regulatory problems will be alleviated by proper coordination.

Action: Marinas are inspected by a number of agencies; however, the marine inspection evaluations are not presently coordinated between these agencies. The County, DEP and the University of Florida Sea Grant program should initiate the coordination between the regulating governmental agencies. Inspection of commercial marinas at business license renewal time is recommended. Items to be inspected or reviewed may include:

1. Pumpout facilities / Marine Sanitation Devices
2. Manatee information
3. Compliance with power / sailboat mix, if required
4. Hurricane Evacuation Plan

5. Spill prevention, control, containment and cleanup plans
6. Waste collection and disposal methods
7. Required fire fighting equipment

Duplication with existing inspection programs shall be avoided where possible.

Title: Hurricane Evacuation

Issue: St. Johns County, as with all coastal areas, is susceptible to the impacts and rages of storms and hurricanes. The concerns of marina residents, boat owners and the location of marina facilities is important to local governments in relation to the consequences of storm impact.

Action: St. Johns County should include provisions for the safety of marina residents and facilities within its adopted Hurricane Evacuation Procedures. Marina facilities should be required to file a Hurricane Preparedness Plan.

St. Johns County should work with marina owners to educate boat owners / marina residents about safety and possible protected and / or unsafe anchorages.

All facilities shall conform to State and Local building Codes for wind loading and hurricane protection. The County will give preference to development of new facilities that are designed with up to date hurricane evacuation and preparation controls, including strengthened structural members and special storm mooring capabilities.

Title: Pumpout Facilities

Issue: Due to lack of pumpout facilities, wastewater from boats is being dumped into surface waters without treatment. In St. Johns County there are a few pumpout facilities to service many boats with holding tanks. Undoubtedly due to the lack of pumpout facilities, holding tank contents are discharged to surface waters or the tanks are by-passed with direct discharge. Additional pumpout facilities would help alleviate this problem.

Action: Pumpout facilities may be required by St. Johns County as a permit condition at new or upgraded commercial/recreational marinas. Section 5.2.1(d)3 provides recommended language regarding pumpout requirements for new facilities.

Title: Habitat

Issue: As the result of marina construction, habitat has been lost.

Action: New marina development and expansion of existing marinas shall minimize the destruction of habitat. The nature and extent of mitigation for habitat losses shall be considered during the permitting process. St. Johns County shall give preference to sites which have been legally disturbed, as opposed to sensitive natural areas. Section 5.2(c) gives appropriate language to address this important issue.

Title: Endangered Species / Manatees

Issue: Boating provides some degree of impact on manatees in St. Johns County. By educating boaters about manatees and their habitat, mortalities resulting from boat/manatee collisions may be reduced.

Action: Marina operators shall provide information to boaters on manatees and nearby manatee sanctuaries.

Additionally, those involved in the sale of boats and motors shall be encouraged to provide manatee information to the buyer at the time of delivery.

The County shall work with the State and federal agencies and local marine businesses to develop an information packet containing manatee information.

Manatee warning signs and speed limit signs may be useful for some areas of the County. Waters and access channels to marinas shall be marked appropriately.

New facilities should not be located in manatee sanctuaries, or other areas designated for preservation of endangered or protected species.

Title: Runoff From Boat Maintenance Areas

Issue: Runoff from boat maintenance areas often contains various pollutants that should not be allowed to reach surface waters. Runoff from work areas reaching surface waters often results in oils, grease, solvents, metals and other pollutants being discharged to surface waters. However, simple wash down prior to storage contains minimal amounts of pollutants.

Action: New or upgraded marina facilities shall retain runoff from work areas on uplands, until adequate treatment prior to discharge is realized. A stormwater system shall be designed by a registered Engineer in the State. Stormwater retention ponds should be designed to retain the first inch of runoff from all impervious areas. The St. Johns River Water Management District (SJRWMD) and Florida Department of Environmental Protection (FDEP) stormwater management requirements shall be implemented.

Title: Stormwater Runoff From Marina Areas

Issue: Stormwater runoff may contain nutrients, herbicides, pesticides and other material, which may degrade surface waters. Stormwater discharges with no detention, retention, or other form or treatment, may result in the discharge of pollutants to surface waters.

Action: New or upgraded marina facilities shall be required to retain and/or treat runoff per County, State and Federal regulations. A stormwater system shall be designed by a registered Engineer in the State, and should retain the first inch of runoff. The St. Johns River Water Management District (SJRWMD) and Florida Department of Environmental Protection (FDEP) stormwater management requirements shall be implemented.

Title: Water Circulation

Issue: Poor circulation in marina basins has resulted in poor water quality conditions within these basins. As a result of poor circulation, water quality in many marina basins is poor. By maintaining circulation in new basins or improving circulation in old basins water quality could be enhanced or maintained.

Action: New marina facilities shall be designed to take advantage of existing water circulation and shall not adversely affect existing circulation patterns. Improving water circulation shall be a consideration when expanding or upgrading existing facilities. It must be demonstrated that adequate flushing times, conditions and requirements are met, as outlined in FDEP and SJRWMD marina permit application regulations.

Title: Aesthetics

Issue: Attractive facilities are often desirable to the residents of a community. The definition “attractive” and the establishment of criteria to determine the quality of development are subjective. Many types of land use activities, such as marine industrial development, would not necessarily require the same criteria addressing aesthetics as residential or recreational uses.

Action: These standards should address the adopted community goals and, at a minimum, address vegetation and landscape requirements. St. Johns County’s Future Land Use Element of the Comprehensive Plan could provide appropriate standards, which apply to these concerns.

Title: Dredging and Disposal

Issue: Dredging activities may impact water quality, aquatic and wetland habitat resources by altering water circulation patterns, increasing turbidity or siltation, decreasing dissolved oxygen, releasing pollutants from sediments and increasing erosion or shoaling rates. State regulation prohibits dredging of Aquatic Preserve Areas unless it can be shown that such dredging is in the public interest.

Action: Preferred marina sites would be those requiring no dredging. Acceptable marina sites must be located within areas that can provide safe, easy and convenient access to waterways, with minimal dredging. Section 5.1.2 gives appropriate language to be used in future LDR’s. All new and expanded facility plans shall include detailed bathymetric survey data showing existing and proposed depths.

Areas with known high siltation or shoaling rates should be avoided due to the possibility of considerable maintenance dredging.

Title: Filling Activities

Issue: The principal concern for adverse impacts from filling are related to the modification or loss of shallow aquatic habitat or wetlands, potentially reduced circulation and increased siltation.

Action: Preferred marina sites would have adequate upland area for marina development and future expansion, including updated utilities and parking. Filling of

shallow water areas or wetlands is considered unacceptable by St. John County and regulatory agencies, which have adopted “No Net Loss” wetlands policies, and should be avoided when other alternatives exist.

Title: Structures

Issue: Some sites may require modifications to the shoreline to either create additional land area or stabilize shore erosion. Bulkheads and revetments are commonly constructed for this purpose. Because they are constructed at the land/water interface and may disrupt the flow of water, detritus and biota into or out of a wetland, care must be exercised to minimize impacts for both aquatic and terrestrial habitats.

Action: Preference for new marina sites will be given for those providing good natural protection, which could eliminate or minimize the need for protective structures such as bulkheads, revetments and breakwaters.

Title: Flushing and Water Quality

Issue: The potential for water quality problems is higher in areas with low flushing rates such as dead-end channels or canals and the upper reaches of estuaries or tidal creeks, which may be characterized by low tidal range or low net flow.

Action: Preferred sites are those on open waters or near the mouths of tidal creeks or tributaries. Marina design should maximize natural circulation to reduce sedimentation and maximize dispersion of pollutants. All flushing requirements must be met as stipulated by FDEP and SJRWMD.

Title: Protected Areas

Issue: Fish or wildlife in designated aquatic preserves wildlife refuges; wilderness areas or other specially designated protected areas can be affected by marina construction and operation. The potential for adverse impact is directly related to the proximity of the marina to these areas. A significant portion of the Guana River and all of Pellicer Creek are protected areas since they are designated as Florida Aquatic Preserves.

Action: A proposed marina in or immediately adjacent to a protected area may require mitigative measures in order to obtain a permit. These measures may include design modifications, seasonal construction scheduling or seasonal modifications in operational activities to ensure the avoidance of adverse impacts.

Title: Shellfish

Issue: Changes in water quality can result from marina construction and operation and from boating activity. Changes that have the potential to impede shellfish growth and propagation include increased turbidity, siltation, and water turbulence and pollutant levels. Sanitary waste discharges can contaminate harvestable shellfish such as oysters and preclude commercial harvesting of this resource.

Action: Marinas shall not be located in approved or conditionally approved shellfish harvesting waters or other environmentally sensitive areas designated by the County so

as to substantially and materially have a negative impact on these waters. These waters are shown in Figure 10. Additional language is provided in Section 5.1.

Title: Grassbeds

Issue: Increased turbidity, pollutants and physical damage from boats may damage grassbeds. Seagrasses are considered to be sensitive resources because of their role as nursery areas and their slow recovery following impacts.

Action: Marinas shall not be located where significant disruption of highly productive seagrasses areas will occur. Site Plans for all new and expanded facilities shall include mapped seagrass areas, showing existing and impacted areas.

Title: Obstruction to Navigation

Issue: Structures that extend into existing channels have the potential to obstruct boat traffic. Although it is important that boating activity is or will be sufficient to support the marina, the marina should be sited in such a manner that the marina itself or boats moving to or from the marina will not interfere with traffic along established navigation channels or routes.

Action: Marina development shall comply with Corps of Engineers and other applicable agency siting requirements relative to designated channel/basin areas; structure placement shall not pose a hazard to safe navigation. All ingress and egress channels shall be clearly marked with appropriate signage. No structure shall block more than 20% of the waterway width at that location.

5.2 Recommendations and Suggestions for the Development of Land Development Regulations (LDR's)

In order to implement the findings and recommendations of the Water Dependent Use Study, the St. Johns County Land Regulations (LDR's) must be revised and expanded. Unless otherwise noted, the following standards shall be applied to all Marinas and Water Dependent Use facilities within St. Johns County. The term "best public interest" may include the following: increasing public access; improvement of public health, safety, or welfare; improved land management or water quality; enhancement of natural habitat; and improved protection of endangered, threatened, or unique species.

Siting of Marinas, Boat Ramps, and Commercial Docking Facilities

- (a) *Purpose and Intent.* The provisions of this section are intended to regulate the location and potential impacts to the surrounding areas from proposed marinas, boat ramps, and commercial docking facilities, through the use of siting standards developed as part of the St. Johns County Water Dependent Uses and Marine Study, hereby referred to as the SJWDUMS.
- (b) *Pre-Development Requirements.* The following requirements must be met prior to submitting development plans to the County.
 - 1) Developers of all new marine related facilities will be required to complete and submit a Marine Study Checklist as provided in Section 6 of SJWDUMS. This checklist will be reviewed by the County during the required pre-application conference meeting.
 - 2) Prior to completing the screening checklist, the developer will identify the combined site suitability rating score based on Table 4-4 and Figures 13-16 of the SJWDUMS. This information must be included in the Marine Study Checklist.
 - 3) After initial review of the project, and upon acceptance of the Marine Study Checklist by the County, a conceptual development plan shall be submitted to the County. This plan must include:
 - (i) boat demand and market study for the project area;
 - (ii) discussion of size and services of the proposed facility;
 - (iii) a survey of the property, signed and sealed by a surveyor registered in the state, locating the mean high-water line, the ordinary high-water line, or the safe upland line;
 - (iv) a sketch, drawn to scale, on the survey described in subsection (3)(iii) of this section, indicating the location and building dimensions of the structures, and any proposed alteration of the shoreline;
 - (v) a description of the types of structures proposed and the construction materials to be used;
 - (vi) a description of how the surface water quality will be protected (see Section 5.2.1(b));

- (vii) adequate demonstration that the proposed facility has sufficient upland area to accommodate all needed utilities and marina support facilities, including stormwater retention;
 - (viii) environmental assessment of the site, including water quality impacts, sediment transport and management, stormwater runoff control, shoreline protection, biological impacts, and proposed mitigative measures.
- (c) *Preferred and Desirable Characteristics for New Facilities.* The following characteristics are desirable for new facilities, and will be looked upon favorably by the County when considering new marine developments.
- 1) Easy access to open waters, population centers, utilities, public sewer and water lines, and existing roads and maintained waterways.
 - 2) Adequate storm protection with deep waters close to shore.
 - 3) Near currently permitted public areas for disposal of dredged material
 - 4) High tidal ranges, or other features that promote high flushing rates (low flushing times), such as near mouths of estuaries and tidal creeks, near inlets, or on convex shorelines.
 - 5) Facilities located in areas that minimize adverse environmental impacts, such as, but not limited to, submerged aquatic vegetation, manatee protection and documented high population areas, tidal marshes, wetlands, and special water classifications, as shown in Figures 9-12 of the SJWDUMS.
 - 6) Legally disturbed areas as opposed to naturally sensitive areas. The County will take into consideration opportunities to improve or correct land use and/or environmental conflicts created by prior development activities.
 - 7) Minimized or avoided habitat removal/destruction. Facilities which have been planned to minimize or avoid habitat losses are preferred methods of conservation as compared to facilities proposing removal or destruction of natural habitat.
- (d) *Restrictions for Location of New Facilities.* The following restrictions will be adhered to when considering siting of new facilities.
- 1) For proposed marine developments in Class II waters, Outstanding Florida Waters, Aquatic Preserves, and conditionally approved Class III shellfishing waters and Class III waters, the requirements as established in Section 18-20.004 of the Florida Administrative Code (FAC) will be strictly adhered to, including setback requirements, surface water discharges, and shoreline protection. Petitions for variances to these restrictions will not be considered by the County unless granted by the State of Florida. Approval by the State does not guarantee approval by St. Johns County.
 - 2) Along Class II waters, Outstanding Florida Waters, aquatic preserves, and conditionally approved Class III shellfishing waters, a 50-foot shoreline buffer extending landward from the mean high-water line or the safe upland line, as determined by the bureau of survey and mapping of the FDEP, whichever the applicant prefers, shall be established.

- 3) Along Class III waters, except conditionally approved Class III shellfishing waters, a 25-foot shoreline protection buffer extending landward from the mean high-water line or the safe upland line, as determined by the Bureau of Survey and Mapping of the FDEP, whichever the applicant prefers, shall be established.
- 4) Alteration or construction within the shoreline protection buffer other than that which is permitted under this section shall be prohibited, unless it can be shown to be in the best public interest and does not adversely impact water quality and natural habitat.
- 5) All multi-slip and marina docking facilities, except boat davits, in or adjacent to natural waterbodies must be set back a minimum of 25 feet from all adjoining side lot lines.
- 6) Non-water dependent use facilities, such as, but not limited to, restaurants, bait and tackle shops, and retail facilities shall be situated on uplands. Petitions for variances to this requirement must demonstrate why the proposed facility can not be located on uplands, and what actions will be taken to ensure that there will be no adverse impacts to the adjacent waters.
- 7) Marina docking facilities shall only be approved in locations having adequate water depths to accommodate the proposed boat use. A minimum water depth of 4 feet (mean low water) shall be required. These depth requirements shall also apply to the area between the proposed facility and any natural or navigable channel, inlet or deep water.
- 8) Dredging and filling shall not be permitted in or connected to Class II waters, Outstanding Florida Waters, Aquatic Preserves and conditionally approved Class III shellfishing waters unless the activity is clearly in the best public interest, such as approved maintenance dredging on existing public navigational channels, or where dredging may improve the water quality by removing accumulated silt or improving flushing characteristics.

5.2.1 DEVELOPMENTAL REQUIREMENTS FOR NEW MARINE USE FACILITIES

- (a) *Purpose and Intent.* This Section outlines the specific requirements that must be met for the construction of all new water use facilities in the County.
- (b) *Water Quality Requirements.* The following will be required for all new facilities to ensure that existing water quality in the proposed area will not be adversely affected by the development.
 - 1) A specific condition for approval of any proposed marina shall be that the applicant shall maintain water quality standards as stated in Chapter 403, Florida Statutes. To assure compliance, the applicant shall maintain a water-quality monitoring program approved by the Florida Department of Environmental Protection.
 - 2) All new marina facilities shall be designed to take advantage of existing water circulation and shall not adversely affect existing circulation patterns. It must be demonstrated that adequate flushing times, conditions and requirements are met, as outlined in FDEP and SJRWMD Environmental Resource Permit

(ERP) application regulations. Variations from these requirements will not be accepted by the County unless approved by FDEP or SJRWMD. Approval by these agencies does not guarantee approval by the County.

- 3) Adequate and effective measures shall be taken to prevent contamination of area waters from spillage or tank storage leakage. These measures must include spill containment devices and booms, tank over-fill protection, and early detection systems as stated in EPA and FDEP regulations. A Spill Control Counter-Measures Plan (SPCC) must be prepared by the facility owner for all new fueling operations in St. Johns County. The plan will include operations and safety procedures and contingency plans for clean up of any potential spills. A plan approved by FDEP and other agencies shall be judged sufficient for St. Johns County.
- (c) *Stormwater Control.* New or upgraded marina facilities shall be required to retain and/or treat runoff per all County, State and Federal regulations. A stormwater system shall be designed by a registered Engineer in the State, and should retain the first 1 (one) inch of runoff. The St. Johns River Water Management District (SJRWMD) and Florida Department of Environmental Protection (FDEP) stormwater management requirements shall be implemented.
- (d) *Utilities, Fire Protection, and Traffic Control.* The following requirements must be met for all new marine use facilities.
- 1) All water dependent use facilities shall demonstrate that connecting roadways are sufficient to accommodate the anticipated traffic without reducing the Level of Service below that required by St. Johns County's Comprehensive Plan. A Transportation Impact Report shall be required when a proposed marina project exceeds the threshold value.
 - 2) Parking for boat ramps shall consist of parking areas and spaces able to accommodate vehicles and trailers safely. The minimum allowable parking space size shall be 10 (ten) feet wide by 40 (forty) feet long. A limited number of standard spaces, 10 (ten) feet wide by 18 (eighteen) feet long, may be required at the discretion of the County. Sufficient Americans with Disability Act (ADA) parking spaces shall be made available at all water dependent use facilities. The number of available spaces must conform with State of Florida and Federal Statutes.
 - 3) All facilities must provide adequate capacity to handle sewage in accordance with state standards, either by means of on-site pump out and treatment facilities or connection to a treatment plant. Applicants shall document the availability and capacity of the above sewage facilities to handle the anticipated volume of wastes. All marinas serving live-aboards or overnight transient traffic shall provide sewage pumpout facilities at the dock.
 - 4) Utilities at wet slip and dry stack marinas shall comply with the latest edition of local codes and NFPA 303, Fire Protection Standards for Marinas and Boat Yards.
 - 5) Land uses at upland areas at dry stack marinas shall conform to the lot size, road frontage, setback, and height requirements stipulated in the St. Johns County Building Codes and Land Development Regulations. Minimum yard

requirements less than 20 ft shall be increased to 20 feet to ensure adequate access for fire and emergency equipment. Variances to yard requirements shall only be granted by the Board of Adjustment following review by the local fire department, and in accordance with procedures and standards set forth by the County. A variance to the lot coverage may be approved provided that no variance shall permit buildings to cover more than 50% (fifty percent) of the upland lot area. A variance to permit buildings to cover more than 50% of the upland area may only be granted by the Board of Adjustment in accordance with procedures set forth by the County. In the event of a conflict with the shoreline buffers and setback requirements, the greater distance shall be required.

5.2.2 NAVIGATION AND OVER-WATER STRUCTURE RESTRICTIONS

- (a) *Purpose and Intent.* The following restrictions apply to docks, bulkheads, piers, and other structures that extend into, and over the water as related to marinas, boat ramps and other water use marine facilities.
- (b) *Navigational Restrictions.* The following restrictions shall be adhered to when constructing new facilities.
 - 1) Docks and vessels moored at the docks shall not interfere with navigation in adjacent waters. Docks shall not extend beyond the mean high water line more than 500 feet or 20% (twenty percent) of the waterway width at that point, whichever is less. Variances to this restriction may be approved by the County for the following circumstances:
 - (i) the proposed dock has been approved by all applicable state and federal agencies;
 - (ii) the increased length will not result in a hazard to navigation;
 - (iii) the proposed dock is compatible with docks or other structures and uses on adjoining lots;
 - (iv) the increase in length will lessen the docks impacts on submerged aquatic vegetation or other marine resources.
 - 2) Immediate access (ingress and egress) points to marinas and boat ramps shall be delineated by channel markers, indicating speed limits and any other applicable regulations as required by the Florida Fish and Wildlife Commission and the U.S. Army Corps of Engineers.
 - 3) There shall be no permanent docking within 30 feet of fuel pumps or other fueling equipment.
- (c) *Structural Requirements for New Facilities.* The following structural requirements must be met for all new commercial facilities.
 - 1) All docks and structures erected over the water shall be on piers permitting the free flow of water; no bulkhead shall be permitted to extend beyond the established mean high water line; no pier shall be allowed to extend in public water to such a distance as to interfere with navigation and commerce.

- 2) All new facilities must meet the requirements established in the Florida Building Codes for wind loading and hurricane protection, as updated in January 1, 2002.

5.2.3 RESIDENTIAL AND SINGLE FAMILY DOCKS

- (a) *Purpose and Intent.* The following restrictions apply to single family and residential docks used for mooring purposes and water access. They do not apply to commercial facilities and marinas.
- (b) *Number of Slips.*
 - 1) No more than one private single-family watercraft mooring dock with two slips is permitted in natural water bodies.
 - 2) A shared property dock can be permitted for up to four slips.
 - 3) Docking facilities in natural water bodies must comply with the following maximum dimensional requirements:
 - (i) Access walkway not greater than four (4) feet wide;
 - (ii) Terminal platform not greater than 160 square feet;
 - (iii) Finger piers not greater than three (3) feet wide;
 - (iv) Variances to these dimensions may be granted if the primary access to the property is by watercraft and no reasonable alternative access exists.
- (c) *Setback Requirements.*
 - 1) All private single family docking facilities in natural water bodies must be set back from all adjoining side lot and side riparian lines as follows:
 - (i) Marginal docks – no less than 10 feet;
 - (ii) All other docks – no less than 25 feet.
 - (iii) Single-family boat ramps shall not exceed 25 feet in width, not including accompanying access dock for the ramp.
 - 2) Variances to these set back requirements may be approved under the following circumstances:
 - (i) The width of the subject parcel is not wide enough to permit construction of a single family docking facility perpendicular to the shoreline at the midpoint of the shoreline property line, without a deviation; or
 - (ii) Construction of the structure within the setback area will minimize or eliminate damage to environmental resources that would otherwise be impacted if the deviation is not granted.

SECTION 6.0

MARINE FACILITY SITING, PLANNING, IMPLEMENTATION AND CONTROL MANUAL

6.0 MARINE FACILITY SITING, PLANNING, IMPLEMENTATION AND CONTROL MANUAL

This Section provides a reference manual to be used by County staff and/or prospective developers to plan and review permit proposals for locating future water dependent use facilities in St. Johns County.

The manual discusses siting criteria and provides a site planning checklist for use during the early stages of marina screening. The siting criteria and checklist may be put into a separate document and used by County staff and potential developers. One suggestion would be to have all prospective developers complete the checklist and provide County staff a copy prior to an "official" pre-application conference. The siting and planning checklist could be reviewed at the official pre-application meeting.

This Section also includes a discussion of basic Environmental Assessment Techniques for further analysis of potential impacts and a discussion on approaches which mitigate adverse environmental effects. This section is designed to give insight into environmental issues that will have to be addressed during Local, State and Federal reviews.

6.1 Siting Criteria and Site Planning Checklist

6.1.1 INTRODUCTION

Marinas are very important to the economy of St. Johns County and the local communities along its various water bodies. The popularity of boating and the resultant need for marinas will continue to increase in the future. Siting of marinas, however, should be done in areas that avoid or minimize adverse environmental effects. Environmental impacts include the potential loss of submerged and shoreline habitats such as marina grass beds, tidal marshes and wetlands which are biologically productive. Areas of particular concern in St. Johns County in siting marinas are special water class areas, aquatic preserves and manatee habitats. This presents a special concern in reference to marina siting. The Florida Department of Environmental Protection (FDEP) severely restricts marina development in these areas. The draft updates to management plans being formulated by FDEP continue to severely restrict marina development in aquatic preserves. FDEP considers the siting of new marina facilities within the aquatic preserves secondary to the expansion of existing facilities when such expansion is consistent with other standards.

All marina projects within aquatic preserves must demonstrate they are in the public's interest and consistent with an adopted management plan. Further, all requested transfers of ownership for sovereign lands are subjected to a cost/benefit analysis to determine whether the social, economic, and/or environmental benefits clearly exceed the costs imposed on the public. In evaluating the benefits and costs of proposed uses, consideration is given to the quality and nature of the affected water body. Projects in less developed, more pristine areas are subjected to higher standards than those in the more developed areas.

Categories of impact benefits include: public access; provision of boating and marina services; improvement of public health, safety, or welfare; improved land management;

improved water quality; enhancement and restoration of natural habitat and functions; and improved protection of endangered, threatened, or unique species. These benefits are balanced against the negative impact of: reduced water quality; degraded or destroyed natural habitat; destruction, harm, or harassment of endangered or threatened species and their habitat; pre-emption of public use; increased navigational hazards; reduced aesthetics, and adverse cumulative impacts.

Site selection is one of the most important steps in developing a marina project. The site evaluation is key to understanding the potential for economic success, the environmental impacts and the probability for obtaining regulatory approval. A proper siting process should include the following:

1. Compilation of data and maps of the site.
2. Comprehensive review of development constraints / opportunities.
3. Evaluation of alternatives.
4. Review of Federal, State and Local policies controlling proposed uses at the site.
5. Select acceptable site.

The siting process should start with a screening evaluation to identify sites that warrant a more detailed evaluation and to eliminate sites that are unacceptable for further study.

The initial screening process often begins with boating demand studies, market studies and formulation of a marina concept, including type of marina services, size and types of boats to be accommodated.

Following initial site identification, the prospective marina developer should proceed with an in depth feasibility study of the marina project which includes preliminary design and consideration of applicable regulations and policies. Marina sites often present unique problems in providing economically feasible recreational boating facilities while minimizing adverse environmental impacts.

6.1.2 MARINA SCREENING CHECKLIST

The marina screening checklist is designed for early identification of planning, engineering, environmental and permitting issues that may be pertinent to a marina project. The checklist should be used to obtain an initial overview of the relative merits and disadvantages of marina site or sites. A prospective marina developer should also use the checklist in early discussions with St. John's County and local governments.

A discussion of the elements and use of the checklist follows:

Part I: Project Description

Items 1 through 7 of the screening checklist should be used during the initial evaluation of the marina project.

Question 1 – Location

A marina site must provide safe navigational access to cruising waters and have adequate land access for boat owners to reach the marina. Precise location of the site is important for identifying potential difficulties related to land, water or utility access or potential regulatory issues related to conflicts with state or local management plans, ordinances, zoning requirements or natural resource

	<u>Yes</u>	<u>No</u>	<u>Unknown</u>
5. Will the water body at the site be characterized by low flushing rates dead-end channel or canal, upper reaches of estuary or tidal creek, low tidal range or low net flow?	_____	_____	_____
6. What is the Florida Department of Environmental Protection (FDEP) water classification of the water body at the marina site?	_____	_____	_____
7. Is the water body classified as an outstanding Florida waters (OFW)?	_____	_____	_____
8. Does the water body presently fail to meet state water quality standards for existing use classifications?	_____	_____	_____
9. Is the site located within 1.6 km (1 mi.) of an aquatic preserve or a designated wildlife refuge, wilderness area or other area specially designated for the protection of fish or wildlife?	_____	_____	_____
10. Are there rare, threatened, endangered or otherwise designates unique or outstanding aquatic or terrestrial species or the habitats known to be present at the site? (Contact Florida Fish & Wildlife Commission, US Fish & Wildlife Service and/or National Marine Fisheries Service).	_____	_____	_____
11. Do shellfish beds occur within 2000 feet of the site or within 1000 feet of access channels?	_____	_____	_____
12. Are all grassbeds located within 1000 feet of the marina or access channels?	_____	_____	_____
13. Is the site in an area of recognized historic, archaeological, or scenic value? (Contact State Historic Preservation Officer)	_____	_____	_____
14. Are local residents or landowners apposed to the project or unaware of the project?	_____	_____	_____
15. Will any proposed activity be inconsistent with state coastal zone management plans or local management plans, ordinances or zoning requirements? (Contact St. Johns County Panning Department and City Governments).	_____	_____	_____
16. Will the project require a Development of Regional Impact (DRI) review by the State of Florida, Department of Community Affairs?	_____	_____	_____
17. Will the project obstruct public land access to navigable waters?	_____	_____	_____
18. Will the project require structures which would extend into or otherwise obstruct existing channels or will the project require placing structures closer than 100 feet to a federally-maintained channel or basin?	_____	_____	_____

Table 6-1 Marina Services and Facilities

MARINA SERVICES

Water Related

Boat launching
Mooring service
Water taxi service
Transient boat service
Waste collection
Fueling
Boat towing
Fire and rescue services
Navigation and weather information

Land Related

Boat sales
Boat repairs
Marina supply sales
General supply sales
Trailer storage
Parking
Overnight
Food service
Concessions
Utility service
Recreational services

MARINA FACILITIES

Water Related

Open and covered mooring
Boat launch ramp
Marine railway
Crane lift
Drydock
Fueling pier
Anchorage areas
Marine service station
Entrance and exit channels
Swimming area
Water skiing course
Basin flushing system
Storm and wave protection

Land Related

Boat building and repair
Boat dry storage
Trailer storage
Restaurant
Motel
Picnic areas
Convenience store
Boat washing
Parking
Swimming pool
Camping
Beach area
Club room
Marine supply sales
Public toilets and showers
Recreational facilities
Bait shop
Seafood sales

management policies. Proximity of the site to population centers, accessibility of the marina from the landside and easy access to desired water use areas are important evaluation factors.

