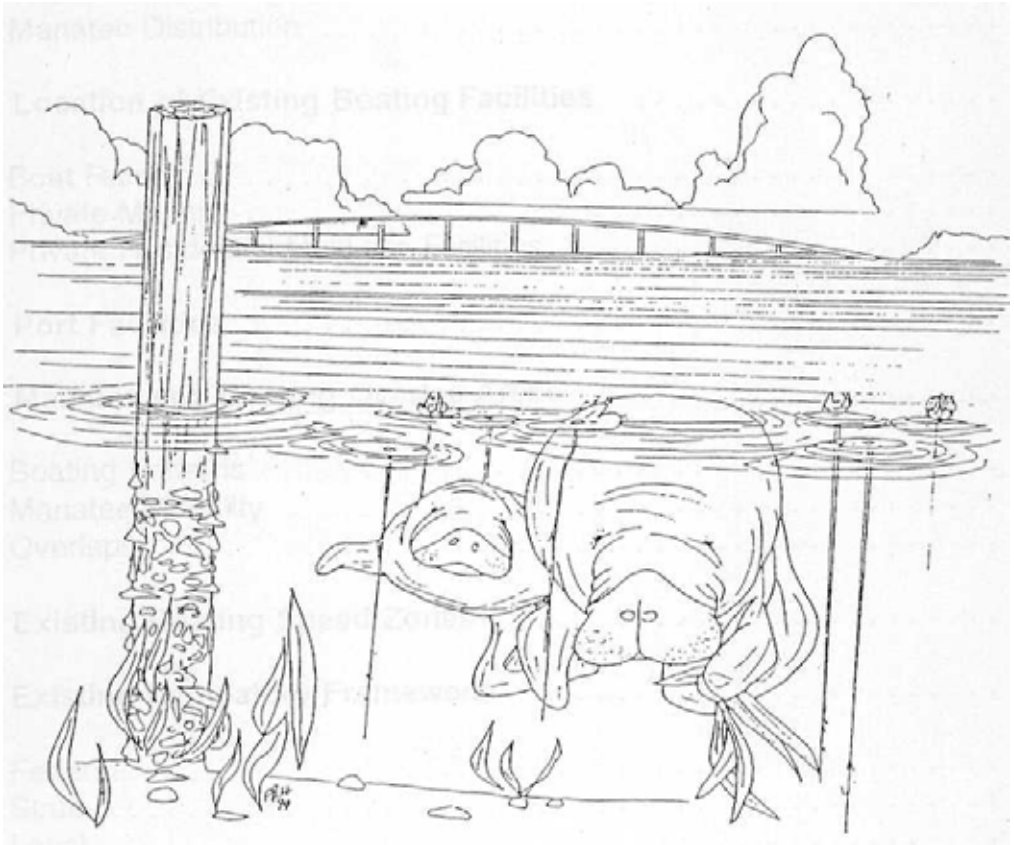
CLAY COUNTY
MANATEE PROTECTION PLAN
March 2007



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1. Executive Summary

Clay County is located on the west bank of the Lower St. Johns River (LSJR) in northeast Florida. Duval County borders to the north, Putnam County is to the south and St. Johns County is directly opposite on the east bank of the river (Figure 1). The length of shoreline in Clay County extends about 30 miles from Buckman Bridge south to the Clay/Putnam County line. River width exceeds three miles in some areas of Clay County.

The Florida manatee (*Trichechus manatus latirostris*), a sub-species of the West Indian manatee, is commonly observed in Clay County waters during the warmer months of the year. Club Continental and Doctor's Lake in northern Clay County are important areas where manatees are frequently observed. Currently, there are no more warm water outfalls in Duval, Clay or St. Johns Counties. Manatees used to frequent Jacksonville Electric Authority's Southside Generating Station (Duval County) that closed in October 2001 but little use was observed in 2003/2004. Clay County does not have any power plants or other types of warm water sources that would attract manatees in colder months. Three fresh water springs exist but are too small to function as attractants to manatees. As a result, small numbers of manatees remain in northeast Florida during the winter months.

The United States Fish and Wildlife Service (USFWS/Service) is authorized to protect manatees under the Endangered Species Act. The Florida Manatee Recovery Plan (FMRP) was developed in 1980 by the Service and revised in 2001 to assure the long-term viability of the Florida Manatee in the wild. The Recovery Plan addresses recovery goals and measurable criteria to achieve these goals, actions needed, time scale and cost estimates (US Fish and Wildlife Service, October 2001). The development of manatee protection plans (MPPs) is listed in the FMRP as one of the recovery actions to address threats to manatees.

On October 24, 1989, Florida's Governor and Cabinet approved recommendations for protecting manatees, their habitat and increasing boating safety in 13 "key" counties that were experiencing excessive watercraft-related manatee mortality. Recommendations were outlined in Attachment K of a report entitled "Recommendations to Improve Boating Safety and Manatee Protection for Florida's Waterways." Clay County is not one of the thirteen "key" counties required to develop a manatee protection plan at this time but is proactively pursuing the completion of such a plan to further manatee protection efforts in the County.

In 1992, Clay County adopted the "Clay County 2001 Comprehensive Plan" pursuant to the state- mandated 1985 "Growth Management Act." Policy 5.11 of the Conservation Element of the Comprehensive Plan requires the County to develop and implement a manatee protection plan. The Clay County Board of County Commissioners held two workshops in October 1994 and August 1995 to discuss proposed manatee protection planning including recommendations for boating speed zones in Doctors Lake and portions of St. Johns River. Funding for this study was provided by a grant awarded to Clay County from the National Oceanic and Atmospheric Administration (NOAA), under the Coastal Impact Assistance Program (CIAP). In September 2002, Jacksonville University was contracted to update and complete the 1994 draft of the Clay County Manatee Protection Plan.

Aerial counts of manatees were highest in the LSJR adjacent to Clay County from spring to late fall. The single highest day count of 190 animals was a record on 06/25/2003 (both river banks). It is important to note that Clay County borders the west bank of the LSJR and that sightings on the east bank are primarily in St. Johns County. More animals occur on the west bank 58% versus 42% east bank. More animals were observed in the north part of Clay County and less in the central areas of the county with numbers reduced towards the south. On the west bank of the LSJR, highest numbers of manatees were seen from the Buckman Bridge to Red Bay Point and including Doctor's Lake. Behavior means indicated that manatees spent most of their time traveling (18%), resting (27%) and feeding (25%) and the least time cavorting (11%).

A total of 49 manatee deaths, including 13 watercraft-related deaths, has been reported between 1975 and 2004 in Clay County waters. Over the last decade, Clay County has averaged 0.5 watercraft-related deaths per year. Six of the 13 watercraft-related deaths occurred near the mouth of Doctor's Lake. The other watercraft-related deaths were documented near Club Continental (2), Fleming Island (1), Hibernia Point (1), mouth of Black Creek (1) Magnolia Point (1) and Green Cove Springs (1). Other documented deaths were classified as natural (1), cold stress (9), perinatal (11), 1 other human (ingestion of monofilament line), and undetermined (14). Total mortality rates in Clay County averaged 1.6 total deaths/yr. (range 1-5) since 1975. Total deaths were higher in 1992 (4), 1998 (5), 2000 (4), 2001 (4), and 2003 (4).

Registered vessels in Florida increased by 7% (65,028 vessels) from 2000 to 2003. Commercial vessels represented about 3% of all vessels, decreased by 448 during this period represent. In Clay County, there was a 12% increase (1,319 vessels). Commercial vessels represented 1% of all vessels, decreased by 6. In Duval County, there was a 1% increase (333 vessels). Commercial vessels represented 2% of all vessels, decreased by 44. In Putnam County, there was a 7% increase (544 vessels). Commercial vessels represented 3% of all vessels, decreased by 16. In St. Johns County, there was an 8% increase (840 vessels). Commercial vessels represented 3% of all vessels, increased by 25. In general, this represents an increase of some 3,036 vessels and a decrease of 489 commercial vessels in the region over this time period.

Aquatic vegetation such as tape grass, *Vallisneria americana,* occurs most extensively south of the Buckman Bridge on both banks of St. Johns River. This serves as a primary food source for manatees in Clay County waters. Submerged aquatic vegetation regenerated significantly after a period of drought. The percent of grass bed that was bare decreased to 20% (2003) and 16% (2004) from 42-58% (1998/2002). The percent of grass beds comprised specifically of *Vallisneria americana* tape grass increased to 72% (2003/2004) from 35% (2000) and 52% (2001/2002). Bed length increased to 103m (2003) and 109m (2004) from 38m (2002). Total percent coverage including all observed species increased from 55% in 1998 to 121% in 2004

Since the FWC adopted extensive speed zones for manatee protection in 2000 and the USFWS adopted additional zones in 2003, no new regulatory zones are recommended at this time. In addition to the state and federal zones, county-established boating safety zones also exist and provide additional protection to manatees.

As part of this MPP, a boat ramp study was conducted in Clay County from May 14, 2003 to August 3, 2003 to examine boater traffic, destinations, and to calculate a boater's sphere of influence. The highest use boat ramps were Knights (St. Johns River) and Lake Shore (Doctors Lake). The mean distance traveled from boat ramps was 7.16 miles (SD ± 2.17) and the mode was 5.30 miles (SD ± 4.79) miles. Weekend use was expectedly higher with a mean of 6.35 (SD ± 5.05) users/weekend day. Weekday use had a mean of 1.82 (SD ± 1.17) users/weekday. Peak usage times were evident from people generally departing in the morning and returning in the afternoon (departing about 9 AM and returning about 4 PM). Weekends and holidays represented peak usage days versus regular weekdays as well as the summer season versus other seasons. Types and classes of vessels using boat ramps in Clay County were determined to be predominantly power vessels less than 20 ft. in length (591) including personal watercraft (36). Other types of vessels recorded were sailboats (3) and canoes (7). Most common activities included cruising (42%), recreational fishing (32%) and water skiing (10%). Most other activities consisted of jet skiing and a few maintenance runs for larger recreational vessels (8%). Swimming activities associated with the boating experience made up 5% of trips followed by land based activities (2%), commercial fishing (1%) and diving (0.4%).

Future boat facility demand is most likely to occur in north/central Clay County waters and may require limits on the number of new powerboat slips to minimize impacts to manatees and manatee habitat. Criteria for the siting of new facilities, the expansion of existing facilities, or rearrangements are outlined in the MPP. Recommendations for future boat facility development are based on manatee use and manatee watercraft-related deaths in Clay County and are discussed according to the three geographically distinct boat facility siting areas. Impacts to submerged aquatic vegetation and other habitat-related provisions will also be considered.

Additional conservation areas and park lands such as Green Cove Springs Nature Preserve, Spring Park, Black Creek Ravines, and the Bayard Conservation Area may also affect areas available for future boat facility development.

PLEASE NOTE THAT THIS DOCUMENT CONTAINS SOME COLOR GRAPHICS THAT MAY NOT REPRODUCE AS EFFECTIVELY IN BLACK AND WHITE.

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MANATEE PROTECTION PLAN GUIDELINES

Area-specific manatee protection plans need to be developed by all counties in which manatees regularly occur to ensure the long-range protection of the species and its habitat. The objective of manatee protection plans are: to reduce the number of boat-related manatee mortalities; to achieve an optimal sustainable manatee population (the goal of the Marine Mammal Protection Act); to protect manatee habitat; to promote boating safety; and to increase public awareness of the need to protect manatees and their environment. These plans will address manatee-human interactions, land use (including boat facility siting), and the protection of suitable habitat (including water quality, thermal refugia, freshwater sources, and grass beds). The information needed to prepare manatee protection plans will include manatee studies, habitat assessments, and, if available, boating studies to evaluate boater use patterns and activities. Boat facility siting elements are necessary components of area-specific manatee protection plans. Boat facility siting must address marinas with wet slips and dry storage, and boat ramps. The objectives of boat facility siting plans are: to determine appropriate dock densities for particular areas; and to develop criteria for designating special use areas (i.e.; for water skiing, jet skiing, and commercial fishing).

Necessary components of a manatee protection plan are:

a.	An Information Base	1-67
b.	location and capacity of all marina facilities (including dry storage) in the county (proposed and existing);	28-43
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l.	other relevant data as determined by the Department of Natural Resources.	n/a

Recommendations—with an Accompanying Implementation Schedule—to Increase Manatee Protection in the County

a.	boating expansion criteria;	67-75
b.	identification of recommended areas for water-related activities requiring high boat speeds, such as water skiing, boat races and certain types of commercial fishing;	n/a
c.	a plan for marking navigation channels in currently unmarked waterways used by manatees.	n/a
d.	new or expanded speed zones, refuges or sanctuaries for the regulation of boat speeds in critical manatee areas;	n/a
e.	installation of manatee educational displays at all boating facilities;	78
f.	development and dissemination of a pamphlet to county boaters describing manatee protection and boating safety speed zones in the area, and recommendations for boaters on how to avoid hitting manatees;	n/a
g.	inclusion of manatee and marine habitat educational material in the county school board's elementary, middle school and high school curricula;	76-83
h.	development of appropriate aquatic plant control methods in manatee areas;	n/a
i.	identification of land acquisition projects to increase refuges, reserves and preserves for manatee protection; and	36-37
j.	other actions as specified by the Department of Natural Resources.	n/a

6. Introduction

A. Setting

Clay County is located on the west bank of the Lower St. Johns River (LSJR) in northeast Florida and is bordered by Duval County to the north, Putnam County to the south, and St. Johns County on the east bank of the river (Figure 1). The shoreline in Clay County extends about 30 miles from the Buckman Bridge south to the Clay/Putnam County line. River width exceeds three miles in some areas of Clay County.

Clay County was **not** one of the thirteen key counties mandated by Florida's Governor and Cabinet in 1989 to develop manatee protection plans (MPPs) but have been proactively working on a comprehensive MPP for many years. The Clay County Board of County Commissioners held two workshops in October 1994 and August 1995 to discuss proposed manatee protection planning including recommendations for boating speed zones in Doctors Lake and portions of St. Johns River. The Florida Fish and Wildlife Conservation Commission's (FWC) Imperiled Species Management Section (ISM) is the primary agency responsible for coordinating and assisting the local governments in the development of these plans. As of December 2005, there are 11 counties in Florida with state-approved MPPs (Brevard, Citrus, Collier, Dade, Duval, Indian River, Lee, Martin, Sarasota, St. Lucie, and Volusia).

The Florida manatee, *Trichechus manatus latirostris*, inhabits the waters of the Clay County area year-round. However, few manatees are observed during the winter months because of the lack of any warm water refuges in this area of the LSJR. Manatees are frequently seen from April through November with the highest concentrations occurring during the summer months (June, July and August). Florida manatees exhibit an array of activities in these waters including traveling, resting, feeding, and cavorting (mating).

The Lower St. Johns River provides habitat for manatees along with supporting tremendous recreational and industrial vessel usage. Boat traffic in the river is very diverse with port facilities for large industrial and commercial shippers, commercial fishing, sport fishing and recreational activity.

In 2004, 276 total manatee deaths (including 69 watercraft-related deaths) were reported in Florida waters. Watercraft-related deaths include propeller hits, boat impact, propeller and boat impact combined, and barge impact (Florida Wildlife Research Institute, 2005). There have been a total of 13 watercraft-related manatee deaths documented in Clay County waters from 1975 to 2004.

In order to protect manatees, Clay County has had manatee speed zones in place for portions of the county since 2000 when the state rule was adopted by the FWC. There are also United States Fish and Wildlife Service (USFWS) zones in the same general area as the FWC rule. In addition to the state and federal zones, county-established boating safety zones also exist and provide additional protection to manatees.

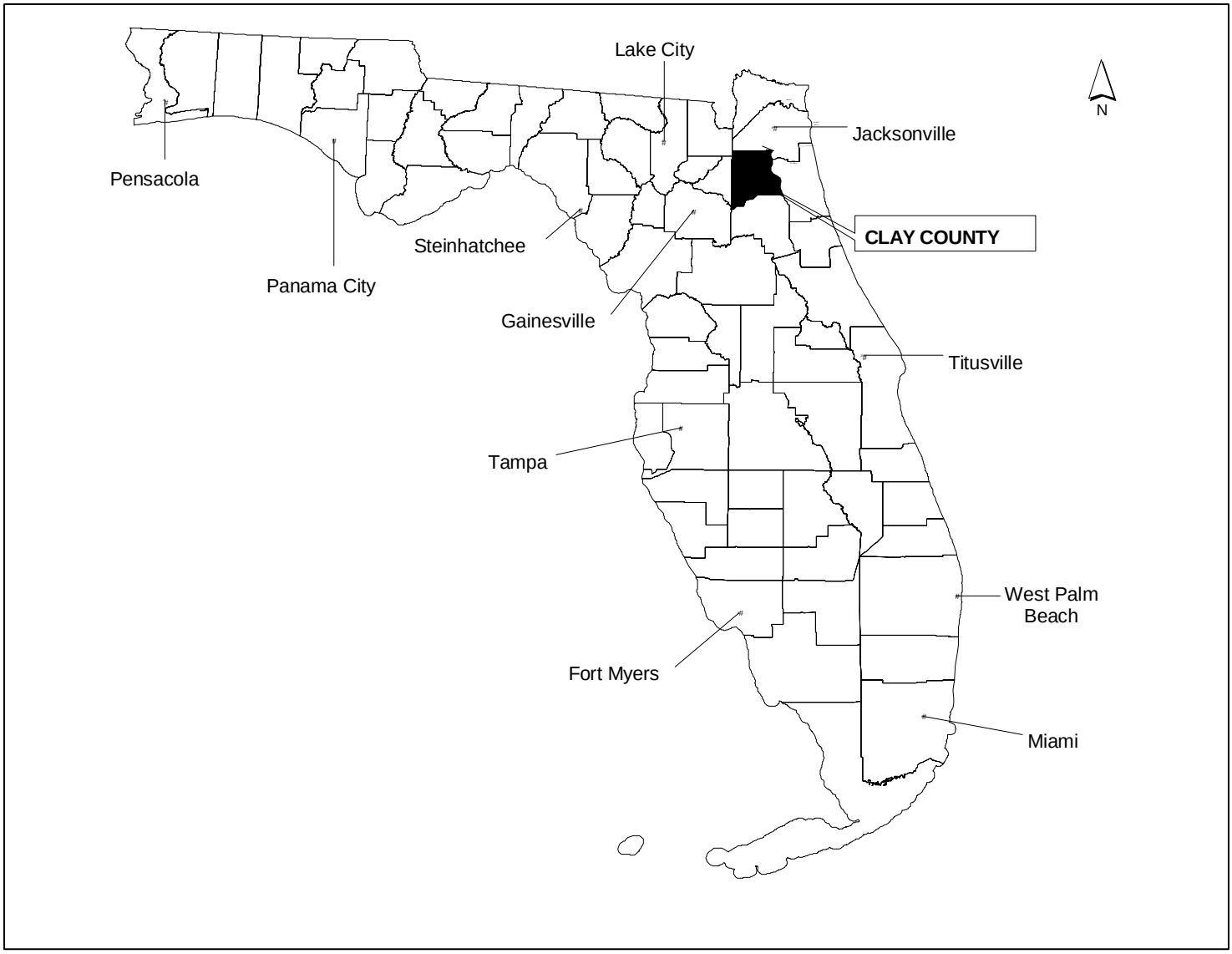


FIGURE 1. Site location of Clay County, Florida.

Because of the potential impacts of boating traffic on manatee survival, vessel registrations are often examined from both a statewide and county-specific perspective. Because of a change in the 1999/2000 fiscal year in the way vessel registrations were tracked, vessel registration statistics in the MPP will be discussed for the 2000/2001 fiscal year through the 2002/2003 fiscal year.

Over this time period, total registered vessels in the State of Florida increased by 4.2% from 864,000 (2000/2001) to 901,730 (2001/2002) and 2.9% from 901,730 (2001/2002) to 929,028 (2002/2003). This represents a 7.1% increase or 65,028 vessels over the last three years. Commercial vessels represent an average of 2.7% of total vessels that decreased by 448 vessels over the last three years. In Clay County, total registered vessels increased by 6% from 10,624 (2000/2001) to 11,286 (2001/2002) and 6% from 11,286 (2001/2002) to 11,943 (2002/2003). This represents a 12% increase or 1,319 vessels over the last three years. Commercial vessels

represent an average of 1.2% of total vessels that decreased by 6 vessels over the last three years. It is also possible that Clay County gets significant boating traffic from neighboring Duval, Putnam, and St. Johns Counties as well as other visitors to the area. (For annual information on private and commercial vessels from the Department of Highway Safety & Motor Vehicles, Statistics and Studies, Revenue Reports 2000, 2001, 2002, 2003, see Appendix E).

Increasing vessel traffic on the St. Johns River, and the significant number of manatees which have been reported using the river, make it important to develop a comprehensive protection plan for the waters of Clay County that addresses manatee protection initiatives and implements policies that direct future boat facility development away from important manatee areas.

B. Purpose

The purpose of this plan is to provide protection to manatees at a level determined necessary and based upon a comprehensive understanding of manatee abundance and distribution, manatee mortality, habitat needs, and interactions with humans, in addition to understanding and acknowledging human recreational and commercial uses of Clay County waterways. The basic concept is to focus future boat facility development away from areas of high manatee use and high watercraft-related mortality.

C. Objectives

The long-term general objectives of this plan are to assist in protecting manatees and their habitats to ensure their continued survival. These objectives are derived from the U. S. Fish and Wildlife Service's (USFWS) Florida Manatee Recovery Plan (2001) and the Governor and Cabinet's 1989 directive to improve boating safety and manatee protection for Florida waterways. Specific objectives include: reducing the number of boat-related mortalities; protecting manatee habitat; promoting boating safety; and increasing public awareness of the need to protect manatees and their habitat. Also, the goals, objectives and policies of the Clay County 2002 Comprehensive Plan are integral components to the long-term objectives in this plan, including the need to adopt the boat facility siting policies into the county's comprehensive plan. In 2002, legislation was passed that exempts counties with state-approved MPPs from the DRI process. Such an exemption would benefit Clay County. However, it should be noted that those counties that are exempt from the DRI process must have appropriate boat facility siting criteria that complies with Section 380.06(24)(k), Florida Statutes. These boat facility siting criteria are then reviewed by the Department of Community Affairs (DCA) with input from the FWC.

D. Format

The Clay County MPP was created to serve as a reference for planning future land and water development in Clay County. In 1992, Clay County adopted the "Clay County 2001 Comprehensive Plan" pursuant to the state mandated 1985 "Growth Management Act." Policy

5.11 of the Conservation Element of the Comprehensive Plan requires the County to develop and implement a MPP. It states that "Clay County shall coordinate with the USFWS, FGFWFC and DNR in protecting manatees and their habitats through a manatee protection plan which shall include maintenance of signage identifying manatee habitat and associated speed zones where shown to be needed and provision of educational materials at boat launch and marina facilities." In addition, relevant sections of the MPP will include protections for listed species and their habitat, as well as policies that address water quality, port facilities, and boat facility siting.

7. Inventory of Existing Conditions

A. Preferred Manatee Habitats

1. Submerged and Emergent Vegetation:

Manatees are herbivores and spend much of their time feeding on aquatic vegetation such as tape grass, *Vallisneria americana,* which occurs most extensively south of the Buckman Bridge on both banks of the main river. Manatees consume from 4-11% of their body weight daily (Bengston 1983; Lomolino 1977; Best 1981). Other aquatic emergent vegetation such as cord grass *Spartina bakeri*, smooth cord grass *Spartina alterniflora*, black needlerush *Juncus roemerianus*, and floating mats of water hyacinth *Eichhornia crassipes* can be found north of the Fuller Warren Bridge or in the Intracoastal Waterway (Kinnaird 1983b).