Question 2 – Type of Marina

The type of marina proposed directly relates to the impacts imposed on the environment. Open marinas in well-flushed tidal creeks or estuaries may minimize the potential for water quality impacts that could result in the buildup of pollutants in poorly flushed, dredged basins. Harbor marinas dredged from upland areas also may lessen impacts to aquatic and wetland resources by limiting submerged area use requirements and modification to aquatic and wetland habitats. The type of marina proposed may directly affect potential water quality or habitat resource permitting issues related to environmental protection.

Question 3 – Intended Use

The intended use of the marina may affect permit approval, particularly where public access is limited. Projects that allow public access to coastal waters are typically viewed as a positive factor in the permit evaluation process.

Question 4 – Size

The size of the marina is dictated by the number, size and type of boats to be accommodated. Land area requirements depend on the harbor function and the facilities necessary to support that function. An ideal marina site should have adequate upland area available for the necessary shoreside facilities and for nonessential facilities such as picnic areas and playgrounds. It may also be necessary to provide land for wastewater treatment facilities, solid waste disposal, stormwater retention and runoff control and dredge material containment.

The Florida Department of Community Affairs (DCA) has Development of Regional Impact (DRI) threshold requirements for marinas. Generally, marinas planned with 150 or more wet slips are subject to DRI review.

Question 5 – Types of Boats

The various boat types and sizes will affect the choice of marina location and marina design considerations. The type of mooring also influences the size of mooring area required. Deeper access channels and harbor depths are required for larger powerboats and sailboats with fixed keels. Reasonable proximity to open waters, relatively straight access channels with broad turns and few shoreline hazards are considerations for safe navigation for sailboats and larger powerboats. These considerations will affect the amount of dredging and submerged area use required for the marina, factors that are directly related to evaluation of potential impacts during the marina permit review process.

Question 6 – Services and Facilities

The marina concept may include a variety of services and facilities (Table 7-1). Suitable water and land areas are essential to successful marina development. Additional land area also may need to be considered to accommodate any projected future expansion. The particular services and facilities proposed may pose beneficial and adverse environmental impacts that could affect permit approval. Facilities for fueling and boat repairs are of particular concern to

regulatory agencies because these activities have the potential for water quality and shellfish sanitation problems.

Question 7 – Hydrographic Conditions

Tidal range, natural water depth at the site and the project depth at the marina are hydrographic considerations necessary for evaluating the natural circulation of the area and the projected flushing rate of the marina basin. During the hydrographic survey, it is also important to note the locations of underwater hazards or obstructions, and to review the past history of the bottom in terms of siltation rates, marina life, bottom growth and shoaling.

Other hydrographic considerations necessary for effective site evaluation include:

- Bottom Conditions
- Wave Action
- Tidal Conditions
- Sedimentation Patterns
- Shoaling Conditions

Part II: Potential Permitting Issues

After development of the marina concept and identification of potential sites, responses to the Screening Checklist, Part II, Questions 1 through 18 will identify potential permitting issues or indicate where additional information should be obtained. This should provide assistance in final site selection, site feasibility analyses and marina design.

Question 1 – Dredging

Dredging activities may impact water quality, aquatic and wetland habitat resources by altering water circulation patterns, increasing turbidity or siltation, decreasing dissolved oxygen, releasing pollutants from sediments and increasing erosion or shoaling rates. Because of the variety and nature of impacts that may result, preferred marina sites would be those requiring little or no dredging. Acceptable marina sites must be located within areas that provide safe, easy and convenient access to waterways. The site also should provide an area of sufficient depth to permit safe access and moorage for boats. Sites on long, winding channels or with shallow water or bottom conditions that hinder safe navigation may require extensive modification and should be avoided. Straightening winding channels can affect basin water circulation patterns, tidal flows and sedimentation characteristics. Areas with known high siltation or shoaling rates also should be avoided because considerable maintenance dredging may be required. Where dredging is necessary, preferred areas would be those where shellfish, other benthic invertebrates or seagrasses would not be affected. Dredging in aquatic preserves is prohibited unless it can be demonstrated that there would not be significant adverse environmental impacts and that the project would be in the public interest.

Question 2 – Filling

The principal concerns for adverse impacts from filling are related to the modification or loss of shallow aquatic areas or wetlands. Because of the significance of adverse impacts to these resources, preferred marina sites would

have adequate upland area for marina development and future expansion and present natural characteristics conducive to eliminating or minimizing fill requirements.

Filling of shallow water areas or wetlands is considered unacceptable by regulatory agencies and should be avoided when any alternative exists. Unavoidable modification of these areas may require mitigative measures to compensate for habitat loss. Federal, State and county policies are currently enforcing a “no – net loss” of wetlands. Therefore, compensation for potential wetland losses should be evaluated for any marina proposals that result in adverse effects on wetland resources.

Question 3 – Dredged Material Disposal

Adequate disposal areas for initial and all maintenance dredging should be identified for the life of the project. Upland areas are preferred dredged material disposal sites for initial and maintenance dredging. In localities where pollutants in the sediments may be insignificant, the dredged material may, in certain instances, be used for beach nourishment or to create spoil islands suitable of waterbird nesting rookeries. Productive use of dredged material may be viewed as a positive factor in permit application evaluation. According to FDEP, spoil disposal within an aquatic preserve shall be strongly discouraged and may be approved only where the applicant has demonstrated that there is no other reasonable alternative and that the spoiling activity may be beneficial to, or at the minimum, not harmful to the quality or utility of the preserve. FDEP rules may also limit dredging and dredge disposal in OFW areas.

Question 4 – Structures

Some sites may require modifications to the shoreline to either create additional land area or stabilize shore erosion. Seawalls, bulkheads and revetments are commonly constructed for this purpose. Care must be exercised to minimize impacts to both aquatic and terrestrial habitats since these structures are constructed at the land/water interface and may exacerbate erosion problems, disrupt the flow of water, detritus and biota into or out of the wetland. Preferred marina sites would be those affording good natural protective, which could eliminate or minimize the need for protective structures such as bulkheads, revetments and breakwaters.

Question 5 – Flushing

The potential for water quality problems is higher in areas with low flushing rates such as dead-end channels or canals and the upper reaches of estuaries or tidal creeks, which may be characterized by low tidal range or low net flow. Preferred sites are those on open water or near the mouths of tidal creeks or tributaries. Marina design should maximize natural circulation to reduce sedimentation and maximize dispersion of pollutants.

Question 6 – Water Quality Classification

The Florida Department of Environmental Protection has classified all waters of the State according to existing water quality condition and/or water quality goals. The State also publishes water quality standards for each classification that should be understood when evaluating a site for marina development. The State

of Florida has classified surface water into five categories which indicate allowable usage based on the quality of water:

<u>Class</u>	<u>Type</u>
I	Public Water Supplies
II	Shellfish Harvesting
III	Recreation / Propagation and Management of Fish and Wildlife
IV	Agriculture and Industrial Water Supply
V	Navigation, Utility and Industrial Use

Areas of St. Johns County are classified as Class II and Class III waters. Marina development is prohibited in Class I and generally prohibited in Class II waters if shellfish are affected.

Question 7 – Outstanding Florida Waters (OFW)

Certain waters of the State have been given an additional classification because of unique ecological features and high levels of water quality. This classification imposes severe restriction on marina development. All waters of Pellicer Creek and a large portion of Guana River are classified as Outstanding Florida Waterways.

Question 8 – Water Quality

Obtaining permits for marinas in marginal water quality areas or in sensitive areas where maintenance of water quality is critical for protecting natural resources such as shellfish or grassbeds may be very difficult or require extensive design modifications, including extensive and expensive pollutant control mitigative measures.

Question 9 – Protected Areas

Fish or wildlife in designated aquatic preserves wildlife refuges, wilderness areas or other specially designated protected areas can be affected by marina construction and operation. The potential for adverse impact is directly related to the proximity of the marina to these areas. Protected areas may be readily identified through contacting the Florida Department of Environmental Protection, Florida Fish & Wildlife Commission, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service.

Impacts to the fish and wildlife in protected areas may restrict marina development. A proposed marina near a protected area may require mitigative measures in order to obtain a permit. These measures may include design modifications, seasonal construction scheduling or seasonal modifications in operation activities to ensure the avoidance of adverse impacts. According to FDEP, marinas shall not be sited within State designated manatee sanctuaries.

Question 10 – Rare, Threatened, or Endangered Species

A number of endangered or threatened species potentially inhabit the waters of St. Johns County. The most seriously endangered of these species is the Manatee.

The West Indian Manatee is an endangered aquatic species of significant concern in Florida. This generally slow moving mammal concentrates in springs, power plant discharges and other warm water areas in Florida during the winter. Impacts on manatees or the habitat necessary to support them may result from marina construction, operation or boating activities. Manatee concentration areas may be identified through contacting the Florida Fish & Wildlife Commission, the Florida Department of Environmental Protection, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service.

Birds are also a primary group of endangered species that may be of concern in marina siting. Many waterbirds, such as pelicans, ospreys, terns, and herons are on state and federal lists of protected species.

Potential impacts to rare, threatened, endangered or otherwise designated outstanding or unique species or habitats are considered to be very important. Significant impacts to any of these areas or species are unacceptable. Circumstances may arise when mitigation of potential impacts would be acceptable.

Question 11 – Shellfish

Changes in water quality can result from marina construction and operation from boating activity. Changes that have the potential to impede shellfish growth and propagation include increased turbidity, siltation, water turbulence and pollutant levels. Sanitary waste discharges can contaminate harvestable shellfish such as clams and oysters, and preclude commercial harvesting of this resource. Locating marinas away from shellfish harvesting areas will reduce the potential for both environmental impacts and resource-use conflicts.

Question 12 – Grassbeds

Increased turbidity, pollutants and physical damage from boats may damage grassbeds. Seagrasses are considered to be sensitive resources because of their role as nursery areas, their role as food source for manatees and their slow recovery following impacts. It is preferred that marinas be sited in locations where disruption of highly productive nursery areas, such as seagrasses, marsh grasses, and mangroves will not occur.

The dredging of access channels through grassbeds is strongly discouraged and may be prohibited by regulatory agencies. Obtaining permit approval for marinas near grass beds will require close consideration for potential impacts and may require mitigative measures which can affect the financial feasibility of the project.

Question 13 – Historic, Archaeological, and Scenic Areas

Proposing a marina development in a recognized area of historic, archaeological or scenic value is a factor considered by permitting agencies. A finding of significant impact may cause a permit to be denied. As part of the permitting process, the USACE considers impacts to these resources that may result from marina development. Under Section 106 of the National Historic Preservation Act, the Florida Historic Preservation Officer (FHPO) has responsibilities for reviewing proposed developments to determine possible adverse impacts. The marina developer or site planner may identify these areas by contacting the

FHPO. The FHPO can identify sites that could give rise to significant permitting issues or recommend an appropriate professional with knowledge in the local area who may be consulted.

Question 14 – Local Opinion

An important consideration in site planning is the opinion of local landowners. Identification of adjacent property owners is a required part of the marina permit application. Early consultation with local residents and landowners may be important to project success. Informed residents who have the opportunity to participate in shaping the proposed development can be assets to the marina developer. Issuance of Public Notice is required in the permit review process. The purpose of this notice is to allow regulatory agencies, individuals, and special interest groups to comment on the proposed development. Public opposition to the project may lead to public hearings, require significant project modifications or ultimately result in permit denial.

Question 15 – Consistency with Coastal Zone Management,

Local Permits and Approvals

After the best of the candidate sites have been selected, early evaluation of consistency with the State Coastal Zone Management Plan and St. Johns County Comprehensive Plan & Land Development Code requirements is important in determining site feasibility. State and County law require consistency with the St. Johns County Comprehensive Plan. The FDEP permit review process requires a determination that the proposed project is consistent with state, county and local coastal management plans. Failure to obtain all necessary regional and local permits and approvals may result in costly delays in obtaining marina permit approval or result in permit denial.

Question 16 – Florida Development of Regional Impact

The Florida Department of Community Affairs administers the Development of Regional Impact (DRI) process which requires an evaluation of the social, economic, and environmental affects of development projects of certain magnitude. Marinas of sufficient size are subject to the DRI Review Process. A prospective developer should contact the Department of Community Affairs to determine the DRI requirements for the marina proposal.

Question 17 – Public Access

Considerations for public access affect permit approval. Regulatory agencies look more favorable on a public marina or a private marina that would allow public water-use access (boat ramps or other facilities) than on a proposed marina that would exclude any public use. Provision to provide or enhance public land access to navigable waters is generally viewed as a positive factor in evaluating permit applications. Projects that obstruct public access could be considered detrimental to the public interest and not approved as proposed.

Question 18 – Obstruction to Navigation

Structures that extend into or near existing channels have the potential to obstruct boat traffic. Although it is important that boating activity is or will be sufficient to support the marina, the marina should be sited in such a manner that the marina itself or boats moving to or from the marina will not interfere with

traffic along established navigation channels or routes. An acceptable marina site would provide adequate open water for safe navigation.

Summary

The typical marina development process encompasses two phases:

1. An initial broad screening evaluation in which market analysis, development of market strategy and marina concept and identification of possible sites occur; and
2. A detailed site-specific evaluation in which the proposed site is selected, site feasibility and preliminary marina design are determined, final marina design is completed, and development is initiated.

The initial broad screening evaluation of candidate marina sites should consider the anticipated need and demand for the marina. Sites should provide adequate water and land area; water, land, and utility access; and aesthetic surroundings. Sites that meet these conditions may then be considered for detailed site-specific evaluations to determine existing site conditions favorable for marina development in an environmentally sound manner. The screening checklist can be used to identify desirable / undesirable site characteristics. Responses to questions in Part Two of the checklist will identify potential permitting problems. This approach leads to site selection and marina design that allow maximum use of existing conditions while minimizing site modifications. This, in turn, will help eliminate or reduce environmental impacts and permitting issues.

Collective environmental and engineering needs a given marina site are rarely met and alterations are usually required to make the site suitable. The most appropriate marina site would be one requiring as little modification to the site environs as possible. Desirable and undesirable site selection characteristics include:

Desirable Site Characteristics

- Easy access to open waters, population centers, utilities, public sewer and water lines;
- Accessible from existing roads and waterways;
- On sheltered waters providing adequate storm protection with deep waters close to shore;
- Near existing state or federally maintained channels;
- Near currently permitted public areas for disposal of dredged material;
- High tidal range or flow and high flushing rates, such as near the mouths of estuaries or tidal creeks, near inlets or on convex shorelines;
- Compatibility with existing land and water uses; and
- Away from shellfish beds used for harvesting for human consumption.

Undesirable Site Characteristics

- Too shallow or with inadequate water or land area for intended use, requiring extensive dredging or filling;
- Low tidal range or flow and low flushing rates, such as dead-end channels or canals or the upper reaches of tidal creeks

- In a location with poor water quality, marginally meeting state water quality standards;
- Near specially designated fish or wildlife protection areas or near shellfish bids or dense grassbeds;
- Location where rare, threatened, endangered, or otherwise designated unique or outstanding aquatic or terrestrial species or habitats are found;
- In an area or recognized historic, archaeological or scenic value; and
- Location where development would obstruct public access to navigable waters or hinder safe navigation by requiring structures that would extend into existing channels.

6.2 Environmental Assessment Techniques

6.2.1 INTRODUCTION

Upon completion of siting and preliminary design studies, the prospective marina developer should conduct an environmental impact assessment of the project. The following section of this manual presents a step-by-step guide for completion of an environmental assessment of the major impacts normally associated with a marina project. The guidelines present several recommended techniques for conducting impact analyses. Most of these are applicable to simplified marina designs. However, for more complex marina proposals, it may be necessary to use more sophisticated approaches in assessing impacts. Regulatory agency staff will advise the applicant as to the level of detail required for studies and analyses at the pre-permit conferences.

6.2.2 WATER QUALITY IMPACTS

Many factors work to determine the eventual impact a marina will have on the water quality within the immediate vicinity of a marina and areas of the adjacent waterway. Initial marina site selection is one very important factor. Selection of a site with favorable hydrographic characteristics and which requires the least amount of modification can do a great deal to reduce potential water quality impacts.

For marinas with enclosed or semi-enclosed basins, the basin configuration is another important factor. Marina basin size and shape are two significant features of basin configuration. The size and shape of marina basins are functions of:

- Natural advantages at the site
- Mooring facility requirements
- Required degree of protection from weather and waves
- Land and water area limitations
- Economics.

In such basins, circulation of flushing characteristics plays important roles in the distribution and dilution of potential contaminants. Circulation and flushing can be influenced by the natural or dredged basin orientation. The final design is usually a compromise that will provide the most desirable combination of marina capacity, services and access, while minimizing environmental impacts, dredging, protective structures and other site development costs.

Numerous marina-related development and operation activities are also significant factors impacting water quality. Dredging and dredged material disposal, wastewater disposal, fueling operations, stormwater runoff and boat maintenance and repair are some of these. Discharges from marina sanitation devices and bilges can also impact water quality in the marina waters. In inadequately flushed basins, discharges from these sources have the potential to reduce dissolved oxygen supply and increase turbidity, coliform bacteria concentrations, nutrient, metals or hydrocarbon levels. Further, the potential for periodic release of concentrated pollutant loads into adjacent waters exists in the case of inadequately flushed basins.

Flushing Characteristics of Marina Sites

Flushing and circulation are important physical characteristics of a marina site that should be considered in marina planning. Precise information on flushing and circulation usually is not readily available during the marina site selection and design process. However, methods exist for providing estimates of expected flushing capability.

The method chosen to estimate expected flushing from a marina site depends upon the hydrographic characteristics of the siting location. Marinas anticipated to be located within a confined area with one or two relatively narrow openings would have flushing characteristics considerably different from marinas located directly on larger bays or estuaries or along river shorelines. Two openings may improve flushing in semi-enclosed marina basins. The United States Environmental Protection Agency (USEPA) Coastal Marinas Handbook describes several methods for evaluation flushing characteristics.

A prospective marina developer should schedule a meeting with the Chief Hydrographic Engineer with the Florida Department of Environmental Protection (FDEP) in Tallahassee to discuss appropriate water quality analysis techniques before submitting a permit application.

Sediment Deposition and Shoaling

A variety of factors influence the amount and location of sediment deposition in a marina area. Since marina sites are generally chosen or designed to be relatively quiescent, they become efficient sediment traps. Sediment can be transported into the marina through suspended or bed load, hydrodynamic transport, or by upland storm runoff. Shoaling at harbor entrances can occur when breakwaters or entrance channels affect littoral drift. Sediment control measures such as groins or jetties may be required at some sites where suspended load or bed load sediment transport is high.

SUSPENDED SEDIMENT TRANSPORT

Semi-Enclosed Marinas

Estimates of suspended load sedimentation in a semi-enclosed marina can be obtained through the use of two characteristics, the total suspended solids in the water being carried into the marina basin and the percentage retention of these solids within the basin.

Open Marinas

Sedimentation of the suspended load for marinas located on more open areas of an estuary, bay or river would be affected by local conditions. In estuaries, sedimentation of suspended load will be greater in the upper estuary near the point of river influx because the water velocity decreases at this point and many of the suspended particles will settle out. This also occurs at tide nodal point. Sedimentation also will be greater near the point of freshwater-saltwater interface in the estuary where rapid change in the salinity causes flocculation of the suspended particles. Marinas sited near these locations would be subject to high sedimentation rates. Available records can be reviewed to determine historic and therefore expected sedimentation in these areas.

BED LOAD SEDIMENT TRANSPORT

Bed load transport is the descriptive term for sediment, which is moved along the bottom by currents. This sediment movement is a complex process that is affected by particle size, channel or bottom geometry, relative layering of various particles sizes, bottom growth or other obstructions, near-bottom current velocities and suspended particle composition of the near-bottom currents.

For marinas that are semi-enclosed with entrance channels perpendicular to rivers, bed load transport may be significant in filling the dredged entrance channel. For natural entrances and for marinas located on rivers or in bays or estuaries, the bed load transport would probably not create a buildup of sediment unless structures were added that significantly altered bottom flow patterns.

Runoff

Stormwater runoff can carry particles into the marina basin. These particles would add to the total amount of sedimentation expected. Upland runoff characteristics result from complex interactions between rainfall frequency and intensity, ground characteristics such as vegetation, type of soil, relative compaction of soil, slope of the land, impervious and pervious surfaces and other obstructions.

Dredging and Dredged Material Disposal

Impacts from dredging and construction activities may be environmentally significant, depending upon the physical and biological characteristics of the surrounding water body. The degree of impact depends on the quality of the existing environment; the character of site-specific habitats, wildlife water quality, adjacent developments; and the manner in which the dredging and disposal is conducted.

Turbidity Increase

Turbidity, which can be both natural and man-induced, refers to the amount of suspended solids in the water column and the corresponding decrease in light transmittance.

Elevated turbidity levels can be temporary and localized. Many investigators feel that temporary, localized turbidity increases due to dredging are not significant because estuaries typically experience temporary turbidity increases as a result of tides and storms, and because some estuarine organisms, such as fish, can actively avoid these areas. The dredge-related effects of siltation, however, can have a prolonged and serious impact through seagrass destruction, shoaling and circulation changes, and

burial of organisms. Open water unconsolidated spoil banks and unstabilized dredged canal banks can be eroded and agitated by wave action and boat wakes so that turbidity levels remain elevated over long periods.

Quantity of Suspended Sediments

In order to determine the area of impact for dredging it is necessary to estimate the amount of dredging that would be required initially and for subsequent maintenance. The initial volume of dredging depends upon the specific design of the marina and the pre-construction condition of the site. The volume of maintenance dredging anticipated would depend upon sedimentation at the marina site.

Once determination has been made of the expected volume of dredged material to be removed, the quantity of increased suspended solids can be estimated.

The National Academy of Sciences, National Academy of Engineering (1973) recommends the following maximum concentrations of suspended sediments for protection of aquatic communities (Carstea, et al., 1975):

- | | |
|----------------------------|-----------------|
| • High level of protection | 15 mg / l |
| • Moderate protection | 80 mg / l |
| • Low protection | 400 mg / l |
| • Very low protection | over 400 mg / l |

Shoreline and Protective Structures

Marinas use shoreline and protective structures to retain their developed shores, to protect against waves generated by wind and moving watercraft, and to provide public access to navigable water. The following review is a complete summary of the impacts from minor shoreline structures with numerous references.

The shoreline and protective structures relevant to marinas include:

- Piers and piles
- Jetties, groins, and breakwaters
- Bulkheads, revetments, and ramps.

Development of marinas may involve dredging and construction of shoreline structures, access roads, and shop and supply buildings. These operations typically alter existing habitats which may include productive areas such as wetlands and estuaries. Although the construction of pilings, docks, bulkheads, breakwaters, rip-rap revetments, vegetated revetments, jetties, and other shoreline structures do afford new habitat for marine and terrestrial animal colonization, they do not replace the habitat that is lost by dredge and fill and construction activities or altered through secondary effects.

Physical Impacts

Physical alteration can be caused by certain shoreline structures. Alterations frequently involve changes in siltation, circulation, turbidity and erosion. Solid breakwaters, for example, change circulation patterns and may cause shoaling. Typical areas of shoaling for shore-attached solid breakwaters are along the shoreline near the updrift point of the breakwater shore attachment. For detached breakwaters, accumulation is often along the shoreline on the lee side of the breakwater. Such shoaling can cause downshore

erosion. Areas downshore of groins may also be deprived of littoral drift sediment and consequently scoured. Erosion and the resulting sediment accumulation elsewhere may require maintenance dredging.

Chemical Impacts

In addition to dredging-related water quality alterations during construction, shoreline structures may produce other water quality changes. Pilings and other wooden structures are frequently treated with preservatives such as creosote or other zinc and copper salts to slow the settling of fouling and boring organisms and to increase the life of the structures. Chemicals can leach into marina waters and can affect the water quality and non-target organisms.

Pollutant Concentration

Runoff from marinas may introduce pollutants that can degrade the quality of adjacent waters. During marina construction, natural vegetative cover is usually replaced by impermeable surfaces such as buildings or parking lots that reduce the area available for stormwater percolation. Without proper design, stormwater runoff can increase and pollutants may be washed from a marina into the water. These pollutants may include sediments, pesticides, oil and road dirt, heavy metals, and nutrients.

During periods of heavy rainfall, storm sewer systems designed simply to channel stormwater away from parking lots, walkways, roofs and other collection points may carry a variety of pollutants that are capable of degrading water quality.

Expected pollutant concentrations in marina basins and adjacent waters can be estimated by evaluating the type and quality of pollutant loadings expected and the dilution and transfer of such pollutants by various flushing mechanisms.

Dissolved Oxygen

The discharge of pollutants to the marina basin may impose a biochemical oxygen demand that can be combined with estimated sediment oxygen demand to provide an estimate of oxygen depletion in the basin. This estimate requires a variety of assumptions. The approach to dissolved oxygen (DO) considerations is to conduct a DO mass balance over one tidal cycle and determine whether significant DO reduction occurs.

Sanitary Wastes from Boats

One pollutant source of major concern is the discharge of sanitary wastes from boats in marinas or adjacent waterways which may contribute to increased biochemical oxygen demand (BOD) in receiving waters.

The most serious effect of discharging fresh fecal material is the potential for introducing disease-causing viruses and bacteria (pathogens). Problems may occur if boat sewage is released in the vicinity of shellfish (clam or oyster) beds or into enclosed waterways with limited flushing. Shellfish require clean water to be microbiologically safe for human consumption, regardless of whether they are eaten raw or partially cooked. Fecal coliform bacteria, other bacterial pathogens, and viruses found in water and sediments are concentrated by shellfish, depending upon temperature, density of pathogens, salinity, currents, depth, water chemistry, and shellfish feeding activity.

Impact Evaluation

Several methods have been developed for predicting the potential coliform concentration resulting from sanitary waste discharge in a marina basin or adjacent waters. Potential impacts to shellfish areas or water quality can be estimated by comparing results from any of these methods with the state water quality standards for classification of waters in which the marina is located. If presence of shellfish is an important issue in the planning of a marina project, contact should be made with the Florida Department of Environmental Protection (FDEP) and a method for prediction of impacts should be coordinated and developed through the agency.

Boat Operation and Maintenance

Many of the water quality impacts of boat operation and maintenance on the environment are subtle and most have not received the scientific attention required to assess them. In addition to sanitary waste discharges, other pollutants include outboard exhaust and other engine pollutants, lead, copper and detergents. The impacts associated with these pollutants range from acute toxicity to slight perturbations.

Wetlands

Review of the vegetative community information developed in the ecological description of the site should be used to determine the amount (in acres) and types of wetlands. This analysis should include the impacts associated with dredging and/or development of all facilities associated with the marina project that will result in the loss of any wetland habitat. The importance and/or functional value of the wetlands impacted with regard to the local ecosystem and the relative significance of this loss of wetland resources should be discussed. The wetland areas to be preserved in their natural or existing state and the planning approaches that will be used to accomplish this preservation should be indicated.

Terrestrial Biology

Review of the vegetation and wildlife information for the site should be used to determine the amount and types of vegetation and wildlife habitat that would be affected by construction of the proposed project. The locally or regionally important functions of these habitats, such as breeding, nesting, or roosting grounds for wildlife, should be discussed. The planning approaches that will be used to preserve any important areas found on the site should be discussed. The presence of any rare, threatened, or endangered plants and animals which would be affected by the proposed project should be determined.

Aquatic Biology

The following information should be included:

1. The amount of aquatic habitat (i.e., grassbeds) that will be modified by the proposed marina project: a study of the quantity and quality of benthic communities may be undertaken to assess the direct loss by dredging or shoreline modifications;

2. The direct or indirect effects on bottom communities and shellfish resources by physical disruption of habitat during construction or indirect effects caused by changes in water quality during marina operation (refer to the impacts of coliform bacteria and other parameters analyzed in the water quality impact section to address indirect impacts on oyster resources);
3. The impact of construction and/or operation of the marina on important spawning or nursery areas for fishery resources in the site area;
4. After review of the benthic macroinvertebrate studies conducted at the site, an estimate of the amount of benthic habitat and communities that will be affected by the marina project; and
5. The effects of boat wakes on molluscan shellfish resources adjacent to the marina or in tidal creeks which would experience significant increases in boat traffic as a result of the proposed marina should also be addressed.

Protected Species

The principal means of predicting impacts to protected species is the identification of their presence at or near the marina. State and federal lists of endangered species may be reviewed in order to determine potential presence of these species at a chosen marina site. Local experts, U.S. Fish and Wildlife Service and Florida Department of Environmental Protection agencies may also be contacted for endangered, threatened or rare species information.

6.2.3 SOCIAL AND ECONOMICS

Historical or Archaeological Resources

Important planning considerations for any proposed marina facility include evaluation of the cultural, economic and environmental consequences of its development. Consideration of the potential effects from marina development on local cultural resources may include the evaluation of historical and archaeological sites. If these sites occur in the area to be developed, data recovery and preservation activities may be necessary to avoid alteration or loss of prehistoric, historic or archaeological resources.

The National Register of Historic Places, compiled by the National Park Service, may be used as a primary information source for determining whether or not a proposed marina would affect any historic or archaeological site of significance for the area. The Register and the appropriate State Historic Preservation Officer will provide information on sites that the states are nominating for inclusion, or are considered eligible for inclusion in the National Register. If historical or archaeological resources, including marine artifacts, may be potentially affected by the project, a survey may be justified.