Submerged aquatic macrophytes found in the Lower St. Johns River and Intracoastal Waterway are primarily freshwater and brackish-water species. Commonly found species include: *Vallisneria americana, Ruppia maritima, Potamogeton pectinatus* and *Ceratophyllum demersum. V. americana, R. maritima* and *Najas guadalupensis* are submerged grasses which form extensive submerged grassbeds when conditions allow. *V. americana* is a freshwater species that tolerates brackish conditions, while *R. maritima* is a brackish-water species.

The distribution of submerged macrophytes is limited to shallow waters near the shore (Kinnaird 1983b). Submerged aquatic vegetation in the tannin-rich St. Johns River is found exclusively in 4 feet or less of water depth due to poor sunlight penetration. Rapid growth occurs in late winter and spring when water temperatures are ideal for plant growth (high plant biomass). In mid-summer, heat stress causes plant mortality resulting in a reduction in biomass and coverage area. The tape grass beds recover annually by recruitment and the cycle continues (Thayer et al. 1984).

Submerged vegetation provides nurseries for a variety of aquatic life, helps to prevent erosion, and reduces turbidity by trapping sediment. Sunlight is vital for good growth of submerged grasses. Sunlight penetration may be reduced because of increased turbidity, pollution from upland development and/or disturbance of soils. Deteriorating water quality can cause a reduction in the amount of viable, submerged vegetation. This leads to erosion and further deterioration of water quality.

Map Series C, Dockline & Submerged Vegetation, is a set of maps depicting the extent of submerged tape grass beds in Clay County for the years 1998 (Dobberfuhl 2002) and 2001 (Dobberfuhl, unpublished). Locations of submerged vegetation were determined by using three methods: (1) aerial photography interpretation, (2) hydroacoustic mapping, and (3) ground-truth transects (Dobberfuhl 2002). Graphic depiction of tape grass beds and all other map series were generated in ArcView using information provided by the St. Johns River Water Management District (SJRWMD).

In addition, updated information relating to the condition of grass beds in Duval, Clay and St. Johns Counties (Table 1) was also provided for the years 1998 to 2004 (D. Dobberfuhl, unpublished data, SJRWMD). The "Total % Cover" may be greater than 100% because the transects were performed using the line-intercept method wherein continuous patches of each species were identified and recorded. Many of these patches overlapped, resulting in greater "Total %. Cover" figures.

TABLE 1. Grass bed data from the St. Johns River Water Management District.

County	Year	Percent bare	Percent tape grass	Bed length (m)	Diversity	Total % Cover*
Duval	**1998**	**39.56**	**50.25**	**75.86**	**0.67**	**60.44**
	2000	**86.75**	**8.14**	**58.27**	**0.33**	**15.11**
	2001	**75.75**	**19.44**	**63.57**	**0.38**	**27.14**
	2002	**79.66**	**15.89**	**28.22**	**0.15**	**22.34**
	2003	**47.57**	**46.39**	**61.88**	**0.35**	**59.20**
	2004	**33.33**	**56.75**	**64.64**	**0.57**	**87.45**
Clay	**1998**	**44.98**	**50.11**	**100.25**	**0.55**	**55.02**
	2000	**58.46**	**34.86**	**92.76**	**0.54**	**50.25**
	2001	**35.15**	**52.33**	**110.53**	**0.88**	**83.72**
	2002	**42.20**	**51.57**	**38.42**	**0.48**	**71.00**
	2003	**20.39**	**71.57**	**102.93**	**0.59**	**96.85**
	2004	**16.07**	**72.49**	**109.19**	**0.92**	**120.52**
St. Johns	**1998**	**47.46**	**46.52**	**73.40**	**0.64**	**52.54**
	2000	**45.62**	**41.19**	**80.60**	**0.74**	**64.43**
	2001	**38.28**	**45.71**	**72.30**	**1.01**	**84.08**
	2002	**41.73**	**46.56**	**61.45**	**0.81**	**82.46**
	2003	**39.38**	**49.55**	**70.21**	**0.83**	**82.81**
	2004	**32.02**	**53.19**	**77.65**	**0.94**	**95.49**

*** Including all observed species.**

Source: D. Dobberfuhl, unpublished data. SJRWMD 2004.

Note: This area of the LSJR experienced drought conditions in the 2000 to 2002 time period which resulted in higher numbers in the "percent bare" column above.

The percent of bottom that was bare in Clay County ranged from 42 to 58% (1998 to 2002) following the drought in 2001 and 2002 then decreased to 20% (2003) and 16% (2004). The percent of grass beds comprising specifically of *Vallisneria americana* was relatively unchanged between 1998 (50%), 2000 (35%) and 52% (2001/2002) but then increased to 72% (2003/2004).

Bed length in Clay County waters was relatively unchanged and ranged from 93-111m (1998-2001) but then decreased to 38m (2002). In 2003 and 2004, bed length increased again to 103m and 109m, respectively. The diversity index was highest in 2001 (0.88), then decreased to 0.48 (2002), increased to 0.59 (2003), and then increased again 0.92 (2004) indicating a consistent increase since 2002. Prior to 2001, the diversity indices were 0.55 and 0.54 (1998 and 2000, respectively).

The total percent coverage including all observed species has increased steadily since 1998 (55%) to 84% (2001), 71% (2002), 97% (2003), and 121% (2004).

2. Warm Water Attractants:

Because manatees are sensitive to cold temperature conditions, they are attracted to power plants that produce warm water outfalls and natural springs. Clay County does not have any power plants or other types of industrial warm water sources. Three freshwater springs (Green Cove Spring, Wadesborough Spring, and another unnamed spring near the Port of Green Cove) have been identified in Clay County but they appear to be too small to function as warm water attractants to manatees. Historically, manatees have not been observed during winter observations at these locations.

Green Cove Spring discharges between 1,170-2,340 gallons/minute (gal/min). Warmth from the spring dissipates as it travels down a 300 ft. long run, and a large shallow delta area at the confluence with the St. Johns River prevents manatees from accessing the spring discharge. Wadesborough Spring and an adjacent unnamed spring discharge 900 gal/min. at the north side of Doctors Lake. Another unnamed spring off the Port of Green Cove (25 ft. water depth) discharges about 935-1,400 gal/min.(Rick Speckler, USGS, 1994, personal communication). Map Series A shows seasonal manatee sightings during aerial surveys in relation to the location of these springs as determined by the SJRWMD (Osburn et al., 2002). Aerial surveys do not show any significant usage of these springs.

Small numbers of manatees remain in Northeast Florida in the winter months. Currently, there are no more warm water industrial outfalls in Duval, Clay or St. Johns Counties. Historically, groups of manatees have been observed at Duval County warm water refugia during the early winter and late spring (Valade 1991). Manatees frequently used the old Southside Generating Station (Jacksonville, Duval County) until it closed in October 2001 but little use was observed during the 2003/2004 winter. Although there are numerous other minor springs along the

LSJR that may provide thermal benefits to manatees, Blue Spring (Volusia County) is the focus of the St. Johns River sub-population during the winter months (196 total manatees seen at Blue Spring during the 2004-2005 winter)(Wayne Hartley, Park Ranger, Blue Spring State Park, personal communication).

3. Distribution and Abundance:

Manatees in the Clay County area are a combination of the Atlantic Coast and LSJR sub-populations that winter in the coastal waters south of Jacksonville (Kinnaird and Valade 1983, Valade 1991). On the east coast, there is a core group of more than 100 manatees that use the Blue Spring warm-water refuge in the Upper St. Johns River and tend to remain in the Upper St. Johns River area (Bengtson 1981). Most animals in the Lower St. Johns River are part of the Atlantic Region sub-population that frequent Clay, Duval, Nassau, St. Johns and Putnam County waters as based on results of long-term radio tracking and photo-identification studies (Beck and Reid 1995; Reid et al. 1995; Deutsch *et al*. 1998).

Information on Florida manatee distribution and abundance in northeast Florida is based upon historical and continuing aerial survey data from 1982 to date (Kinnaird and Valade 1983, Valade 1991, Brooks personal communication). Evidence from surveys conducted over several one to two-year periods by USFWS and FDEP respectively, along with earlier research on manatee abundance in northeast Florida, implies that manatee usage exhibits seasonal migratory fluxes (Beeler and O'Shea 1988, Valade 1991, White et al. 2002). Historical aerial survey data show that the numbers of manatees sighted increased as ambient water temperatures increased (>70°F), and decreased as ambient water temperatures decreased (<70°F) in late winter (Kinnaird 1983, Valade 1991, Worthy et al. 2000, White et al. 2002).

In a series of aerial surveys conducted by the USFWS (1982-1983), the area of coverage included Duval County waters as well as the St. Johns River extending into Clay and St. Johns Counties (to the Shands Bridge). The coverage area also included the Atlantic Intracoastal Waterway from Kings Bay, Georgia to Oak Hill, Florida. The St. Johns River portion of the survey yielded a total count of 425 manatees, including 7% calves (23 aerial surveys). Highest sighting counts were recorded from the Buckman Bridge to Green Cove Springs. Kinnaird (1983) states that these results confirmed that percent bottom cover by submerged aquatic vegetation is the best predictor of manatee presence. The highest single-day count in this study of 48 manatees was recorded in May, 1983. The most frequent group configuration in this study was single or paired manatees.

Aerial surveys were conducted by CH2M Hill (June 1985- June 1986), as part of the St. Johns Harbour DRI assessment report (2 surveys per month). The DRI proposed building a multi-slip marina on Six Mile Creek southeast of Green Cove Springs in St. Johns County. The study area extended from Federal Point just north of Palatka (Putnam County) to Hibernia Point on Fleming Island (Clay County). Over half of the manatees counted were found north of Shands Bridge. In Clay County, manatees were most frequently seen in the mouth of Black Creek (11), Green Cove (9), Magnolia Cove (8), and off Wilkies Point (5). Manatees were also observed at Hibernia Point (4), in Governors Cove (3), and south of the Shands Bridge (3).

Manatees were most frequently observed during the warmer months (May –September), and no manatees were seen during the colder months (December-April). The highest number of calves was seen in the fall months despite a lower total number of manatees.

The City of Jacksonville's Department of Parks, Recreation and Entertainment funded a similar study (May 1988-April 1990) limited to Duval County waters including the Intracoastal Waterway (Valade 1991). A total of 52 aerial surveys was conducted with 1,823 recorded manatee sightings including 4.9% calves. A peak single count of 99 manatees was recorded in October, 1988. As expected, manatee abundance increased during the spring and peaked in the late summer. The principal activity of manatees surveyed in the main river system was traveling (Valade 1991).

FDEP (now FWC) conducted aerial surveys of the St. Johns River (May 26, 1993- February 9, 1994) using a helicopter in place of the fixed-wing aircraft used in other surveys of Duval County waters. Aerial surveys were performed in the lower reaches of the St. Johns River and its tributaries from Mayport to Black Creek. A total of 919 manatees, 8.1% calves, was sighted (21 aerial surveys). The largest single-day count was 102 manatees (May, 1994). Manatees were observed along the shore throughout Doctors Lake. Highest counts were seen from the Buckman Bridge south to Doctors Inlet (61), from Doctors Inlet to one mile south of Raggedy Point (53), and in portions of Doctors Lake. Within Doctors Lake, the counts were highest at Romeo Point (16), Mill Cove (14), Geigers Point (10), and Swimming Pen Creek (9).

Jacksonville University has conducted aerial surveys from March 1994 to the present. Bimonthly surveys have been conducted in areas manatees are known to frequent including the St. Johns River, its tributaries (including northern Clay and St. Johns Counties), and the Atlantic Intracoastal Waterway (Nassau Sound to Palm Valley). During the winter months, all natural and industrial warm water sources in Northeast Florida are also monitored. During 315 bimonthly surveys, a total of 6,661 manatees has been observed including 8.2 % calves. When water temperatures decrease (December through March), the majority of manatees in Duval County waters migrate south to Blue Spring and/or other warmer South Florida waters (White et al., 2002).

Manatee survey data from Jacksonville University indicated that manatees were observed feeding, resting and cavorting/mating in greater numbers south of the Fuller Warren Bridge relative to other waters in Duval County. Sightings in remaining waters consisted mostly of manatees traveling or resting. Preliminary data suggested that manatees use the Intracoastal Waterway as a travel corridor during their seasonal (north/south) migrations along the east coast. Manatees appeared to stay close to the shore, utilizing small tributaries for feeding when in these waters. Aerial survey counts of manatees are indices of abundance at the time of each survey. As a result, counts must be viewed as relative only to trends in general abundance, distribution countywide, and habitat use patterns (Irvine 1980). *Map Series A, Manatee Aerial Sightings*, provides graphical distribution information about manatees. The first map in this series shows pooled data for all aerial surveys conducted by Jacksonville University since 1994.

These results support observations made in prior studies by Hartman (1979) and Valade (1991) that manatee abundance and distribution in the LSJR was correlated with water temperatures and food resources. Abundance was greatest during the summer months when water temperatures exceeded 17°C. Abundance was limited during the winter when water temperatures fell below 16°C. This threshold supports that reported in earlier studies by Allsopp (1969) and Irvine et al. (1981) of 19°C to 16°C limiting winter abundance. Also, Kinnaird (1983) mentioned a threshold water temperature of 20°C above which manatee abundance was significantly higher away from warm water sources.

Due to the geographic nature and delineation of county boundaries along the LSJR, data from the Clay County study area are often discussed along with that of adjacent counties.

1. *Aerial survey data for southern Duval, northern Clay and St. Johns Counties* (Table 2, Figure 2). This dataset is for the time period, March 1994 to October 2004, and covers the area south of the Buckman Bridge to Hibernia Point (west bank) and from the Buckman Bridge to New Switzerland Point (east bank). This area also includes Doctors Lake, Julington Creek, and Durbin Creek and was flown by Jacksonville University personnel as part of the Duval County manatee aerial surveys.

Table 2 . Summary of aerial survey data for south Duval, north Clay and north St. Johns Counties.

Survey Months/Yr.	No. of surveys	Adults	Calves	Total	% Calves	Manatees/survey means
3/94-12/94	20	484	55	539	10.20	26.95
1/95-12/95	22	269	13	282	4.61	12.82
1/96-12/96	21	296	45	341	13.20	16.24
1/97-12/97	23	551	39	590	6.61	25.65
1/98-12/98	26	485	54	539	10.02	20.73
1/99-12/99	20	594	66	660	10.00	33.00
1/00-12/00	21	199	19	218	8.72	10.38
1/01-12/01	18	288	10	298	3.36	16.56
1/02-12/02	23	582	21	603	3.48	26.22
1/03-12/03	22	710	52	762	6.82	34.64
1/04-12/04	18	491	54	545	9.91	30.28
Total	234	4,949	428	5,377	7.96	22.98

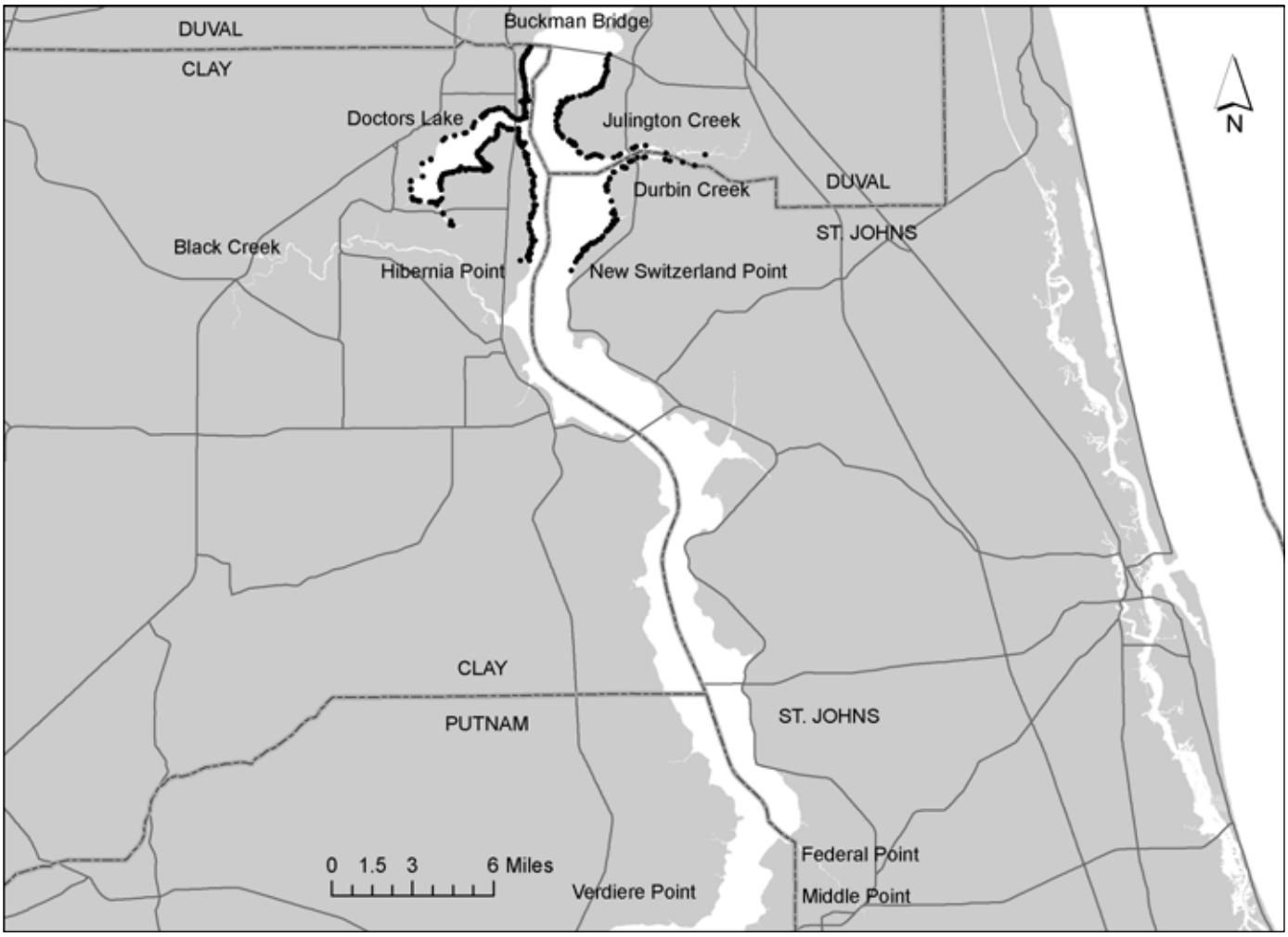


FIGURE 2. Aerial sightings of manatees in southern Duval, north Clay and St. Johns Counties. Data collection occurred between March 1994 and October 2004 (Tables 2-5) and covers the area south of the Buckman Bridge to Hibernia Point (west bank) and from the Buckman Bridge to New Switzerland Point (east bank). This area also includes Doctors Lake, Julington Creek and Durbin Creek. Each dot may represent one or more manatees. Source: Jacksonville University 2005.

A total of 234 aerial surveys was conducted in this area between March 1994 and December 2004. During this time, 4,949 adults and 428 calves for a total of 5,377 manatees were observed. Calves represented 7.96% of the total number of manatees sighted (Table 2, Figure 2). This percentage of calves was similar to those reported by Campbell and Irvine (1981) of 9.6 %, Valade (1991) of 5 %, and Kinnaird (1983) of 7 % for the LSJR, Duval County. A mean number of 22.98 (SD ± 9) manatees/survey was calculated for this area.

Summary of aerial survey data for the west bank of the LSJR : Historical and present study data for northern Clay County (Table 3, Figure 2) are presented below. Data collection occurred between March 1994 and December 2004 and covers the area south of Buckman Bridge to Hibernia Point (west bank). This area also includes Doctors Lake.

Table 3 . Summary of aerial survey data for northern Clay County (west bank of the LSJR).

Survey Months/Yr.	No. of surveys	Adults	Calves	Total	% Calves	Manatees/survey means
3/94-12/94	**20**	**354**	**45**	**399**	**11.28**	**19.95**
1/95-12/95	**22**	**172**	**9**	**181**	**4.97**	**8.23**
1/96-12/96	**21**	**224**	**36**	**260**	**13.85**	**12.38**
1/97-12/97	**23**	**442**	**32**	**474**	**6.75**	**20.61**
1/98-12/98	**26**	**342**	**40**	**382**	**10.47**	**14.69**
1/99-12/99	**20**	**421**	**53**	**474**	**11.18**	**23.70**
1/00-12/00	**21**	**156**	**11**	**167**	**6.59**	**7.95**
1/01-12/01	**18**	**231**	**10**	**241**	**4.15**	**13.39**
1/02-12/02	**23**	**375**	**15**	**390**	**3.85**	**16.96**
1/03-12/03	**22**	**493**	**36**	**529**	**6.81**	**24.05**
1/04-12/04	**18**	**380**	**42**	**422**	**9.95**	**23.44**
Total	**234**	**3,590**	**329**	**3,919**	**8.39**	**16.75**

Source: Jacksonville University 2005.

A total of 234 surveys was conducted in this area between March 1994 and December 2004. During this time, 3,590 adults and 329 calves for a total of 3,919 manatees were observed. Calves represented 8.39% of the total number of manatees sighted (Table 3, Figure 2). A mean number of 16.75 manatees/survey was calculated for this area.

Single Highest Day Counts (SHDC): The SHDC for this area of the LSJR ranged from 34 to 120 manatees (1994-2004). Valade (1991) reported a peak count of 99 manatees in his study of the whole of Duval County (Table 4, Figure 2). The total number of manatees was lower from 1994 to 1996 (range 34-55 manatees/survey). Then, numbers increased from 1997 to a peak in 1999 (range 78-120 manatees/survey). The totals (range of 45-48 manatees/survey) then decreased in the next two years, 2000 to 2001, probably because of drought conditions and poor rainfall that adversely affected the health and vitality of the tape grass beds that manatee rely on for food in this area. Between 2002 and 2004, the total number of manatees sighted increased again (range 78- 112 manatees/survey) with adequate rainfall and subsequent regeneration of tape grass beds. In the past two years, high counts have exceeded 100 animals.

Table 4 . Summary of Single Highest Day Counts (SHDC) from aerial survey data for south Duval, north Clay and north St. Johns Counties.

Date	Adults	Calves	Total	Manatee groups
5/26/94	50	5	55	15
9/28/94	48	7	55	20
7/20/95	32	2	34	17
6/21/96	41	8	49	18
6/25/97	71	7	78	41
9/11/98	72	8	80	36
9/28/99	108	12	120	55
5/3/00	42	3	45	20
6/22/01	48	0	48	22
6/24/02	75	3	78	39
6/25/03	103	4	107	43
5/20/04	96	16	112	35

Source: Jacksonville University 2005.

SHDC for West bank LSJR (Clay County only): The SHDC for this area of the LSJR ranged from 27 to 93 manatees (1994-2004) (Table 5, Figure 2).

Table 5 . Summary of Single Highest Day Counts (SHDC) from aerial survey data for northern Clay County.

west bank of LSJR				
Date	Adults	Calves	Total	Manatee groups
5/26/94	49	5	54	14
5/16/95	26	1	27	7
6/21/96	28	8	36	17
8/26/96	31	5	36	12
6/25/97	58	6	64	36
9/11/98	48	6	54	25
9/28/99	75	9	84	37
5/18/00	35	3	38	18
6/4/01	35	3	38	13
6/17/02	45	5	50	16
6/25/03	73	3	76	30
5/20/04	79	14	93	27

Source: Jacksonville University 2005.

Behavior Information: Manatees spent most of the time resting, followed by feeding and traveling and the least time was spent cavorting. Lower numbers of manatees in 2000/2001 were attributed to lower than average food reserves during a period of drought. Moreover, manatees seemed to travel more in search of food, and fewer manatees were observed feeding in the area. Seasons were classified as winter (December-February), spring (March-May), summer (June-August), and fall (September-November).In a comparison of means, the percent of animals engaged in various behaviors was not significantly different between the spring, summer and fall. Animals engaged in traveling behaviors 20% of the time, feeding 25% of the time, and resting 34-46% of the time. In winter, numbers were lower than in other seasons except for traveling (21%). Most manatees were seen cavorting in the spring (18%) and a lower percentage during the summer (12%) and fall (12%). No manatees were seen cavorting in the winter months.

There were no differences in the general behaviors between the east and west banks of LSJR except for more animals (20%) cavorting in spring on the west bank versus less (6%) on the east bank. Also, higher numbers of animals were seen traveling in spring (34%) on the east bank versus 19% on the west bank and in winter on the east bank (17%) versus 10% on the west bank.

2. *Aerial survey data for central/southern Clay County, St. Johns County, and northern Putnam County*: The most recent study data for central and southern Clay and St. Johns Counties with slight overlap into north Putnam County is presented below (Table 6, Figure 3). Data collection began August 19, 2002 and ended December 9, 2003 and covers the area south of Hibernia Point to Verdiere Point (west bank) and from New Switzerland Point to Middle Point (east bank). This data set represents information from the Clay County sponsored manatee aerial survey dataset.

Table 6 . Summary of aerial survey data for central and southern Clay and St. Johns Counties and the northern portion of Putnam County.

Survey Months/Yr.	No. of surveys	Adults	Calves	Total	% Calves	Manatees/survey mean
8/19/02-12/9/03	**28**	**762**	**44**	**806**	**5.46**	**28.79**

Source: Jacksonville University 2005.

Manatees were most abundant in summer ’03 (301) followed by fall ‘03 (201) and fall ’02 (114) and spring ’03 (91). No manatees were observed in winter. *Map Series A, Manatee Aerial Sightings*, provides graphical distribution information about manatees.

Of the 806 total manatees sighted during the most recent study, 377 (46.77%) manatees were observed on the west bank of the LSJR. This total included 28 calves (7.43% of the total for this area). A mean number of 13 manatees/survey was observed along this portion of the west bank of the LSJR.

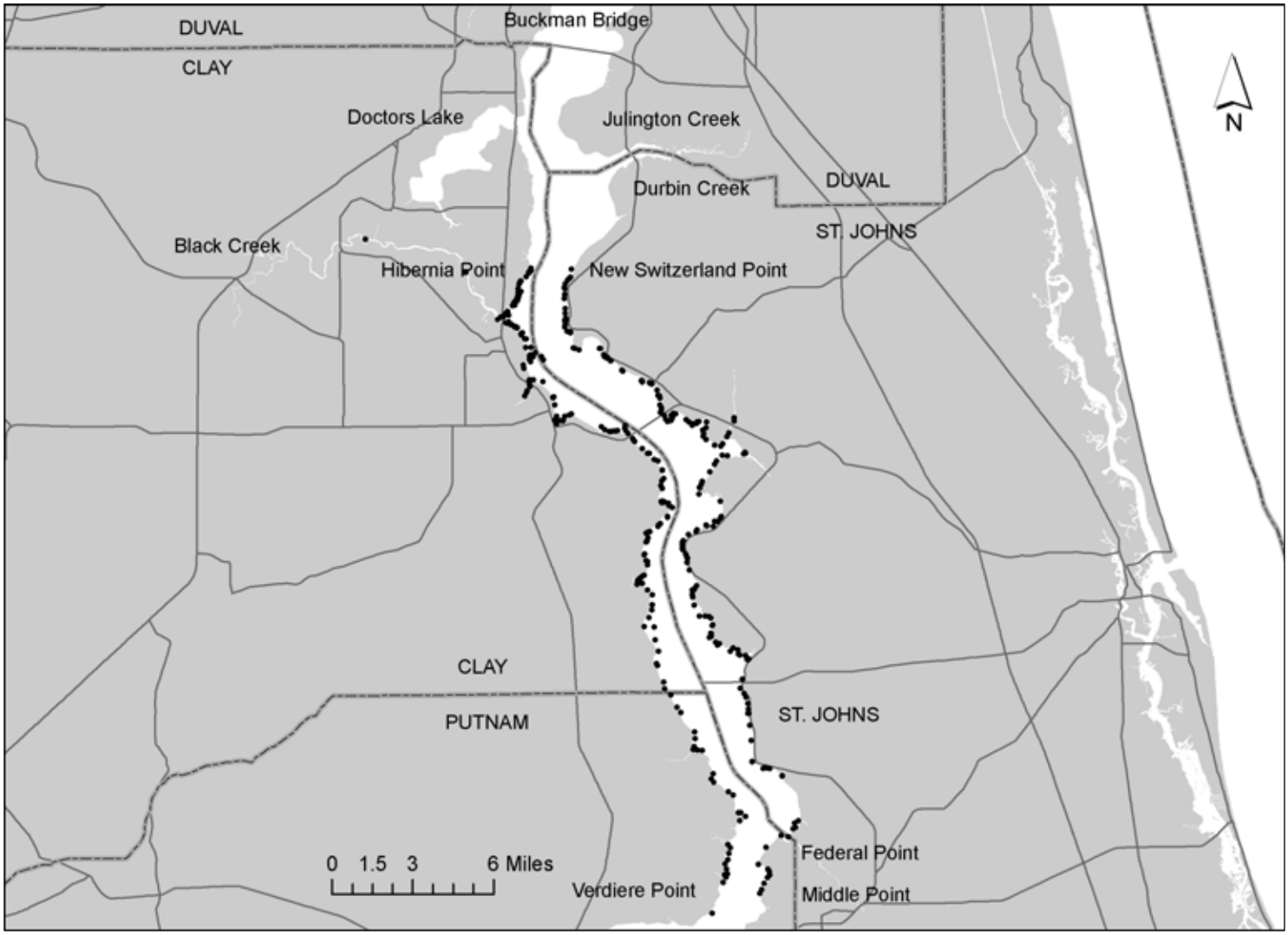


FIGURE 3. Aerial sightings of central and southern Clay and St. Johns Counties with slight overlap into northern Putnam County (Table 6). Data collection occurred from September 10, 2002 to December 9, 2003 and covered the area south of Hibernia Point to Verdiere Point (west bank) including Black Creek and from New Switzerland Point to Middle Point (east bank). Each dot may represent one or more manatees.
Source: Jacksonville University 2005.

Single Highest Day Counts (SHDC): The SHDC for this area of the LSJR (Central/Southern Clay County, St. Johns County, and Northern Putnam County) was 97 manatees.

The SHDC for the west bank area of the LSJR was 44 manatees

Behavior Information: Manatees spent most of the time feeding, followed by resting and traveling and the least time was spent cavorting (Table 7). In a comparison of means, the percent of animals engaged in various behaviors was not significantly different between spring, summer and fall months. There were no differences in the general behaviors between the east and west banks of LSJR.

Table 7. Percent of manatees engaged in Traveling (T), Resting (R), Feeding (F) and Cavorting (C) behaviors in the St. Johns River. Data from aerial surveys for central and southern Clay and St. Johns Counties and the northern portion of Putnam County.

Year/Season	Total No.	Percent T	Percent R	Percent F	Percent C	Manatee groups
Fall '02	114	33	22	38	7	34
Fall '03	201	19	35	43	2	54
Winter '02-03	0	0	0	0	0	0
Spring '03	91	32	23	42	3	13
Summer '03	301	17	31	35	17	53
Total	707					154
Mean	141	20	22	31	6	31
SD	114	13	14	18	7	24

T = Traveling; R = Resting; F = Feeding and C = Cavorting

Source: Jacksonville University 2005.

3. Aerial survey data for Clay County: The most recent study data for Clay County waters only (Table 8) are presented. Data collection occurred from August 19, 2002 to December 9, 2003 and covers the area south of Buckman Bridge to the Clay/Putnam County line (west bank only). This data subset includes information derived from both the Duval and Clay County aerial survey datasets. Duval County flights that overlapped into Clay County were assigned an equivalent survey date that coincided with the relevant Clay County flight survey date. The SHDC for the overall Clay County area was 112 manatees on June 25, 2003.

Table 8 . Summary of aerial survey data for Clay County only.

Survey Month/Yr.	No. of surveys	Adults	Calves	Total	% Calves	Manatees/survey means
8/19/02-12/9/03	**28**	**880**	**66**	**946**	**6.98**	**33.79**

Source: Jacksonville University 2005.

The following data for Clay County are discussed based on the boat facility siting zone boundaries as shown in Figure 27.

Summary of aerial survey data for northern Clay County: The most recent study data for northern Clay County waters only are presented below (Table 9). Data collection occurred from August 19, 2002 to December 9, 2003 and covers the northern area of Clay County from the Buckman Bridge to the mouth of Black Creek. This area includes Doctors Lake and Black Creek. The SHDC for this area of the LSJR was 93 manatees on June 25, 2003.

Table 9 . Summary of aerial survey data for northern Clay County only.

Survey Month/Yr.	No. of surveys	Adults	Calves	Total	% Calves	Manatees/survey means
8/19/02-12/9/03	**28**	**620**	**43**	**663**	**6.49**	**23.68**

Source: Jacksonville University 2005.

Summary of aerial survey data for central Clay County: The most recent study data for central Clay County waters only are presented below (Table 10). Data collection occurred from August 19, 2002 to December 9, 2003 and covers the central area of Clay County from the mouth of Black Creek to Red Bay Point at the Shands Bridge. The SHDC for this area of the LSJR was 28 manatees on July 9, 2003.

Table 10 . Summary of aerial survey data for central Clay County only.

Survey Month/Yr.	No. of surveys	Adults	Calves	Total	% Calves	Manatees/survey means
8/19/02-12/9/03	**28**	**143**	**11**	**154**	**7.14**	**5.50**

Source: Jacksonville University 2005.

Summary of aerial survey data for southern Clay County: The most recent study data for Clay County waters only are presented below (Table 11). Data collection occurred from August 19, 2002 to December 9, 2003 and covers the southern area of Clay County from the Red Bay Point at the Shands Bridge to the Clay/Putnam County line. The SHDC for this area of the LSJR was 18 manatees on May 14, 2003.

Table 11 . Summary of aerial survey data for southern Clay County only.

Survey Month/Yr.	No. of surveys	Adults	Calves	Total	% Calves	Manatees/survey means
8/19/02-12/9/03	**28**	**117**	**12**	**129**	**9.30**	**4.61**

Source: Jacksonville University 2005.

4. *Aerial survey data for south Duval, Clay and St. Johns Counties*: The most recent study data for south Duval, Clay and St. Johns Counties and the northern portion of Putnam County (Tables 12-14, Figure 4) are discussed below. Data collection occurred from August 19, 2002 to December 9, 2003 and covers the area south of the Buckman Bridge to Verdiere Point (west bank) and Middle Point (east bank) in northern Putnam County. This dataset represents the relevant aerial sightings of manatees on both sides of the river for all waters adjacent to Clay County for the present study period. Duval County flights that overlapped into Clay County were assigned an equivalent survey date that coincided with the relevant Clay County flight survey date. The SHDC for this overall area of the LSJR was 190 manatees on June 25, 2003. Between July 19, 2003 and August 26, 2003, single day counts ranged between 125 and 128 manatees/survey. The SHDC for the west bank of Clay County and northern Putnam County was 41 manatees on November 12, 2003, and the SHDC for the east bank of the LSJR was 59 manatees on August 19, 2002.

Table 12. Summary of aerial survey data for southern Duval, Clay and St. Johns Counties and northern Putnam County.

Survey Month/Yr.	No. of surveys	Adults	Calves	Total	% Calves	Manatees/survey means
8/19/02-12/9/03	**28**	**1,609**	**99**	**1708**	**5.80**	**61.00**

Source: Jacksonville University 2005.

Table 13. Summary of aerial survey data for Clay County and northern Putnam County (west bank of LSJR).

Survey Month/Yr.	No. of surveys	Adults	Calves	Total	% Calves	Manatees/survey means
8/19/02-12/9/03	**28**	**931**	**65**	**996**	**6.53**	**35.57**

Source: Jacksonville University 2005.

Behavior Information: Manatees spent most of the time resting, feeding and traveling and the least time was spent cavorting (Table 14).

Table 14. Percent of manatees engaged in Traveling (T), Resting (R), Feeding (F) and Cavorting (C) behaviors in the St. Johns River. Data from aerial surveys for south Duval, Clay and St. Johns Counties and the northern portion of Putnam County.

Year/Season	Total	Adults	Calves	Percent				Manatee
				T	R	F	C	groups
Fall '02	255	249	6	23	27	24	27	99
Fall'03	335	310	25	20	43	33	3	152
Winter '02-03	0	0	0	0	0	0	0	0
Spring '03	227	208	19	26	35	34	6	103
Summer '03	791	748	43	19	27	35	19	323
Total	1,608	1,515	93					677

T = Traveling; R = Resting; F = Feeding and C = Cavorting
Source: Jacksonville University 2005.

Cumulative counts and summary:

In order to determine manatee density, cumulative counts for the area south of the Buckman Bridge (Clay, Duval and St. Johns Counties) to Verdiere Point/Middle Point (north Putnam County) were computed from the existing aerial survey data. Total per location counts were made for different areas along the St. Johns River. Table 15 shows aerial sightings of manatees on the west bank of the LSJR from March 1994 to December 2002 in the area south of the Buckman Bridge to Black Creek. Table 16 shows aerial sightings of manatees on the east bank of the LSJR from March 1994 to December 2002 in the area south of the Buckman Bridge to Cunningham Creek.

TABLE 15. Cumulative counts of manatees in the LSJR 1994 – 2002.

west bank of LSJR

LOCATION	ADULTS	CALVES	TOTAL
Buckman Bridge - Doctors Inlet	1,261	121	1,382
Doctors Lake	1,282	127	1,409
Doctors Inlet - Ragged Point	420	30	450
Ragged Point - Black Creek	227	16	243

NOTE: These numbers indicate total aerial survey counts within a specified stretch of river bank individual animals may migrate to other areas between flights.
Source: Jacksonville University, 2005.

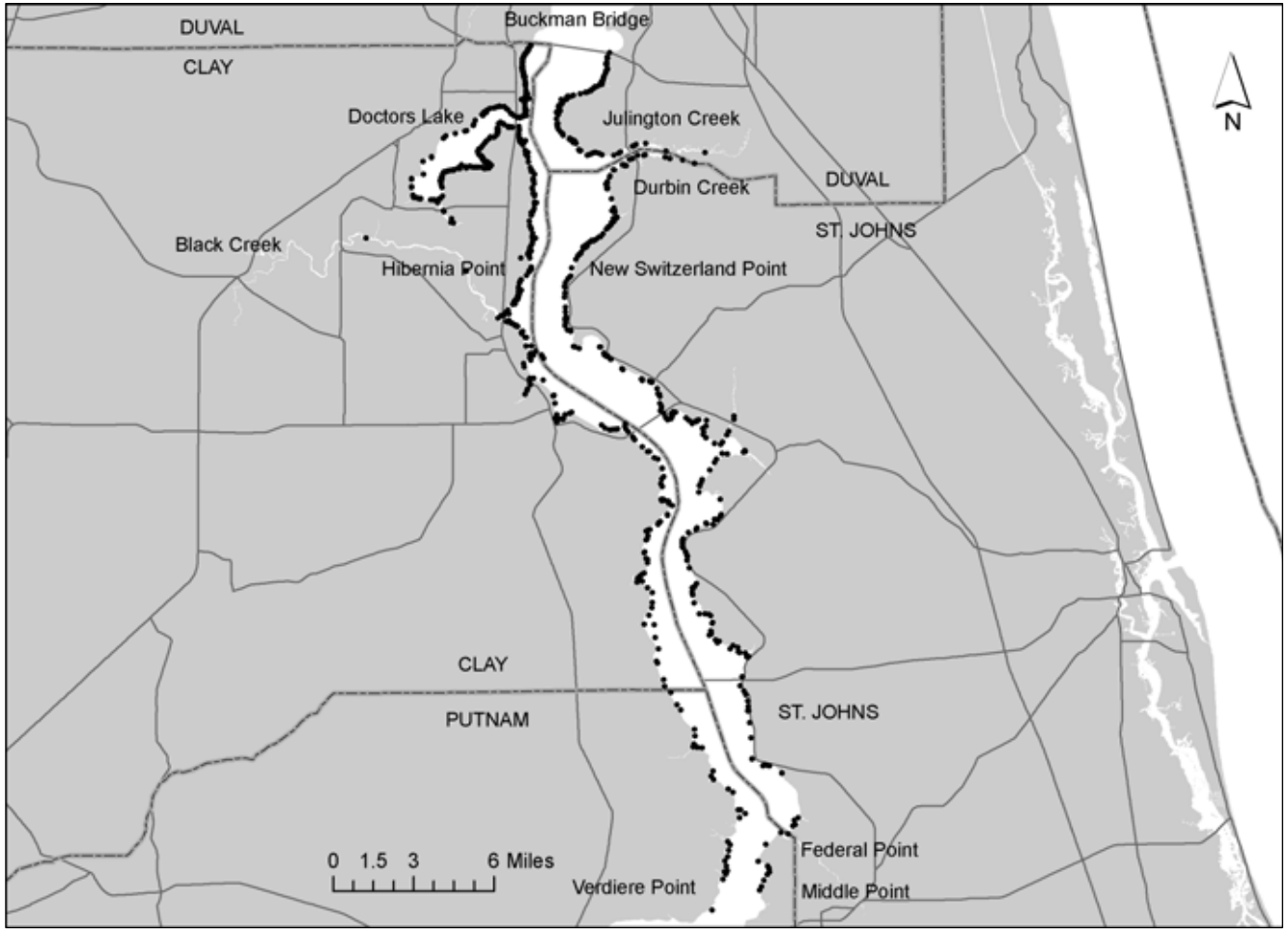


FIGURE 4. Aerial sightings for southern Duval, Clay and St. Johns Counties and the northern portion of Putnam County. Data collection occurred from August 19, 2002 to December 9, 2003 and covers the area south of Buckman Bridge to Verdiere Point (west bank) and Middle Point (east bank). Each dot may represent one or more manatees. Source: Jacksonville University 2005.

TABLE 16. Cumulative counts of manatees in the LSJR 1994 – 2002.

east bank of LSJR

LOCATION	ADULTS	CALVES	TOTAL
Buckman Bridge - Julington Creek	909	62	971
Julington Creek	73	13	86
Julington Creek - Cunningham Creek	135	4	139

NOTE: These numbers indicate total aerial survey counts within a specified stretch of river bank individual animals may migrate to other areas between flights.

Source: Jacksonville University, 2005.

More manatees tended to be seen on the west bank of LSJR. The data indicated that 74 % (3,484 animals) of the total number of manatees sighted occurred on the west bank of LSJR and 26 % (1,196 animals) occurred on the east bank. This supports prior observations made by Kinnaird (1983) who reported that more manatees were observed on the west bank of the St. Johns River within Clay County along with the southwest edge of Doctors Lake. Most animals are seen in the main stem of the river north of Doctors Inlet and within Doctors Lake itself. The fewest animals were observed in Julington Creek and towards Cunningham Creek as well as the area in between Doctors Inlet and Black Creek. In the more recent data (August 2002 to December 2003), the trend was less pronounced indicating 58 % (996 animals) of the total number of manatees sighted occurred on the west bank of the LSJR versus 42 % (712 animals) on the east bank (Tables 17 and 18). On the west bank, few animals were observed in Black Creek possibly due to poor visibility caused by tree overhangs, narrow waterways and dark deep water. On the east bank, the same was true for Julington Creek.

TABLE 17. Cumulative counts of manatees in the LSJR August 2002 – December 2003.

west bank of LSJR

LOCATION	ADULTS	CALVES	TOTAL
Buckman Bridge - Doctors Inlet	155	13	168
Doctors Lake	268	13	281
Doctors Inlet - Ragged Point	49	1	50
Ragged Point - Black Creek	108	9	117
Black Creek	2	0	2
Black Creek - Red Bay Point	130	10	140
Red Bay Point - Bayard Point	49	3	52
Bayard Point - Clay County Line (south)	67	9	76
Putnam County Line (north) - Verdiere Point	51	1	52

NOTE: These numbers indicate total aerial survey counts within a specified stretch of river bank individual animals may migrate to other areas between flights.

Source: Jacksonville University, 2005.

TABLE 18. Cumulative counts of manatees in the LSJR August 2002 - December 2003.

east bank of LSJR

LOCATION	ADULTS	CALVES	TOTAL
Buckman Bridge - Julington Creek	160	5	165
Julington Creek	9	2	11
Julington Creek - Cunningham Creek	25	2	27
Cunningham Creek - New Switzerland	74	8	82
New Switzerland - Popo Point	82	4	86
Popo Point - Smith Point	93	4	97
Smith Point - Picolata	108	2	110
Picolata - Magnolia Point	75	1	76
Magnolia Point - Racy Point	18	2	20
Racy Point - Middle Point	42	3	45

NOTE: These numbers indicate total aerial survey counts within a specified stretch of river bank, individual animals may migrate to other areas between flights.

Source: Jacksonville University, 2005.

On the west bank, the highest numbers of manatees were seen from the Buckman Bridge to Red Bay Point, including Doctor's Lake. On the east bank, the highest counts were reported between the Buckman Bridge and Julington Creek and from Cunningham Creek to Magnolia Point (Tables 17 and 18).

Manatees were distributed throughout the LSJR in the spring *(Map Series A)*. The highest concentrations of manatees occurred south of Buckman Bridge (east and west banks) and in Doctor's Lake in the summer where substantial submerged aquatic vegetation exists *(Map Series C)*. During the spring and summer, manatees with new calves were consistently seen in the upstream areas of tributaries possibly because these areas are more sheltered. In late summer and fall, manatees tended to occur in the main stem of the LSJR. In winter, most animals moved out of Clay County *(Map Series A)* in search of warmer waters in south Florida.

Aerial survey data for the northern portion of the study area: This data discussion includes historical aerial surveys and the most recent study data for southern Duval, northern Clay and St. Johns Counties (Table 2, Figure 2). Data collection occurred from March 1994 to December 2004 and covers the area south of Buckman Bridge to Hibernia Point (west bank) and from Buckman Bridge to New Switzerland Point (east bank). This area also includes Doctors Lake, Julington and Durbin Creeks. A total of 5,377 manatees were sighted (8% calves) with a mean of 23 manatees/survey. In the most recent study, 603 manatees were observed (4% calves) and a mean of 27 manatees/survey (2002). In 2003, a total of 702 manatees were seen (7% calves) and a mean of 36 manatees/survey. The number of calves was not significantly different between the east and west banks of the river. However, the total numbers were greater on the west bank versus the east bank. The range of manatees observed was 34-120 manatees per day.