Navigation

Potential impacts to navigation resources may result from obstructing boating traffic through structure placement or increased shoaling as a result of marina development. Predicting impacts from structure placement principally involves determining structure

requirements for the marina layout and comparing these requirements with the size and type of boats presently using the waterway.

6.3 Mitigative Measures

6.3.1 INTRODUCTION

Most coastal construction projects, including marinas, will have some impact on the environment. This section is designed to provide the prospective marina developer with alternative measures or “environmental solutions” that can be used to solve potential environmental impact problems during marina design and construction.

6.3.2 ENVIRONMENTAL IMPACT SOLUTIONS THROUGH MITIGATION

Definition of Mitigation

The definition of “mitigation” has evolved to include avoiding and minimizing project impacts on natural resources during project planning and implementation, as well as corrective action following impact. This definition is stated in the National Environmental Policy Act (NEPA; Section 1508) and includes:

- Avoiding the impact altogether by not taking a certain action or parts of an action;
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation;
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
- Reducing or eliminating the impact over time by preservation and maintenance operation during the life of the action; and
- Compensating for the impact by replacing or providing substitute resources or environments.

The U.S. Department of the Army, Corps of Engineers (USACE) has adopted regulations which address mitigation in the context of dredge and fill permits. Currently, the USACE and U.S. Environmental Protection Agency (EPA) are continuing to work to develop additional guidance for the implementation of the mitigation rules.

The USACE has generally adopted the NEPA definition for mitigation, and it uses the concept broadly throughout the permitting process. The USACE does not follow a permitting sequence of modification prior to mitigation because the USACE recognizes modification as a form of mitigation. Minor modifications such as restrictions in a project’s size and scope, changes in construction methods, materials or timing, or changes in operation and maintenance practices are all considered mitigation.

The most familiar form of mitigation resulting from the USACE permitting process is “compensatory mitigation.” It is defined as “compensating for the impact by replacing or providing substitute resources or environments.” It can be provided by constructing or enhancing a wetland, dedicating wetland acreage for public use, or contributing to the construction, enhancement, acquisition, or preservation of such “mitigating lands.”

The U.S. Fish and Wildlife Service (USFWS) is a commenting agency which receives USACE dredge and fill applications pursuant to the Fish and Wildlife Coordination Act.

The USFWS' major focus is the habitat value of the area impacted. One method of attempting to quantify the comparability of ecosystems is the USFWS Habitat Evaluation Procedure (HEP). There are many variations on this modeling methodology and close coordination with the agency involved is recommended before embarking on any attempt to quantify habitat ramifications from the proposed construction action or the planned mitigation measures. USFWS undertakes a higher visibility permitting role if an endangered species is impacted.

The Florida Department of Environmental Protection (FDEP) also has a rule in reference to mitigation. The intent of the rule is to establish criteria whereby a dredge and fill project, which is not otherwise permissible, nevertheless may be allowed if the adverse impacts of the project can be offset. The rule makes it clear that mitigation is resorted to only after it has been determined that the project is not permissible. It is not an "up-front" requirement in the normal processing of an application. The normal procedure will be for the FDEP to review an application to determine whether it is permissible under its statutory criteria. If it is not, then the applicant or FDEP may propose a mitigation plan.

Mitigation proposals must include:

- A description of mitigation area.
- A description of reference waters. Where necessary, reference waters are to be used to measure the success of mitigation.
- A description of proximal habitat (i.e., nearby or adjacent areas that can provide habitat for animals displaced by the dredge and fill activity).
- A monitoring plan.
- A mitigation cost estimate.
- Sufficient legal interest in the property to be used for mitigation.

All mitigation proposals are evaluated on a case by case basis. There is no absolute requirement for the replacement of the same type of habitats impacted, nor are there absolute requirements for habitats created or enhanced versus habitats adversely impacted.

Offsetting adverse impacts will usually be best addressed through protection, enhancement or creation of the same type of habitat as those impacted by the dredge and fill activity.

The rule provides that a ration of 2:1 (area created : area impacted) is to be used as a guideline for mitigation involving the creation of habitats.

Mitigative Concepts

The primary mitigative approach is one of preventative conservation, design to protect environmental resources and avoid costly man-assisted restoration efforts. It is founded on preventing adverse, predictable and irreversible trends or changes in aquatic and terrestrial natural systems. The mitigative approach to meet this objective is to pursue feasible and prudent alternatives to a proposed project and/or examine all feasible measures to reduce or counteract adverse impacts associated with that project. Where remedial action is indicated, it should be a sufficient size and properly designed so as to offset the adverse impacts of a proposed project.

Extent of Mitigation

The extent of mitigation needed for a marina project may be based on consideration of the following factors:

- The extent of proposed dredge and/or fill activity in intertidal and marsh areas.
- The biological productivity and important resources values of the site.
- The adverse impacts and the extent to which they can be minimized through modification of project design or reduction in project scope.
- The identification of any remaining adverse impacts to be mitigated by restoration, compensation or other measures.

Marina Related Mitigative Measures

In general adverse impacts associated with marina development include the loss of surface area (by filling), the loss of shallow intertidal benthic habitat (by either filling or dredging) and the degradation of water quality. As a minimum, mitigation efforts should be designed to maintain, to compensate for or to restore these potential environmental losses.

6.3.3 WATER QUALITY MITIGATIVE MEASURES

Flushing

Adequate flushing of a marina is necessary for maintaining the water quality of the marina basin and adjacent waterway. Natural circulation near the site should be maintained whenever possible. Poorly flushed marinas can become stagnant and permit the concentration of pollutants from the marina facility and boats. The settling and accumulation of organic material and fine sediment can result in decreased dissolved oxygen levels and shoaling within the marina basin.

Marina Basin Design

Open marinas located on existing channels will generally have the same flushing rate as the channel. Semi-enclosed marinas or marinas with dredged basins should be designed to maximize tidal exchange and mixing within the marina. Marina basin design features that promote flushing are:

- Basin depths that are not deeper than the open water or channels to which the basin is connected and never deeper than the marina access channel.
- Basin and channel depths that gradually increase toward open water.
- Two openings at opposite ends of the marina to establish flow-through currents.
- Single entrances that are centered in rectangular basins rather than at one corner.
- Basins with few vertical walls and gently rounded corners.
- Even bottom contours, gently sloping toward the entrance with no pockets or depressions.

Generally, a rectangular basin is accepted as the best geometric shape for maximizing both the number of boat slips and basin circulation.

Mechanical Devices

In areas where tidal exchange may not adequately flush the marina, mechanical means such as tide gates or one-way valves may be used to enhance flushing rates. However, the performance of these systems should be carefully evaluated before installation. Where possible, flushing should be accomplished through basin design without the assistance of mechanical devices. Mechanical devices may be costly and will require maintenance.

Entrance Channel Design

Entrance channel design and placement can alleviate potential water quality problems. Entrance channels designed with openings as wide as possible and with increasing depth away from the marina basis promote flushing. Flushing also is enhanced when entrance channels are located in the direction of prevailing winds where possible because wind-generated currents can mix basin water and facilitate circulation between the basis and adjacent waterway.

The abatement of negative dredging effects initially involves assessing the need for dredging. Ideally, a marina should be sited in a well-flushed, circulated, protected, deep-water, natural harbor that does not require dredging for navigation or require spoil filling of submerged wetland areas. Realistically, such areas are not always available or economically feasible. However, minimizing the amount (area and volume) of material dredged and the frequency of dredging activities will reduce the environmental impact as well as the cost of maintaining the marina.

Most marina developments require only small amounts of dredging and dredged material disposal. The most common marina-related dredging involves “spot” and maintenance dredging to remove sediment from problem areas in boat channels or near docks. A recent alternative to dredging boat basins from shallow water areas has been the excavation of upland areas, sometimes connected to open waters by locks.

Water quality impacts may be avoided or minimized by:

- Planning dredged channels that follow the course of natural channels.
- Building skips for boats with deep drafts in naturally deep water.
- Extending piers and docks as far as possible into naturally deep water.
- Providing upland storage for smaller boats and using boat lifts to transport them to the water.

Sediment Curtains

Silt screens may be used to confine suspended sediments in sensitive areas such as those near shellfish beds or grassbeds. Sediment curtains are effective in low current areas (1 to 1.5 knots) when properly maintained and monitored (U.S. E.P.A., 1985).

Other Mitigative Measures

Other mitigative measures for dredging impacts include:

- Dredging during colder months when Dissolved Oxygen (DO) levels are higher (cold water has a greater capacity for DO than does warm water) would help mitigate dredging-related DO and Biological Oxygen Demand (BOD) problems.

- Dredging dead-end (Venetian) finger canals within a marina is undesirable. If canals are dredged, however, the banks of the canals can be sloped, as opposed to being at right angles with the bottom, to reduce stagnant, low DO pocket areas. Sloped banks can be stabilized with rip-rap and/or vegetation to prevent erosion.
- Water circulation can be ensured by using properly designed culverts, pilings and bridge spans, and by using discontinuous mounds for open water discharge.

Dredged Material Disposal

Historically, dredged material has been disposed of in open water, wetlands and upland sites. Today however, open water disposal is seldom a viable option for marina projects and disposal in wetlands is unacceptable because of environmental reasons. The following list provides potential guidelines for dredging associated with marina development.

- Productive use of suitable dredged material for beach replenishment, construction, sanitary landfill and agricultural soil improvement.
- Confining discharges to the smallest practicable deposition zone to protect adjacent substrates.
- Use of currently permitted public disposal sites.
- Dedicating permanent upland disposal sites as part of the marina specifications would help eliminate future problems related to disposal of maintenance dredging material. These permanent sites can be sites that have been previously used or represent an environmentally satisfactory alternative.
- The carrying capacity at existing disposal areas could be increased by raising the height of containment embankments.
- Disposing of toxic and organic materials in impervious containment basins (settling of contaminated suspended particles may be enhanced by the addition of a cationic polyelectrolyte with further treatment using sand filters and activated charcoal before discharge).
- Upland retention of treatment of runoff from the discharged material to remove dissolved pollutants before they reach the aquatic environment (a simple treatment such as ozonation or aeration can be adequate for reduction of BOD and Chemical Oxygen Demand (COD) before the discharge of supernatant liquid from spoil areas enters into receiving waters).
- Controlling erosion at diked areas by shaping the dike and using stabilization measures, such as revegetation. Positioning outfalls to empty back into the dredged area.
- Characterizing the sediments to be dredged and considering the potential odor problems during the selection of the disposal site and site preparation.

Structures

Structures that may be required at the marina include bulkheads, revetments, pilings, piers and breakwaters. Bulkheads and revetments are primarily used to stabilize banks and control erosion. Pilings, piers and finger piers are necessary for mooring watercraft in the marina. Breakwater areas used to absorb and reflect wave energy away from the marina to protect boats moored within the marina basin. A direct water quality impact from these structures during construction is a temporary increase in turbidity during

emplacement. This may be alleviated, if necessary, by use of pile-driving rather than jetting. Water quality can be indirectly affected when structure emplacement, particularly breakwaters, reduces water circulation. Therefore, all structures should be designed and placed so as not to restrict water circulation or mixing within the marina basin or increase shoaling.

Bulkheads and Revetments

Revetments are preferable to vertical bulkheading for controlling erosion because revetments reduce reflected waves that can increase turbidity within the marina basin and can cause scouring adjacent to or in front of vertical structures. Sloping revetments are also preferable to vertical bulkheads since bulkheads provide less surface area than revetments, for colonization by organisms. Placing these structures as far upland as possible not only avoids alterations to shallow intertidal and wetland areas, but also provides a vegetated buffer to filter stormwater runoff between upland facilities and the waterway. Where vertical bulkheads are necessary, they should contain weep holes, backed with a filter cloth to contain upland sediments and while permitting groundwater flow into the marina.

Vegetated revetments are currently recommended as a means of maintaining a vegetative fringe along the shoreline while protecting the upland. Mangroves are presently being used for this purpose. A guide to the planting and maintenance of mangroves, *Spartina* and other species is available from the Florida Sea Grant Program (Barnett and Crews, 1990).

Piers and Pilings

Mooring structures can impact quality within the marina basin through the leaching of wood preservatives and by impeding water circulation. These potential impacts can be avoided or reduced by:

- Using alternative materials such as concrete-filled, steel-reinforced PVC, plastics or other non-conventional materials.
- Using highly refined (grade one) creosote that contains less tar, or alternative preservatives such as chromated copper arsenate (CCA) to minimize chemical leaching.
- Avoid solid structures.
- Elevate docks and piers as high as possible, orient in north-south rather than east-west direction and minimize structure width to allow for maximum sunlight penetration (maximum of 3 ft. wide finger piers and 6 ft. wide main piers within Aquatic Preserve boundaries).

Breakwaters

Breakwaters can be fixed or floating. Fixed breakwaters can interfere with currents and reduce the flushing rate within the marina, resulting in reduced water quality and increased shoaling. Circulation often can be maintained by providing openings in solid breakwaters, at both ends of fixed breakwaters or between the fixed breakwater and shore. Alternatively, pile supported wave screens or floating breakwaters can be used.

Stormwater Runoff and Spills

Through optimal site selection, many of the problems associated with sanitary waste or other pollutants in stormwater runoff can be avoided or minimized. Marinas sited on estuaries, creeks, and water characterized by high flushing rates or high rates of water exchange should exhibit fewer water quality problems than marinas in areas of low water exchange. High exchange rates tend to dilute and disperse any sanitary waste or stormwater runoff pollutants from a marina. The configuration of a marina basin may enhance or hinder flushing rates. Marina basins with backwater, excessively deep or dead-end areas that have lower than natural rates of exchange tend to accumulate potential pollutants or require inordinate periods of time for flushing and organic decomposition.

An effective marina design and stormwater management plan are essential to maintaining water quality within the marina. Stormwater runoff impacts can be mitigated through proper control measures incorporated during marina design. Mitigative measures that can be used are:

- Minimize clearing and retain or create vegetated buffers such as marsh, mangrove or natural vegetation on the site between land and water areas.
- Install erosion and sediment controls before upland construction begins.
- Use porous surfaces (crushed stone, shell) whenever possible, particularly in parking areas.
- Retain at least the first inch of rain fall and route runoff through swales, wetlands, retention and detention ponds and other systems that will increase the time of concentration for pollutants, decrease runoff velocity, increase infiltration and allow suspended solids to settle and remove pollutants.
- When outfalls are necessary they should be located to discharge into areas with high flushing rates.

Fuel docks launching ramps are the primary sources for small spills of oil and fuel. Spills at fuel docks can be minimized by using fuel pumps with back pressure automatic cut-off valves. Cut-off valves should be available at the dock in the marina.

Sanitary Wastes

If the marina is in an area where public sewer service can be obtained, this service should be used. Where septic tanks are used, they should be located in suitable soils far enough from the marina basin and adjacent waters and designed with sufficient capacity to prevent the leaching of contaminants. Wastes from boat pumpouts should be handled separately as the chemical disinfectants used can destroy the bacteria necessary to decompose wastes in onshore treatment facilities.

Shoreline Facilities

Connection to a central sewage is the best way for a marina to avoid potential problems with pollution from land-based sewage facilities. Connection to municipal systems may not be available at all potential or proposed marina sites. However, in such cases, septic tank systems are a viable alternative as other forms of waste treatment can be prohibitively expensive for such relatively small businesses as marinas.

Sanitary Wastes from Boats

Controlling sanitary wastes from boats is one of the primary marina permitting issues that may arise for marinas proposed in the vicinity of shellfishing waters, because of the potential impacts to shellfish through bacterial contamination. This source of pollution also can potentially result in contravention of state water quality standards. Because of these regulatory concerns, proper management plans and designs for these wastes can be critical to marina development. In general, marina sanitation can be considered to have two components; the first is the equipment on board a vessel and the second is the onshore equipment, including piers. The onboard equipment is categorically referred to as marina sanitation devices, or MSDS.

One means of controlling sewage pollution from boats is to educate boaters about the potential health hazards associated with the discharge of sewage and to encourage boaters not to discharge either treated or untreated wastes into a marina basin or into coastal waters. Marina operators or harbor masters shall post regulations prohibiting the discharge of any waste into marina waters and frequently inform their clients of such regulations. Such a regulation would be helpful in preserving water quality. It also makes good business sense to maintain an aesthetically pleasing appearance.

Marina Wastewater Collection Systems

Three types of onshore marina wastewater collection systems are available:

- Marina-wide systems
- Portable / mobile systems
- Slipside systems

Marina-wide wastewater collection systems include one or more centrally located wastewater pumpout installations. These installations are located at the end of a berthing pier or on a non-berthing pier (such as a fuel pier). Vessels requiring the wastewater pumpout services would dock at the pumpout installation and a flexible hose would be connected to a wastewater fitting in the deck of the vessel.

Portable / mobile systems are similar to marina-wide systems except that the pumpout stations are mobile. The mobile unit includes a positive displacement pump and a small storage tank. The unit is connected to the deck fitting on the vessel and wastewater is pumped from the vessel's holding tank to the storage tank attached to the pumping unit. When the storage tank is full, the contents are discharged into onshore collection or treatment facilities.

6.3.4 ECOLOGICAL MITIGATIVE MEASURES

Aquatic Habitat

Maintaining water quality through the design and mitigative measures previously discussed is essential to maintaining the aquatic habitat in the vicinity of the marina. Construction impacts to aquatic habitats result from increased turbidity and siltation and from direct habitat loss due to dredging. Alteration of the shoreline through dredging and placement of structures also can damage the aquatic community and even eliminate the shallow intertidal zone. Recolonization of dredged areas or disposal sites is more likely

to occur when the sediments in either area are similar in physical and chemical characteristics both before and after dredging and disposal. Mitigative measures applicable to aquatic habitat resources are:

- Locate marinas on existing channels
- Avoid sensitive areas such as shellfish beds and grassbeds
- Minimize the need for dredging through choice of marina site and design and the use of dry-stack storage for boats, where appropriate
- Extend open dockage to reach deep water
- Depth requirements should be based on the size and type of boats services and should not exceed the zone of light penetration unless existing conditions already exceed that depth
- Schedule dredging and other construction activities at times other than during spawning, migration or critical life stages of fish and other aquatic organisms
- Use sediment curtains and coordinate dredging activities with tidal cycle so as to avoid excessive siltation and burial of sensitive organisms
- Minimize pier widths to avoid excessive shading of aquatic habitats
- Place bulkheads or revetments as far upland as possible and provide access ways over wetlands to avoid shallow intertidal areas.
- Use floating, detached breakwaters and floating docks or piling construction to minimize habitat loss
- Sloping revetments and vegetated revetments provide better habitat and protection for juvenile fish and are preferable to vertical bulkheads, where feasible
- Locate boat ramps away from sensitive areas such as grassbeds or shellfish beds. Preferred areas are shorelines without wetlands vegetation and adjacent to waters with adequate navigation depths.

Unavoidable loss of habitat can be compensated through use of dredged material to provide new habitat. New or altered habitat areas can be restored as described below.

Rehabilitation of Altered Areas

When alternative sites are not available, or when some habitats are altered or destroyed during construction, some of these areas can be rehabilitated. The planting of mangroves and marsh grass and seagrasses are examples of artificial habitat restoration. The method of recolonization or rehabilitation chosen for those sensitive areas will depend on location, species concerned, sediment type and cost.

The disturbances of mangroves caused by dredge and fill is a particular problem. Mangrove species differ in their response to alteration of their environment. For example, black and white mangroves are typically more resistant to the effects of diking and flooding than red mangroves (Teas, 1980). Success rates for restoration projects will vary under different conditions. Mangrove rehabilitation / creation is a viable mitigation alternative that will necessitate site-specific planning.

Establishment of *Spartina* is possible by means of either seeds or transplants. Direct seeding apparently offers a very rapid and relatively economical route to the establishment and stabilization of areas meeting certain standards (e.g., very low wave

energy). Transplanting is considerably more expensive, but may be adaptable to a wider variety of conditions.

Since it has been shown that natural recolonization of seagrass beds takes many years and is often unlikely, rehabilitation of damaged seagrasses by means of transplanting may be considered. Planting and transplanting of aquatic vegetation show some limited success; however, problems involving cost and restoration time exist, so avoiding or minimizing impacts to sensitive aquatic habitat resources should remain the primary mitigative measure.

Existing marinas and other sites that flush poorly also can be rehabilitated. In lieu of improving circulation by dredging, such stagnant areas can be supplied with aeration systems that oxygenate and vertically circulate stagnant water areas. However, this method should remain a rehabilitation technique for existing marinas; new marinas should be designed to maintain adequate DO levels without aeration.

Terrestrial Habitats

Impacts to terrestrial habitats are primarily related to construction of upland facilities and upland disposal of dredged materials. Site clearing and grading will remove the natural protective vegetation which controls erosion. Without cover, soil can be carried into the waterway, causing turbidity. Vegetation should be replaced as quickly as practicable. The soil also contains plant nutrients and other pollutants that can further degrade water quality. Minimizing the damage to natural vegetation is an effective method of controlling erosion, as well as other construction erosion control measures. If marina development required unavoidable loss of vegetation considered to be ecologically important, an area of greater value can be restored elsewhere in the ecosystem.

Wetlands and Protected Species

Wetlands are vital to the health of the estuarine ecosystem and therefore any loss of wetlands is generally considered unacceptable by regulatory agencies. When there is no alternative to unavoidable loss of wetlands during marina construction, acceptable mitigation maybe the creation of new wetland or the restoration of a greater area of previously disturbed wetland. Measures that may be taken to mitigate impacts to wetlands are:

- Avoid dredging through use of existing channels
- Avoid dredging deep channels into wetlands or straightening tidal creeks to obtain access to the marina site
- The construction of access ways through wetlands should be elevated or otherwise permit unrestricted water flow through the wetland
- Wherever possible a wetland fringe should be retained along the shoreline and bulkheads and revetments should be placed along the existing shoreline as close to the upland as possible.

The impact of erosion on inshore or channel shorelines from boat wakes can be prevented or reduced by posting and enforcing "NO WAKE" zones in areas of high boating activity.

Planting marsh vegetation on stabilized exposed banks can be an efficient deterrent to erosion caused by boat wakes. The establishment of mangroves in conjunction with *Spartina* is another means of shoreline stabilization for protecting against erosion in some locations.

Fauna and flora also can be protected through public awareness. For example, a massive effort by the state of Florida, the U.S. Fish and Wildlife Service and private organizations have been successful in educating the public to protect the manatee. Regulation of boat speeds and limited access in manatee sanctuaries is also underway to reduce boat-related incidents. Similar measures can be taken for other species of concern.

The visible presence of humans may disturb wildlife, particularly during nesting seasons. Thus, regulations regarding minimum distances from nesting areas may be set and enforced to reduce noise and other disturbances from passing boats. Minimum distances required to prevent disturbance of nesting birds will vary with the number and species of birds and with the physical characteristics of the site such as the amount of vegetative cover.

Impacts to protected species such as manatees should be avoided. The presence of rare, threatened, endangered or otherwise designated unique species or habitat should be identified early in the marina planning process and planning and design steps taken to avoid any impacts.

Marina sites located near rookery areas or other wildlife refuges or sanctuaries should be buffered through the use of vegetation. Construction activities should be scheduled to not interfere with breeding, nesting or spawning seasons.

Shellfish

The principal factors that promote the propagation, and growth of shellfish communities are the character of the bottom water movement, water salinity, temperature and food availability. Unfavorable factors that tend to destroy or inhibit growth and productivity of shellfish communities are sedimentation, competition, pollution, disease and predation (Galtsoff, 1964). Marina construction in or adjacent to shellfish beds may contribute directly and indirectly to these factors.

In some cases, it may be possible to remove biological contaminants from shellfish through depuration. This procedure could become an important mitigative measure for area-wide or regional impacts in the future; however, it is not effective in removing heavy metals and hydrocarbons.

Shellfish are particularly sensitive resources with respect to marina development because of the potential for fecal contamination from marinas and boat discharges. The Florida Department of Environmental Protection imposes buffer zones around marinas located in shellfishing waters. Significant permitting issues may arise from resource-use conflicts and this issue can prevent marina permitting. The primary mitigative measure for impacts to shellfish would be to avoid development within areas supporting harvestable shellfish beds.

Other Mitigative Measures

Historical / Archaeological Resources

Historical and archaeological resources present at the marina site or discovered during construction that may be impacted by marina development can be identified by contacting the Florida Historic Preservation Officer. Mitigative measures can include:

- Preservation or restoration of the artifacts.
- Photographic documentation.
- Survey or excavation by professional historians or archaeologists.

Aesthetic Resources

Aesthetic resources contribute to the attractiveness of the area for development. Measures to protect and maintain water quality, minimize modifications to existing resources and develop the marina facility to be aesthetically compatible with the area will serve to preserve the aesthetic appear of the location.

Public Access

Public access to navigable waters is a concern of permitting agencies when reviewing marina permit applications. Designs that incorporate provisions for public access through providing boat ramps, parks or other public recreational facilities will be a positive factor.

Summary

Addressing potential impacts from the development and operation of marinas necessitates a concise and current knowledge of biological interactions, water chemistry, hydrology, geology, engineering practices and the economics of the situation. This section has focused on the primary environmental impacts associated with development and operation of marinas in coastal waters by means of reviewing potential impacts and ecosystem perturbations and examining documented physical, chemical, and biological responses to these impacts. Assessment of these impacts may be carried out on multiple levels, each varying in terms of cost and applicability. Responsibility for performing the impact assessment can also vary from decision-making agencies to the developer.

Upon completion of the preliminary marina review, the project can then be evaluated in reference to the specific goals, objectives and policy statements of the St. John's County Comprehensive Plan and in reference to the St. John's County Land Development Code.

If the project is considered compatible with St. John's County requirements, the prospective developer should review the county design, construction and performance standards and hurricane evacuation plan requirements which will be subject to review prior to project construction. The design, construction and performance standard and Hurricane Evacuation Plan requirements are presented in the following sections.

6.4 Design, Construction and Performance Standards

Standards for marina design and construction are presented in this section.

- 1) To the extent feasible marinas shall be located in areas where maximum physical advantage exists and where the least initial and maintenance dredging will be required.
- 2) Marinas should avoid or minimize the disruption of currents. Dead-end or deep canals without adequate circulation or tidal flushing will not be permitted unless it can be determined that water quality will not be adversely affected.
- 3) Open dockage extending to deep water is usually preferable to excavation for boat basins, and it must be considered as an alternative to dredging and bulkheading for marinas.
- 4) Turning basins and navigation channels shall be designed to prevent long-term degradation of water quality. In areas where there is poor water circulation, the depth of boat basins and access canals should not exceed that of the receiving body of water to protect water quality.
- 5) Marina proposals shall include facilities for the proper handling of petroleum products, sewage, litter, waste and other refuse.
- 6) Marina facilities shall only be located in or near areas with good circulation, flushing, and adequate water depths.
- 7) The location of new facilities and expansion of existing facilities shall consider the use of upland dry storage as an alternative to multiple wet slip docking, where permitted by St. John's County land use and zoning regulations.
- 8) Dredging and filling in wetlands or open water in order to accommodate uses which are not water-dependent is strongly discouraged. Exceptions may be granted in cases shown to be overwhelmingly in the public interest.
- 9) Cumulative effects of several marinas and/or boat ramps in one area shall be considered in the review of proposed marina projects.
- 10) All new expanded marinas may be required to provide adequate capacity to handle sewage, either by means of onsite pump out and treatment facilities or connection to a treatment plant. Applicants shall document the availability and capacity of any required sewage facilities to handle the anticipated volume of wastes. All marinas with fueling facilities may be required to provide pump out facilities at each fuel dock. Marinas which serve live-aboards or overnight transient traffic may be required to provide direct connection to central sewage collection system at every live-aboard and transient slip.
- 11) All applicants shall provide documentation of their capability to respond as rapidly and effectively as possible to contain any spills of petroleum or other hazardous materials. Documentation shall be in the form of a spill contingency plan which includes a list of clean-up equipment and where it will be stored, fuel pump operation and emergency shutdown procedures, spill containment and removal procedures, and the description of the training which will be provided to marina personnel who will operate the pumps and deploy clean up equipment.
- 12) If required, new and expanded marinas shall provide a demonstration of compliance with State Water Quality Standards by maintaining a water quality

monitoring program by the Florida Department of Environmental Protection (FDEP).

- 13) New marinas shall be located only in areas having adequate depths for ingress and egress with no dredging of productive submerged (vegetated or unvegetated) areas. A minimum water depth of -4 feet mean low water should be required. Greater depth should be required for those facilities designed for or capable of accommodating boats having greater than a three foot draft. These depth requirements should apply to the area between the proposed facility and any natural or other navigation channel, inlet, or deep water. Where necessary, marking of navigational channels may be required.
- 14) All new and expanded marinas shall provide treatment of stormwater runoff from upland areas to the extent necessary to ensure that State Water Quality Standards are met at the point of discharge to Waters of the State. In addition, all requirements of the Water Management Districts and the Florida Department of Environmental Regulation must be met.
- 15) Boat maintenance activities in new or expanded marina sites shall be situated in order to reduce contamination of waterbodies by toxic substances common to boat maintenance. Runoff from boat maintenance activities shall be collected and treated prior to discharge.
- 16) New marina facilities shall be designed to maximize water circulation, and should not adversely affect existing circulation patterns. Improvement of circulation should be a preferred consideration when expanding or upgrading existing facilities. However, any buffer zone established by FDAC's Shellfish Environmental Assessment Section shall be maintained.
- 17) Sewage pump-out service may be required in certain instances. Operation of all pump-out equipment shall be limited to trained personnel.
- 18) In the event marina fueling facilities are planned, the developer shall provide a fuel management spill contingency plan to the County in consultation with the St. Johns River Water Management District and the Department of Environmental Regulation. The plan shall describe the methods of fuel storage, personnel training, methods to be used to dispense fuel, and all the procedures, methods and materials to be used in the event of a spill.
- 19) Appropriate hydrographic analysis shall be undertaken to determine criteria for design and magnitude of the facility necessary to meet state water quality standards. No facility is to be constructed which would result in degradation of water quality below state standards. Proposed marinas will demonstrate adequate flushing, to prevent the accumulation of pollutants.
- 20) Docking facilities shall only be approved which require minimal or no dredging and/or filling to provide access by canal, channel, or road. This restriction shall also apply to widening and/or deepening any existing canal or channel, but not to regular maintenance dredging and filling to meet depth standards of existing canals or channels. In the event that dredging is required, the mooring areas and the navigation access channels shall not be dredged to depths greater than those necessary to prevent prop dredging. Any required dredging shall utilize appropriate construction techniques and materials to comply with state water quality standards (e.g., turbidity screens,

hydraulic dredges, properly sized and isolated spoil deposition area to control spoil dewatering).

- 21) The siting of marina facilities shall take into account the ability of boat traffic to avoid marine seagrass beds or other aquatic resources in the surrounding area.
- 22) The siting of new facilities within an aquatic preserve shall be secondary to the expansion of existing facilities when such expansion is consistent with other standards. Impacts to the fish and wildlife in protected areas may restrict marina development. A proposed marina near a protected area may require mitigative measures in order to obtain a permit. These measures may include design modifications, seasonal construction scheduling or seasonal modifications in operation activities to ensure the avoidance of adverse impacts. According to FDEP, marinas shall not be sited within State designated manatee sanctuaries.
- 23) Marinas shall not be sited within state designated manatee sanctuaries.
- 24) In any areas with known manatee concentrations, manatee warning / notice and/or speed limit signs shall be erected at the marina and/or ingress and egress channels, according to Florida Marine patrol specifications.
- 25) Spoil disposal within an aquatic preserve shall be strongly discouraged and may be approved only where the applicant has demonstrated that there is no other reasonable alternative and that the spoiling activity may be beneficial to, or at a minimum, not harmful to the quality and utility of the preserve.
- 26) In reviewing applications for new or expanded docking facilities, ways to improve, mitigate, or restore adverse environmental impacts caused by previous activities shall be explored. This may include shallowing dredged areas, restoring wetland or submerged vegetation, or making navigational channels. Such mitigation or restoration may be required as a condition of approval for new, renewed, or expanded facilities.
- 27) Immediate access (ingress and egress) points shall be delineated by channel markers, indicating speed limits, manatee area warnings if applicable, and other applicable regulations.
- 28) Open wet slips shall be preferred to cover wet slips in marina design to reducing shading of waterbodies which results in lowered biological productivity.
- 29) Marinas shall not be permitted in areas which have received the highest level of protection. These areas can include, but are not limited to, manatee sanctuaries, feeding areas or areas which have been identified in FDEP or USFWS manatee recovery plans.
- 30) Marinas proposed for the following resource areas shall conform to the rules for commercial / private docking facilities as specified in the F.A.C.:
 - a. Aquatic Preserves
 - b. Outstanding Florida Waters
 - c. Class II Waters
 - d. Manatee Sanctuaries or Critical Manatee Habitats
 - e. Marine Sanctuaries

- 31) Marina operators shall be required to undertake the following manatee protection measures in areas of manatee visitation:
 - a. Implement and maintain a manatee public awareness program (in consultation with FDEP) which will include the posting of signs to advise boat users that manatees are an endangered species which frequently use the waters of the St. Johns River and ICW and the provision of manatee literature at conspicuous locations.
 - b. Declare the waters in and around the marina as a no wake zone.
 - c. Install flags or other appropriate means of warning at the entrance channel to warn boaters when manatees are known to be in the area.
- 32) Marina designs should minimize the need for excavation and filling of shoreline areas.
- 33) To the extent feasible marinas should be located in areas that will have the least adverse impact on wetlands, water quality, wildlife and marine resources or other critical habitats.
- 34) Marina design shall incorporate natural wetland vegetative buffers whenever possible near the docking area and in ingress / egress areas for erosion and sediment control, runoff purification, and habitat purposes.
- 35) The following policies shall be considered in marina location and design:
 - a. Adequacy of transportation access from the landward site,
 - b. Adequacy of parking facilities,
 - c. Upland facilities which are compatible with the enhanced recreational boating opportunities.
- 36) Marina / multi-slip facilities shall not be approved for development in areas which are not designated for such use according to the St. Johns County's Comprehensive Plan.
- 37) Marinas proposed in St. Johns County shall demonstrate that they have sufficient upland areas to accommodate all needed utilities and marina support facilities, including parking.
- 38) Marina owners and developers shall prepare and adopt a hurricane preparedness plan addressing evacuation procedures and provisions that will be made for boat owners within the marina basin to assure protection of life and property to the maximum extent feasible. Development and approval of the plan shall be in accordance with the specifications provided by the County Disaster Preparedness Director in consultation with the United States Coast Guard and the FWCC. The plan must be approved by the County's Disaster Preparedness Director prior to occupancy of the facility.

6.4.1 SUMMARY OF A STREAMLINED, SIMPLIFIED INTER-AGENCY PERMITTING AND PLANNING PROCESS

The existing marina permitting system in the State of Florida already affords St. Johns County abundant opportunities to influence the results of the process. Therefore, it is incumbent upon St. Johns County to develop a process to insure that their position is conveyed in a timely and convincing manner to the State and Federal regulatory agencies which have jurisdiction over marina development. Additionally, St. Johns

County and other units of local government, through development and adoption of an appropriate ordinance, may exert regulatory power over proposed marina projects within its jurisdiction.

In Florida, FDEP controls marina development in coastal waters. If FDEP does not issue the Sec. 401 Water Quality Certification as required by the Federal Clean Water Act and the State dredge and fill permit, the Corps cannot issue the requisite Federal permit. Therefore, local governments can exercise significant influence by requiring proposed projects meet standards established by FDEP and the Water Management Districts.

St. Johns County can best manage marina development within its jurisdiction by amending the Land Development Code addressing this issue. As indicated, the FDEP process provides the best avenue for the County to exert its desired control. Other agencies that should be made aware of the County's position on specific projects include the U.S. Army Corps of Engineers and the Department of Community Affairs (during the DRI processing). The development of the County's ordinance and regulations to control marina development is critical to insuring the County's voice is heard in this management process.

SECTION 7.0

CONCLUSIONS AND RECOMMENDATIONS

7.0 CONCLUSIONS AND RECOMMENDATIONS

St. Johns County is one of the most rapidly growing Counties in the State. As the population increases as much as 60% by 2015, the demand for new and expanded water dependent use facilities such as marinas and boat ramps will rise as well. To meet this demand, St. Johns County officials must begin to plan for these requirements immediately. Information provided in this Study report are summarized below, along with recommendations to assist the County.

- In 2000/2001, there were a total of 10,073 registered vessels in St. Johns County. That number is predicted to increase to 15,564 vessels by 2015, an increase of nearly 65%.
- There are currently 1,054 wet slips at marinas located within St. Johns County. Based on current boat registration and population trends, an increase of 575 slips will be needed to keep up with the existing level of availability by 2015.
- There is an anticipated future demand of as many as fourteen (14) new boat ramp lanes (a ramp may have more than one lane) and 718 parking spaces by the year 2015. Much of this demand may be met by expansion and upgrading of existing facilities. Some additional facilities will be required in regions showing future high use.
- Based on current permitting trends, it is estimated that an additional 375 private residential docks will be constructed by 2015, bringing the total from approximately 1200 in 2000 to 1575 in the year 2015.
- There are currently 400 dry boat storage units at marinas located in St. Johns County. Based on current boat registration and population trends, an increase of 218 units will be needed to keep up with the existing level of availability by 2015
- The majority of wet slip holders in St. Johns County marinas are from outside of the County. As the County continues to grow, this relationship should swing back to St. Johns County registered vessels.
- Expansion and new construction potential for boat ramps is shown in Figures 21 through 24. Expansion and new construction potential for marinas is shown in Figures 25 through 28. The potential for each location was based on suitability ratings as well as an evaluation conducted during site visits as part of this study.
- Two areas of the County are particularly in need of new facilities. The northern portion of the Intracoastal Waterway Region (ICW-N1) has lost its only public ramp due to construction of the new Palm Valley Bridge. Establishment of a new replacement ramp is critical in this area.

The northwestern portion of the County (SJR-N) has no launch facilities. Several new residential developments will be coming on line in the near future and will require construction of new facilities. The County should be actively looking for available land to construct a new ramp. There is currently one facility (Amity Inn Anchorage) that the County should investigate purchasing.

- The central portion of the Intracoastal Waterway – North region (ICW-N2) has two locations which may be available for expansion. Oscar’s Fish Camp has an existing ramp which could be expanded by the County. Another option is to seek agreement with St. Augustine Boating Club and combine their ramp with the County’s adjacent Boating Club Road ramp. One large ramp would be more beneficial than two smaller, inefficient ramps. A level “A” ramp in this area would greatly reduce the crowding at Vilano Boat Basin ramp. This sub-region is considered poor for any new construction, so expansion of existing facilities is critical.
- Frank Butler Park in the southern portion of the Intracoastal Waterway (ICW-S) is ideal for expansion. Sufficient land exists for upland areas, and the water access can be easily improved. Expansion of this ramp would greatly alleviate crowding at Vilano Boat Basin and other Ramps.
- Two existing ramps on the St. Johns River are ideal for expansion. Palmo Boat Ramp has sufficient upland areas available to increase parking, and make it more user friendly. Expansion and improvement of Riverdale Park is critical to meet future demands for boat ramps.
- St. Johns County should begin searching for parcels for future development of a ramp facility in the southern portion of the St. Johns River (SJR-S 2 & 3). While the demand in these areas is currently low, future growth will undoubtedly occur.
- The extreme southern portions of the Intracoastal Waterway (ICW-S 2 & 3) are some of the most environmentally sensitive in the County. In addition to Aquatic Preserves and protected waters, these sub-regions are active shell fishing areas and Class II waters. Therefore, these sub-regions are considered Poor for construction of new facilities.
- Care must be taken to utilize the remaining available parcels in the most efficient manner. Areas that meet the rigorous demands for marinas and ramps should be utilized for that purpose almost exclusively since the availability of these parcels is becoming scarce. Purchase of a parcel that meets the requirements for a new ramp, and then using the upland areas for playgrounds and picnic areas instead of trailer parking is not efficient use of the property. While these facilities are as important as boat ramps, they should be constructed on parcels that do not meet the criteria for water dependent uses.

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St. Johns County Water Dependent Use Study
Project Contact List
(no particular order)

The St. Johns County Project Manager for this Study is Vickie Renna. Other contacts for this study are listed below in no particular order.

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Kenneth Berk	FDEP
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Carol Knox	FWCC
Terri Calleson	FWCC
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Jerry Pinto	Jacksonville University
Quentin White	Jacksonville University
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Bill Watkins	SJRWMD
Dean Dobberfuhl	SJRWMD
Kim Morris	SJRWMD
Kris Mundi	SJRWMD
Paul Haydt	SJRWMD
Barbara Sapp	SJRWMD
Joel Stewart	SJRWMD
Ed Carter	SJRWMD
Bill Vansickle	SJRWMD
Judith Saylor	SJRWMD
Jian Di	SJRWMD
Jenny Konwinski	SJRWMD
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John Hendrickson	SJRWMD
Robert Burks	Gecko Latitudes, Inc.
Patrick Hamilton	County Citizen
Ashley Murphy	UF Doctoral Student
John Burns	Cyano Labs

APPENDIX A
SITE FACILITY SUMMARIES

**INDIVIDUAL MARINE FACILITIES INVENTORY & CONDITION CHECKLISTS
SHOULD BE INSERTED HERE**

APPENDIX B

***ZONING CLASSIFICATIONS AND
RESTRICTIONS***

Land Use and Zoning Restrictions for Marinas and Boat Ramps

Further analysis of the St. Johns County 2015 adopted Future Land Use Elements (FLUE) map and goals, objectives and policies indicates that marinas and boat ramps will be allowed in the following land use areas and zoning:

MARINAS:

Designated Land Use Category:

Intensive Commercial
Airport District¹

Zoning Category:

Commercial, Highway and Tourist (CHT)
Airport District (AD)
Commercial Intensive (CI)²
Commercial Rural (CR)²
Industrial, Warehousing (IW)²
Planned Unit Development (PUD)²

BOAT RAMPS:

Designated Land Use Category:

Agricultural-Intensive
Rural Silviculture, Conservation, Parks and Open Space

Notes:

1 – Further Regulated by the Land Development Code's Airport Overlay District

2 – Allowed as a Special Use subject to consistency with the 2015 Future Land Use Elements GOP's and corresponding land use categories of Intensive Commercial and Airport District as shown on the 2015 FLUE map.

**ARTICLE II
ZONING DISTRICTS AND SPECIAL USES
SHOULD BE INSERTED HERE**

APPENDIX C

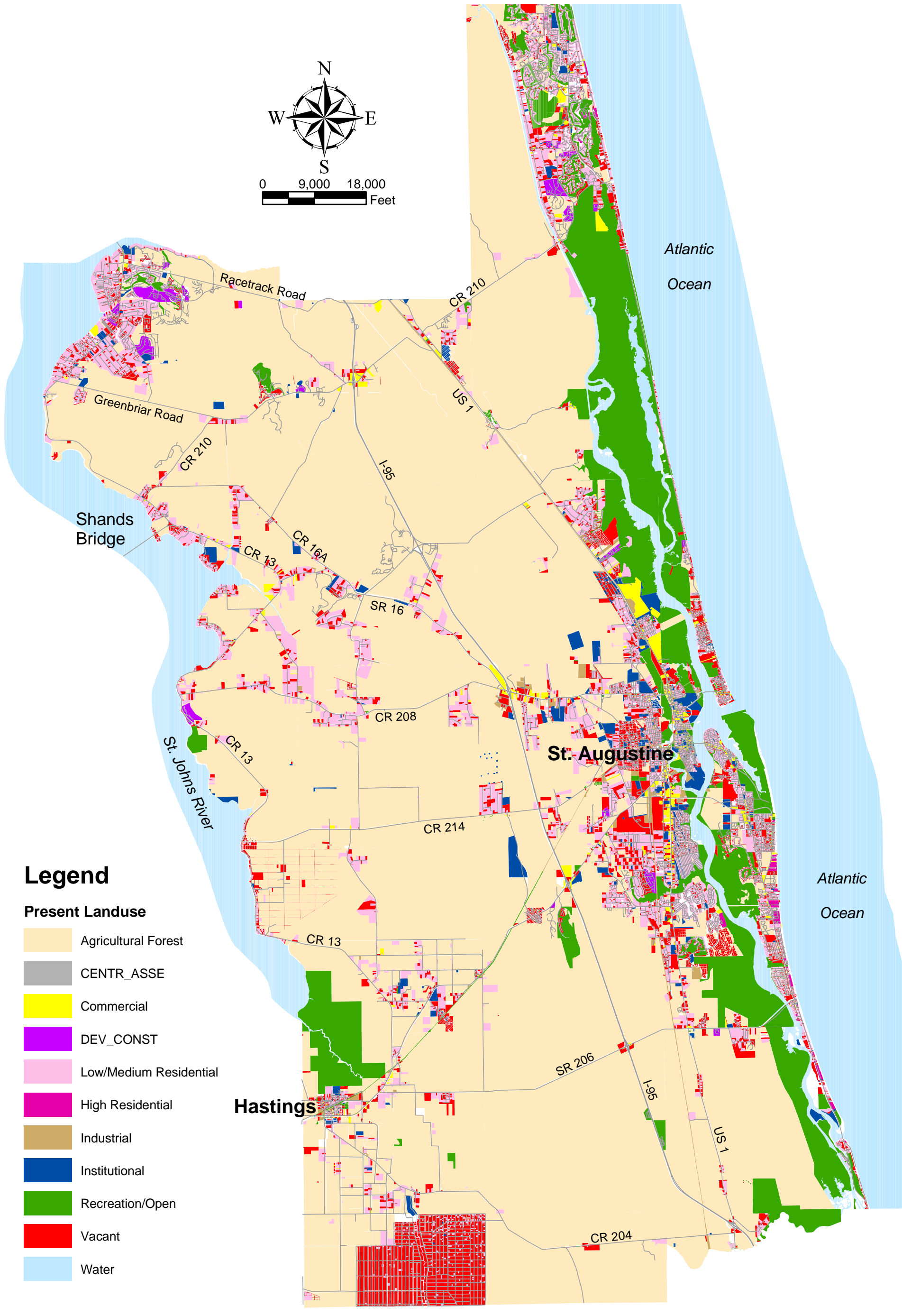
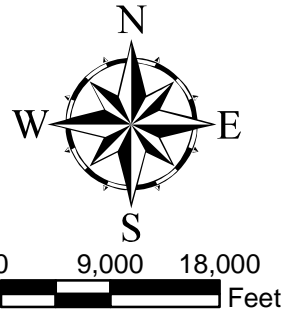
ACRONYMS

List of Acronyms

AP	Aquatic Preserve
CR	County Road
FDACS	Florida Department of Agriculture and Consumer Services
FDCA	Florida Department of Community Affairs
FDEP	Florida Department of Environmental Protection
FIND	Florida Inland Navigation District
FMRI	Florida Marine Research Institute
FWCC	Florida Wildlife Conservation Commission
ICW	Intracoastal Waterway
LSJRB	Lower St. Johns River Basin
NERR	National Estuarine Research Resource
OFW	Outstanding Florida Waterway
SJC	St. Johns County
SJR	St. Johns River
SJRWMD	St. Johns River Water Management District
SR	State Road
SWIM	Surface Water Improvement (Program)
UF	University of Florida
USACE	U. S. Army Corps of Engineers

APPENDIX D

FIGURES



Legend












- Present Landuse**
-  Agricultural Forest
 -  CENTR_ASSE
 -  Commercial
 -  DEV_CONST
 -  Low/Medium Residential
 -  High Residential
 -  Industrial
 -  Institutional
 -  Recreation/Open
 -  Vacant
 -  Water

Figure 1
Existing Land Uses (1996)
St. Johns County

Source: St. Johns County, Geographic Information System Data



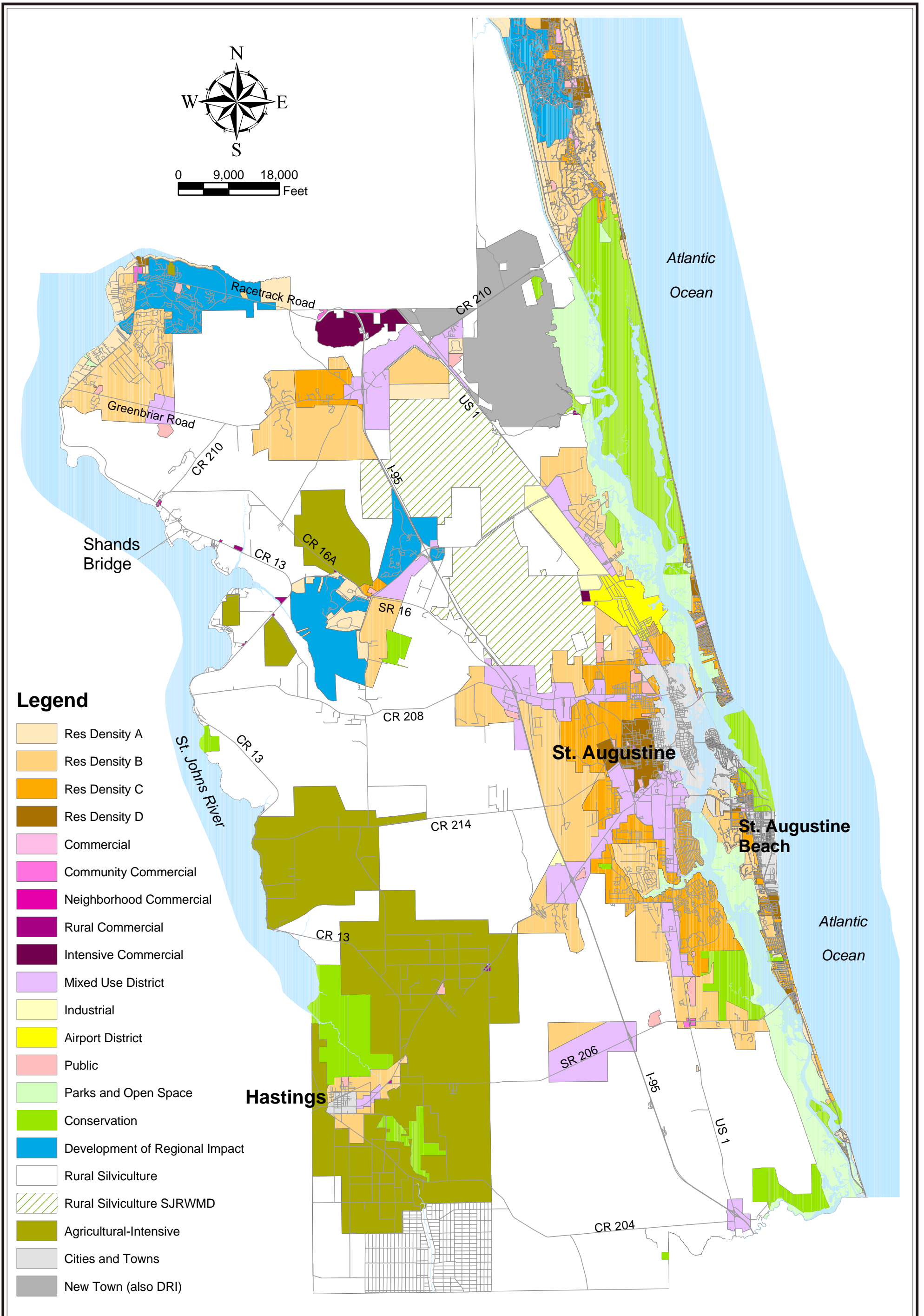
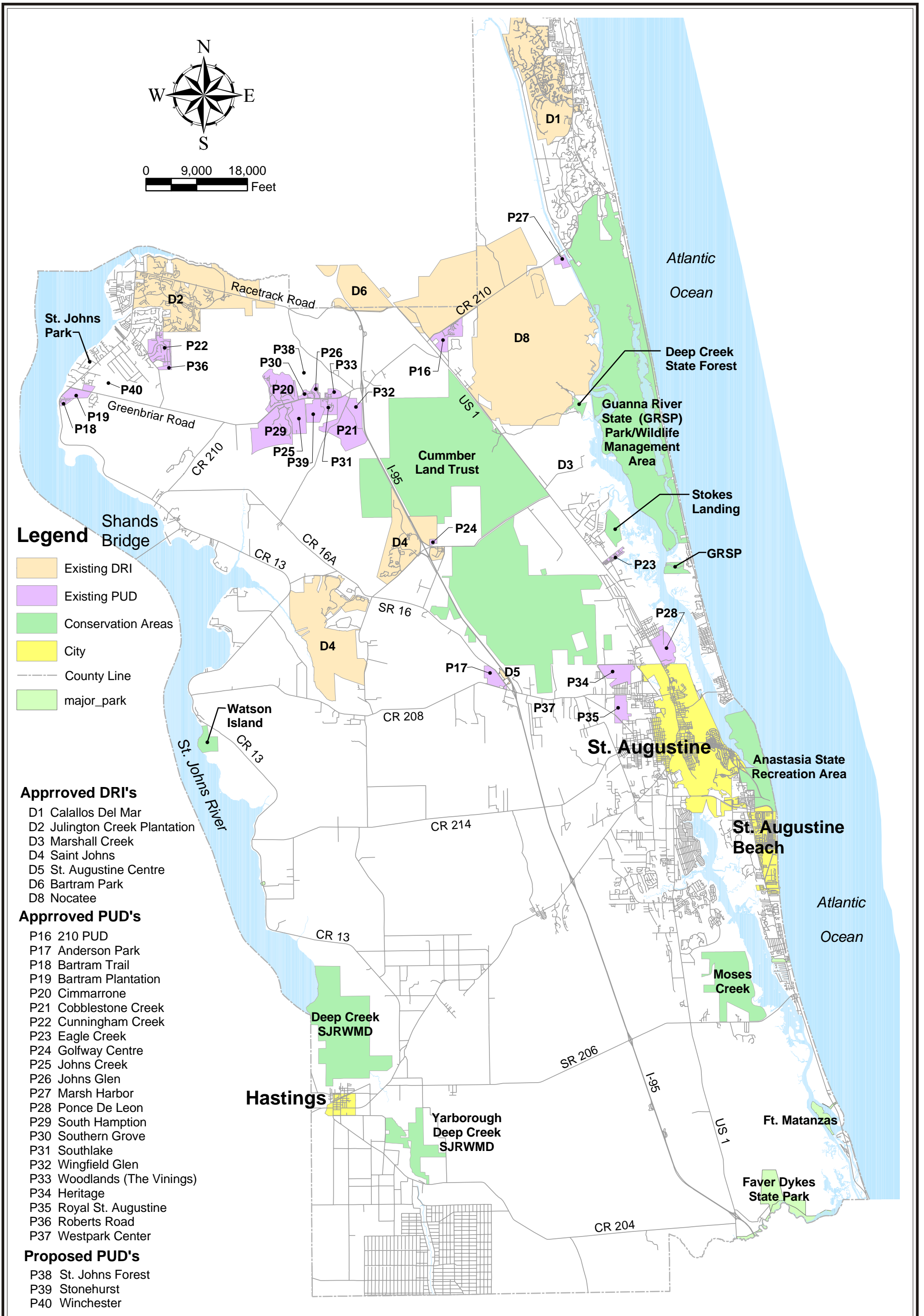


Figure 2
2015 Future Land Use Map
St. Johns County

Source: St. Johns County, Geographic Information System Data





Legend

- Existing DRI
- Existing PUD
- Conservation Areas
- City
- County Line
- major_park

Approved DRI's

- D1 Calallos Del Mar
- D2 Julington Creek Plantation
- D3 Marshall Creek
- D4 Saint Johns
- D5 St. Augustine Centre
- D6 Bartram Park
- D8 Nocatee

Approved PUD's

- P16 210 PUD
- P17 Anderson Park
- P18 Bartram Trail
- P19 Bartram Plantation
- P20 Cimarrone
- P21 Cobblestone Creek
- P22 Cunningham Creek
- P23 Eagle Creek
- P24 Golfway Centre
- P25 Johns Creek
- P26 Johns Glen
- P27 Marsh Harbor
- P28 Ponce De Leon
- P29 South Hampton
- P30 Southern Grove
- P31 Southlake
- P32 Wingfield Glen
- P33 Woodlands (The Vinings)
- P34 Heritage
- P35 Royal St. Augustine
- P36 Roberts Road
- P37 Westpark Center