Aerial sightings data for the Central and South portion of the study area: This data discussion includes the most recent study data for central and southern Clay and St. Johns Counties with slight overlap into north Putnam County (Table 6, Figure 3). Data collection occurred from August 19, 2002 to December 9, 2003 and covers the area south of Hibernia Point to Verdiere Point (west bank) and from New Switzerland Point to Middle Point (east bank). This data set represents information from the Clay County sponsored manatee aerial survey database. A total of 806 manatees (5% calves) were observed with a mean of 29 manatees/survey. Similar numbers of manatees were seen on both banks unlike the northern section of the study area. The east bank had a mean of 15 manatees/survey (4% calves) versus 13 manatees/survey (7% calves) on the west bank. This suggests a higher density of manatees in the north compared to the central and south. More manatees occur on the west bank particularly in the north because of a high concentration documented in Doctors Lake. The SHDC of this area was 97 manatees/day on August 19, 2002.

Aerial sightings data for Clay County portion of the study area: This discussion involves the most recent study data for Clay County waters only (Table 8). Data collection occurred from August 19, 2002 to December 9, 2003 and covers the area south of the Buckman Bridge to the Clay/Putnam County line (west bank only). This data sub set includes information derived from both Duval and Clay County aerial survey databases. Duval County flights that overlapped into Clay County were assigned an equivalent survey date that coincided with the relevant Clay County flight survey date. A total of 946 manatees was observed (7% calves) with a mean of 34 manatees/survey. Data were split into three boat facility siting zones (Figure 27) for comparison. The northern zone had a total of 663 manatees (6% calves) with a mean of 24 manatees/survey. In the central zone, a total of 154 manatees was observed (7% calves) and a mean of 6 manatees/survey. The southern zone was comparable to the central zone with a total of 129 manatees observed (9% calves) and a mean of 5 manatees/survey. The data indicated decreasing numbers as one proceeds south through the study area. The SHDC for Clay County was 112 manatees/day on June 25, 2003 (93 manatees were seen in the northern section on that survey).

Aerial sightings data for the Whole study area: This discussion involves the most recent study data for south Duval, Clay and St. Johns Counties (Table 12, Figure 4). Data collection occurred from August 19, 2002 to December 9, 2003 and covers the area south of the Buckman Bridge to Verdiere Point (west bank) and Middle Point (east bank) in northern Putnam County. This data represent the relevant aerial sightings of manatees on both sides of the river for all waters adjacent to Clay County for the present study period. Duval County flights that overlapped into Clay County were assigned an equivalent survey date that coincided with the relevant Clay County flight survey date. A total of 1,708 manatees (6% calves) were observed with a mean of 61 manatees/survey. The west bank had a total of 996 manatees (7% calves) and a mean of 36 manatees/survey versus 712 manatees on the east bank (5% calves) and a mean of 25 manatees/survey. The SHDC was 190 manatees on June 25, 2003 (117 manatees on the west bank and 73 manatees on the east bank).

Increased spring and summer sightings may be attributed to an influx of animals from outside the study area (Figure 5). Some of these animals likely came from Blue Spring (170 km further south within the St. Johns River system) and the rest are made up of south Florida

animals from the East Coast sub-population (Kinnaird 1983). Kinnaird (1983) mentioned the the then current population of Blue Spring animals as numbering 35 in 1982-83. Ackerman (1995) mentions 88 identified manatees at Blue Spring in the winter of 1993-94. The most recent count at Blue Spring documented 196 (2004-2005) total manatees (Wayne Hartley, Park Ranger, Blue Spring State Park, personal communication Sightings by Jacksonville University seem to indicate that the majority of animals moving into the county come from further south within the LSJR system (Map Series A). However, scar pattern identification suggests that significant numbers of manatees are part of the Atlantic sub-population and that in the last decade, only one manatee carcass recovered in Duval County has been identified as coming from the Blue Spring population (Cathy A. Beck, Wildlife Biologist, Sirenia Project, U.S.G.S. personal communication). Satellite telemetry data also support that most animals come into the LSJR as a result of south Florida east coast animals migrating north/south each year and that the Intracoastal Waterway serves as a travel corridor for such migrations (Deutsch et al. 2003). Deutsch et al. (2003) reported that the LSJR south of Jacksonville was an important area visited by 18 tagged manatees which were part of a 12-year study (1986-1998) of 78 radio-tagged and tracked manatees.

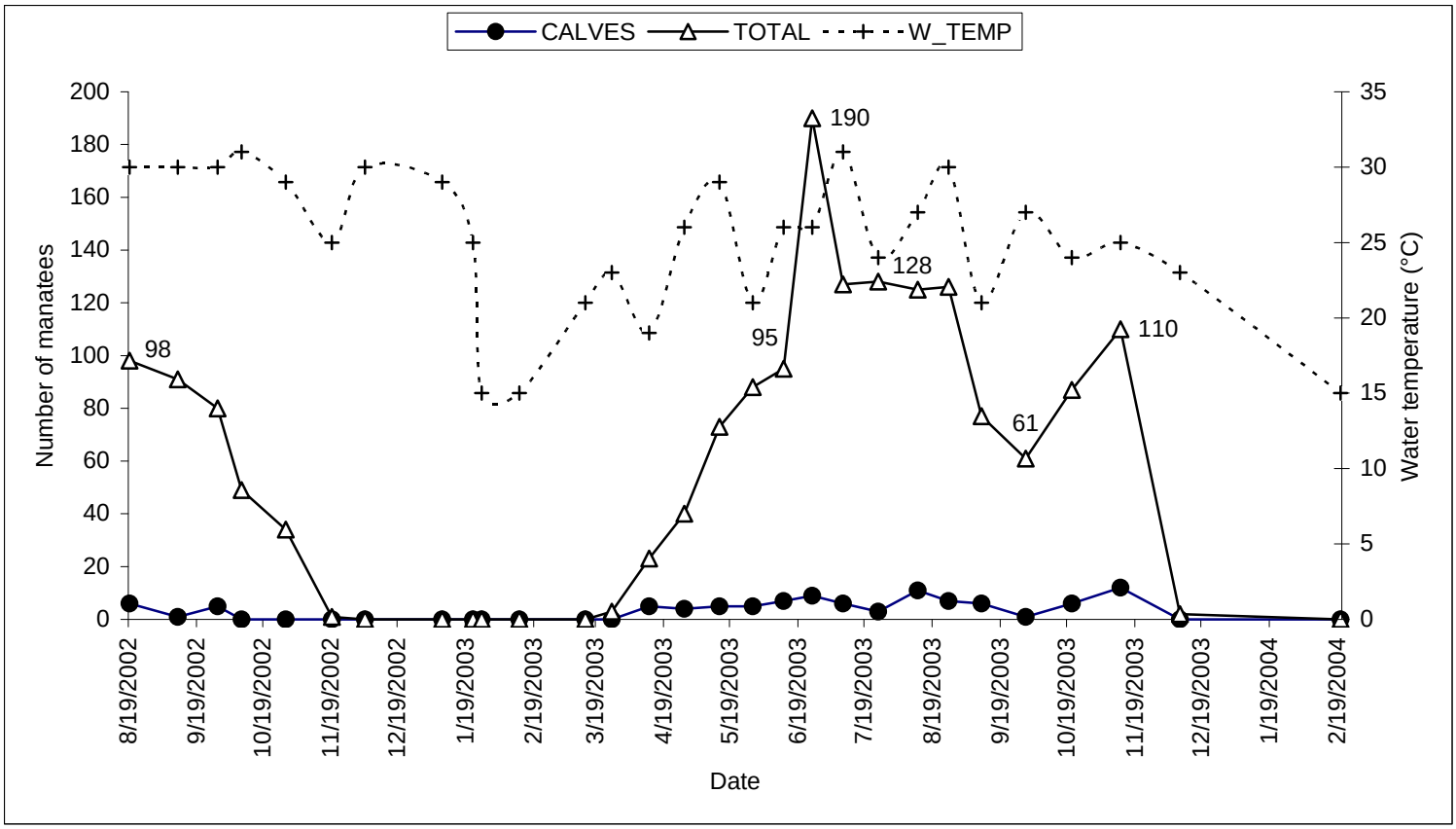


FIGURE 5 . Aerial sightings of manatees in the Clay County geographic study area (this includes sightings from the Buckman Bridge, Duval County to Verdiere and Middle Point, north Putnam County, on both banks of the St. Johns River). Data are for the time period from August 19, 2002 to December 9, 2003. Dates in 2004 represent state synoptic survey flights. Water temperatures were recorded at the Jacksonville University dock.

Mortality Information: The total of state-wide deaths documented for 2004 was 276, of which 69 were watercraft-related. Other causes included other human (4), perinatal (72), cold stress (50), natural (24), floodgate/canal lock (3), undetermined (51) and verified/unrecovered (3). Of the 69 state-wide watercraft-related deaths in 2004, 1 of these carcasses was recovered in Clay County waters (7/20/04, Fleming Island area).

The total number of manatee deaths and the total number of watercraft-related manatee deaths in Clay County are lower than the corresponding number of manatee deaths seen in Florida's key counties (Tables 19 and 20). In Clay County waters, a total of 49 manatee deaths have been reported from January 1975 to December 2004. Of these 49 deaths, 13 were watercraft-related with 6 carcasses recovered near the mouth of Doctor's Lake and the others recovered near Club Continental (2), Fleming Island to Hibernia Point (2), mouth of Black Creek (1) and Magnolia Point (1) and Green Cove Springs (1). Other deaths were classified as human (1), perinatal (11), cold stress (9), natural (2), undetermined (12), and verified – not recovered (1). The total number of manatee deaths in Clay County showed a mean of 1.63 deaths/yr. (range 1-5) since 1975. Total deaths were higher in 1992 (4), 1998 (5), 2000 (4), 2001 (4), and 2003(4). Watercraft-related deaths in Clay County averaged 0.5 watercraft deaths/year over the last 10 years (1995-2004). In Clay County, watercraft-related deaths (13) represented 26.5% of the total deaths from 1975 to 2004.

In addition, *Map Series B, Clay County Manatee Mortality 1976-2003,* identifies the location of each reported manatee carcass.

TABLE 19. Manatee mortality in Florida's key counties compared to Clay County, 1990 – 2004.

County	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Total	% Total
Brevard	62	38	31	30	42	40	56	62	47	46	49	52	50	42	65	712	24.60
Broward	1	3	9	4	4	5	6	3	7	15	4	9	10	8	6	94	3.25
Citrus	4	5	9	8	5	6	6	5	4	6	6	9	9	10	7	99	3.42
Clay	3	2	4	1	2	0	2	2	5	2	4	4	1	4	2	38	1.31
Collier	13	14	19	18	13	10	70	21	14	19	35	31	13	37	23	350	12.09
Dade	4	7	10	5	11	14	7	14	9	12	8	11	9	9	7	137	4.73
Duval	13	19	8	5	6	7	10	10	13	9	11	6	14	19	15	165	5.70
Indian River	3	4	1	0	2	5	10	7	5	6	10	5	7	6	6	77	2.66
Lee	27	18	19	17	33	31	145	43	31	33	44	51	58	81	51	682	23.57
Martin	6	9	8	3	7	6	6	6	8	9	6	7	9	6	5	101	3.49
Palm Beach	6	6	3	5	3	6	7	6	5	7	9	8	14	12	9	106	3.66
Sarasota	7	5	1	5	6	12	8	3	4	13	11	5	16	22	7	125	4.32
St. Lucie	5	1	4	4	2	2	4	2	1	2	2	4	4	0	1	38	1.31
Volusia	8	10	5	5	6	10	9	9	16	12	13	27	13	14	13	170	5.87
Total	162	141	131	110	142	154	346	193	169	191	212	229	227	270	217	2,894	99.98

Source: FWC/FWRI, 2005.

TABLE 20. Watercraft-related mortality in Florida's key Counties compared to Clay County, 1990 – 2004.

County	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Total	% Total
Brevard	7	13	7	9	9	6	13	12	9	12	13	7	17	8	11	153	21.55
Broward	1	2	2	2	3	0	1	0	2	5	2	4	3	5	1	33	4.65
Citrus	1	0	3	1	2	0	2	1	2	3	1	1	3	3	1	24	3.38
Clay*	0	1	4	0	1	0	0	0	2	0	0	1	0	1	1	11	1.55
Collier	7	5	4	5	4	4	5	4	7	10	5	8	6	7	5	86	12.11
Dade	1	0	4	0	1	2	0	5	2	1	2	5	1	2	2	28	3.94
Duval	3	9	2	2	2	3	3	2	3	2	4	1	10	4	5	55	7.75
Indian River	0	1	0	0	0	1	4	1	3	1	4	1	2	1	1	20	2.82
Lee	5	7	2	5	10	8	14	9	9	10	13	23	13	9	13	150	21.13
Martin	4	2	1	0	1	1	2	3	1	2	1	1	2	1	1	23	3.24
Palm Beach	3	1	0	3	2	2	3	1	2	2	3	3	6	5	3	39	5.49
Sarasota	2	1	0	2	2	0	1	2	0	4	5	2	4	1	2	28	3.94
St. Lucie	4	1	1	1	0	0	1	0	0	0	1	1	1	0	0	11	1.55
Volusia	4	3	1	0	1	1	2	1	8	5	4	11	3	2	3	49	6.9
Total	42	46	31	30	38	28	51	41	50	57	58	69	71	49	49	710	100

Source: FWC/FWRI 2005.

4. Site Specific Water Quality Monitoring

The Watershed Action Volunteers are a group that is involved in a regular monitoring program. This group records data on water quality and submerged aquatic vegetation at fixed sites throughout the County.

The St. Johns River Water Management District developed a plan called *"Lower St. Johns River Basin Water Quality Monitoring Program."* The plan was developed *"for the purpose of prioritizing water quality objectives and defining patterns of degradation."* Copies of monitoring atlases are available through the SJRWMD with maps and specific water quality parameters outlined.

The surface water quality monitoring program of the SJRWMD, established in 1983, maintains an ambient surface water quality monitoring network of 72 stations located throughout the District that are sampled six times a year. Fourteen of these stations are a part of the Florida Department of Environmental Protection's (FDEP) Temporal Variability Network. Monitoring of sediments for priority pollutants was added to the program in 1990, followed by benthic (underwater bottom) community sampling in 1999 to enhance understanding of the biological consequences of sediment pollution. This program also participates in FDEP's Integrated Water Resources Monitoring (IWRM) Tier 1 Network. Data generated under the program are uploaded to the U.S. Environmental Protection Agency's (EPA) National Water Quality Data Base (STORET) and used by FDEP for Florida's biennial 305(b) report. The program provides support for modeling efforts involving surface water quality and produces a biennial district-wide assessment of surface water quality status and trends, and sediment, benthic, and other assessments. In 1991, the program included pollutant load modeling as one of its components. The goal of the surface water monitoring program is "to monitor, assess, and report on the water quality of, and the sediment quality and benthic organism quality in, District surface waters."

B. Boat Facilities

There is a general seasonality in boating activity in northeast Florida with more activity in the warmer months of late March to November than in the cooler months of December, January and February. Boat facilities in this study were inventoried during the summer (May 10, 2003 to August 3, 2003). We considered this time frame to be indicative of the peak boating season. The County has no assessment of future demand for wet slips, dry storage, and boat ramps (additional lanes, additional trailer parking spaces) at this time.

1. Boat Ramps

There are 11 existing facilities (Figure 6) with one at the Clay Port Authority and Reynolds Industrial Park (Figure 7). Details about each are listed in Table 21.

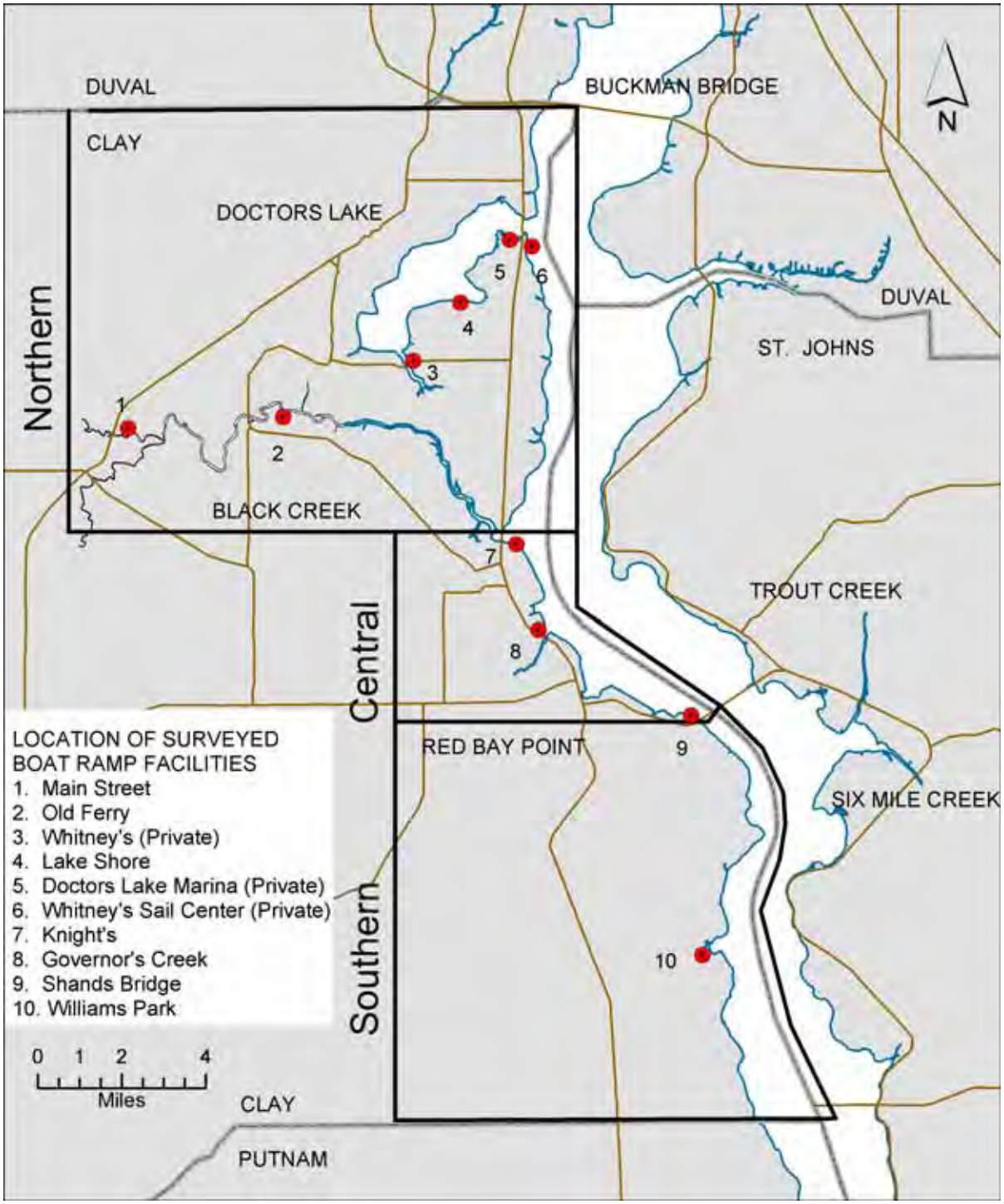


FIGURE 6. Surveyed Boat Ramp Facilities in Clay County, Florida, 2003.
(Specific details are outlined in Table 21).
Note that the following facilities are not included on this map:
-Boat facilities located at the Clay Port (Green Cove Springs) see Figure 7.
-Other Marinas and Private Residential Multi-Slip Facilities see Figure 8.

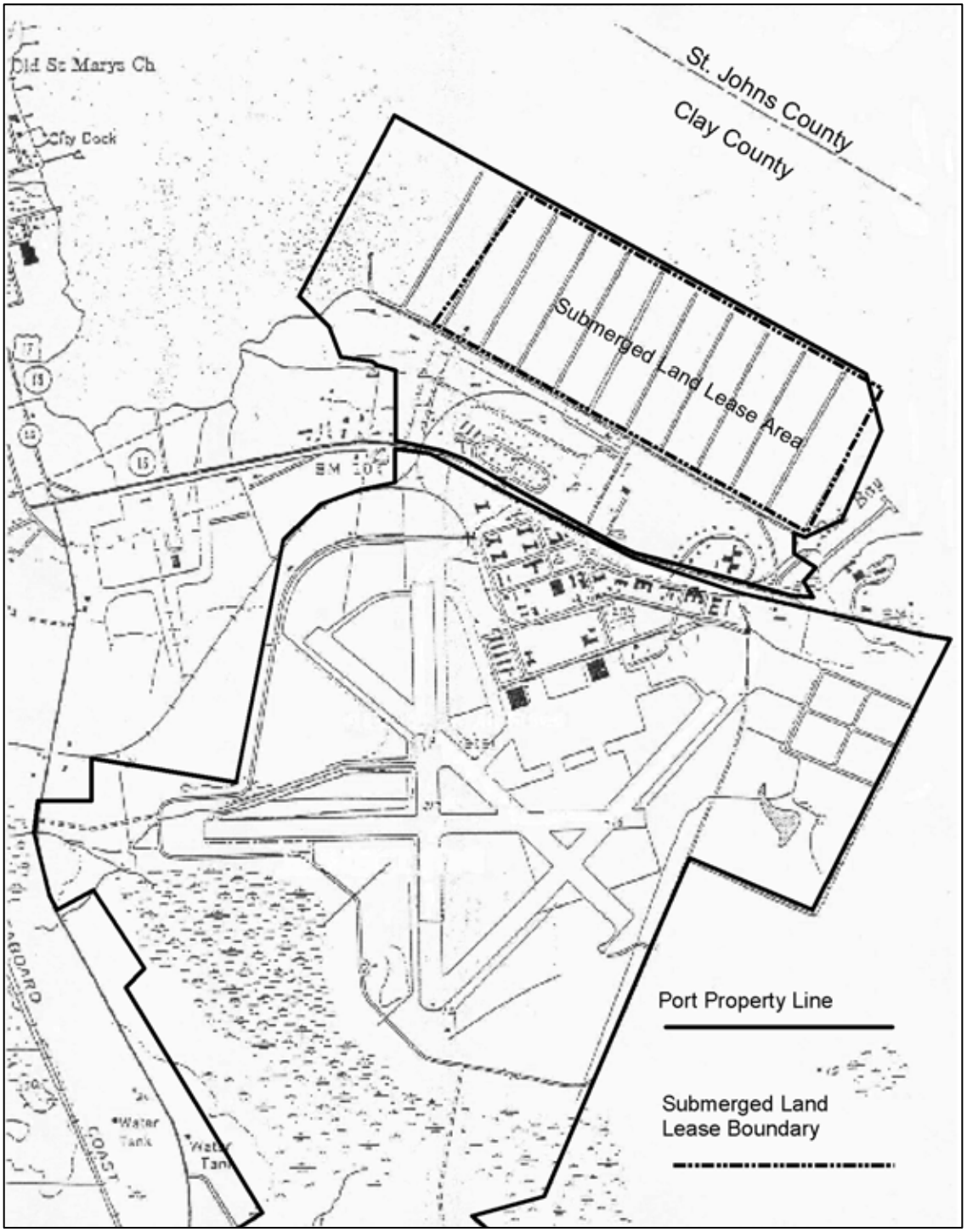


FIGURE 7. Clay Port Authority and Reynolds Industrial Park property line and area of submerged lands. There is a ramp and marina facility at the port used mainly for repair type work.