Proposed PUD's

- P38 St. Johns Forest
- P39 Stonehurst
- P40 Winchester

Figure 3
Planned Major Developments in St. Johns County

Source: St. Johns County, Geographic Information System Data



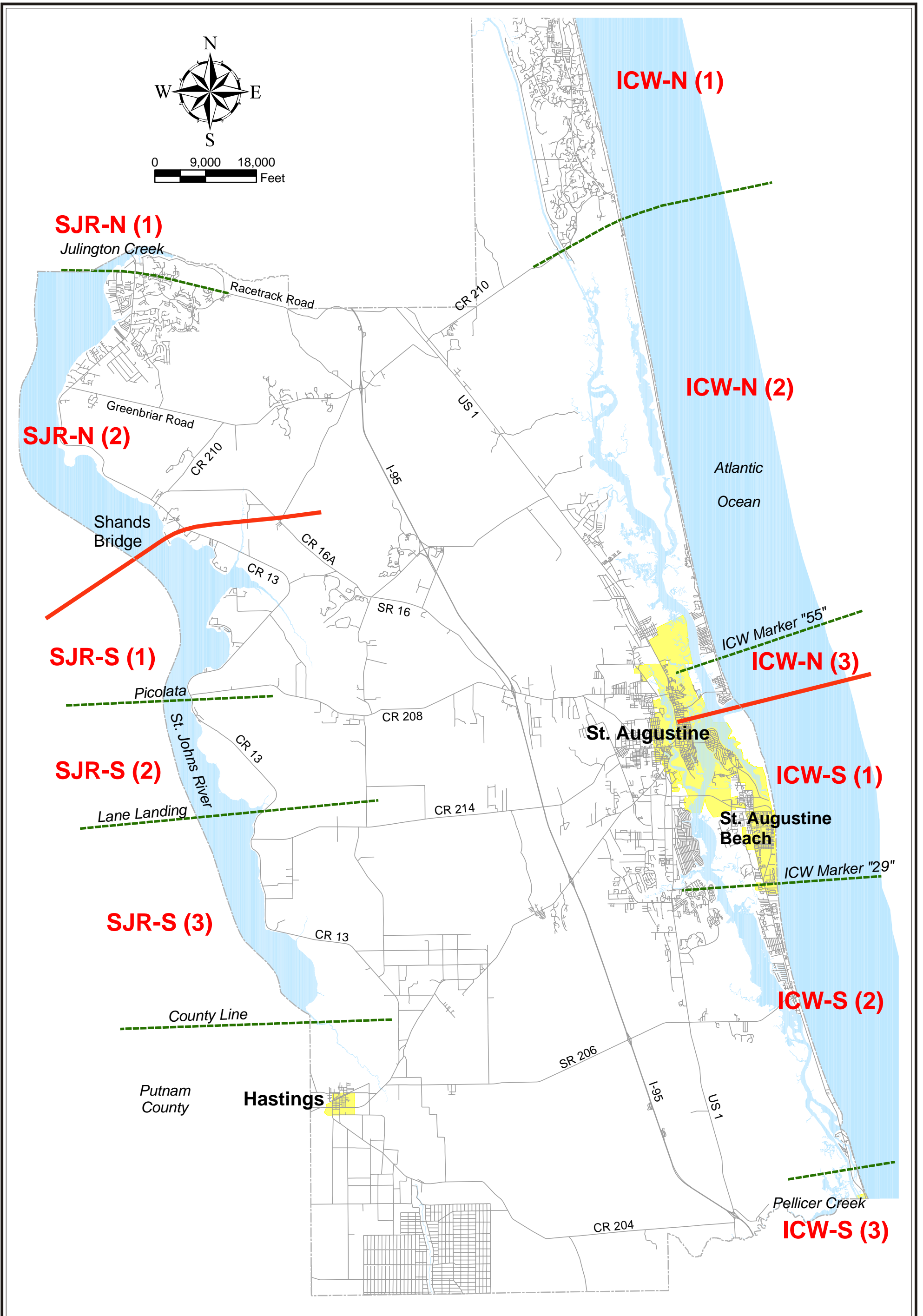


Figure 4
Regional and Sub-Regional Aquatic Delineations
St. Johns County

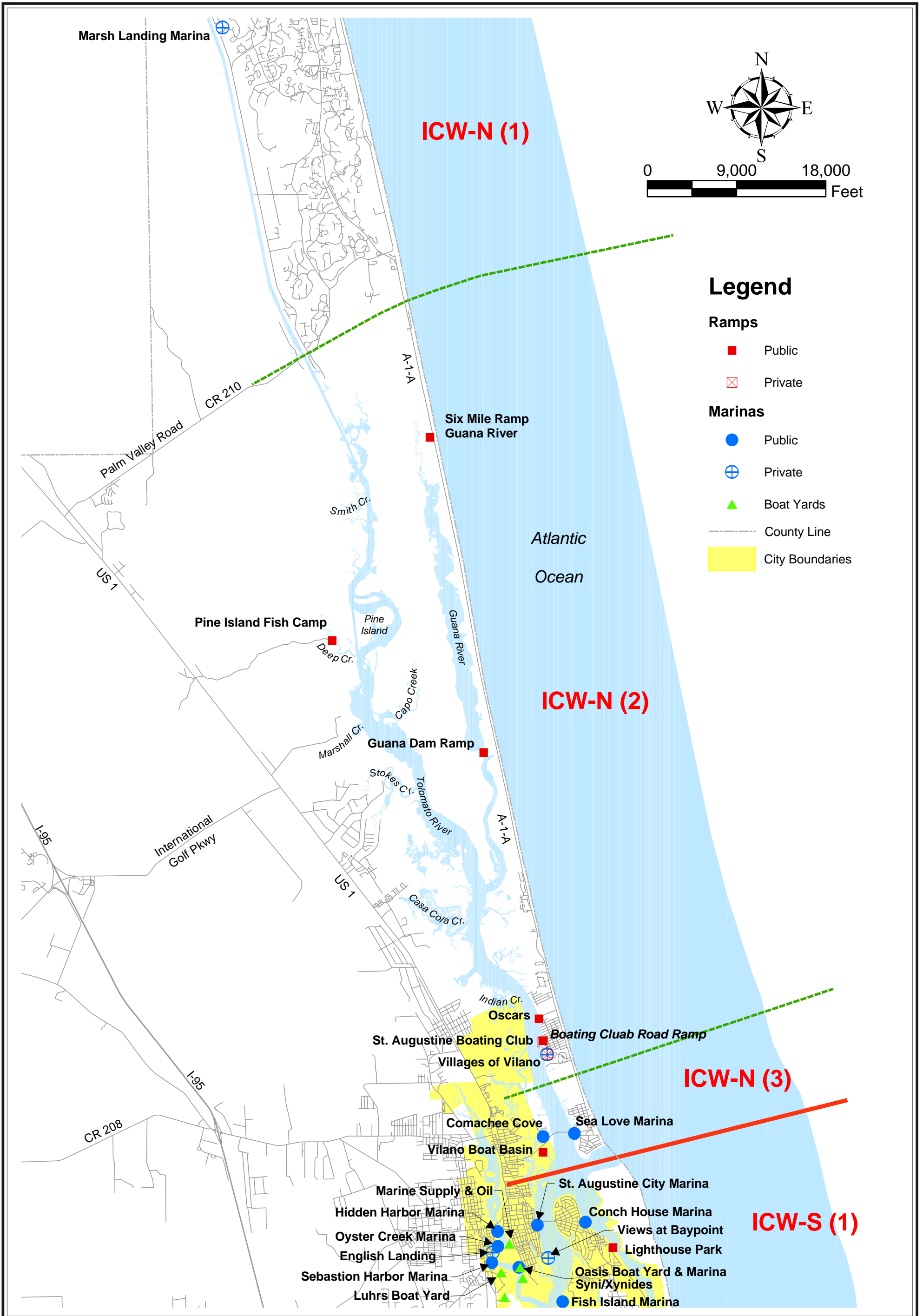


Figure 5
Existing Facilities
Intracoastal Waterway - North

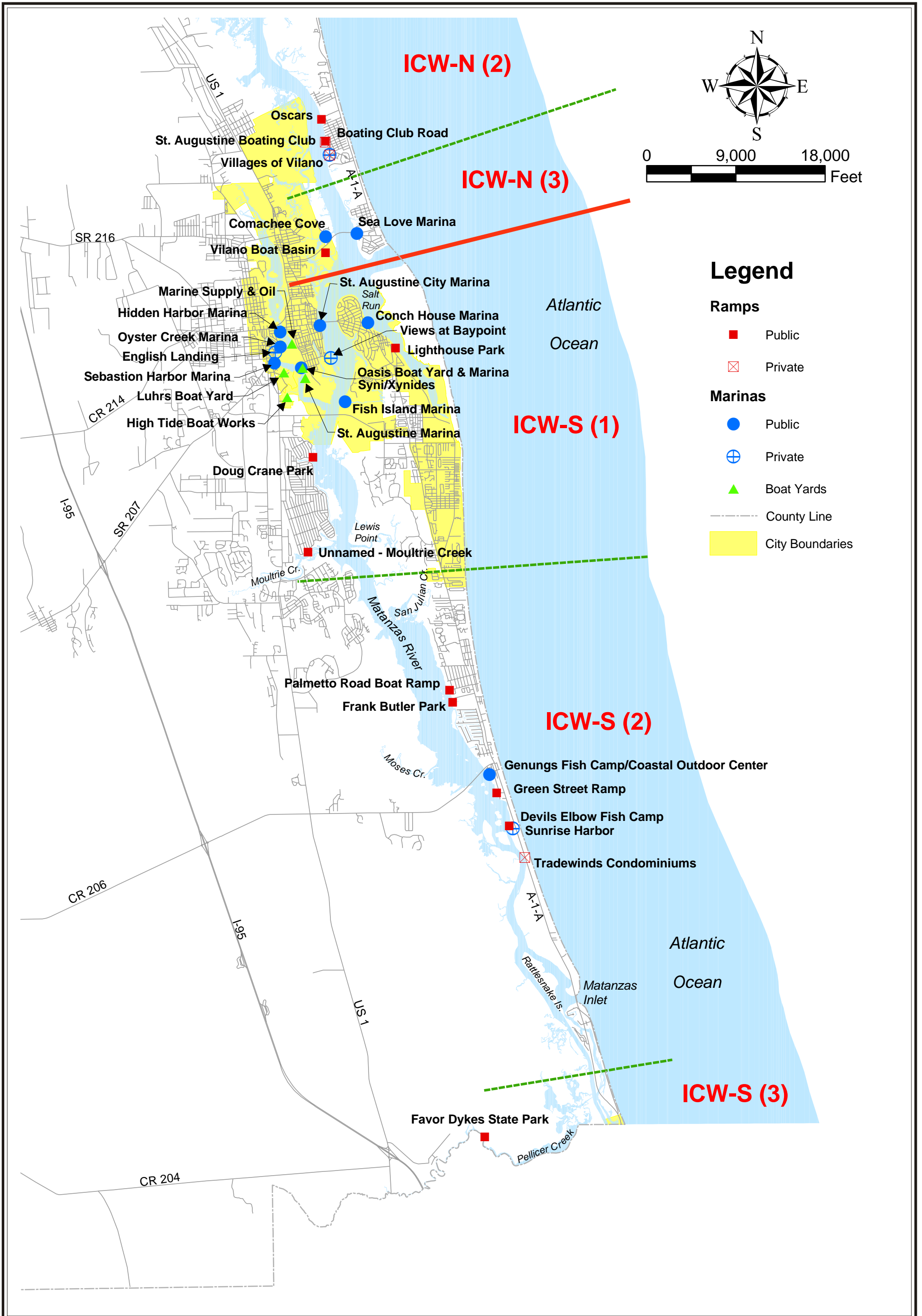
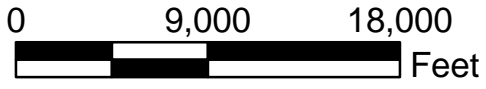
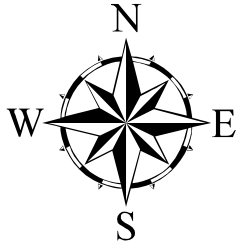


Figure 6
Existing Facilities
Intracoastal Waterway - South



Legend

Ramps

- Public (Red square)
- Private (Red square with X)

Marinas

- Public (Blue circle)
- Private (Blue circle with X)
- Boat Yards (Green triangle)
- City Boundaries (Yellow fill)
- County Line (Dashed line)

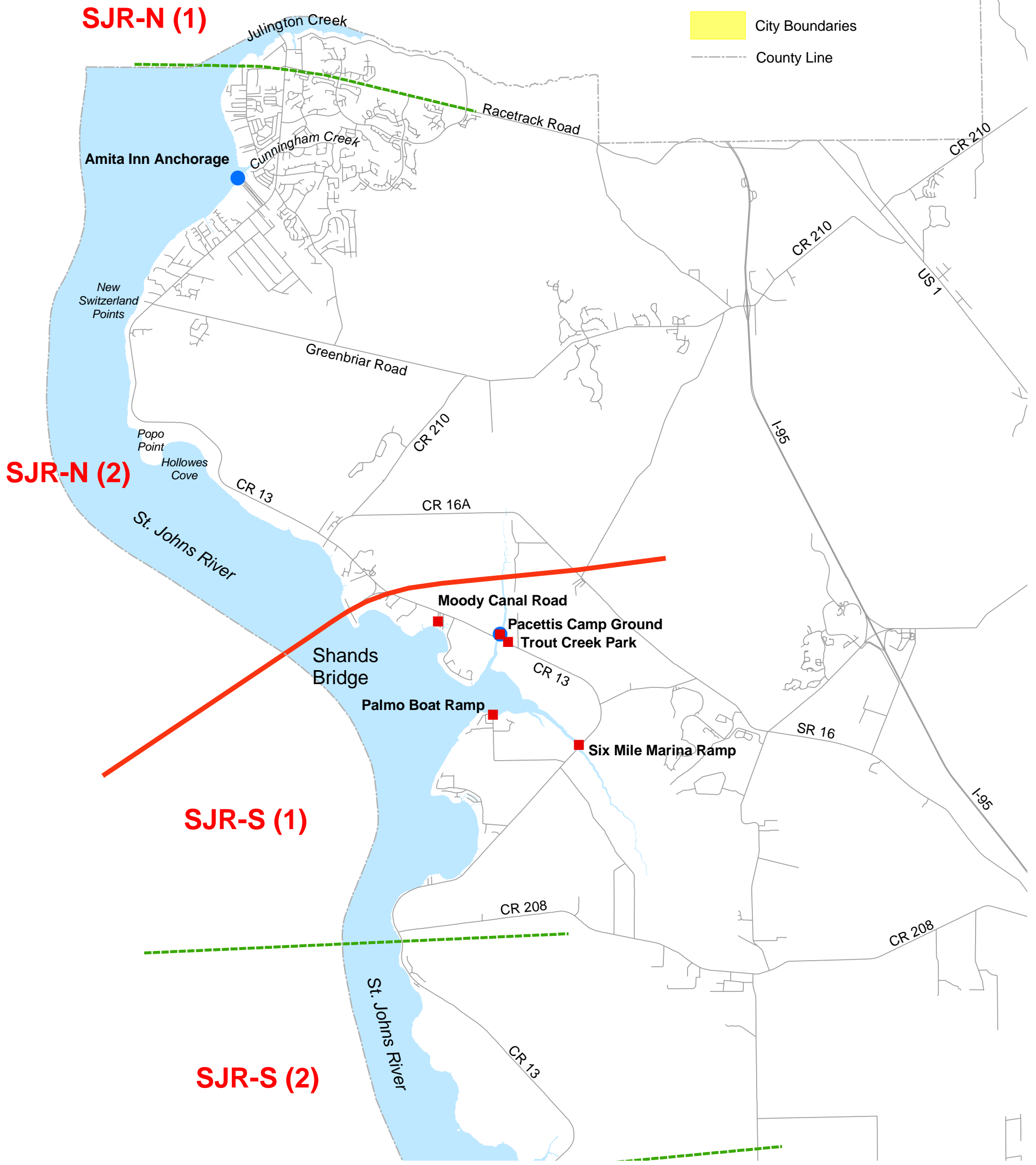
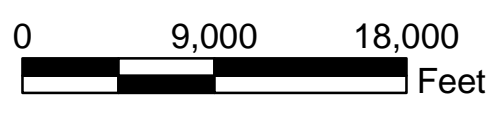
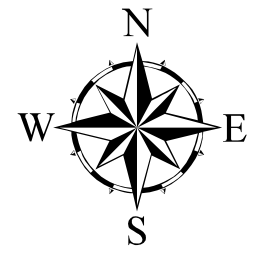
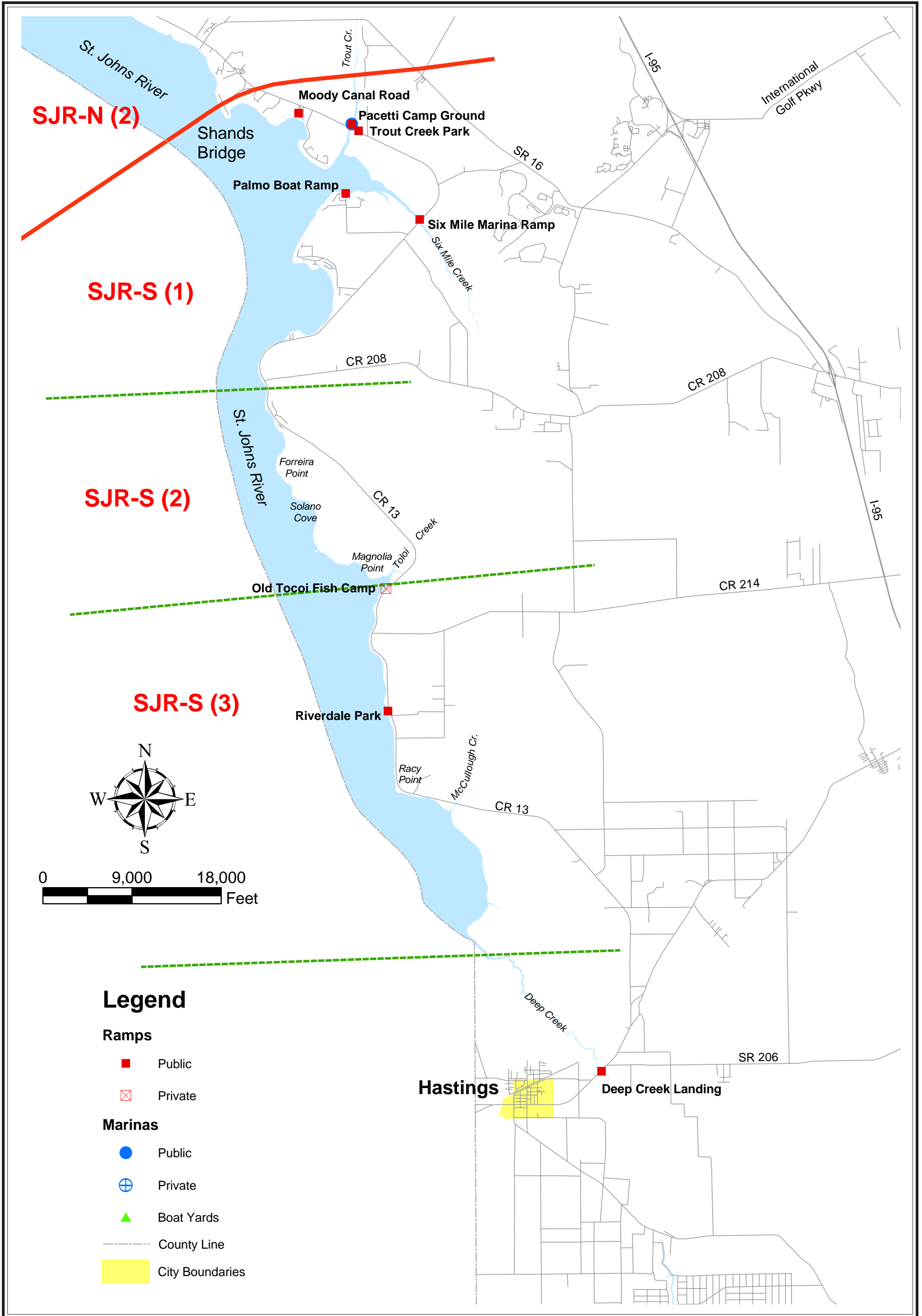


Figure 7
Existing Facilities
St. Johns River - North





Legend

- Ramps**
- Public
 - ⊠ Private
- Marinas**
- Public
 - ⊕ Private
 - ▲ Boat Yards
 - - - County Line
 - City Boundaries

Figure 8
Existing Facilities
St. Johns River - South



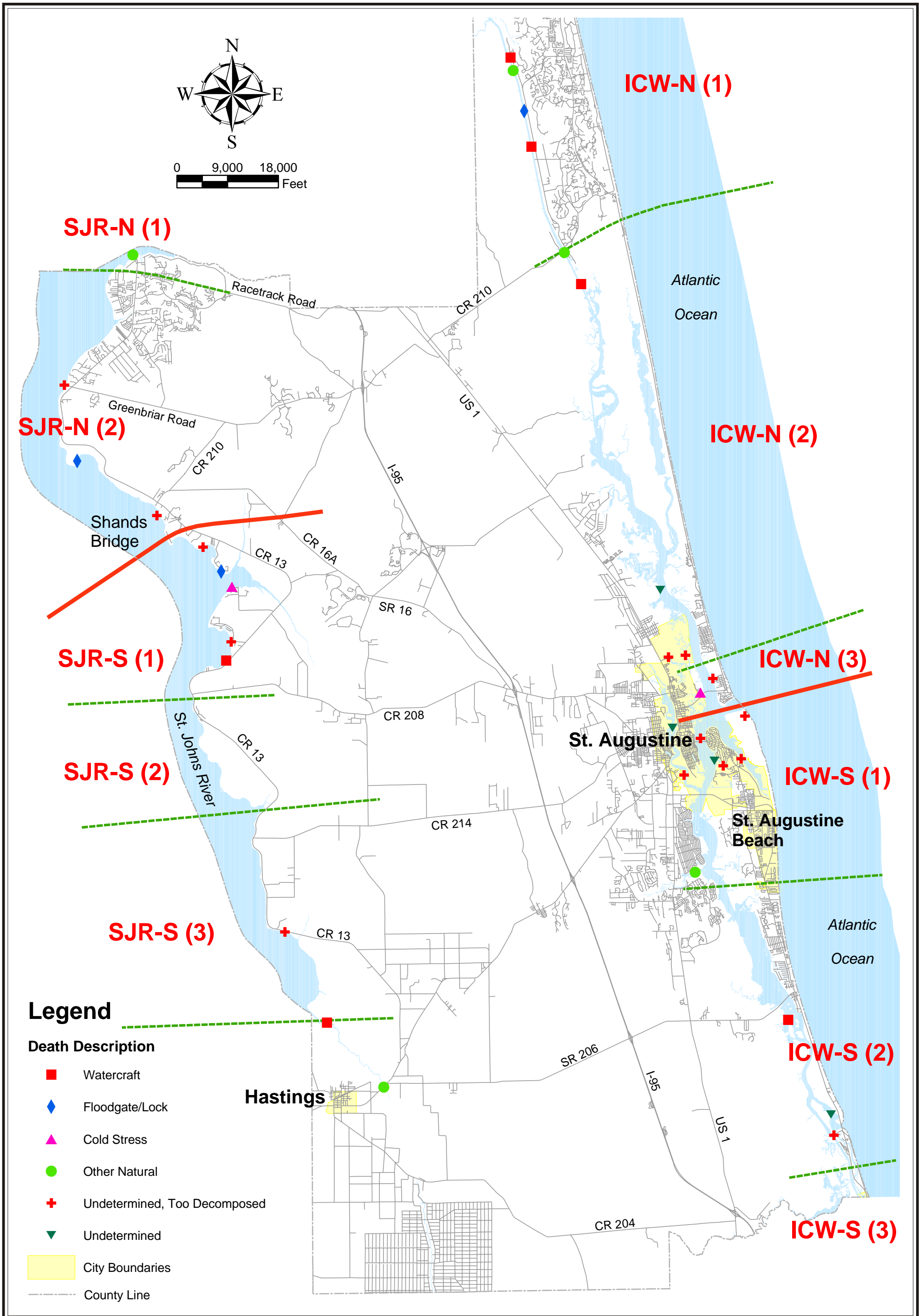


Figure 9
Manatee Mortality Map
St. Johns County

Source: Florida Fish and Wildlife Conservation Commission
Florida Marine Research Institute.
2000 Atlas of Marine Resources CDROM



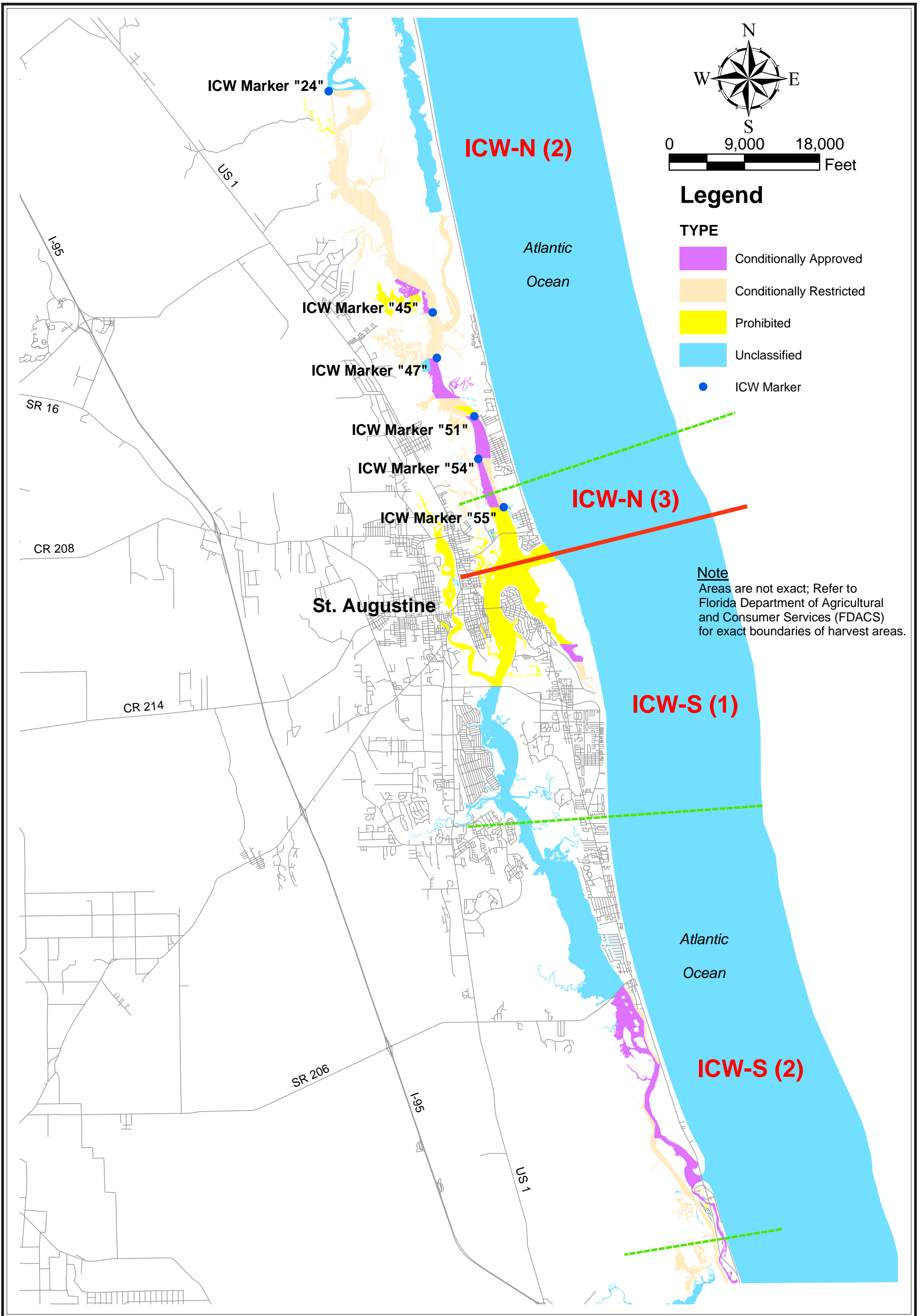


Figure 10
Shellfish Harvesting Areas
St. Johns County

Source: Florida Department of Agriculture and Consumer Services. Shellfish Harvesting Area Classification Map #92/Map #88



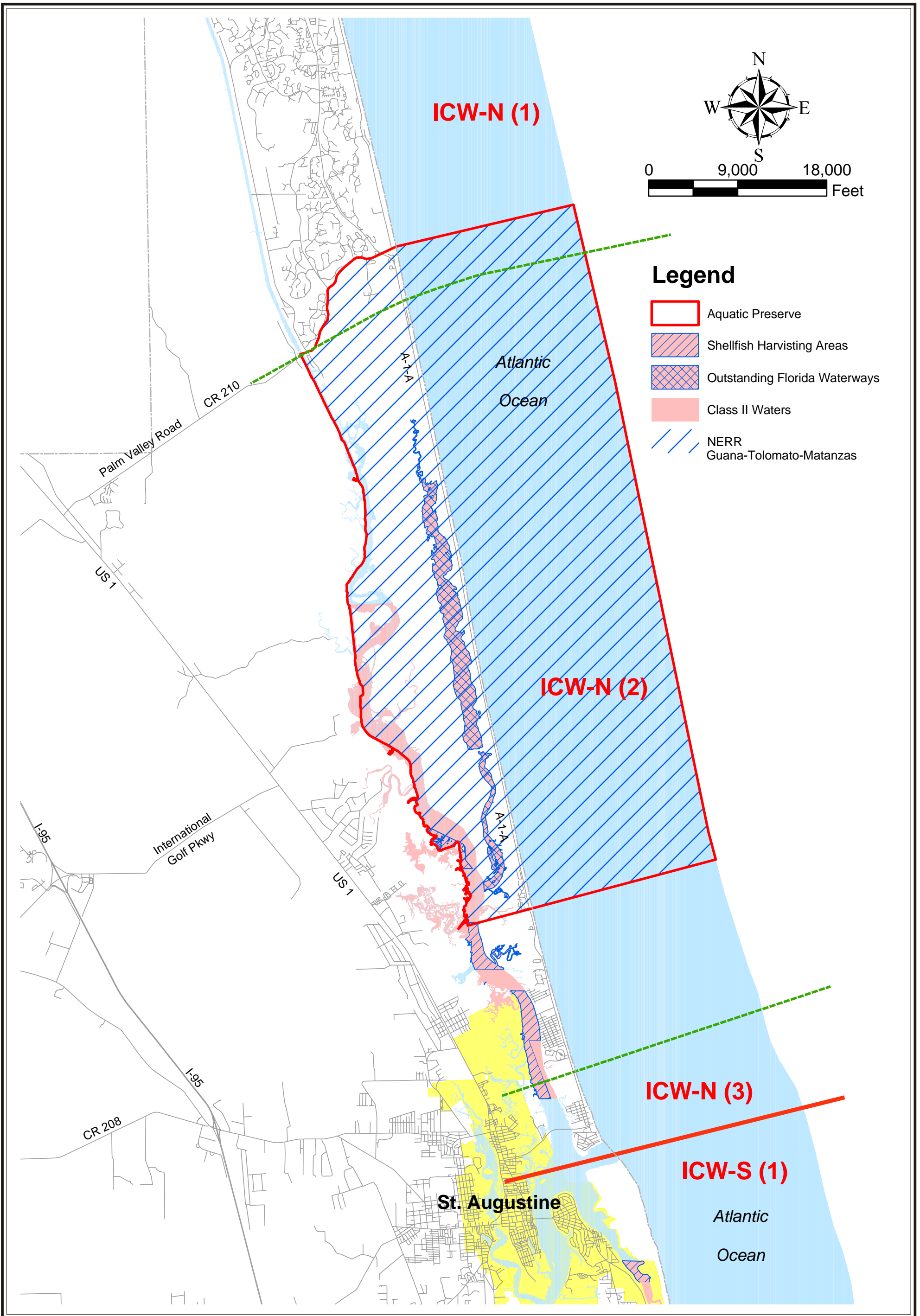


Figure 11
Water body Classifications, Aquatic Preserves, and
Outstanding Florida Waterways
Intracoastal Waterway - North