2. Marinas

There are 6 private commercial marinas within the study area (Whitey's, Doctors Lake Marina, Whitney's Sail Center, Knight's, Clay Port Authority and Continental Yacht Club), 4 of which have wet slips (Whitey's and Clay Port do not have permanent wet slips). All have boat ramps but only 2 are open to the public (Whitey's and Knight's); the rest are used in conjunction with boat repair operations. There is a ramp and marina facility with a boat-lift at the port used mainly for repair type work (Figures 6-8 and Table 21). There are an additional 8 private multi-slip marina facilities within the study area that are associated with residential subdivisions or multi-family developments (Figure 8). These facilities consist of a dock and/or wet slips, and, in one case (Habersham Harbor Subdivision), a boat ramp for use by the residents (Table 21). In addition, 5 other facilities (2 in Duval County and 3 in St. Johns County) have been included on Figure 8 and Table 21 because of their proximity to the study area.

3. Clay Port Authority Inc. and Reynolds Industrial Park

Clay Port Authority and Reynolds Industrial Park are responsible mainly for ship repair and as a base for containerized cargo shipments. There are 11 piers of which one is dedicated as a wet slip for recreational boats. There is also a marina with a boat ramp primarily used for boat repair. Clay Port is located 18 miles south of Jacksonville accessible by Florida Highway 16 and U.S. 17 (Figure 7). The distance from the St. Johns River mouth to the Port is 55 miles or about a 6-8 hour passage for commercial cargo vessels (John Brown, Property Manager, Clay Port Inc., personnel communication. 2003).

The port encompasses an area of 1,700 acres zoned and ready for development with immediate access to air, rail, water and land transportation (1,500 acres of uplands and 200 acres of submerged lands). At the site, there is one mile of bulk-headed waterfront with 12 concrete/steel piers, 11 are 1,800 ft. in length. Most piers are lighted and several have railroad access. The Port has 5 miles of private roads and railway (Clay County Port web page 2003). Zoning for the Port follows the 1992 Adopted City of Green Cove Springs Comprehensive Plan (John Brown, Property Manager, Clay County Port Inc., personal communication. 2003).

During World War II, the Port was called Benjamin Lee Field accommodating 6000 armed forces personnel. At the time, it was considered to be the largest aviation training facility in the country. In 1944, the piers were built in a 2-3 month period to house the Atlantic Reserve Fleet of some 480-600 vessels making it the largest assembly of war ships in the country and probably the world. In 1963, the Department of the Navy transferred ownership of the port to the Government Service Authority (GSA). GSA proposed to build a maximum security prison on the site but the City was opposed. Shortly afterwards, the City of Green Cove Springs bought the facility and named it Port Inc. In 1964, the City sold the property to J. Lewis Reynolds (on speculation of the Cross Florida Barge Canal Project) who renamed it Reynolds Park Inc. In 1983, it was renamed again as Clay County Port Inc. but continued to conduct business under the name Reynolds Park Inc. At this time, removal of asbestos contamination in the buildings was addressed with testing to determine clean-up responsibility. In 1985, the property was developed into an industrial park with help from the USACOE. Since then, it has

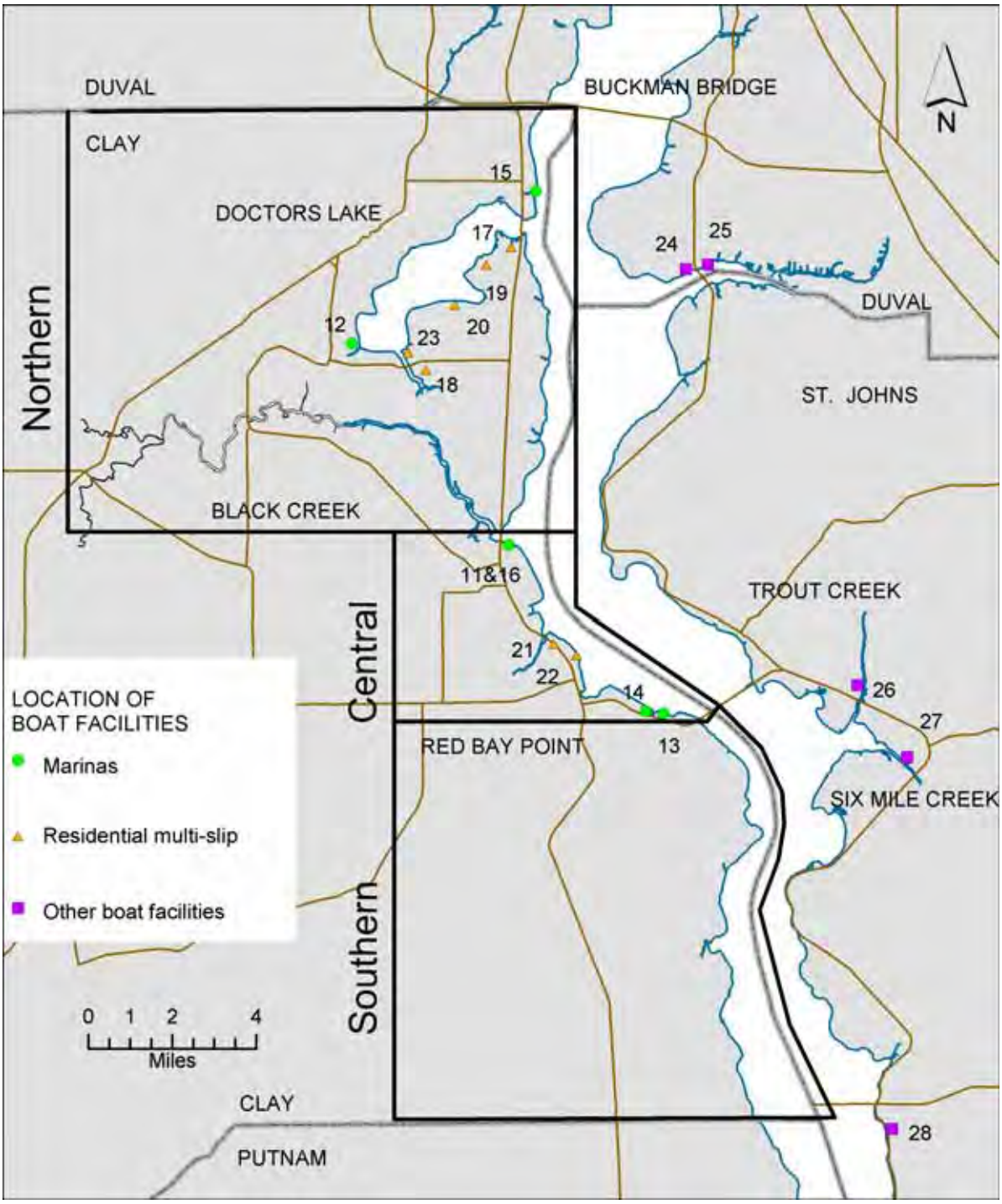


FIGURE 8. Marinas and Private Residential Multi-Slip Facilities in Clay County, Florida, 2003 (Specific details are outlined in Table 21).

TABLE 21. Inventory of Boat Facilities (May 10 - August 3, 2003).

Zone	No.	Boat Facility Name	Fishing pier	No. Ramps	No. Lanes	Trailer parking spaces	No. H/C spaces	Public access	Wet slips	Full (%)	Dry slips	Full (%)	Gas (gal)	Diesel (gal)	Sanitary pump out	No. Power boats	No. Sail boats	Food Service	Boat Repair	Boat Facility Location
		Boat Ramps																		
N	1	Main Street	2	1	1	25	4	yes	no	no	no	n/a	no	no	no	n/a	n/a	no	no	S.R.21(Blanding Blvd.) & Main St.
N	2	Old Ferry	no	1	1	8	1	yes	no	no	no	n/a	no	no	no	n/a	n/a	no	no	Black Ck.(Dr's Inlet/Ridgewood)
N	3	Whitey's Fish Camp	no	1	1	6	4	yes	15[e]	n/a	no	n/a	2500	no	1 for Rv's	n/a	n/a	yes	no	Swimming Pen Creek
N	4	Lake Shore	1	2	2	17	2	yes	no	no	no	n/a	no	no	no	n/a	n/a	no	no	Lake Shore Drive, Dr's. Lake
N	5	Doctors Inlet Marina	no	1	1	no	1	no	98	100	200	95	5000	no	1	295	3	no	yes	Mouth of Dr's Lake
N	6	Whitney's Marina Sail Center	no	1[c]	1	no	0	no	111	92	no	n/a	no	no	1	n/a	92	no	yes	Mouth of Dr's Lake
C	7	Knights Boat Ramp	1	3	3	76	4	yes	no	no	no	n/a	no	no	no	n/a	n/a	no	no	Black Creek/SJR Hw.17
C	8	Governors Creek	1	2	1	19	2	yes	no	no	no	n/a	no	no	no	n/a	n/a	no	no	U.S. Hw 17 in GCS
C	9	Shands Pier	1	1	1	5	2	yes	no	no	no	n/a	no	no	no	n/a	n/a	no	no	GCS off S.R.16
S	10	Williams Park	no	1	1	4	0	yes	no	no	no	n/a	no	no	no	n/a	n/a	no	no	C.R. 209
		Marinas																		
N	11	Florida Water Sports	no	0	no	no	no	yes	no	no	0	0	no	no	no	n/a	n/a	Bait	no	Black Creek/SJR
N	12	Ralph's Fish Camp	no	1[c]	1	no	no	no	10	100	0	0	no	no	no	10	0	no	yes	S.W. Dr's Lake
C	13	Red Bay Marine Repairs	no	1[c]	1	no	no	no	no	no	no	n/a	no	no	no	n/a	n/a	no	yes	Adjacent to Port GCS
C	14	Green Cove Springs Marina	no	no	no	no	no	no	140	100	70	100	no	no	no	6	204	no	yes	N. Shands Bridge
N	15	Continental Yacht Club	no	0	no	no	no	no	77	100	no	n/a	no	no	no	8	69	yes	no	SJR,Orange Park
C	16	Black Creek Marina (Private)	no	0	no	no	no	no	42	50	no	n/a	3000	2000	1	11	10	no	no	S.E. end of Bridge
		Residential Multi-Slip																		
N	17	Creighton Landing	no	0	n/a	n/a	n/a	no	10	50	0	0	no	no	no			no	no	Mouth of Dr's Lake
N	18	Osprey Bluff Subdivision	no	0	n/a	n/a	n/a	no	24	100	0	0	no	no	no	24	0	no	no	Swimming Pen Creek
N	19	Pace Island FQD	no	0	n/a	n/a	n/a	no	0[a]	n/a	no	no	no	no	no	n/a	n/a	no	no	N.E. Dr's Lake
N	20	Eagle Harbor DRI	no	0	n/a	n/a	n/a	no	9[b]	11	no[d]	100[d]	no	no	no	73	6	no	no	S.E. Dr's Lake
C	21	Governors Landing (Condo's)	no	0	n/a	n/a	n/a	no	30	40	0	0	no	no	no	10	2	no	no	Mouth of Governors Ck.
C	22	Hoyt House (Condo's)	no	0	n/a	n/a	n/a	no	8	13	0	0	no	no	no	0	1	no	no	SJR Green Cove Springs
N	23	Habersham Harbor Subdivision	no	1	n/a	n/a	n/a	no	0	n/a	0	0	no	no	no	0	0	no	no	SJR Green Cove Springs HW220
	24	Mandarin Holiday Marina	no	0	0	0	no	no	150	98	0	n/a	7000	4000	1			no	no	SR13 Bridge West, Duval Co.
	25	Julington Creek Marina	no	0	0	0	1	no	100	100	190	98	10000	2000	1			no	no	SR13 Bridge East, Duval Co.
	26	Pacetti's Marina & Campground	dock	1	1	n/a	no	yes	50	30	0	n/a	2000	no	no	15	0	yes	no	SJR at Trout Creek
	27	Six Mile Creek Marina	dock	1	1	n/a	2	yes	a	n/a	n/a	n/a	no	no	no	n/a	n/a	yes	no	SJR at Six Mile Creek
	28	Riverdale Park	dock	1	1	n/a	n/a	yes	no	n/a	no	n/a	no	no	no	n/a	n/a	no	no	SJR, between Toccoi/Racy Pts.

Boat Facility Siting Zone: N = North; C = Central and S = South. H/C = Handicap parking spaces. [a] = Day use dock only, no permanent wet slips. [d] = Dry storage area 60-70 boats.

[b] = Day use dock only, no permanent wet slips. (1 Community pontoon boat moored). [c] = Boat ramp only used in conjunction with boat repairs. [e] = Docking spaces only, no storage.

become necessary to address levels of other environmental contaminants and clean-up issues (John Brown, Senior Property Manager Clay Port Authority Inc., personal communication 2003).

The Port is independently owned by Clay Port Authority Inc. Mr. Ted M^c^Gown is the Executive Director, and Mr. John Brown is the Senior Property Manager. The address for correspondence is 954 Martin Ave., P.O. Box 477, Green Cove Springs, FL 32043, and the contact telephone number is (904) 284-3676 (fax (904) 284-5858). The Port itself is solely responsible for promoting and developing waterborne traffic and commerce. There are no county-owned facilities connected with the Port.

Current tenants offer dry dock, steel and concrete boat building, dredging and marina support. Businesses range from 2-3 employees to 300 employees. Activities include railroad freight car refurbishing, wholesale seafood, fiberglass pipe manufacturing, avionic research, automobile anti-lock brake testing, and light shipbuilding and repair.

The Port is an International Port with a customs agent available on call. The piers are 50% utilized. The piles were encapsulated at the water line for a cost of $1.2 million beginning in 1980 and ending 2002. Piers 1 and 2 (north end of Port) are currently being repaired below the water line at a cost of $1 million per pier. Encapsulation repairs to the remainder or the piers below the waterline is likely to be an ongoing 5-10 year process (Ted M^c^Gown, Executive Director, Clay Port Authority Inc., personal communication 2003). In addition to business interests, there are 70 live aboard tenants and in 2006 leases expire for the waterfront properties. The Belt Way construction is due to be completed in the next 10 years and will prompt development in the area. The Port proposes to build restaurants, clubs, offices and an open-air entertainment facility (north end waterfront) and move toward more residential development. The Port retains a dredge and fill permit and may exercise it to fill in between piers should the need arise after leases expire in 2006. The Port owns the submerged lands under and extending 50 feet from the end of the piers (Figure 7).

The amount and nature of commerce is low for commercial shipping. There is no real commercial interest because of the distance (45 nautical miles) up river. Monthly usage is low and Clay Port Authority has planned a Mega Yacht repair and mooring facilities business which will increase usage.

Most stormwater runs off directly into the St. Johns River. However, there are two recently constructed ponds that retain some stormwater.

4. Comprehensive Plans

At this time, there are no policies that specifically mention manatees or manatee protection plans in the Orange Park or Green Cove Springs Comprehensive Plans. Manatees and manatee protection are specifically mentioned in Policy 5.11 of the Clay County Comprehensive Plan. Excerpts from the city comprehensive plans that may affect manatees or manatee habitat and appropriate references to the county comprehensive plan policies (and the Northeast Florida

Regional Comprehensive Regional Policy Plan) are included below and in Appendices B and C of this document:

The City of Orange Park Comprehensive Plan (1992)
Policy 6.25 of the Recreation and Open Spaces Element states: Ensure the conservation of open spaces provided by wetlands, wildlife habitat and native vegetation communities by requiring all future development to have obtained all necessary permits from relevant State, Federal and Regional Agencies (Tony Robins, Town Planner, Orange Park, FL. 2004. Personal communication) Tel: (904) 739-3655.

Clay County Comprehensive Plan (1992)
Appendix C, Objectives 5, 6 and 8 mention protection of listed wildlife species on environmentally sensitive areas: Policy 5.11 specifically mentions manatee protection in the context of the Manatee Protection Plan (Clay County Government. 2004. http://www.claycountygov.com/ Planning_Dept/ Comprehensive%20Plan%20Elements/ Conservation_Element.htm).

> Policy 5.11: The Clay County Parks and Recreation Department shall coordinate with the USFWS, FGFWFC and DNR in protecting manatees and their habitats through a manatee protection plan which shall include maintenance of signage identifying manatee habitat and associated speed zones where shown to be needed and provision of educational materials at boat launch and marina facilities.

5. Future Land Use Designations/Limitations

Green Cove Springs Nature Preserve will be located along the St. Johns River and U.S. 17. The Nature Preserve will be a passive park preserving land along the St. Johns River. The City is acquiring the property for the Nature Preserve with a Florida Communities Trust (FCT) grant. The initial purchase will be for 22 acres. A management plan will be written to outline the development of the land purchased.

Spring Park is a 3-acre community park located on the St. Johns River at the end of Spring Street and Walnut Street. It is an active park, with historical significance. The historic Green Cove Spring is located on the park site and provides the water to the 2,700 square foot swimming pool located at the park. In addition to the swimming pool, this park boasts picnic facilities, a shelter, playground equipment, a 500 ft. fishing pier, with eight overnight docking facilities, shuffleboard courts, restrooms, flower gardens and a gazebo. Spring Park has approximately 562 feet along the St. Johns River, providing public access to the St. Johns River. The City of Green Cove Springs has expanded and upgraded the facilities at the park. Improvements have included additional parking, fencing, playground equipment and upgraded lighting throughout the park. New restroom and picnic pavilions were completed in 2003.

Black Creek Ravines is a 965-acre conservation area located one mile east of the town of Middleburg, along the south bank of Black Creek. It consists primarily of natural woodlands and wetlands. The property's most distinctive characteristics are the seepage slopes and steep ravines that result from a series of naturally eroding seepage streams. These sensitive

ecosystems support a wide variety of native aquatic and wetland-dependent species. The property exhibits a diversity of natural communities, some classified as being imperiled in Florida because of their rarity and vulnerability to natural or man-made factors. About 2.7 miles of the south shore of Black Creek is protected from development to maintain the important recharge functions of the upland sandhill community. Activities include wildlife viewing of a number of imperiled and protected species, hiking, horseback riding, primitive camping at designated sites, bird watching and nature study. Fishing, boating and canoeing are permitted on Black Creek. However, bicycles and climbing in the ravines is prohibited due to the sensitive nature of this habitat. Access is available from Green Road, north of CR 218.

Bayard Conservation Area is 9,898 acres located along the west bank of St. Johns River just southeast of Green Cove Springs. It is located east of U.S. 17 and south of SR 16 in Clay County. The area is key to providing flood storage and preservation of water and natural resources in the Lower St. Johns River Basin. Riverine bottomland hardwoods, pine flatwoods and sandhill communities are bordered on the east by the St. Johns River with approximately seven miles of river frontage. Activities include wildlife viewing of a number of species including the endangered manatee, bank fishing, hiking, bicycling, horseback riding, primitive camping at designated sites, canoeing and bird watching. Two parking areas are located on the south side of SR 16. The western parking area is recommended for horseback riding enthusiasts. Other access points are located off U.S. 17 and County Road 226, three miles south of Green Cove Springs.

The City of Orange Park has also indicated that they have no future waterfront development plans (Tony Robbins, Town Planner, Orange Park, FL. 2004. Personal communication. Tel: (904) 739-3655).

6. Additional maps for land use and planning

The future land use map of Clay County is shown in Figure 9a and 9b. The Greenways Opportunities Map is shown in Figure 10. The Existing Neighborhood Park Facilities are illustrated in Figure 11. Figure 12 shows the Clay County Planning Districts and Figure 13 identifies the locations of the Existing Regional and Community Parks.

7. Docks

To date, no comprehensive survey of docks in Clay County has been done. Limited information was available from the St. Johns River Water Management District. The information was a GIS shape file produced from high altitude infrared photography (digitized in 1995). The latter indicated that there were 324 docks in Clay County within the St. Johns River excluding its tributaries *(Map Series D: Commercial and Residential Docks in Clay County, 1995).*

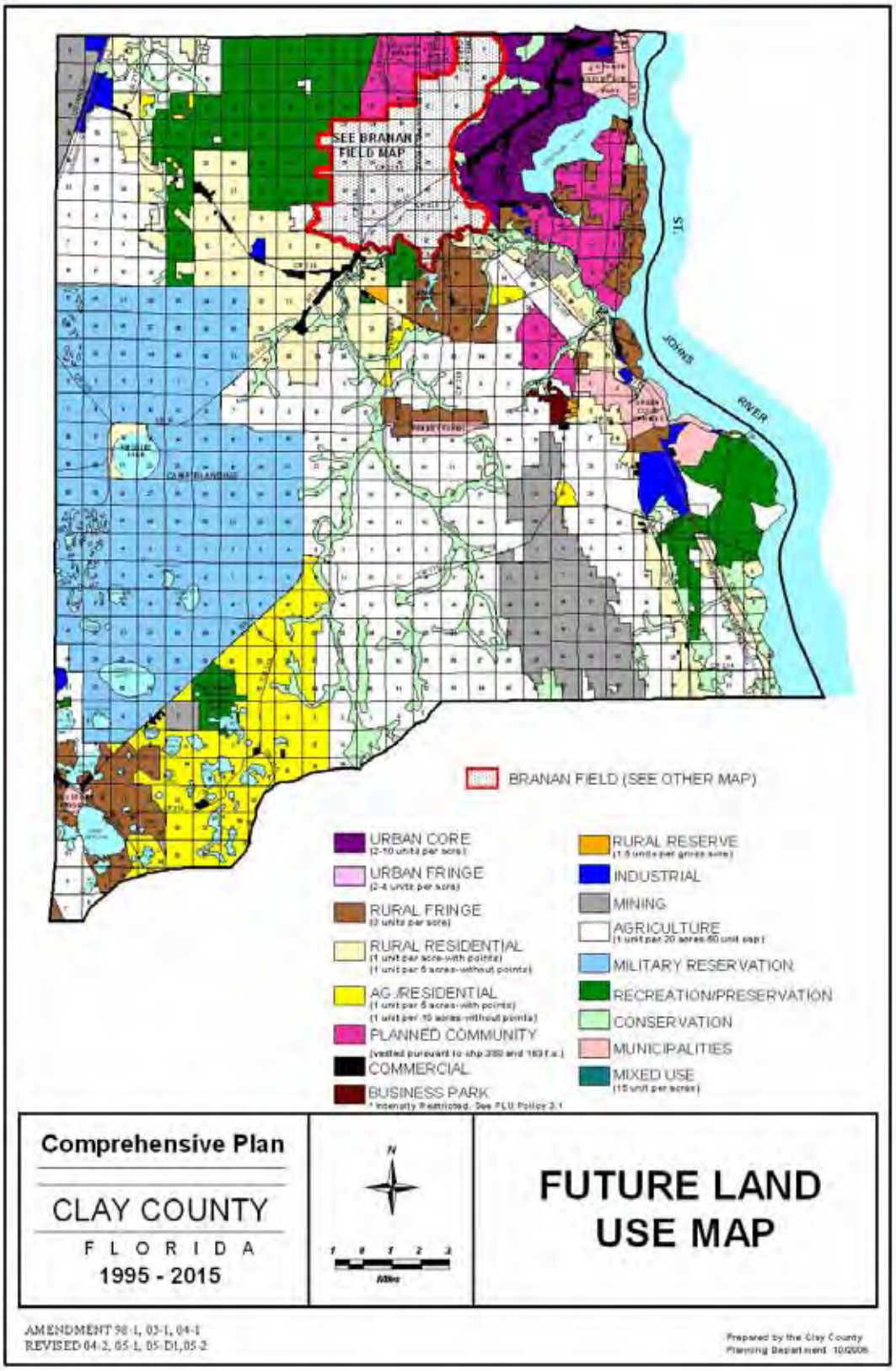


FIGURE 9a. Future Land Use in Clay County.

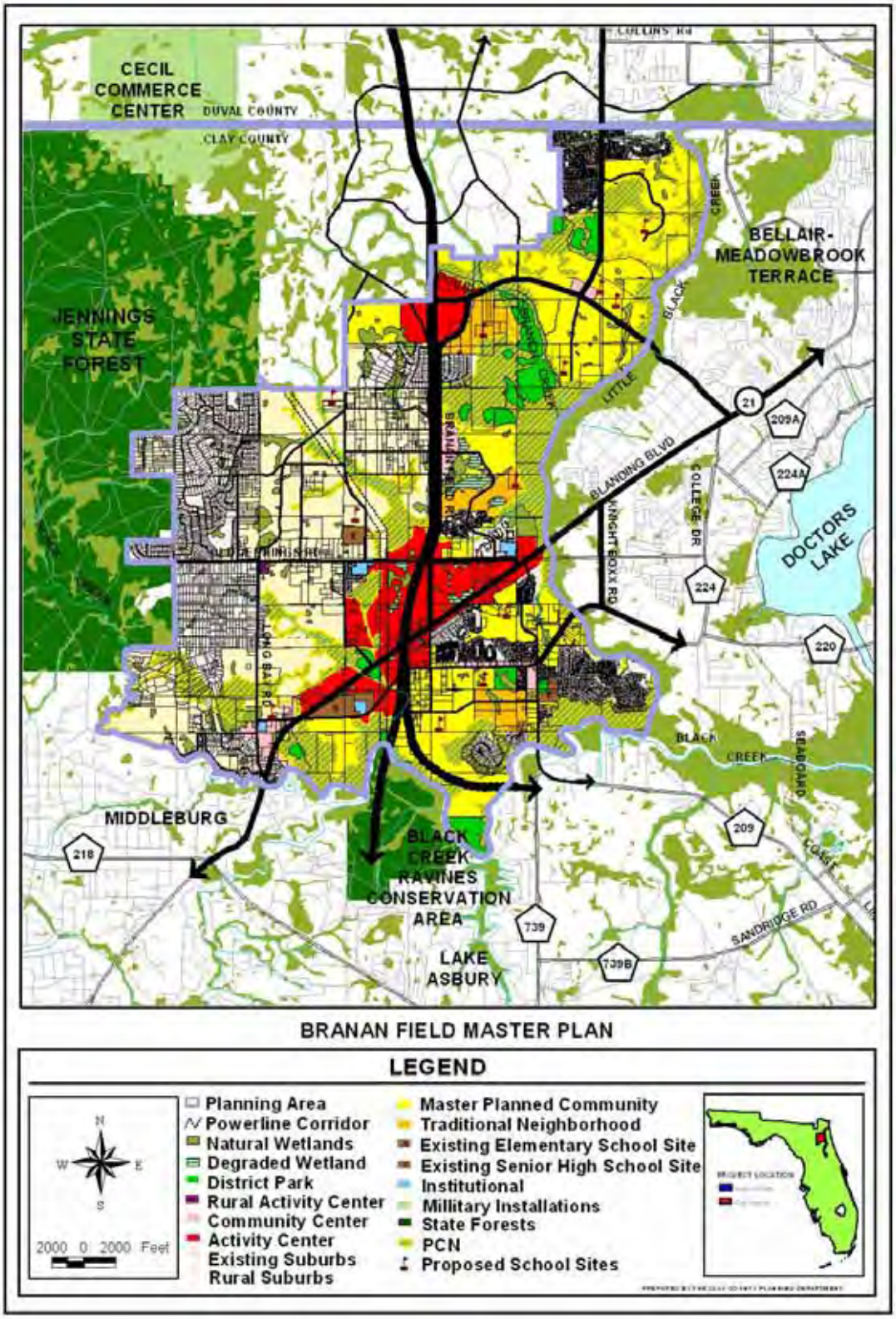


FIGURE 9b. Future Land Use in Clay County, Branan Field Master Plan.

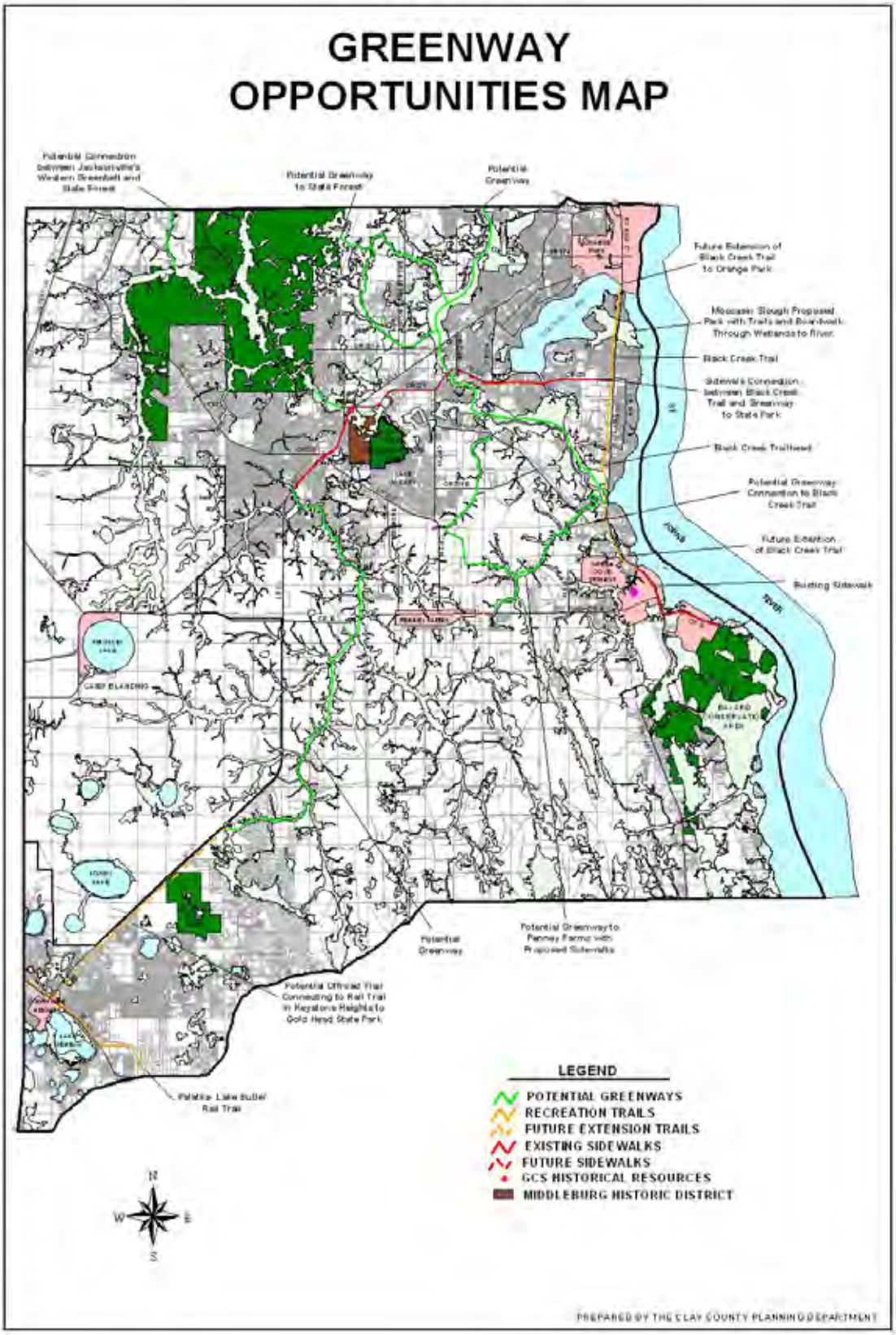


FIGURE 10. Greenway Opportunities in Clay County.

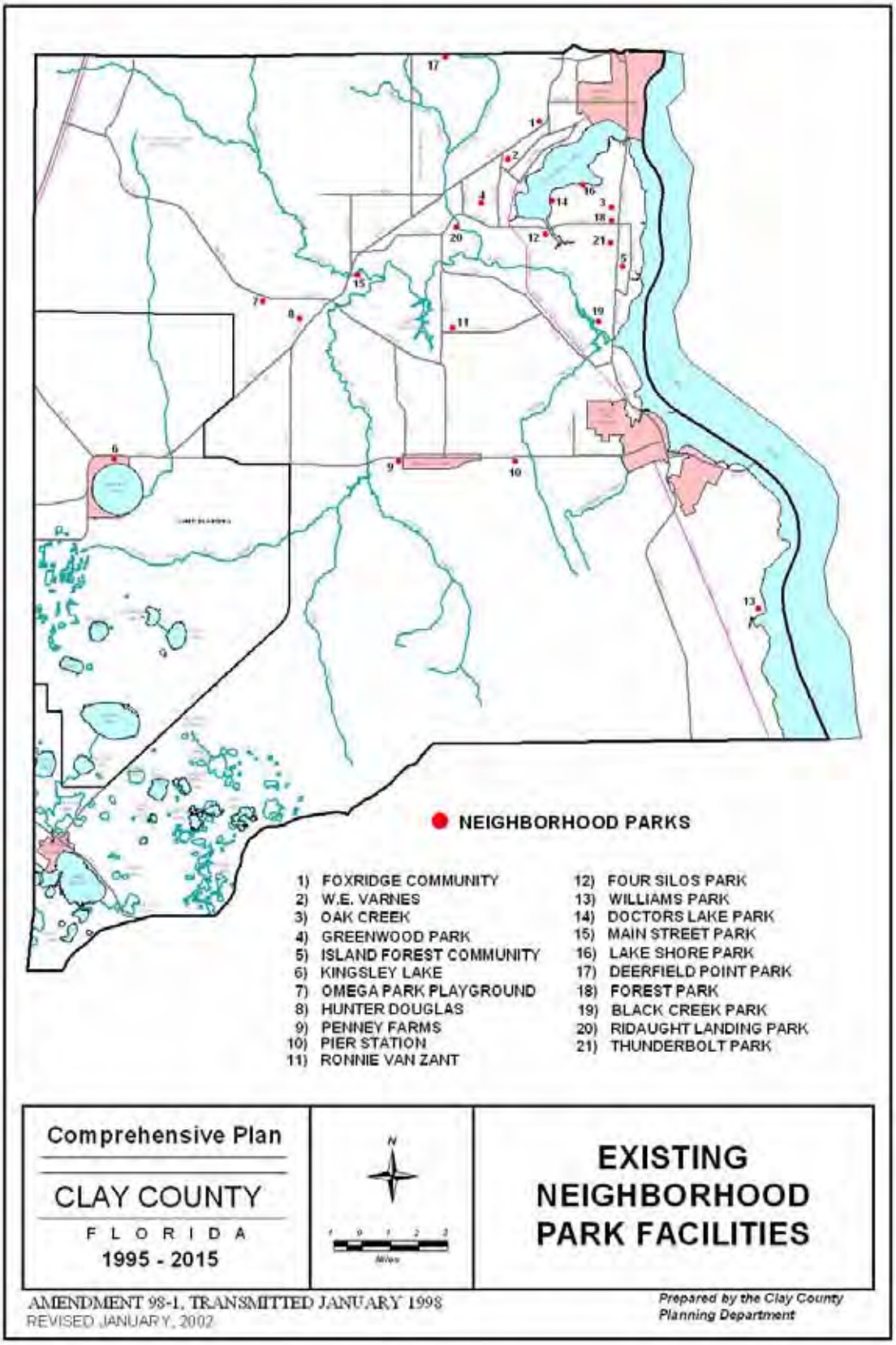


FIGURE 11. Neighborhood Parks in Clay County.

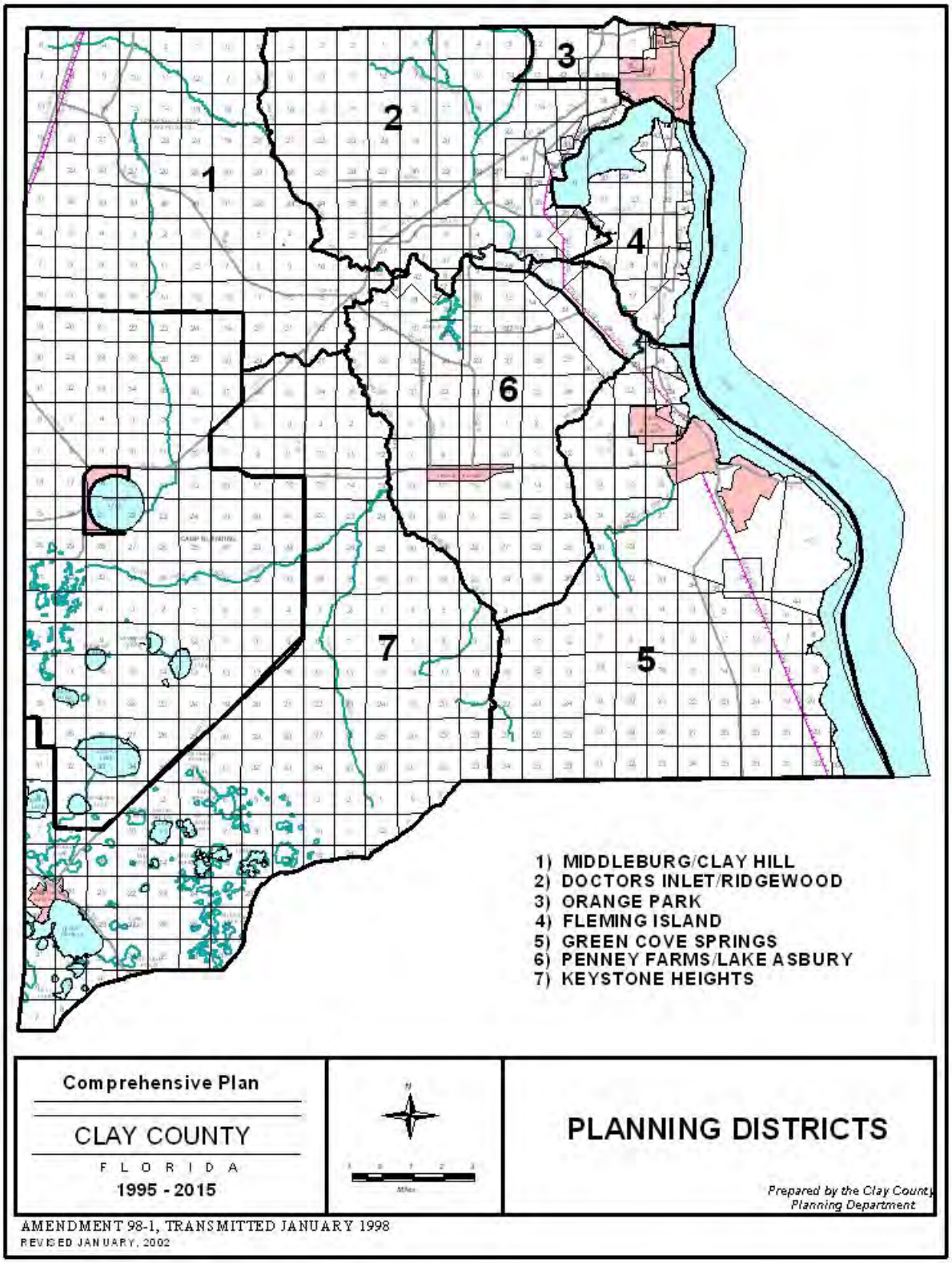


FIGURE 12. Planning Districts in Clay County.

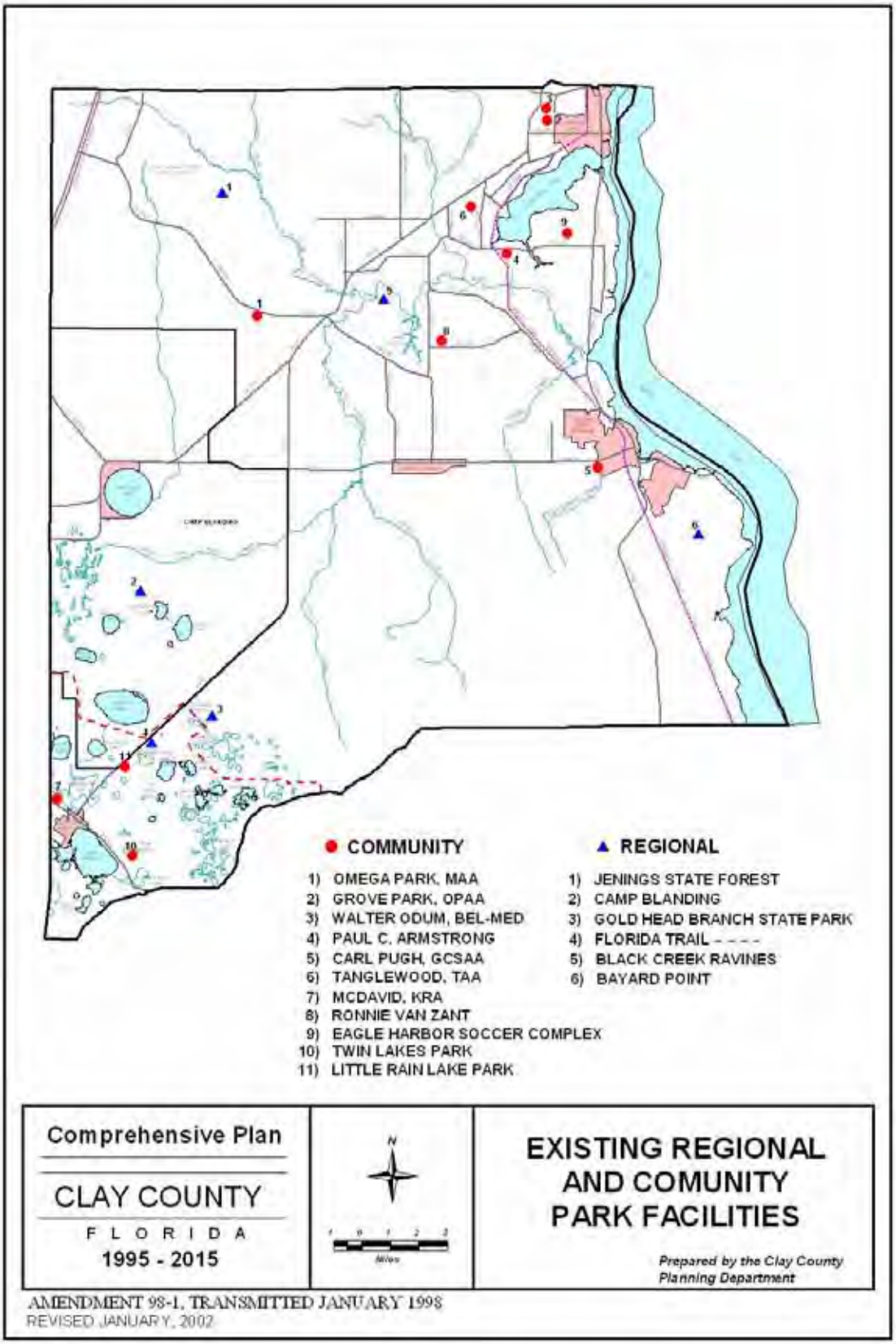


FIGURE 13. Regional and Community Parks.

C. Vessel Traffic

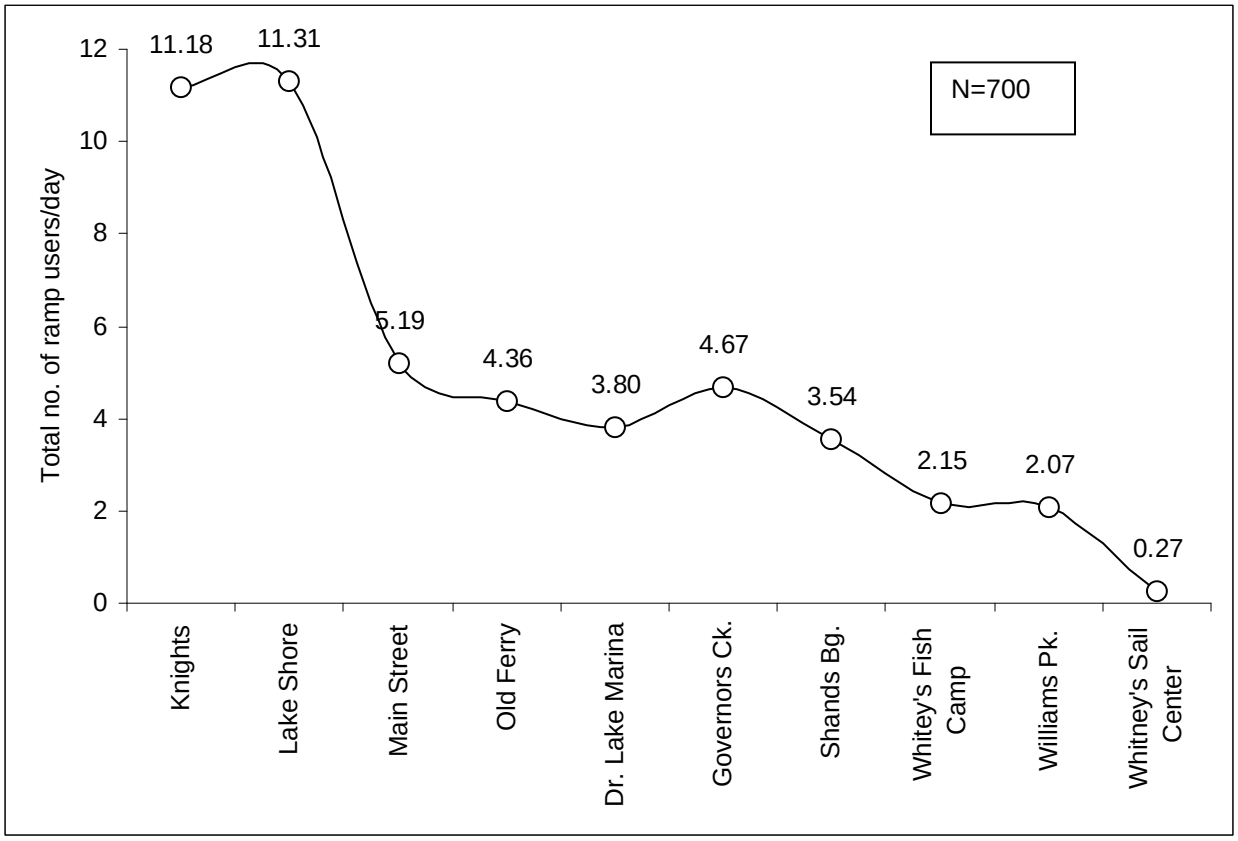
Jacksonville University conducted boat ramp surveys of captains utilizing 10 boat ramps in Clay County between May 14, 2003 and August 3, 2003 (Figure 6 and Table 21). Surveys were conducted for a total of 31 days but all boat ramps were not surveyed on all 31 days. Generally, five ramps were surveyed on a given survey day, ramps and times at each ramp were rotated to provide adequate coverage. The number of days each ramp was surveyed averaged 13.8 days/ramp (SD ± 1.81; range 11-17) (Table 22). The total number of weekend days was 21, including one holiday (Memorial Day – May 26, 2003). All the boat ramps were not surveyed on all 21weekend days. The July 4th and Labor Day holidays were not surveyed due to a lack of available labor. The number of days each ramp was surveyed on a weekend averaged 9.5 days/ramp (SD ± 1.35; range 8-12) (Table 23). Boat ramps were surveyed for one hour durations, once a day, but at different times during the day (starting at 9 AM and ending at 4 PM) over the course of the study. These times represent peak usage times of day with people generally departing in the morning and returning in the afternoon. Also, as expected, weekends and holidays represented peak usage days versus regular weekdays as well as the summer season versus other seasons. The number of days each ramp was surveyed on a weekday averaged 4.3 days/ramp (SD ± 1.61; range 3-7) (Table 24). Each boat ramp was surveyed up to 3 times for each time period during the day over the study period. A standardized boating survey form was used (see page 51) which identified some destinations but left blanks to be completed on a case by case basis. There was an average of 2 observers per location, and they recorded all departures and arrivals.