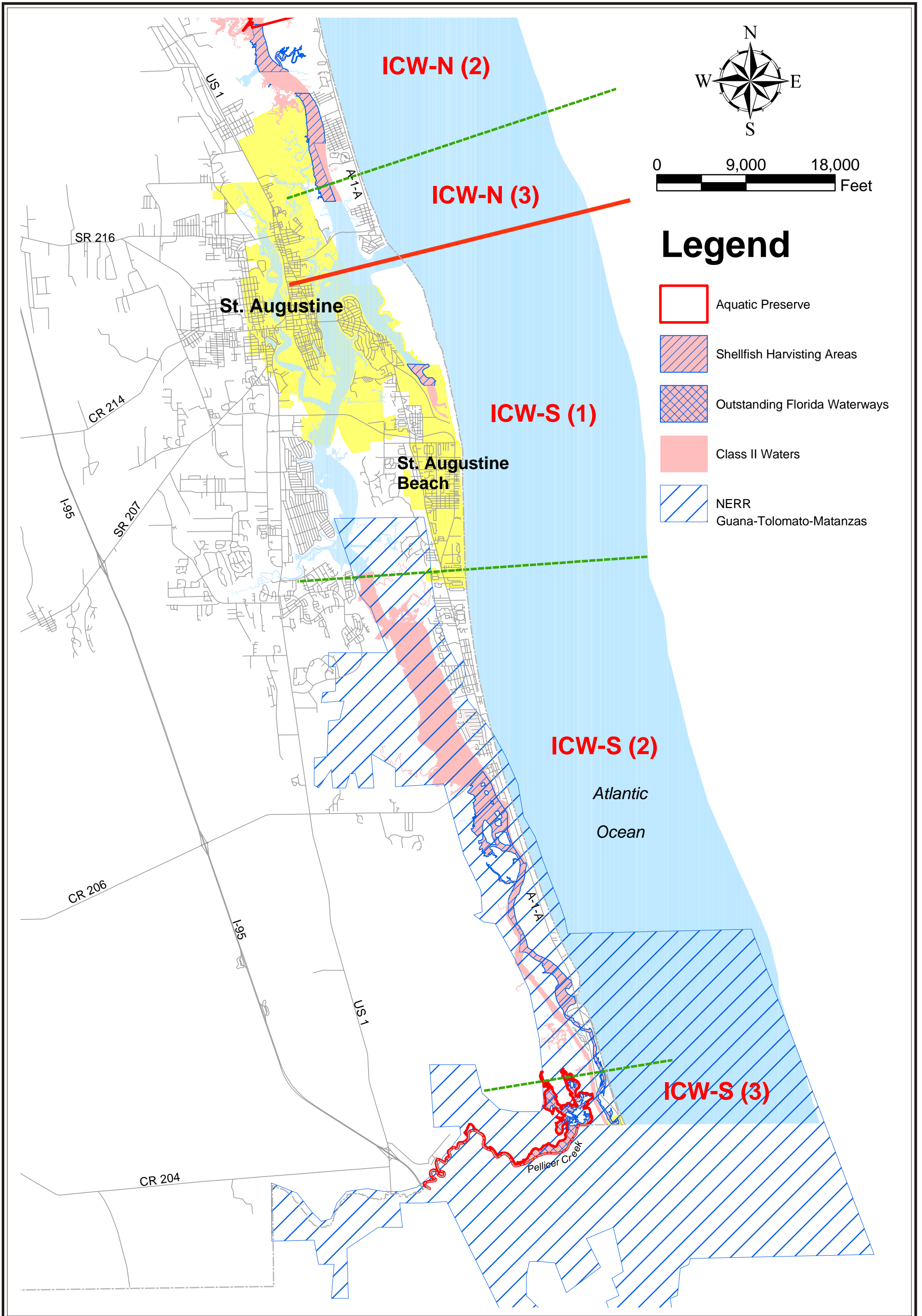


Figure 12
Water body Classifications, Aquatic Preserves, and
Outstanding Florida Waterways
Intracoastal Waterway - South

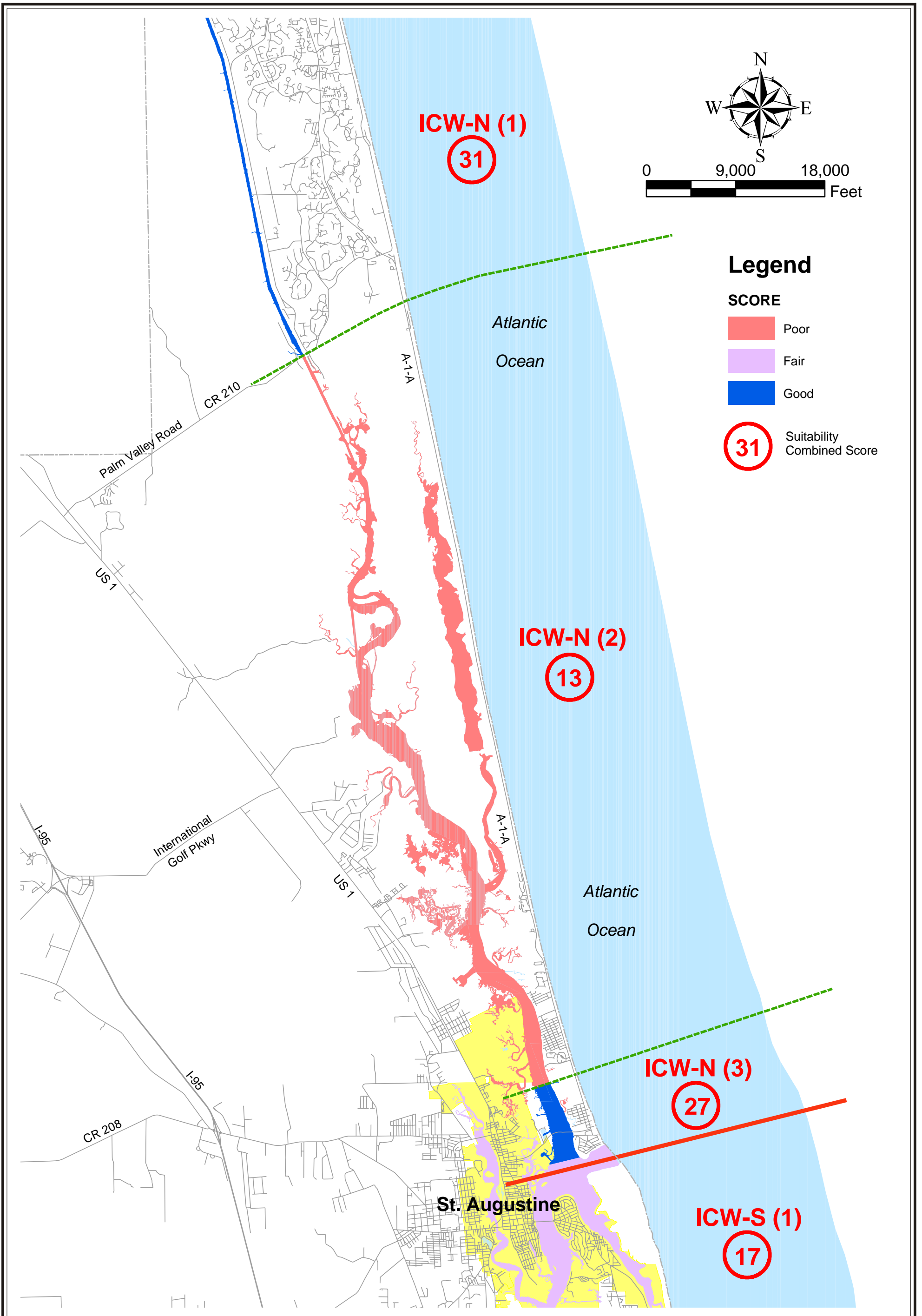


Figure 13
Environmental and Developmental Suitability Scores
Intracoastal Waterway - North

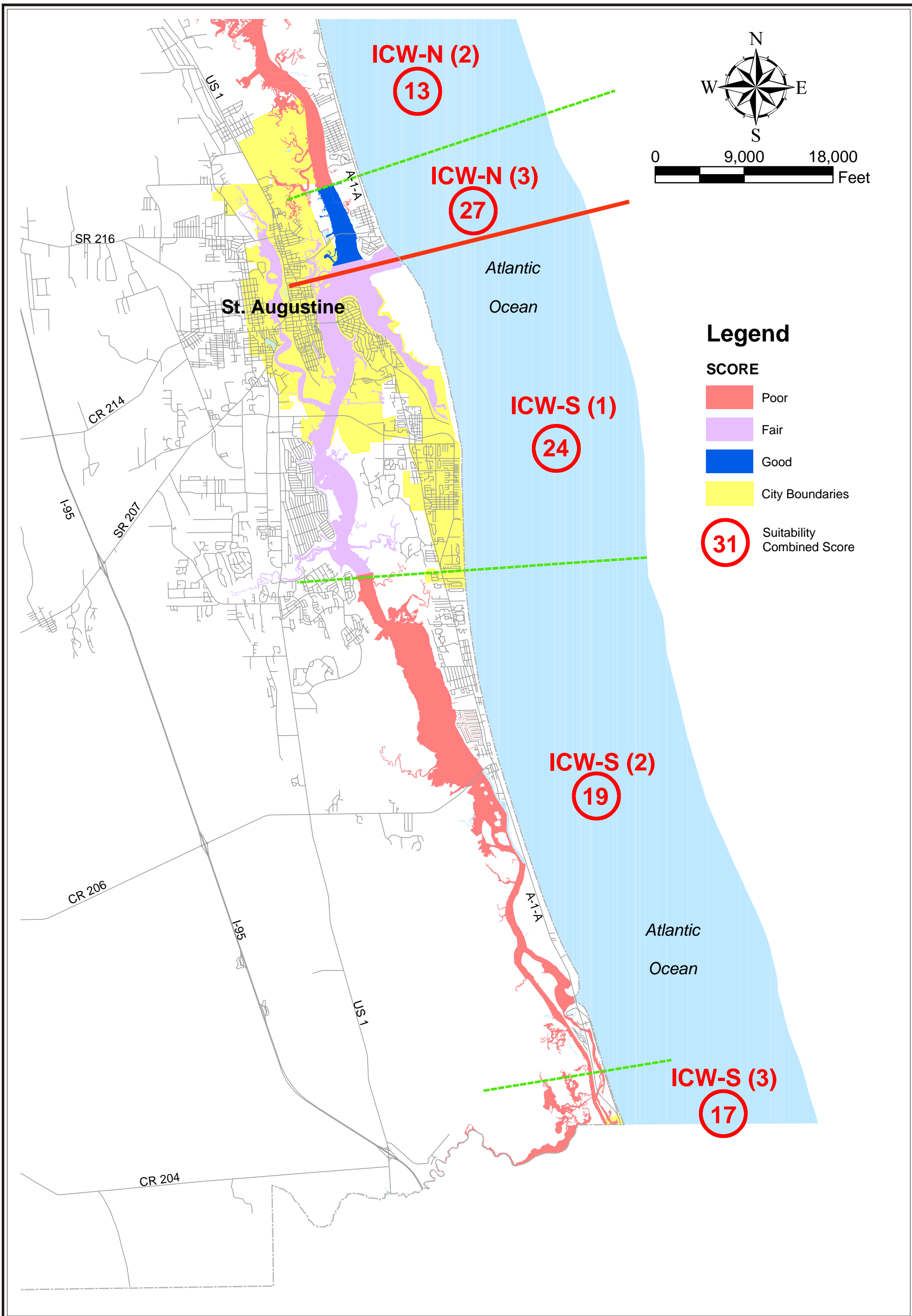


Figure 14
Environmental and Developmental Suitability Scores
Intracoastal Waterway - South

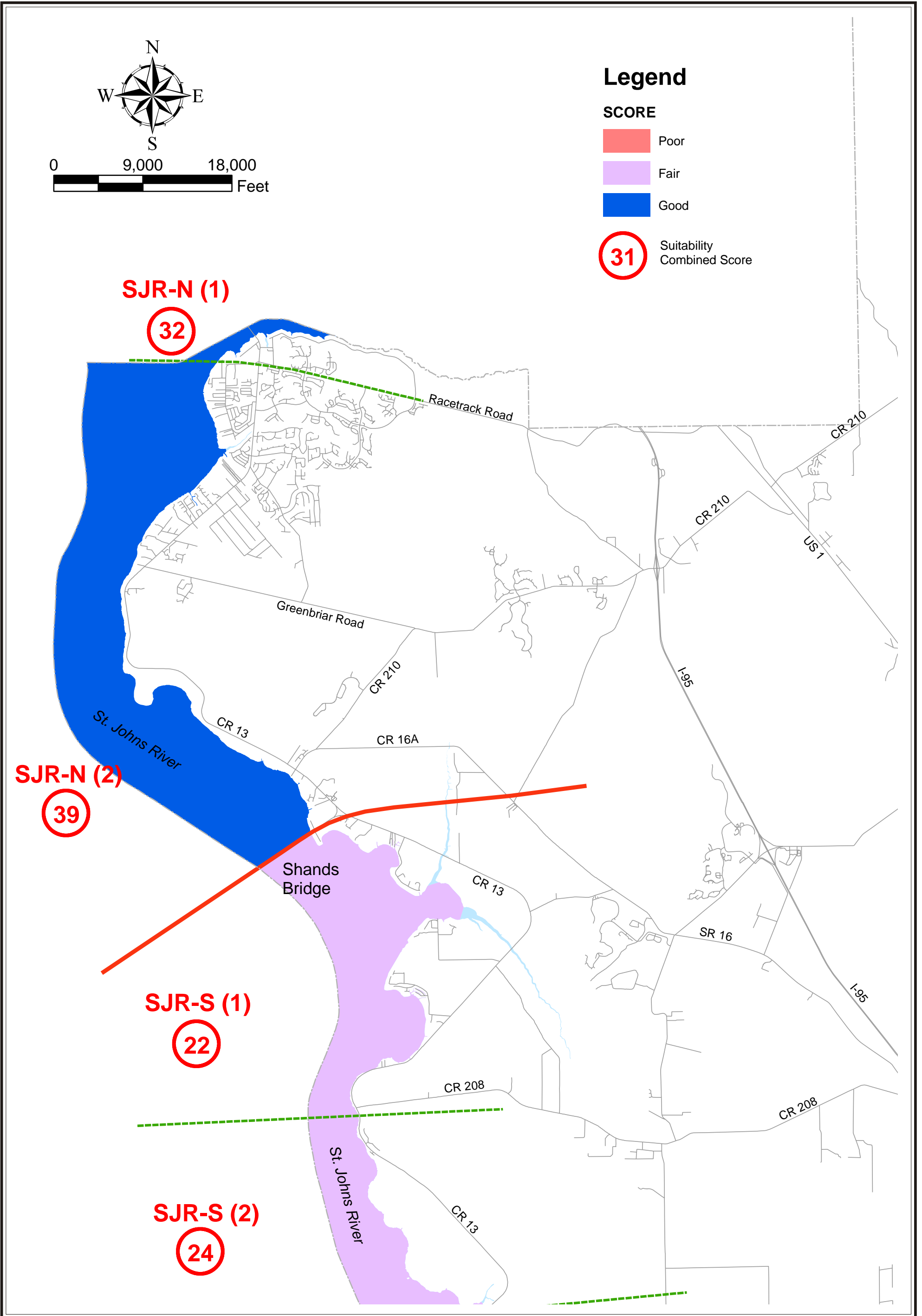


Figure 15
Environmental and Developmental Suitability Scores
St. Johns River - North

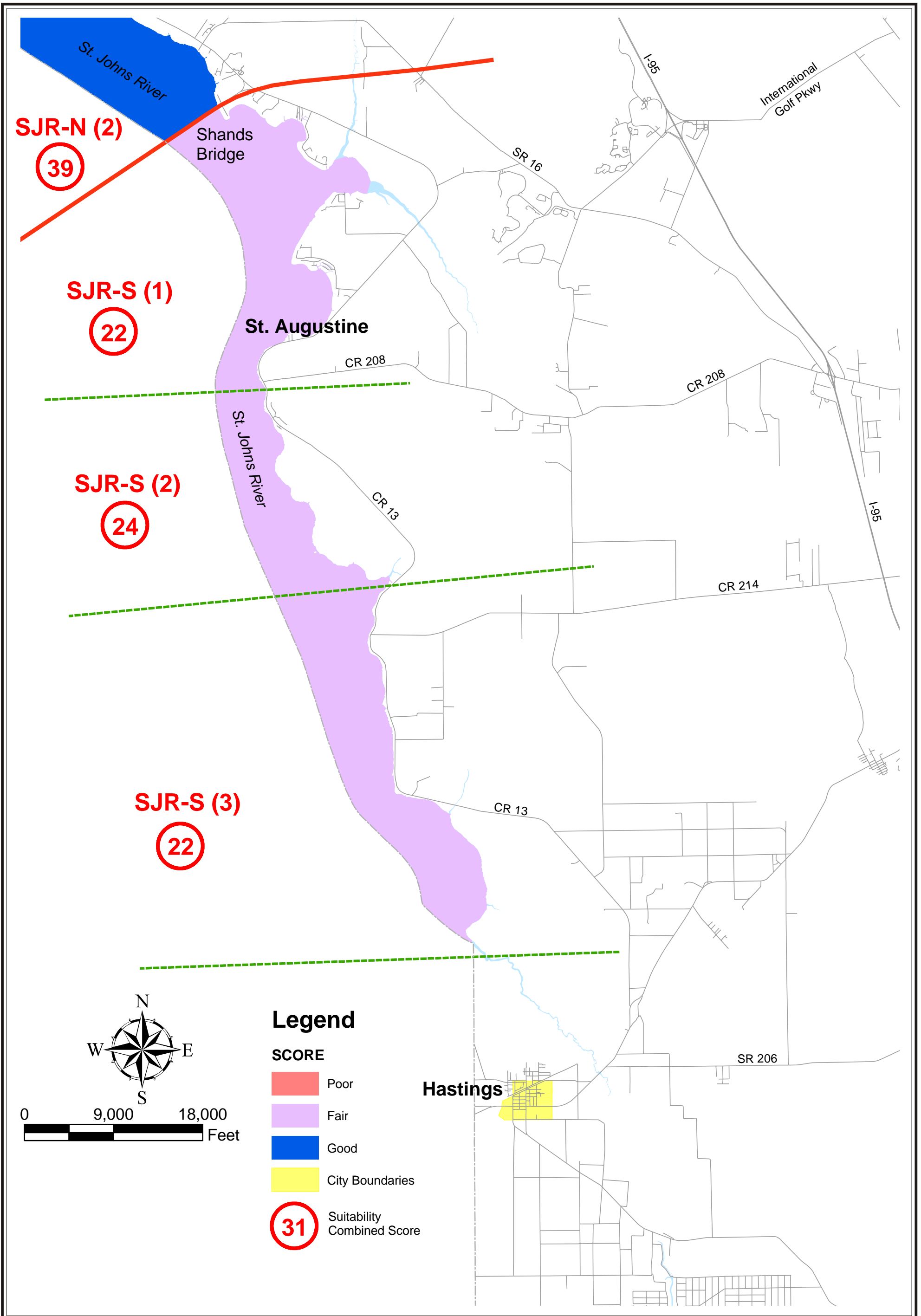


Figure 16
Environmental and Developmental Suitability Scores
St. Johns River - South

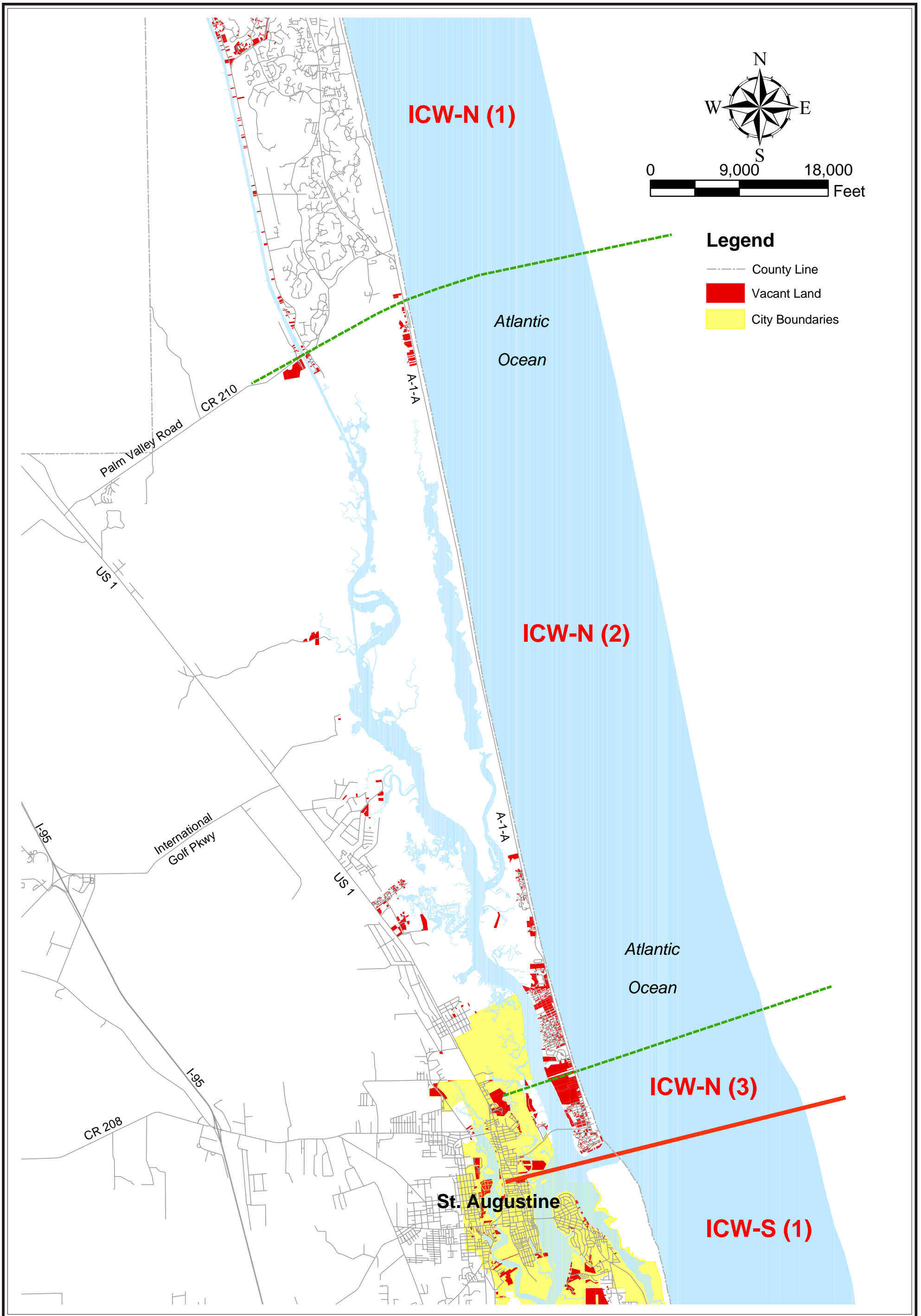


Figure 17
Vacant Waterfront Parcels
Intracoastal Waterway - North

Source: St. Johns County, Geographic Information System Data



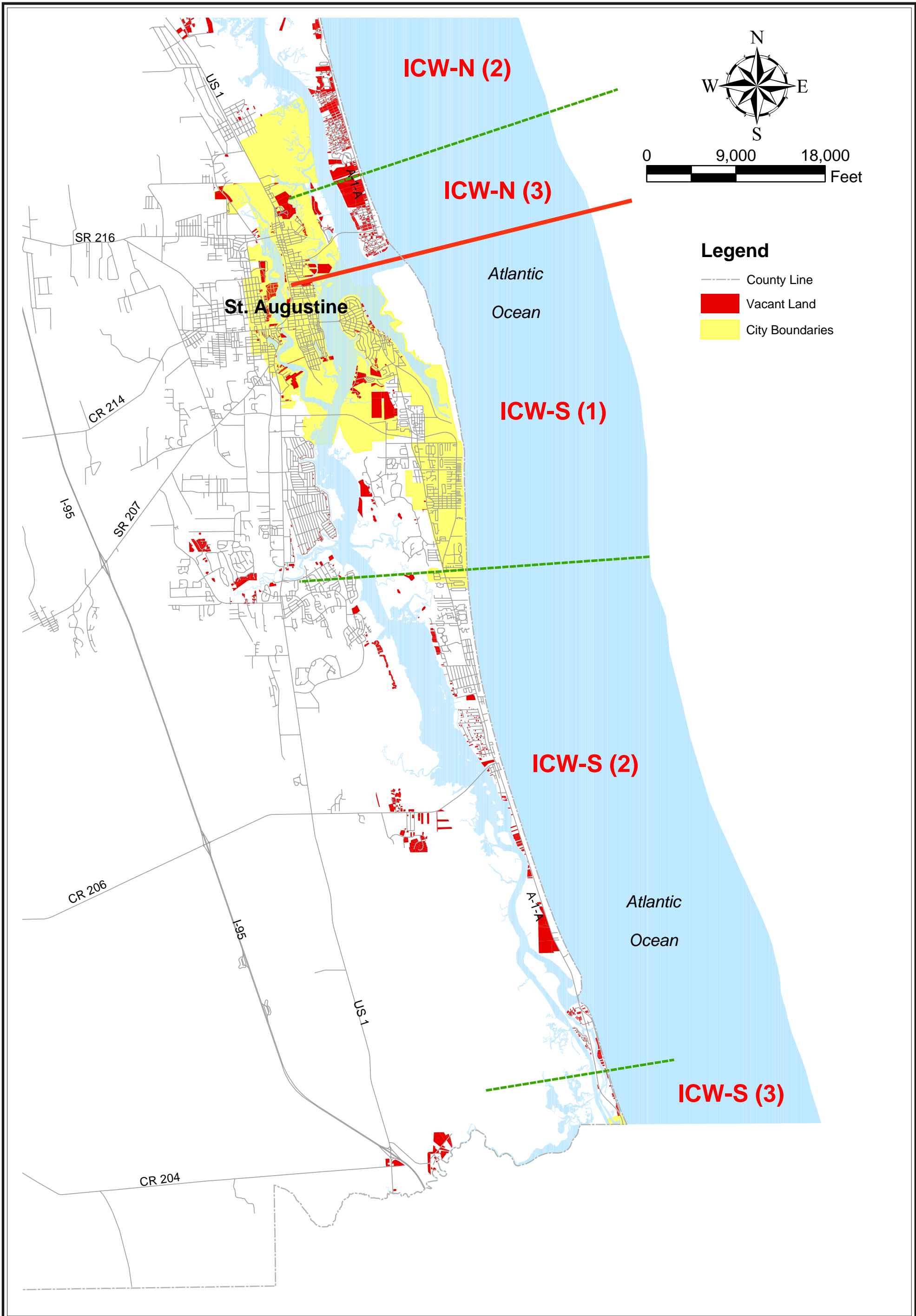
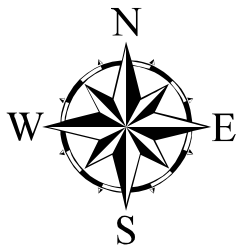


Figure 18
Vacant Waterfront Parcels
Intracoastal Waterway - South

Source: St. Johns County, Geographic Information System Data





Legend

- County Line
- Vacant Land
- City Boundaries

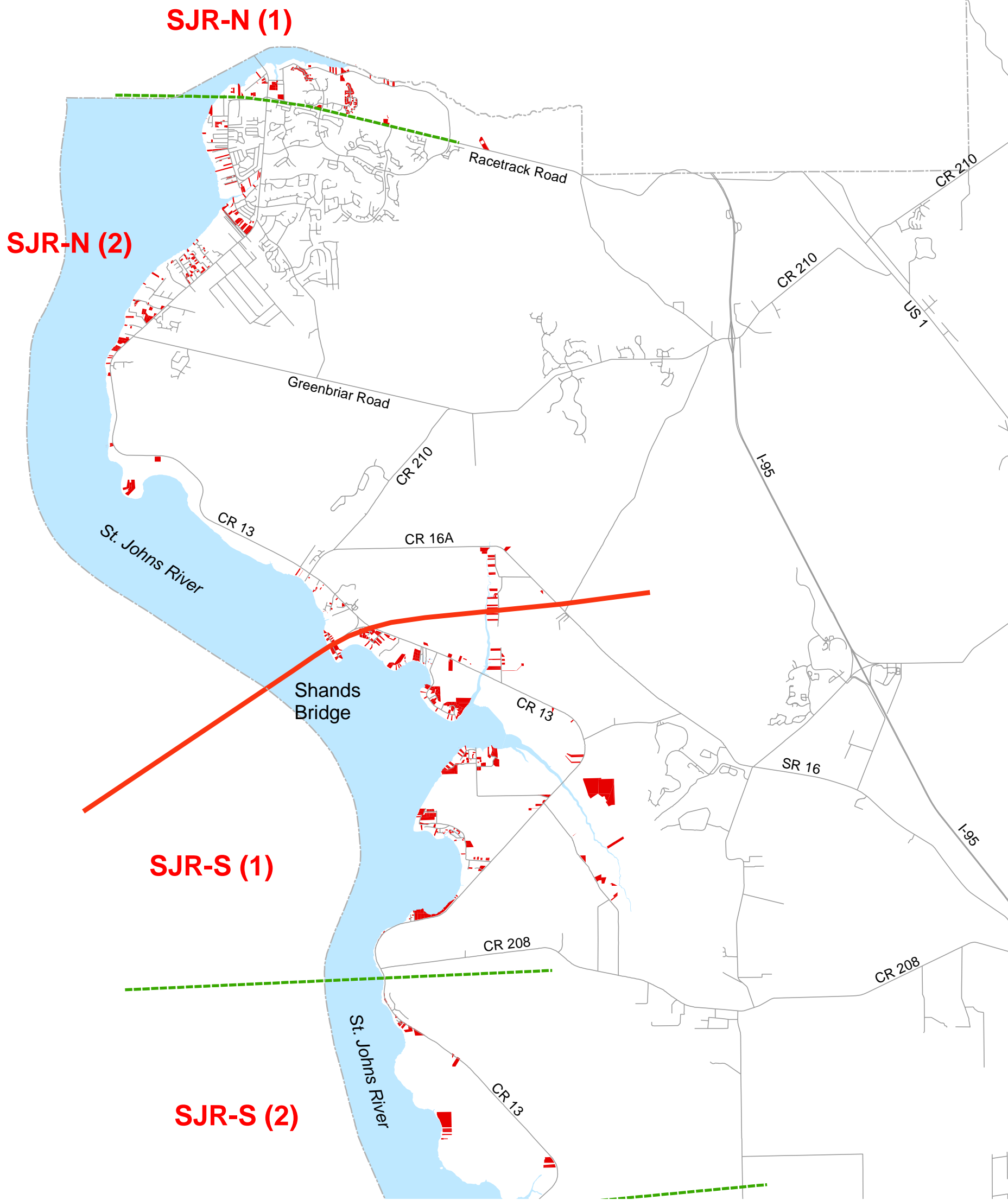


Figure 19
Vacant Waterfront Parcels
St. Johns River - North

Source: St. Johns County, Geographic Information System Data



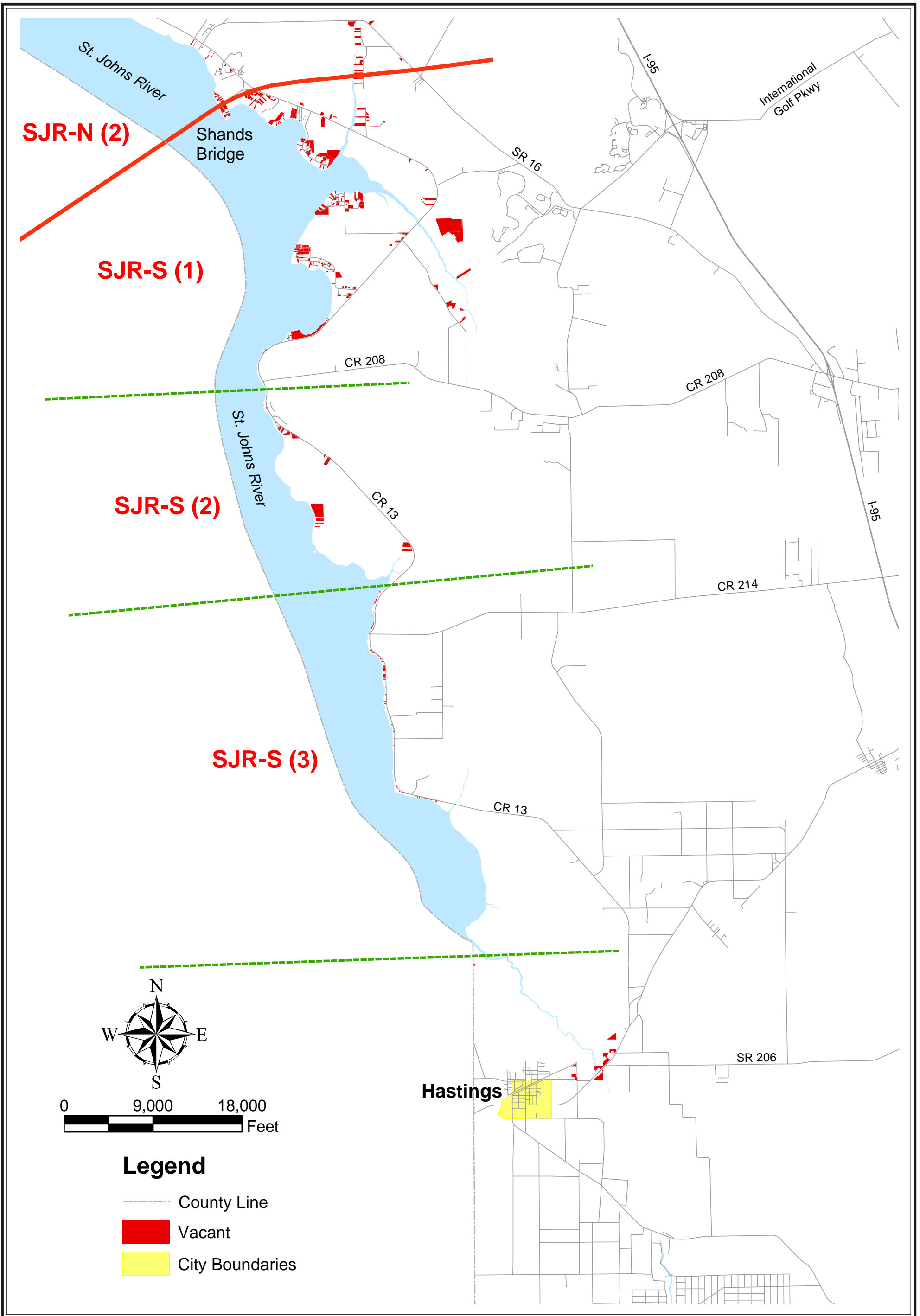


Figure 20
Vacant Waterfront Parcels
St. Johns River - South

Source: St. Johns County, Geographic Information System Data



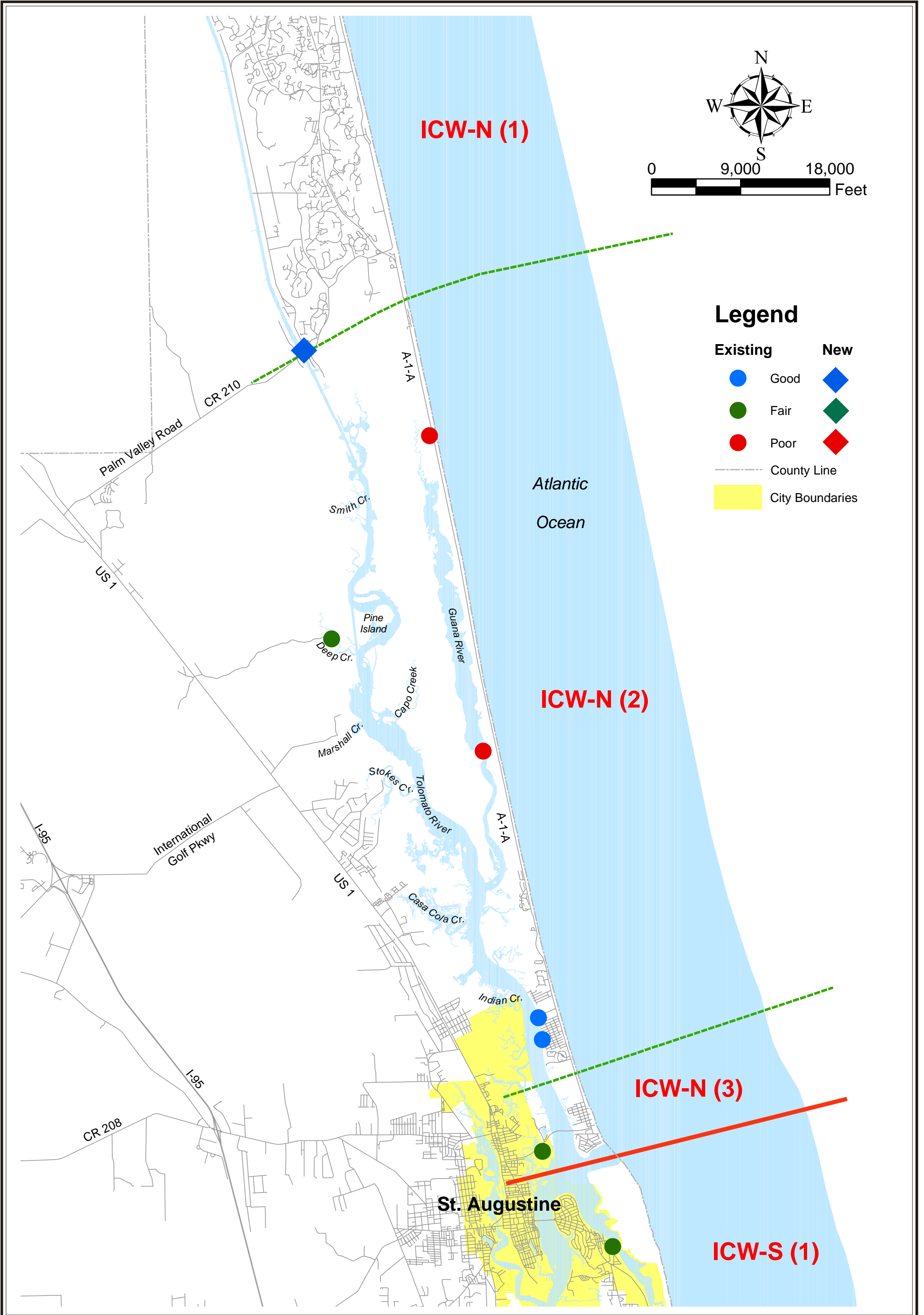


Figure 21
Expansion and New Construction Potential for
Public Ramps - Intracoastal Waterway - North

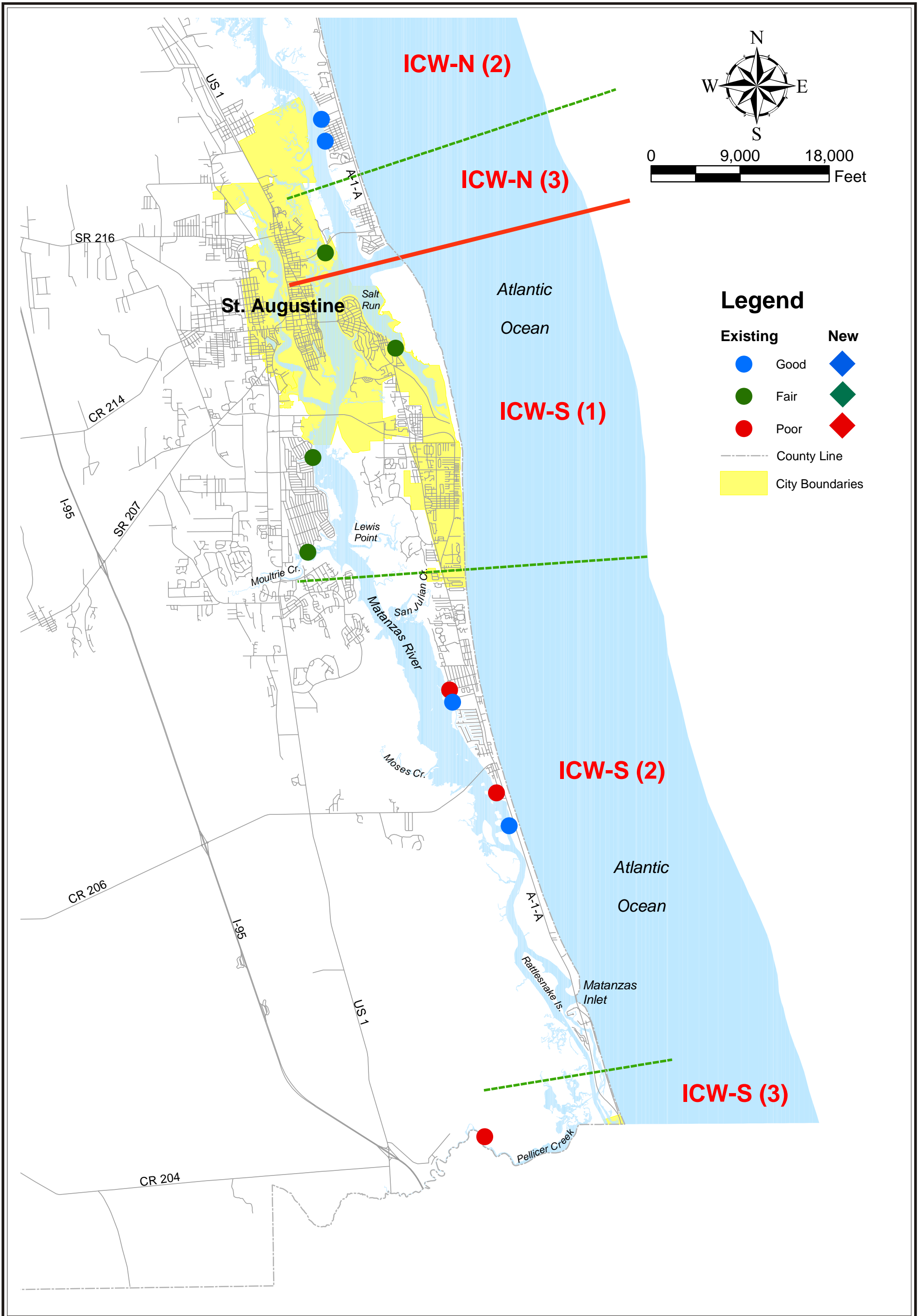
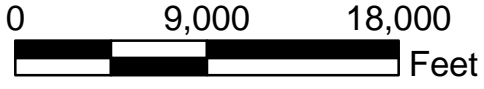
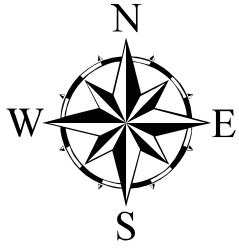


Figure 22
Expansion and New Construction Potential for
Public Ramps - Intracoastal Waterway - South



Legend

Existing		New
●	Good	◆
●	Fair	◆
●	Poor	◆
---	County Line	
	City Boundaries	

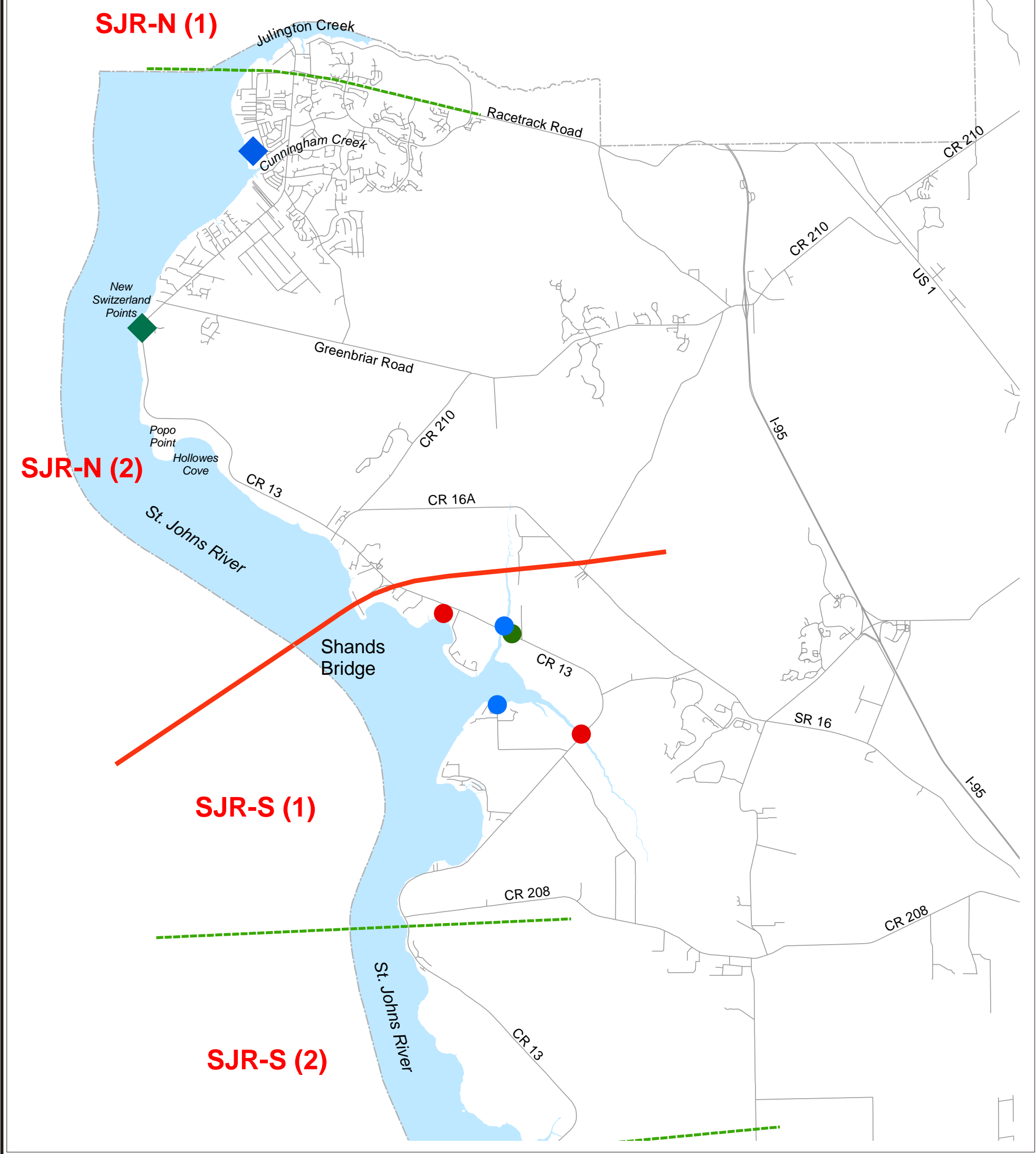


Figure 23
Expansion and New Construction Potential for
Public Ramps - St. Johns River - North



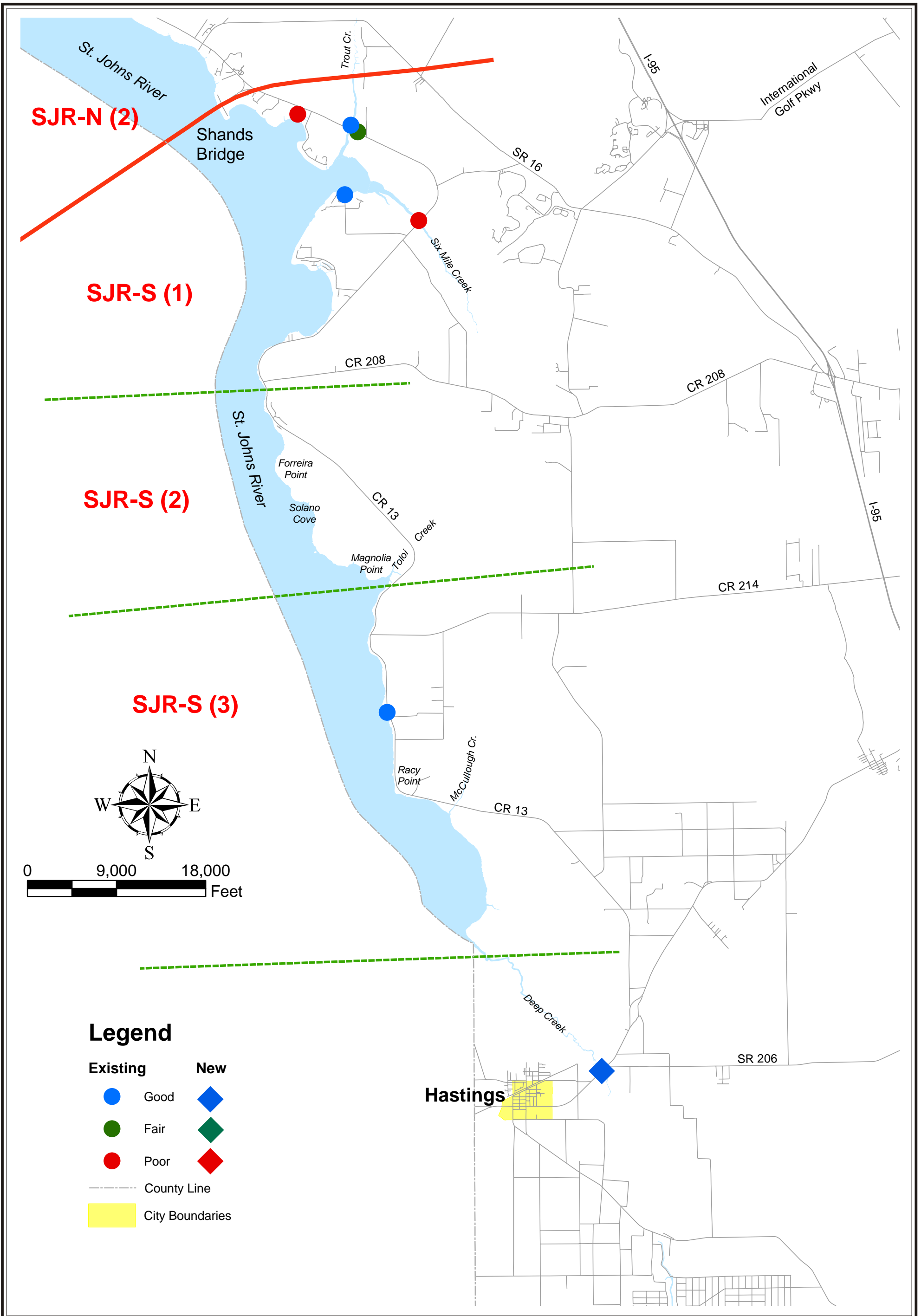


Figure 24
Expansion and New Construction Potential for
Public Ramps - St. Johns River - South

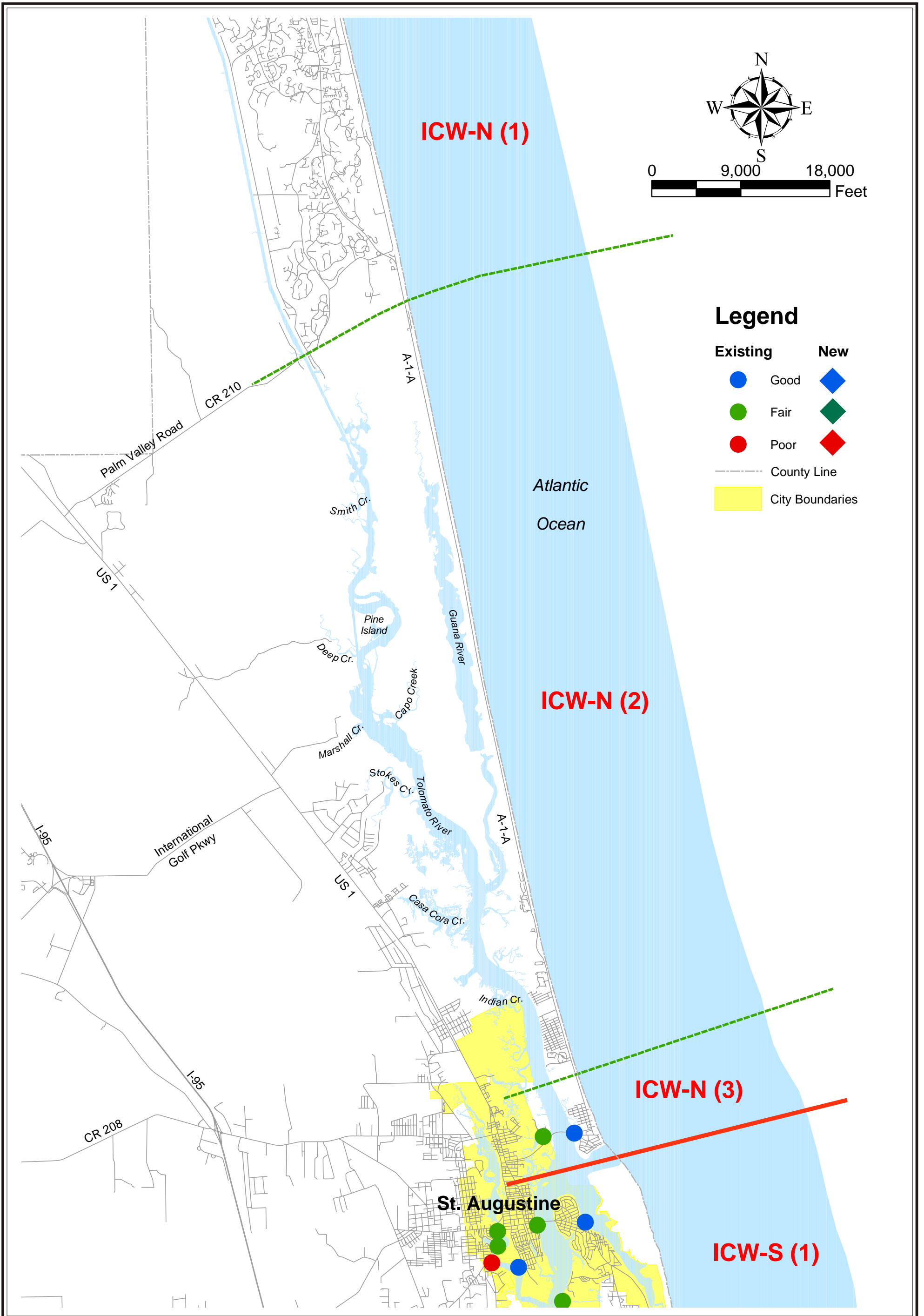


Figure 25
Expansion and New Construction Potential for
Public Marinas - Intracoastal Waterway - North

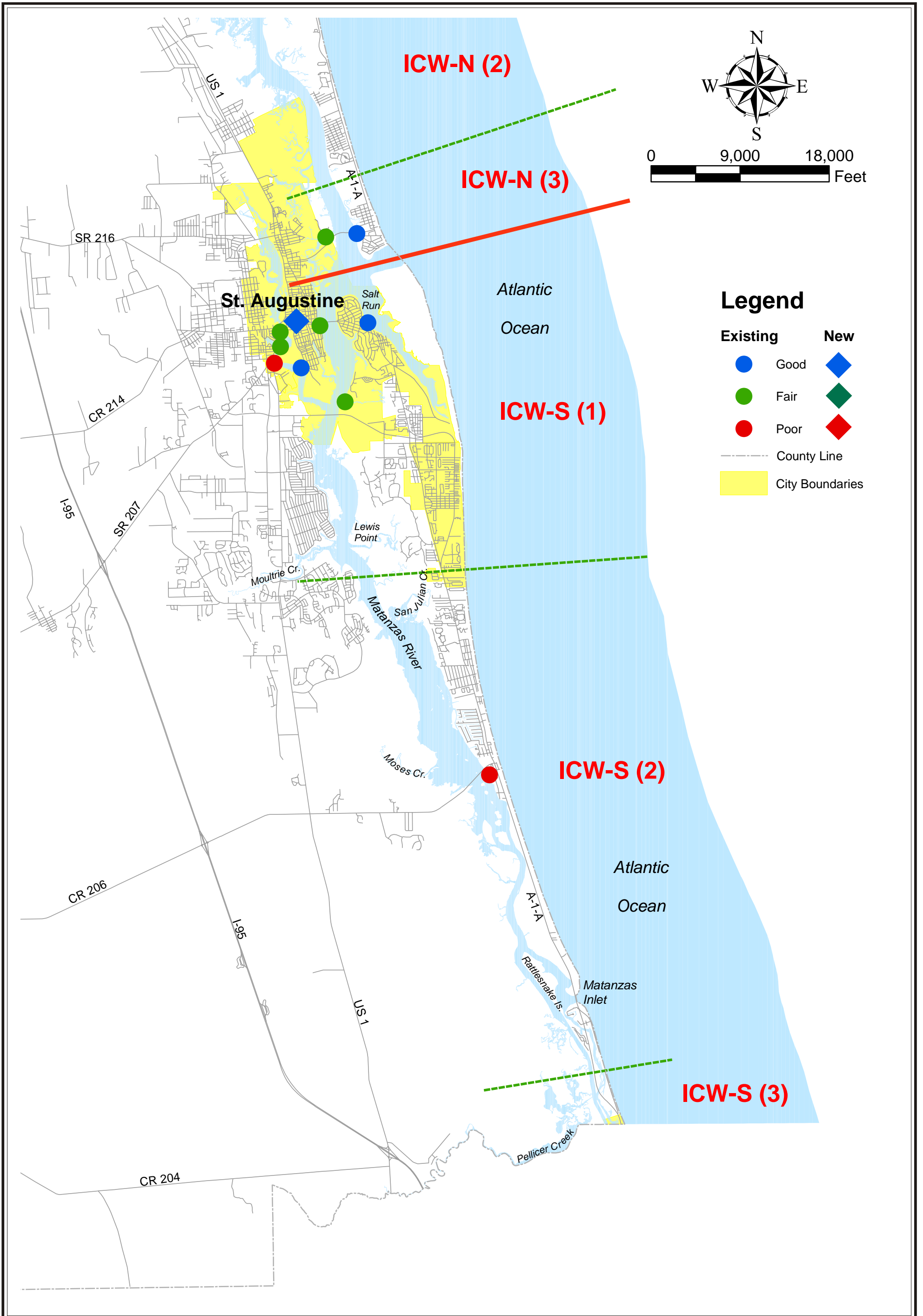
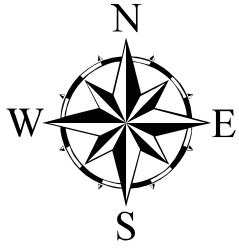


Figure 26
Expansion and New Construction Potential for
Public Marinas - Intracoastal Waterway - South



Legend

Existing		New	
● (Blue)	Good	◆ (Blue)	
● (Green)	Fair	◆ (Green)	
● (Red)	Poor	◆ (Red)	
---	County Line		
■ (Yellow)	City Boundaries		