TABLE 22. Summary of survey data for boat ramp users in Clay County.

Boat ramp name	Ramp No.	Days surveyed	No. of observations (n)	Total No. of ramp users/day
Knights	7	17	190	11.18
Lake Shore	4	13	147	11.31
Main Street	1	16	83	5.19
Old Ferry	2	14	61	4.36
Doctors Lake Marina	5	15	57	3.80
Governors Creek	8	12	56	4.67
Shands Bridge	9	13	46	3.54
Whitey's Fish Camp	3	13	28	2.15
Williams Park	10	14	29	2.07
Whitney's Sail Center	6	11	3	0.27
Total			700	
Mean		13.8	70	4.85
SD		1.81	57.21	3.66

Source: Jacksonville University 2003.

Results indicated that from a total of 700 boat captains, Knight's (190), Lake Shore (147), and Main Street (83) boat ramps experienced the highest number of users. Kinnaird (1983) reported that the Lake Shore ramp may be the most heavily used, and this was probably the case until Knight's was taken over by Clay County. Old Ferry (61), Doctor's Lake Marina (57), Governors Creek (56), Shands Bridge (46), Whitey's Fish Camp (28) and Williams Park (29) experienced intermediate numbers of users and Whitney's Sail Center (3) experienced the lowest number of users (Figure 14, Table 22).



Source Jacksonville University, Summer 2003.

FIGURE 14. Mean number of captains/day using boat ramps in Clay Co., FL.

Data was divided into weekends and weekdays. Results from weekend surveys indicated that from a total of 622 (88%) boat captains, Knight's (177), Lake Shore (136), and Main Street (75) boat ramps experienced the highest number of users. Old Ferry (46), Doctor's Lake Marina (52), Governors Creek (48), Shands Bridge (43), Whitey's Fish Camp (24) and Williams Park (18) experienced intermediate numbers of users and Whitney's Sail Center (3) experienced the lowest number of users (Figure 15, Table 23).

TABLE 23. Summary of survey data for weekend boat ramp users in Clay County.

Boat ramp	Ramp No.	Days surveyed weekend	Total observations weekend	No. of users/day weekends
Knights	7	12	177	14.75
Lake Shore	4	9	136	15.11
Main Street	1	9	75	8.33
Old Ferry	2	9	46	5.11
Doctors Lake Marina	5	11	52	4.73
Governors Creek	8	8	48	6.00
Shands Bridge	9	9	43	4.78
Whitey's Fish Camp	3	9	24	2.67
Williams Park	10	11	18	1.64
Whitney's Sail Center	6	8	3	0.38
Total			622	
Mean		9.5	62.2	6.35
SD		1.35	54.41	5.05

Source: Jacksonville University, Summer 2003.

TABLE 24. Summary of survey data for weekday boat ramp users in Clay County.

Boat ramp	Ramp No.	Days surveyed weekdays	Total observations weekdays	No. of users/day weekdays
Knights	7	5	13	2.60
Lake Shore	4	4	11	2.75
Main Street	1	7	8	1.14
Old Ferry	2	5	15	3.00
Doctors Lake Marina	5	4	5	1.25
Governors Creek	8	4	8	2.00
Shands Bridge	9	4	3	0.75
Whitey's Fish Camp	3	4	4	1.00
Williams Park	10	3	11	3.67
Whitney's Sail Center	6	3	0	0.00
Total			78	
Mean		4.3	7.8	1.82
SD		1.16	4.78	1.17

Source: Jacksonville University, Summer 2003.

Results from weekday surveys indicated that from a total of 78 (12%) boat captains, Old Ferry (15), Knight's (13), Lake Shore and Williams Park (11) boat ramps experienced the highest number of users. Main Street and Governors Creek (8), Doctors Lake Marina (5) and Whitey's Fish Camp (4) experienced intermediate numbers of users and Shands Bridge (3) and Whitney's Sail Center (0) experienced the lowest number of users (Figure 15, Table 24).

Weekend use was expectedly higher with a mean of 6.35 (SD ± 5.05) users/weekend day. Weekday use had a mean of 1.82 (SD ± 1.17) users/weekday. Disparities were greatest at Knight's with a total of 177 captains on weekends versus 13 on weekdays; Lake Shore with a total of 136 captains on weekends versus 11 on weekdays) and Main Street with a total of 75 captains on weekends versus 8 on week days (Figure 15, Tables 23 and 24).

Since survey effort was not equal for each ramp, data were presented as boat ramp users per hour (Figure 16). There was no difference between AM and PM rates of usage. Boat ramp usage rates in the AM hours (09:00-noon) on weekends averaged 4.86 (SD ± 1.44) captains/hr. and in the PM hours (noon-16:00) was 5.47 (SD ± 1.66) captains/hr. Ramp usage rates in the AM hours (09:00-noon) on weekdays averaged 1.58 (SD ± 1.25) captains/hr. and in the PM hours (noon-16:00) was 1.14 (SD ± 0.35) captains/hr.

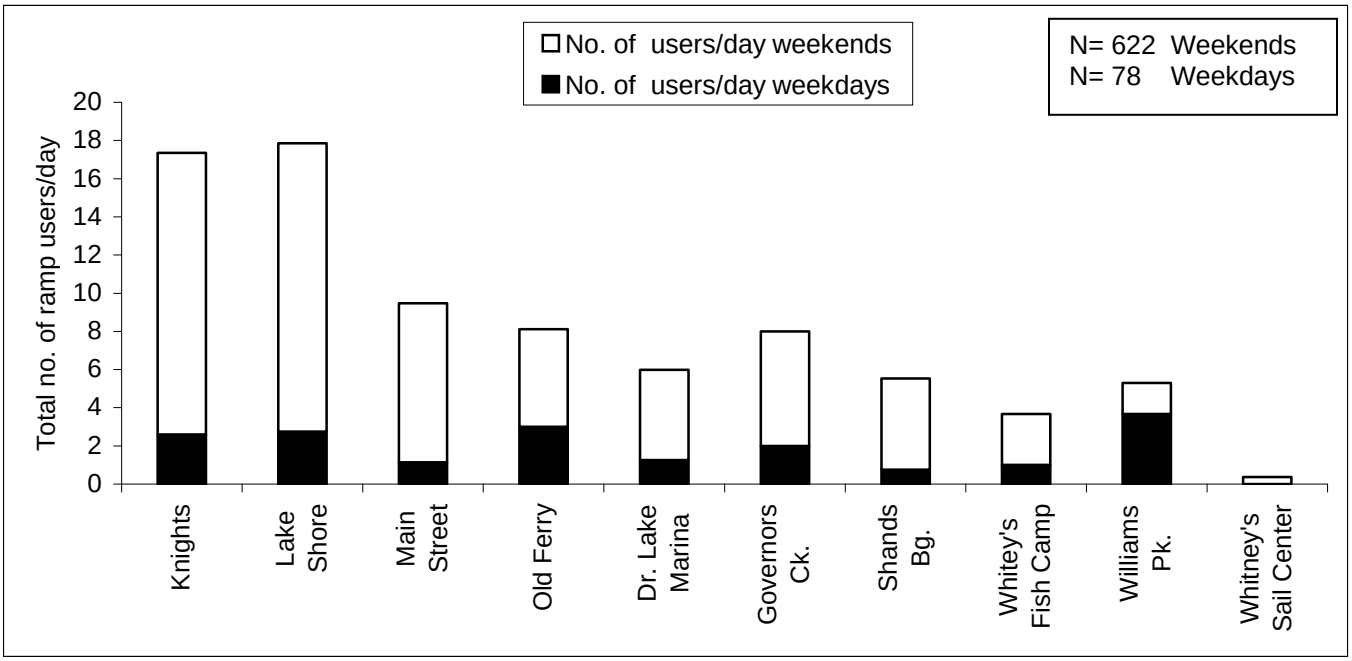


FIGURE 15. Total number of captains/day using boat ramps on weekends and weekdays in Clay Co., FL.

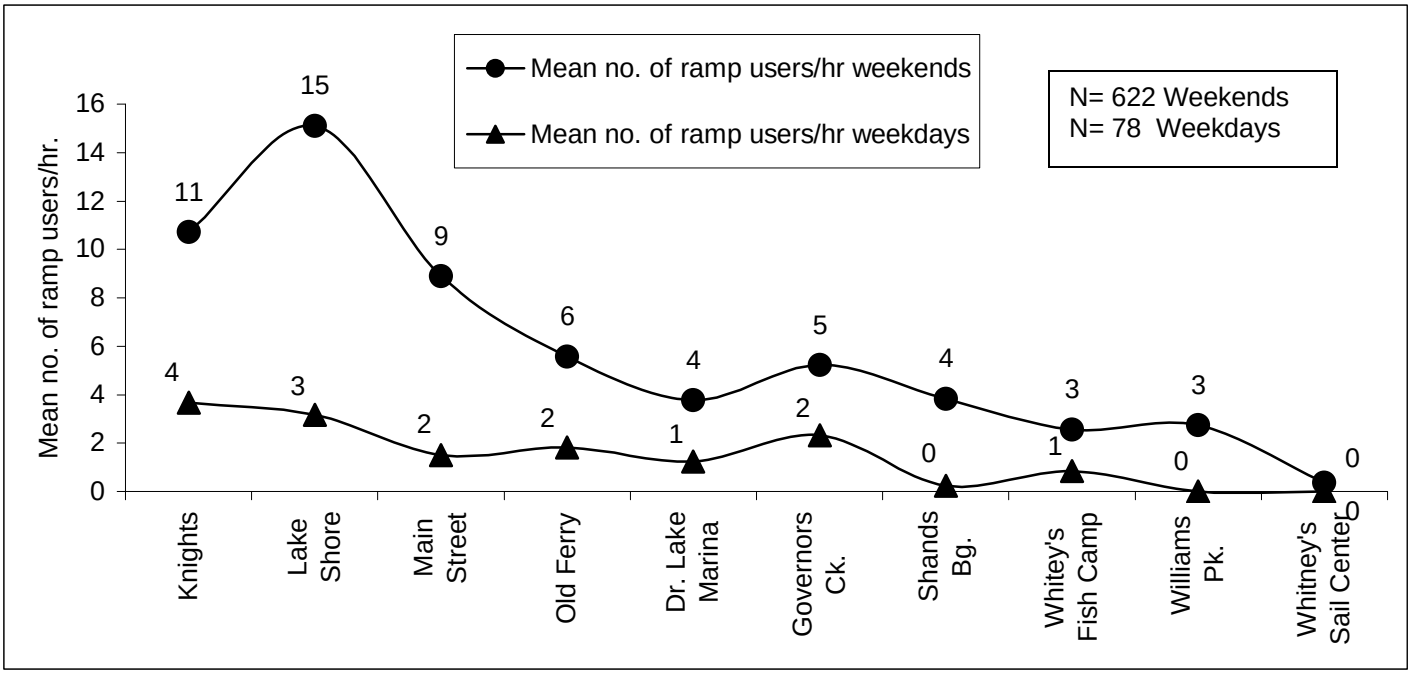
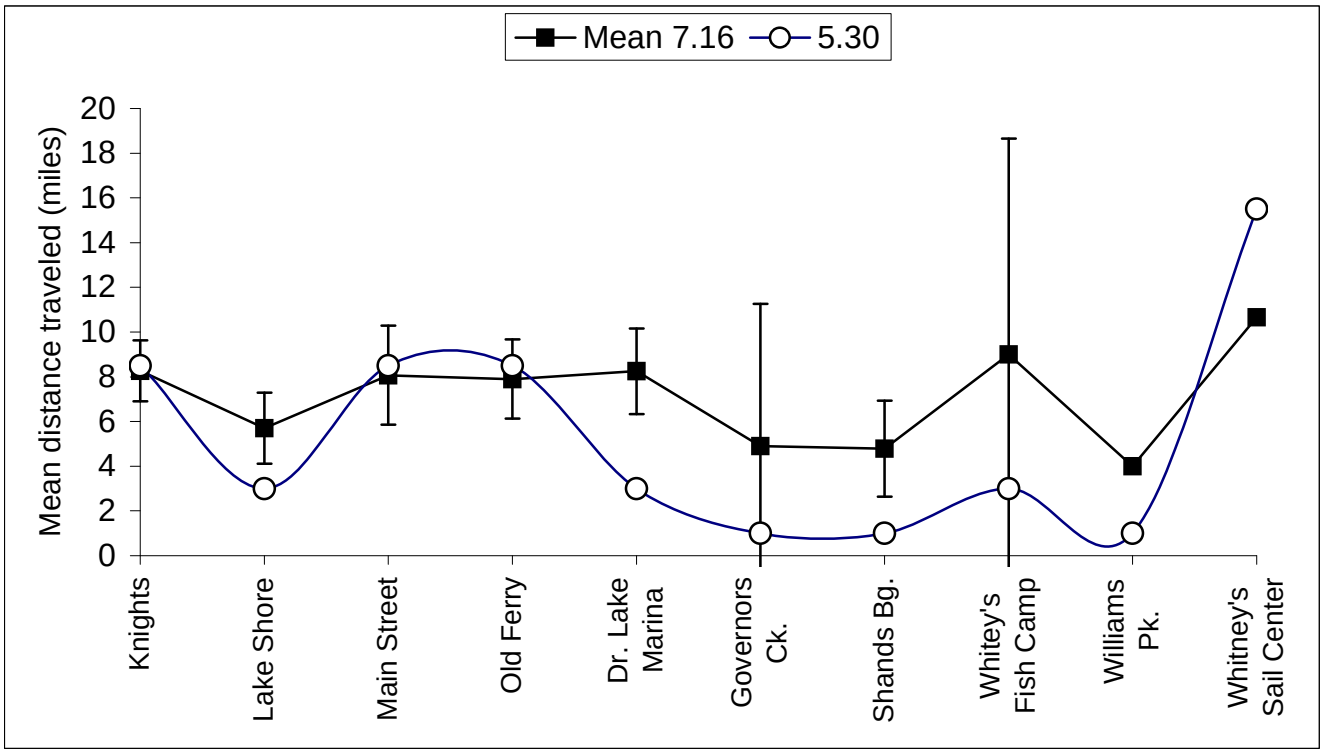


FIGURE 16. Total number of captains/hour using boat ramps on weekends and weekdays in Clay Co., FL.

Boat captains provided information about their destination in 66% of surveys (n =542). These were converted into distances from a given boat ramp. Distances were measured for specific locations with more vague locations estimated as follows: Specific locations were measured from the boat ramp to location by straight lines through the waterways using NOAA navigational charts and county road maps which showed the waterways. Vague locations were calculated two ways: For example, Governors Creek boat ramp to Doctors Lake was measured as above to the beginning of the destination water body (first method or shortest possible distance to Doctors Lake). The second method was the same except that the maximum length of the destination water body was also included in the total distance traveled (second method or longest possible distance to a destination somewhere within Doctors Lake). Finally, the results from the two methods were averaged to develop distance in statute miles for a boating sphere of influence from a given boat ramp/facility (Figure 17).

The mean distance traveled from boat ramps was 7.16 miles (SD ± 2.17) and the mode was 5.30 miles (SD ± 4.79) (Figure 17). Most boaters clamed that they did not travel much over 3 miles (modal distance) from Whitey's Fish Camp, Lake Shore or Doctors Lake Marina. At Governors Creek, Shands Bridge and Williams Park locations, boaters claimed not to travel more than 1 mile (modal distance) from the ramp. Boaters at Main Street, Old Ferry and Knights boat ramps claimed to travel a modal distance of 8.5 miles. At Whitney's Sail Center, two power boat (<20 ft. length) operators traveled 15.5 miles to Black Creek and one sailboat operator traveled about 1 mile (Figure 17).



Boat Ramp Name	No. of Observations	Mean distance	95%CI mean	Mode Distance
Main Street	53	8.07	1.36	8.5
Old Ferry	46	7.90	1.60	8.5
Whitey's Fish Camp	17	9.00	6.36	3
Lake Shore	129	5.70	1.17	3
Doctors Lake Marina	45	8.25	2.21	3
Whitney's Sail Center	3	10.67	9.66	15.5
Knights	142	8.27	1.23	8.5
Governors Creek	47	4.90	1.77	1
Shands Bridge	35	4.79	1.91	1
Williams Park	25	4.00	2.15	1
Total	542			
Mean	54	7.16		5.30
SD	46	2.17		4.79

FIGURE 17. Mean and mode distance traveled from boat ramps in Clay Co., FL. Vertical lines indicate 95% confidence intervals of the mean. Source: Jacksonville University, Summer 2003.

From a total of 601 vessels observed (Table 25), types and classes of vessels using boat ramps in Clay County were determined to be predominantly power vessels less than 20 ft. in length (591). The latter includes personal watercraft (36) for details see Table 26. Other types of vessels recorded were sailboats (3) and canoes (7).

TABLE 25. Vessel types and classes observed using boat ramps in Clay Co., FL.

Boat ramp name	Ramp No.	No. of observations (n)	%. power vessels less 20 ft.	%. sail vessels	%. canoes
Knights	7	152	97	1	3
Lake Shore	4	144	99	1	1
Main Street	1	64	100	0	0
Old Ferry	2	50	100	0	0
Doctors Lake Marina	5	48	100	0	0
Governors Creek	8	51	100	0	0
Shands Bridge	9	46	96	0	4
Whitey's Fish Camp	3	18	100	0	0
Williams Park	10	25	100	0	0
Whitney's Sail Center	6	3	67	33	0
Total number of vessels		601	591	3	7

Source: Jacksonville University, Summer 2003.

TABLE 26. Personal watercraft observed using boat ramps in Clay Co., FL.

Boat ramp name	Ramp No.	No. of pwc	days pwc seen	days surveyed
Knights	7	8	5	17
Lake Shore	4	13	6	13
Main Street	1	6	3	16
Old Ferry	2	5	3	14
Doctors Lake Marina	5	0	0	15
Governors Creek	8	2	1	12
Shands Bridge	9	2	1	13
Whitey's Fish Camp	3	0	0	13
Williams Park	10	0	0	14
Whitney's Sail Center	6	0	0	11
Total number of pwc		36		

pwc=personal watercraft

Source: Jacksonville University, Summer 2003.

BOAT CAPTAIN INTERVIEW DATA FORM

1) Interviewer_____ 2) Date_____Time_____

3) Departure Time_____ 4) Return Time_____
5) Ramp Code_____ (See attached boat ramp map)

6) Captain's Name_____ No. of people in party_____
7) Residency of Captain_____

8) Boat Registration No._____

9) How often does he/she use ramp:
Summer (May to Sept)_____ Fall (Oct/Dec)_____
Winter (Jan/Feb)_____ Spring (Mar/Apr)_____

10) Number of WEEKDAY ramp usage_____ WEEKEND usage_____

11) Purpose of boat trip (circle all that apply)
(RF) Recreational fishing **(CF) Commercial Fishing**
(SK) Skiing **(TR) Travel (cruising)**
(DV) Diving **(SW) Swimming**
(LA) Land Activity (picnic, restaurant, parks)
(OT) Other_____

12) Primary destination (circle one or specify)
(XX) **(JC) Julington Creek**
(XX) **(DL) Doctor's Lake**
(XX) **(RA) SJR S of Buckman Bridge**
(XX) **(RB) Buckman to Fuller Warren**
(XX) **(OR) Ortega River**
(XX) **(RC) Fuller Warren to Matthews**
(XX) **(AR) Arlington River**
(XX) **(TR) Trout River**
(XX) **(RD) Matthews to Dames Pt.**
(SJ) St. Johns County **(RE) Dames Pt. to SJR mouth**
13) (OT) Other_____

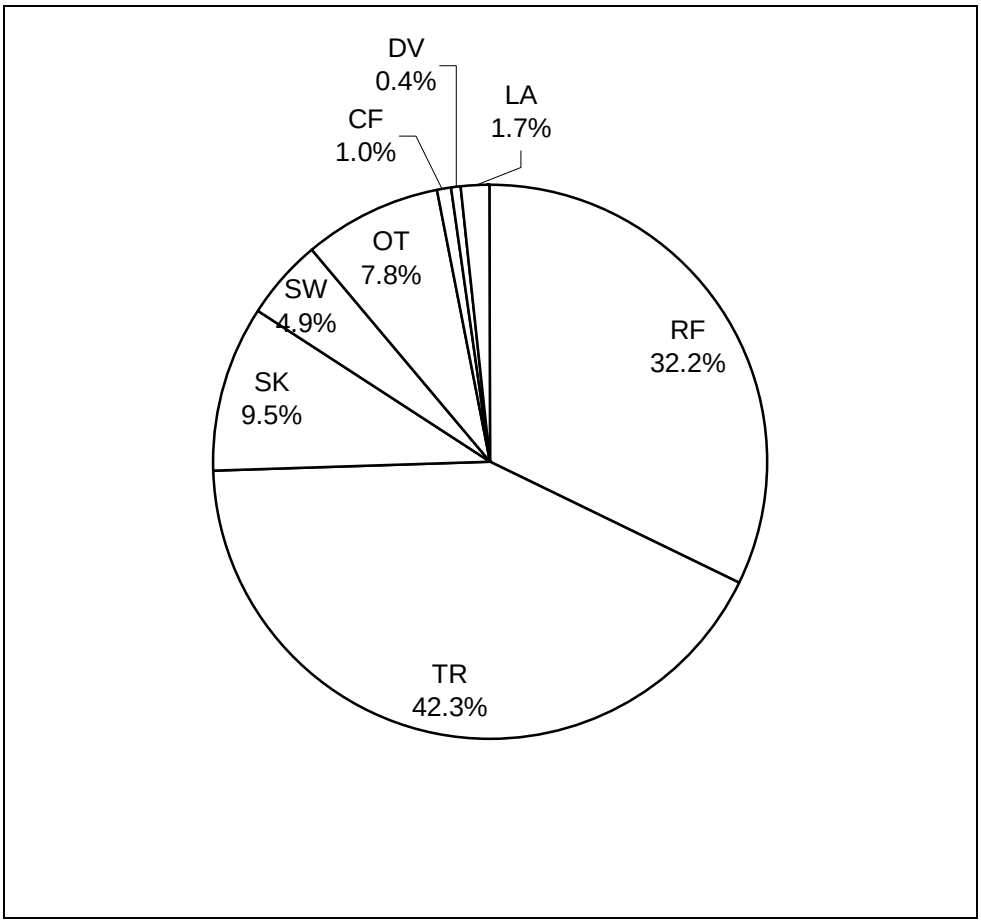
14) Type of vessel (circle)
a) Power/Sail b) 20ft or less c) 20-30 ft. d) 30 ft.+

15) Is boat equipped with **_____(NH) No head**
_____(PP) Porta-potty
_____(HH) Head with holding tank.