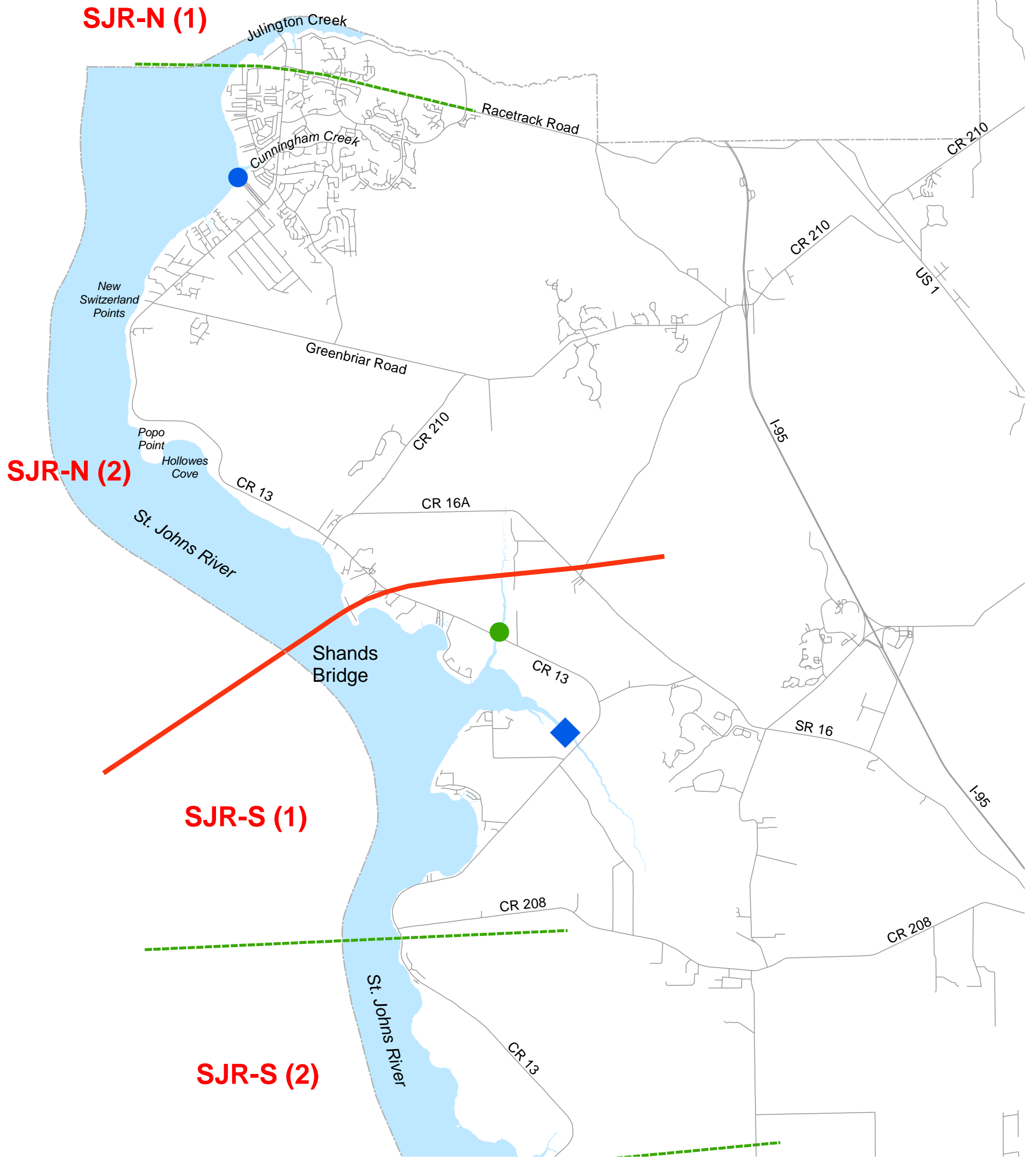


Figure 27
Expansion and New Construction Potential for
Public Marinas - St. Johns River - North



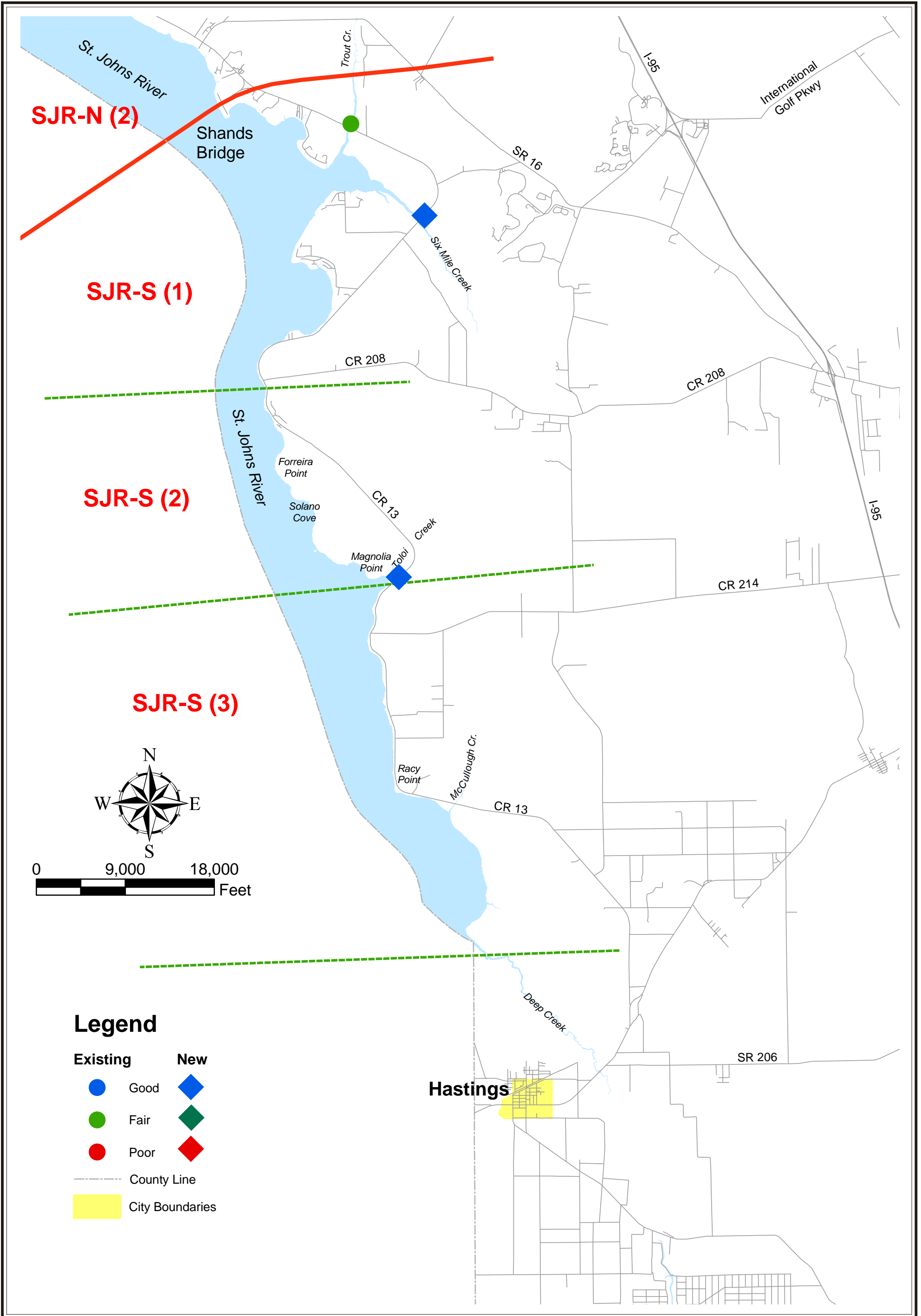


Figure 28
Expansion and New Construction Potential for
Public Marinas - St. Johns River - South

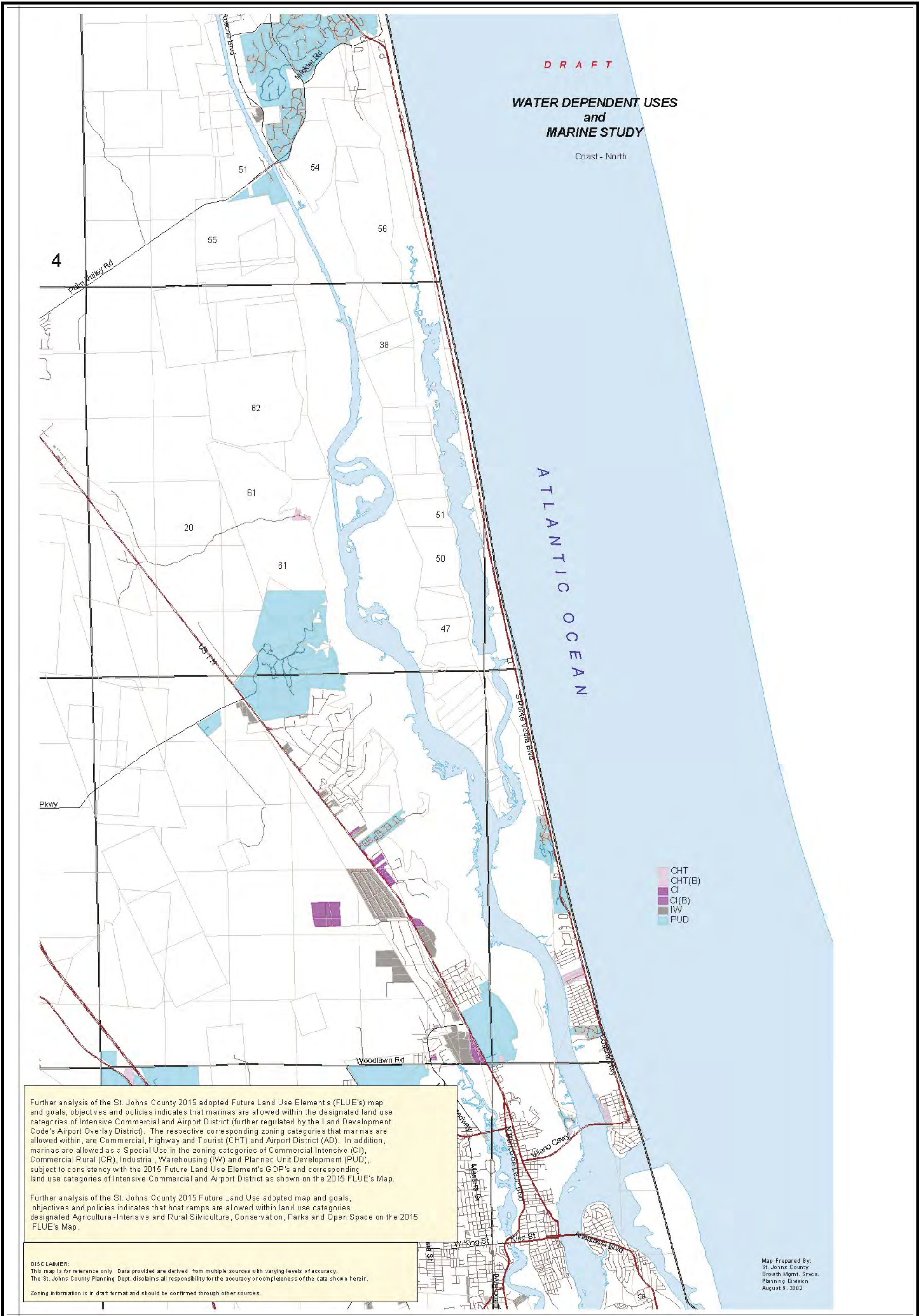
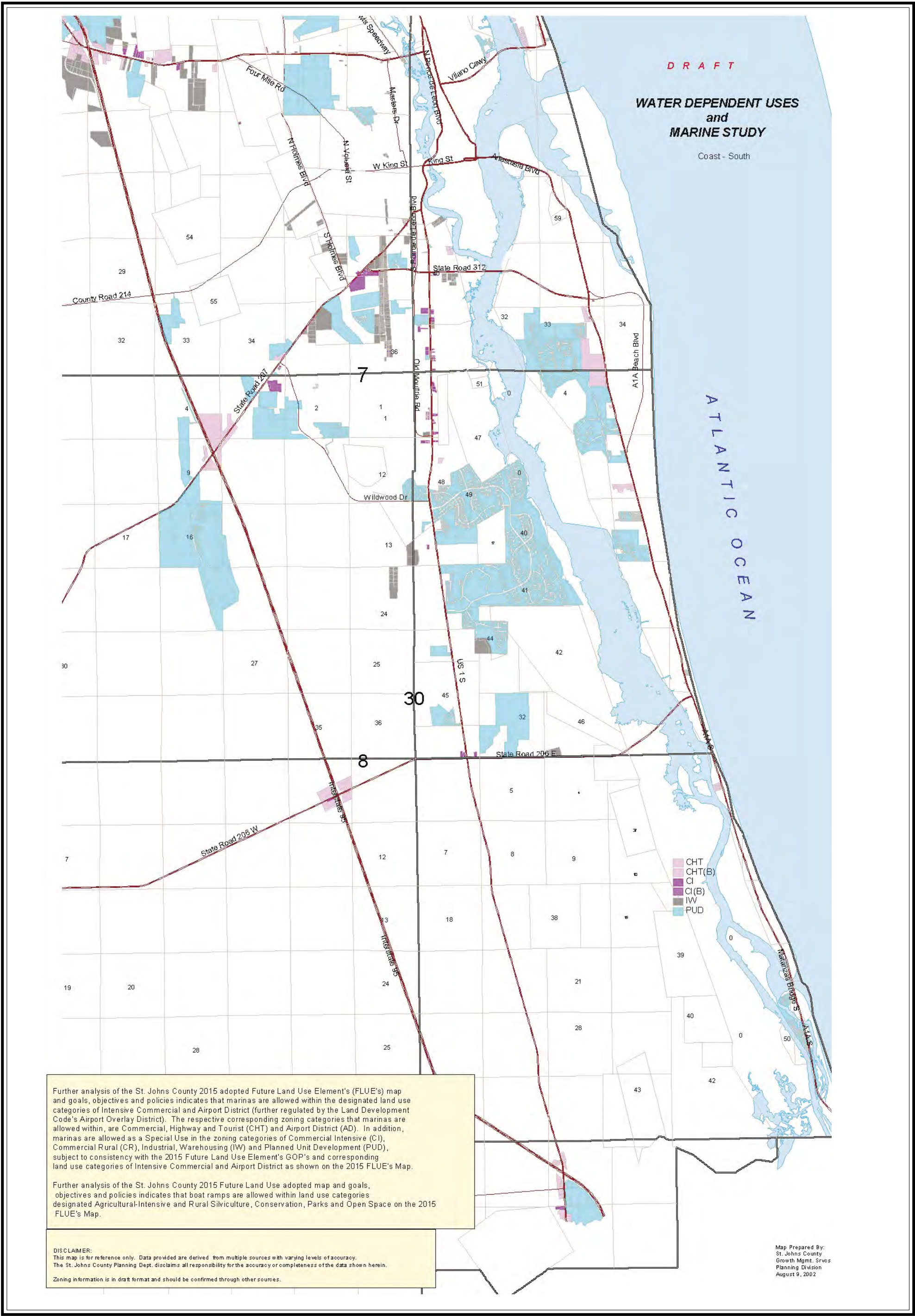


Figure 29
St. Johns County Zoning - Intracoastal Waterway North

Source: St. Johns County, Planning Division





Further analysis of the St. Johns County 2015 adopted Future Land Use Element's (FLUE's) map and goals, objectives and policies indicates that marinas are allowed within the designated land use categories of Intensive Commercial and Airport District (further regulated by the Land Development Code's Airport Overlay District). The respective corresponding zoning categories that marinas are allowed within, are Commercial, Highway and Tourist (CHT) and Airport District (AD). In addition, marinas are allowed as a Special Use in the zoning categories of Commercial Intensive (CI), Commercial Rural (CR), Industrial, Warehousing (IW) and Planned Unit Development (PUD), subject to consistency with the 2015 Future Land Use Element's GOP's and corresponding land use categories of Intensive Commercial and Airport District as shown on the 2015 FLUE's Map.

Further analysis of the St. Johns County 2015 Future Land Use adopted map and goals, objectives and policies indicates that boat ramps are allowed within land use categories designated Agricultural-Intensive and Rural Silviculture, Conservation, Parks and Open Space on the 2015 FLUE's Map.

DISCLAIMER:
 This map is for reference only. Data provided are derived from multiple sources with varying levels of accuracy. The St. Johns County Planning Dept. disclaims all responsibility for the accuracy or completeness of the data shown herein.
 Zoning information is in draft format and should be confirmed through other sources.

Figure 30
 St. Johns County Zoning - Intracoastal Waterway South

Source: St. Johns County, Planning Division



DRAFT

WATER DEPENDENT USES and MARINE STUDY



Further analysis of the St. Johns County 2015 adopted Future Land Use Element's (FLUE's) map and goals, objectives and policies indicates that marinas are allowed within the designated land use categories of Intensive Commercial and Airport District (further regulated by the Land Development Code's Airport Overlay District). The respective corresponding zoning categories that marinas are allowed within, are Commercial, Highway and Tourist (CHT) and Airport District (AD). In addition, marinas are allowed as a Special Use in the zoning categories of Commercial Intensive (CI), Commercial Rural (CR), Industrial, Warehousing (IW) and Planned Unit Development (PUD), subject to consistency with the 2015 Future Land Use Element's GOP's and corresponding land use categories of Intensive Commercial and Airport District as shown on the 2015 FLUE's Map.

Further analysis of the St. Johns County 2015 Future Land Use adopted map and goals, objectives and policies indicates that boat ramps are allowed within land use categories designated Agricultural-Intensive and Rural Silviculture, Conservation, Parks and Open Space on the 2015 FLUE's Map.

DISCLAIMER:
This map is for reference only. Data provided are derived from multiple sources with varying levels of accuracy. The St. Johns County Planning Dept. disclaims all responsibility for the accuracy or completeness of the data shown herein. Zoning information is in draft format and should be confirmed through other sources.

Map Prepared By:
St. Johns County
Growth Mgmt. Svcs.
Planning Division
August 9, 2002

Figure 31
St. Johns County Zoning - St. Johns River North

Source: St. Johns County, Planning Division



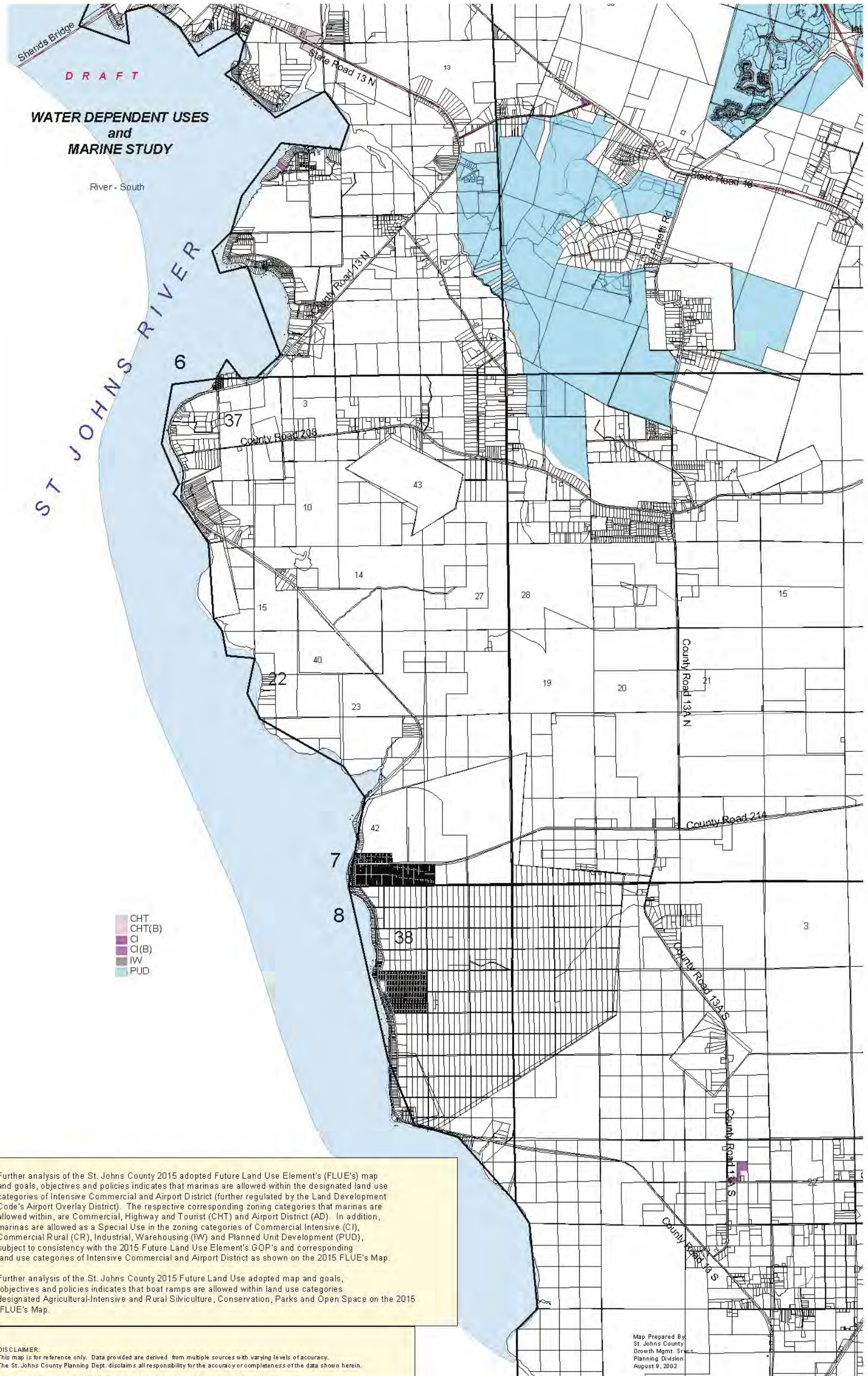


Figure 32
St. Johns County Zoning - St. Johns River South

Source: St. Johns County, Planning Division



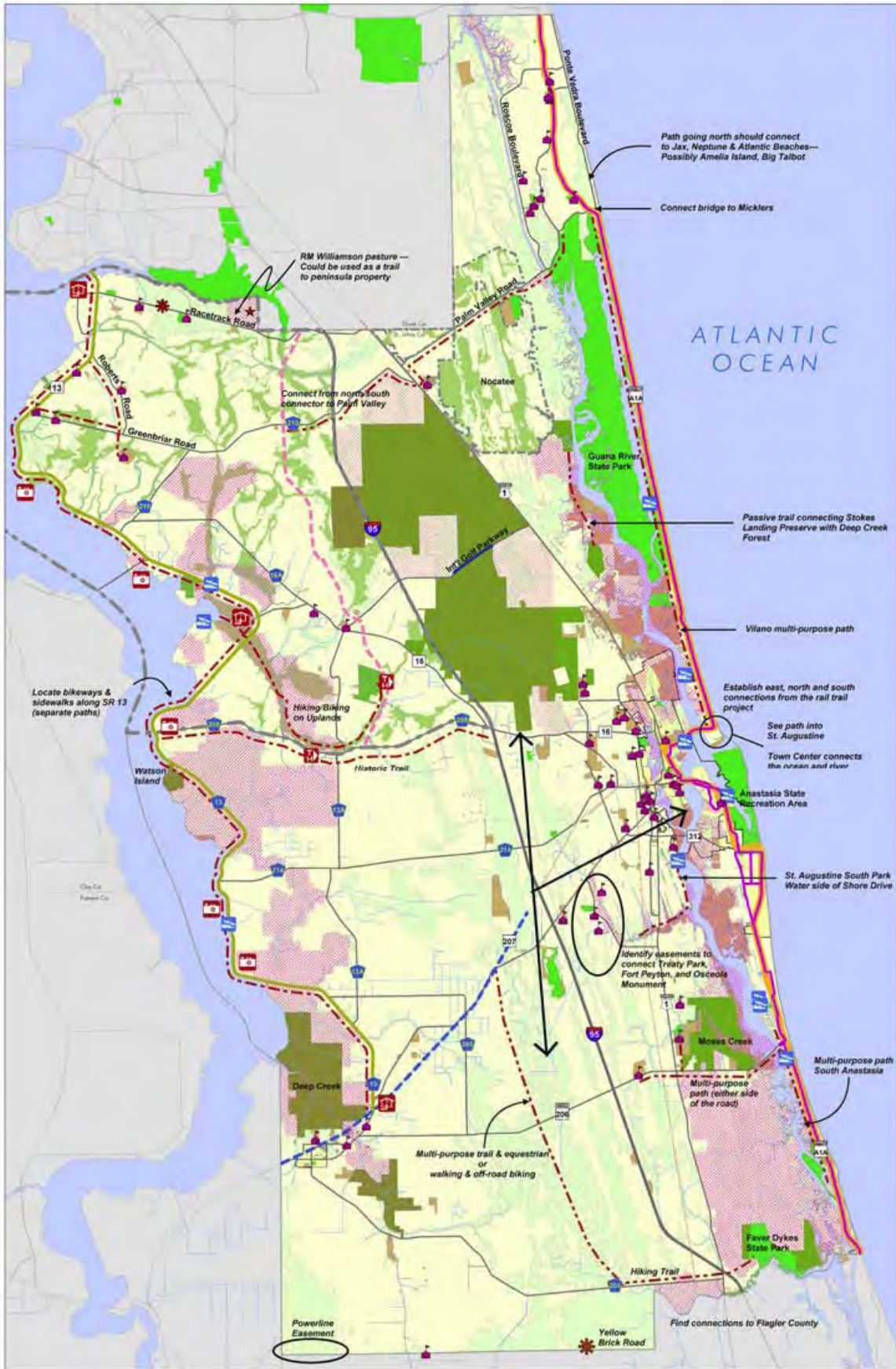
APPENDIX H

Maps Showing Potential Land Acquisition Projects that Would Benefit Manatees

St. Johns River Blueways Land Acquisition Proposal Map

St. Johns County Greenways and Blueways Master Plan Map

ST. JOHNS COUNTY GREENWAYS/BLUEWAYS MASTER PLAN



Multi-Use Opportunities

Legend

- School Sites
- Public Boat Ramps
- Florida Forever Projects (Previously CARL)
- Conservation Areas
- Existing Recreation Lands
- Northwest Sector / Nocatee Connected Wetland System
- Other Public Lands
- ATA National Scenic Byway
- Bike Path
- ATA National Scenic Byway/Bike Path
- Potential FDOT Scenic Highway Designation
- Locally Designated Scenic Highway
- Proposed Rails to Trails
- Proposed North-South Corridor
- Northwest Sector / Nocatee Boundary

Significant Habitat

- Areas of Significant Habitat with rare species occurrences



HDR LANDERS-ATKINS
PLANNERS

Date: February 17, 2003

Notes

Workshop 1 Meeting Notes

- Multi-Use Trails
- Elevated Overlooks
- Kiosks Pertaining to the Scenic Highway
- Trail Head
- Place to Cross Bridge to the Peninsula

General Notes:

- Watson Island Area for Primitive Scout Camping
- County Road 208 as Historic Trail/Corridor
- What about Hunting Area? Hunt Club Currier
- Need East-West Corridors

Workshop 2 Meeting Notes

- Consider Trail Lighting

Workshop 3 Meeting Notes

- Vilano multi-purpose path very important to Vilano and its view plan

Workshop 4 Meeting Notes

APPENDIX I

Potential Funding Sources for MPP Implementation

Source: S.A. Simmons, 2001

Appendix I
Potential Funding Sources for Implementing the St. Johns County MPP

Source	Name or Type of Program	Comments
U.S. EPA Office of Environmental Education	Environmental Education and Training Program	Requires 25% match, next award cycle 2003
U.S. EPA Office of Environmental Education	Environmental Education Grants	For design & dissemination of environmental curricula
U.S. Department of Education	Eisenhower Professional Development Grant	To collect and disseminate exemplary science education instructional materials
U.S. Fish and Wildlife Service	Cooperative Endangered Species Conservation Fund	Grantee must be the State agency
National Oceanographic & Atmospheric Administration (NOAA)	Financial Assistance for Nat'l Centers for Coastal Ocean Science	To minimize adverse consequences of human use of the coastal and marine environments
NOAA	Sea Grant Support	To support marine resource research, education and training
U.S. EPA Office of Environmental Education	National Estuary Program	Activities associated with restoration of Estuaries of National Significance
NOAA/National Marine Fisheries Service	Habitat Conservation	To conserve protected resources & restore depleted marine life
Florida Fish & Wildlife Conservation Commission	Advisory Council on Environmental Education	Enhance awareness of Fl. resources
Chevron Corporation Grants	Environmental conservation & habitat preservation	Focused on K-12 science education
National Fish and Wildlife Foundation	Conservation Education Initiative	Supports education projects concerning fish, wildlife, plants and their habitat
National Fish and Wildlife Foundation	Partnership grants	Funds partnerships for fish & wildlife habitat restoration & enhancement and education
Walmart Foundation	Education and Environmental Programs	Supports programs in communities near Walmart stores
Fields Pond Foundation Inc.	Conservation, stewardship, education & publications	Typical funding \$2,000 to \$10,000
Pew Charitable Trusts	Environment Program	To preserve healthy marine ecosystems
Captain Planet Foundation	Education	Promote understanding of environmental issues through hands-on involvement by youth
Barbara Delano Foundation	Conservation and habitat protection	Target species include marine mammals
Bechtel Foundation	Youth, educational programs and science education	Involvement in communities where facilities are located
First Union Foundation	Special programs for youth	Involvement in communities where facilities are located
Turner Foundation	Biodiversity	To support ecosystem-side habitat protection