16) How do you empty holding tank ? **_____(CS) Commercial pump out (Marina, etc.)**
_____(PF) Private pump-out facility or
_____(OL) Outside 12 mile limit
_____(OT) Other
17) Comments_____
_____
18) Interview Status: _____(C) Questionnaire Complete _____(R) Refused Interview
_____(L) Language Barrier _____(Q) Questionable Interview

19) Vehicle License Plate No._____

A total of 36 personal watercraft was seen over the course of the study. Personal watercraft were only observed at Main Street (6), Old Ferry (5) , Lake Shore (13), Knights (8), Governors Creek (2) and Shands Bridge (2) on days that the ramps were surveyed (Table 26). On average, about 2 personal watercraft/survey day could be expected. No personal watercraft were observed at Whitey's Fish Camp, Doctors Lake Marina, Whitney's Sail Center or Williams Park during the study. Observations of personal watercraft took place predominantly on weekends versus weekdays.



Purpose category	RF	TR	SK	SW	OT	CF	DV	LA	TOTAL
Number of vessels	**223**	**293**	**66**	**34**	**54**	**7**	**3**	**12**	**692**
Percent	**32.2**	**42.3**	**9.5**	**4.9**	**7.8**	**1**	**0.4**	**1.7**	**99.8**

KEY

RF = Recreational fishing
TR = Traveling
SK = Skiing
SW = Swimming
OT = Other (jet skiing etc.)
CF = Commercial fishing
DV = Diving
LA = Land based activity

Source: Jacksonville University, Summer 2003.

FIGURE 18. Purpose of trip indicated by vessel operators in Clay County, FL.

Trip purpose (Figure 18) for the majority of vessel operators was traveling (42%) followed by recreational fishing (32%) and water skiing (10%). Most other activities consisted of jet skiing and a few maintenance runs for larger recreational vessels (8%). Swimming activities associated with the boating experience made up (5%) of trips followed by trips culminating in land based activities (2%), commercial fishing (1%) and diving (0.4%).

D. Natural Resources/Habitat Protection

The Florida Department of Environmental Protection is responsible for issuing permits to construct docks. Any terminal platforms and mooring areas cannot be located above Submerged Aquatic Vegetation (SAV). The dock must extend sufficiently offshore to prevent impact to SAV beds (Danielle Harvey Fondren (2003), Florida Department of Environmental Protection, Environmental Resource Permitting, Northeast District, personal communication).

The St. Johns Water Management District is not involved with issuing permits for docks but is an agency that can provide certain guidelines for dock construction techniques that may reduce impacts to SAV beds (David Miricle (2003), SJRWMD, personal communication). In the past, research on dock construction techniques included adequate spacing between boards, prisms under docks and clear dock material itself. All these techniques were designed to increase light availability to SAV.

Exotic aquatic plant management efforts are coordinated by the following agencies.
The USACOE contact is:
William Zattau (Tel: (904) 232-2215), william.c.zattau@usace.army.mil)
The Aquatic Plant Control website is:
http://www.saj.usace.army.mil/conops/apc/apc_page.html

The WMD contact is:
Wayne Corbin (Program Director) (386-329-4276; wcorbin@sjrwmd.com)
Dave Girardin (904-529-1177; dgirardin@sjrwmd.com)
The website for The Invasive Plant Management Program website is:
http://sjrwmd.com/programs/operations/inv_plant_mgmt/overview.html

E. Manatee Protection Zones

In July 2000, the FWC adopted a rule (subsequently amended January 2007) establishing slow speed variable width buffer zones (500 ft. from the shoreline or 200 ft. from the end of docks, which ever is greater) from the Duval/Clay County line south to Peter Branch Creek in St. Johns River and Doctors Lake (Figure 19). In 2003, the USFWS adopted additional federal zones in Clay County (amended October 2005) that include wider slow speed buffers in some areas.

The FWC manatee protection zones can be enforced by federal, state, and local law enforcement agencies (USFWS, USCG, FWC, and Clay County Sheriff's Marine Patrol Unit). The federal zones can only be enforced by federal and state law enforcement agencies. The FWC is the agency responsible for posting regulatory markers for the state manatee protection

zones. Policy 5.11 of the Conservation Element of the Clay County Comprehensive Plan states that “The Clay County Parks and Recreation Department shall coordinate with the USFWS, FGFWFC and DNR in protecting manatees and their habitats through a manatee protection plan which shall include maintenance of signage identifying manatee habitat and associated speed zones where shown to be needed and provision of educational materials at boat launch and marina facilities.”

As defined by 68C-22.002(4), FAC:

“Slow Speed” and “Slow Speed Minimum Wake” may be used interchangeably and mean that a vessel must be fully off plane and completely settled into the water. The vessel must then proceed at a speed which is reasonable and prudent under the prevailing circumstances so as to avoid the creation of an excessive wake or other hazardous condition which endangers or is likely to endanger other vessels or other persons using the waterway. Due to the different speeds at which vessels of different sizes and configurations may travel while in compliance with this definition, there is no specific numerical speed assigned to Slow Speed.

A vessel that is:
(a) Operating on plane is not proceeding at this speed;
(b) In the process of coming off plane and settling into the water or coming up onto plane is not proceeding at this speed;
(c) Operating at a speed that creates an excessive wake or other hazardous condition which unreasonably or unnecessarily endangers other vessels or other persons using the waterway, or is likely to do so, is not proceeding at this speed;
(d) Completely off plane and which has fully settled into the water and is proceeding at a reasonable and prudent speed with little or no wake is proceeding at this speed.

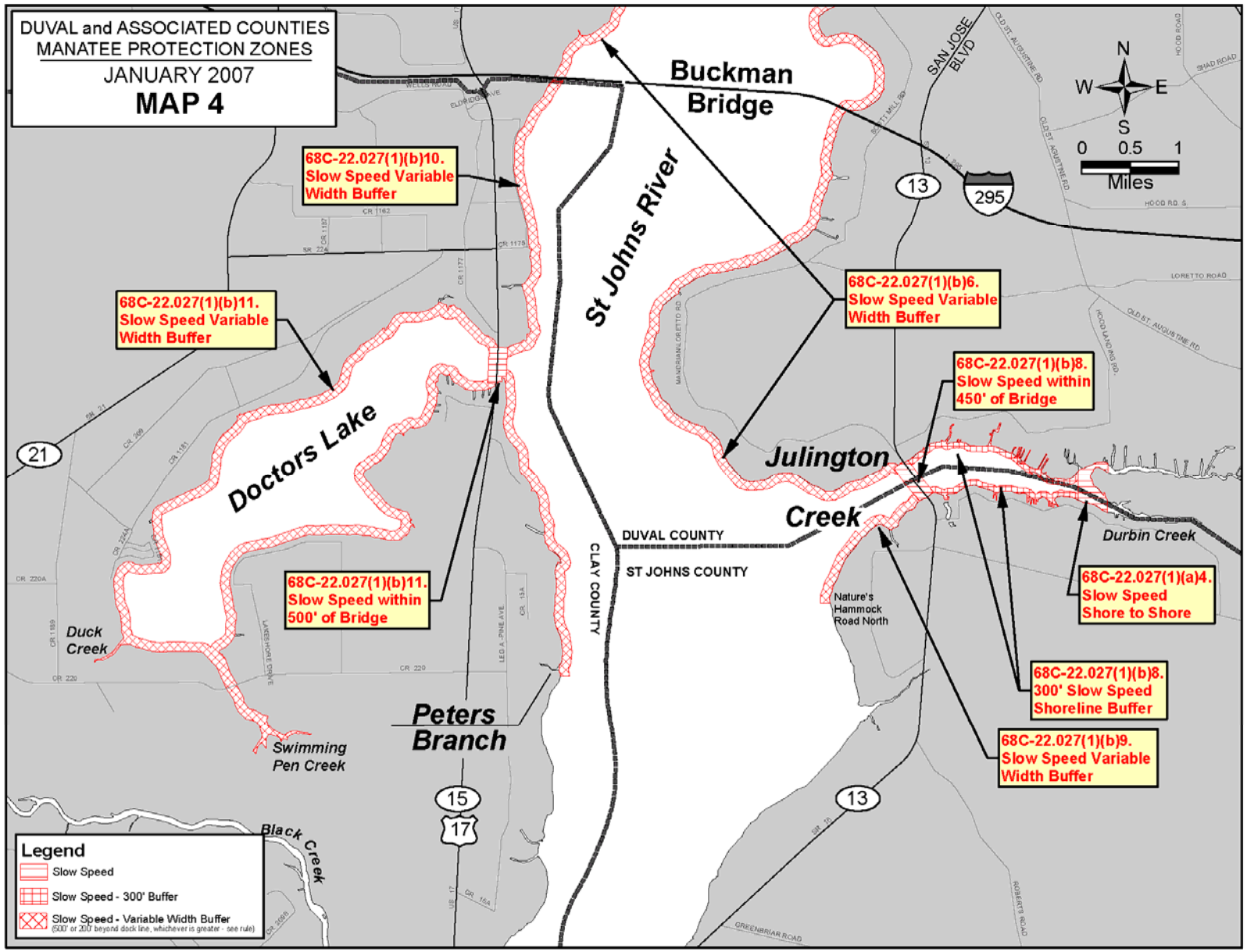


FIGURE 19. Speed zone rule adopted by FWC in July 2000 (amended and effective January 30, 2007).

F. Boating Safety Zones

The following Ordinances 90-42 and 90-59 were adopted for boating safety purposes and have benefits to both human and manatee safety.

Boating Safety Zone – As defined in Ordinance 90-42. An ordinance of the Board of County Commissioners of Clay County, Florida; entitled the Clay County vessel control and water safety ordinance. Section 125.01, Florida Statutes, authorizes the Board of County Commissioners of Clay County, Florida to adopt regulations which will protect the health, safety and welfare of its citizens and others. The ordinance provides a short title, purpose and authority and definitions. It designates a certain idle speed/no wake zone and certain no water skiing zones, establishing prohibited acts, declares violation misdemeanor and establishes penalties. It provides for posting of signs, directs filing with the Department of Environmental Regulation and provides for enforcement, exemptions, severability and an effective date (Figures 20-26).

North Fork Black Creek Ordinance 90-42. Section 4, B.
B. North Fork Black Creek Idle Speed/No wake Zone: North Fork Black Creek from the bridge at S.R 21 upstream to its upper-most reaches, inclusive of all tributaries draining therein (Figure 20).

South Fork Black Creek Ordinance 90-42. Section 4, C.
C. South Fork Black Creek Idle Speed/No Wake Zone: South Fork Black Creek from the bridge at C.R. 218 upstream to its upper-most reaches, inclusive of all tributaries draining therein (Figure 21).

North and South Fork Black Creek Ordinance 90-42. Section 5, A and B.
A. North Fork Black Creek No Water Skiing Zone: North Fork Black Creek from its confluence with South Fork Black Creek upstream to the bridge at S.R. 21.
B. South Fork Black Creek No Water Skiing Zone: South Fork Black Creek from its confluence with North Fork Black Creek upstream to the bridge at C.R. 218 (Figure 22).

Main Street Boat Ramp Ordinance 90-42. Section 4, D.
D. Middleburg Boat Ramp Idle Speed/No wake Zone: North Fork Black Creek from one hundred (100) yards upstream to one hundred (100) yards downstream of the Middleburg Boat Ramp located at the end of Main Street in Middleburg (Figure 23).

Swimming Pen Creek Ordinance 90-42. Section 4, A.
A. Swimming Pen Creek Idle Speed/No Wake Zone: Swimming Pen Creek from its confluence with Doctors Lake upstream to its upper-most reaches, inclusive of all tributaries draining therein (Figure 24).

Peters Creek Ordinance 02-6. Section 1, (6).
(6) Peters Creek Slow Down/Minimum Wake Zone: Peters Creek, from the confluence of Peters Creek and Black Creek to the bridge at C.R. 209 North, inclusive of all tributaries draining therein (Figure 25).

Old Ferry Boat Ramp Ordinance 01-52. Section 1 (5) and 2 (3).
(5) Ridaught Boat Ramp Slow Down/Minimum Wake Zone: Black Creek, from one hundred (100) yards upstream of C.R. 209 bridge to one hundred (100) yards downstream of the Ridaught boat ramp located at the end of Old Ferry Road.
(3) Ridaught Boat Ramp No Water Skiing Zone: From one hundred (100) yards west of the C.R. 209 bridge to one hundred (100) yards downstream of the Ridaught boat ramp located at the end of Old Ferry Road (Figure 26) (See Appendix D. Boat Safety Zone Ordinances).

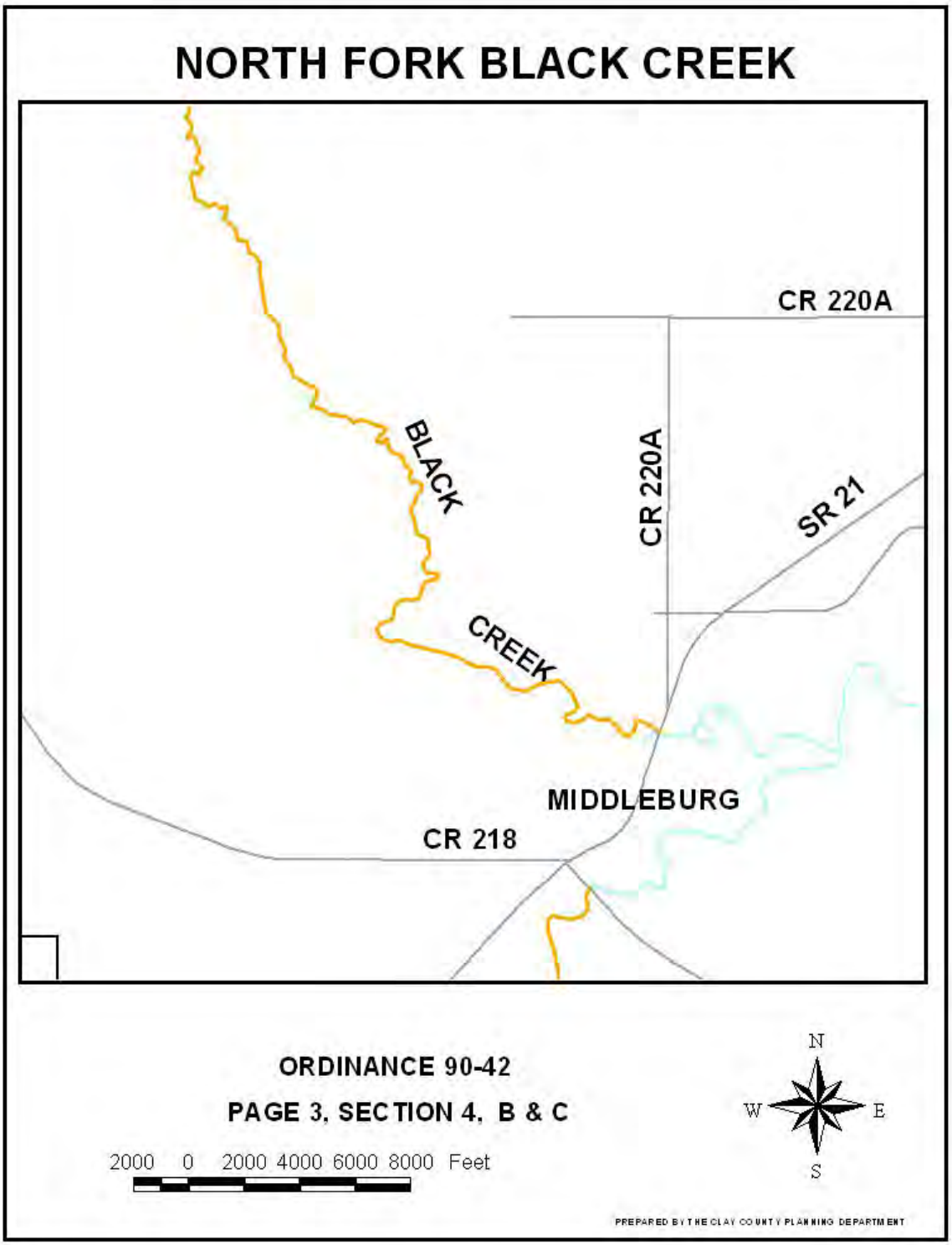


FIGURE 20. North Fork Black Creek Idle Speed/No wake Zone.

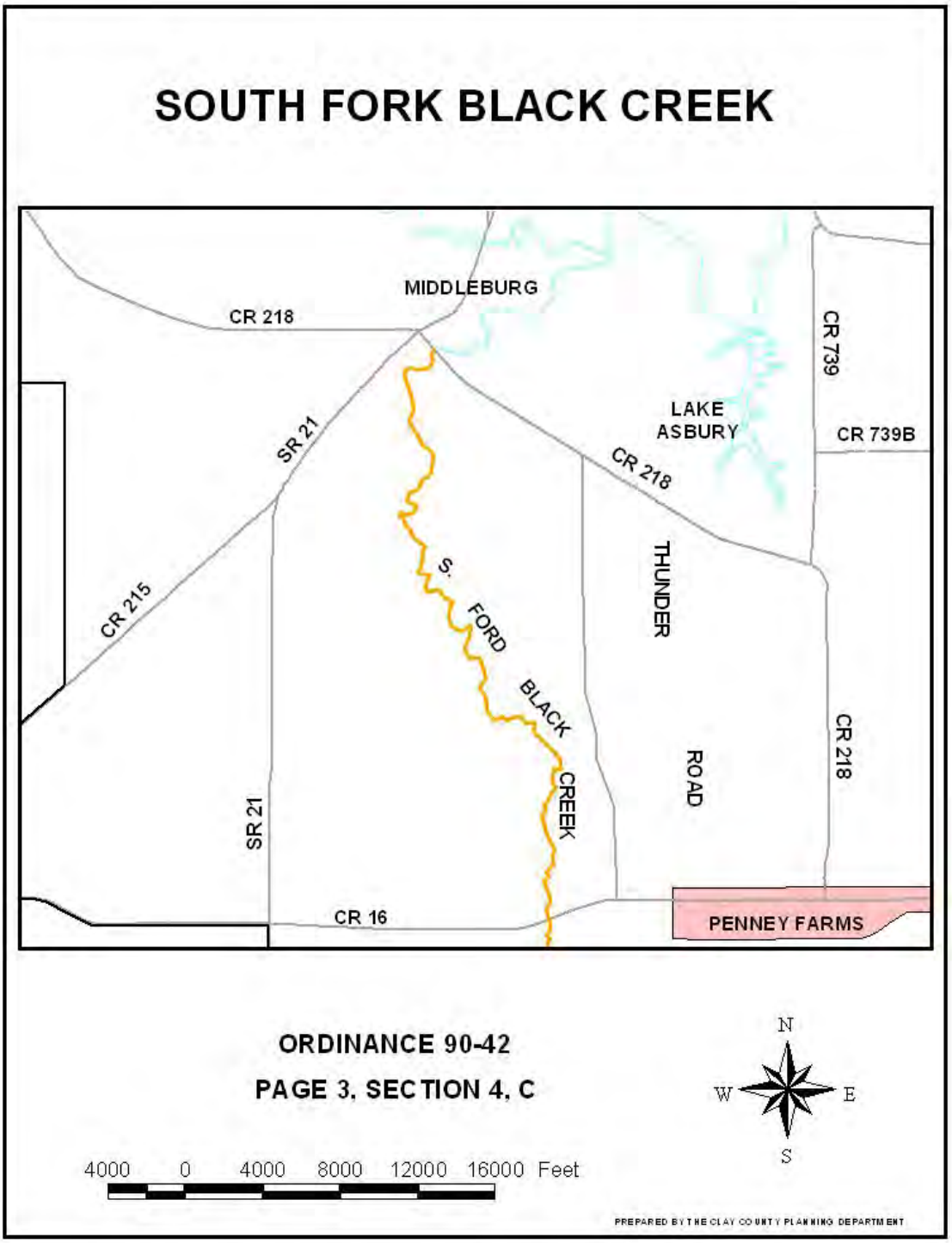


FIGURE 21. South Fork Black Creek Idle Speed/No Wake Zone

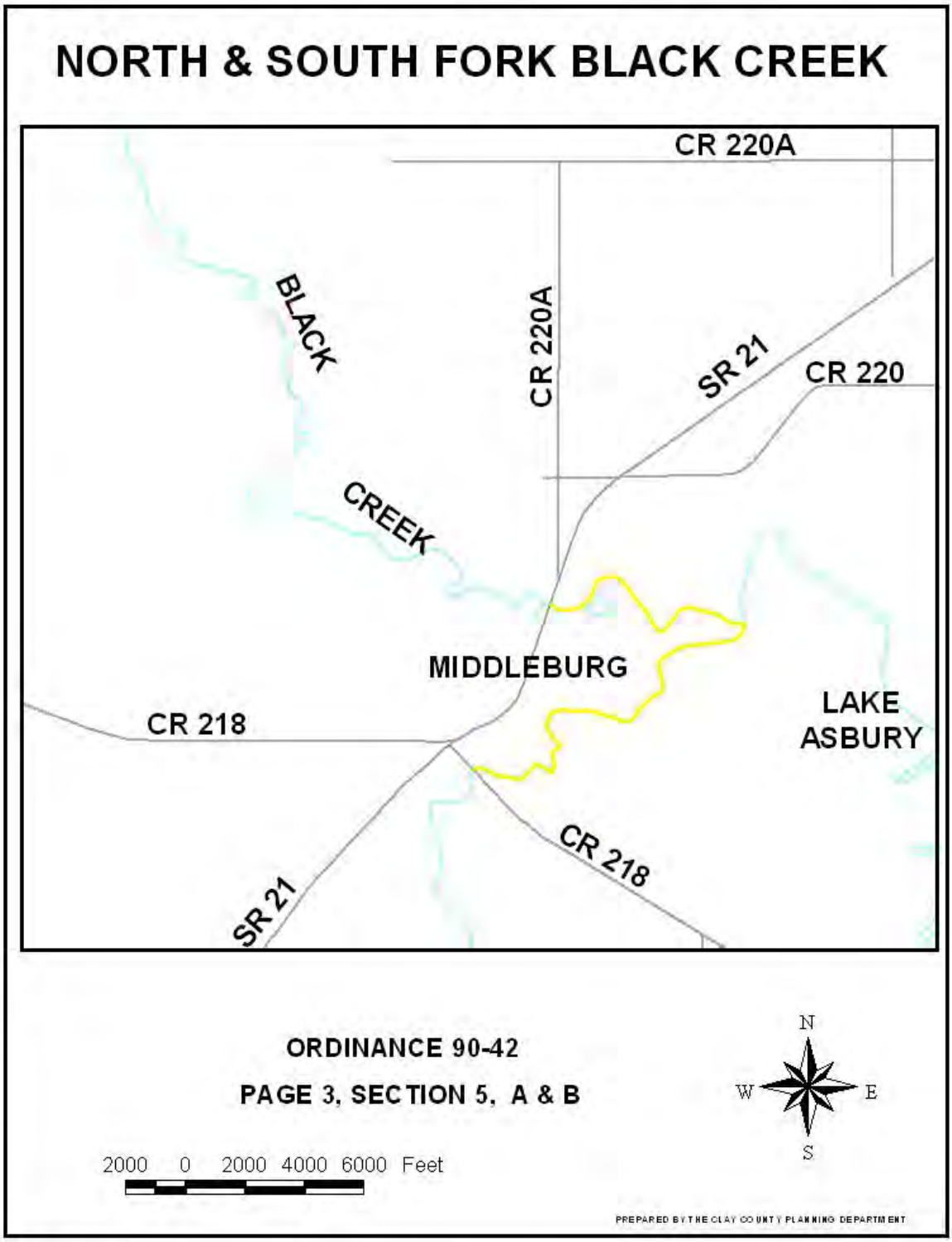


FIGURE 22. North Fork Black Creek No Water Skiing Zone.

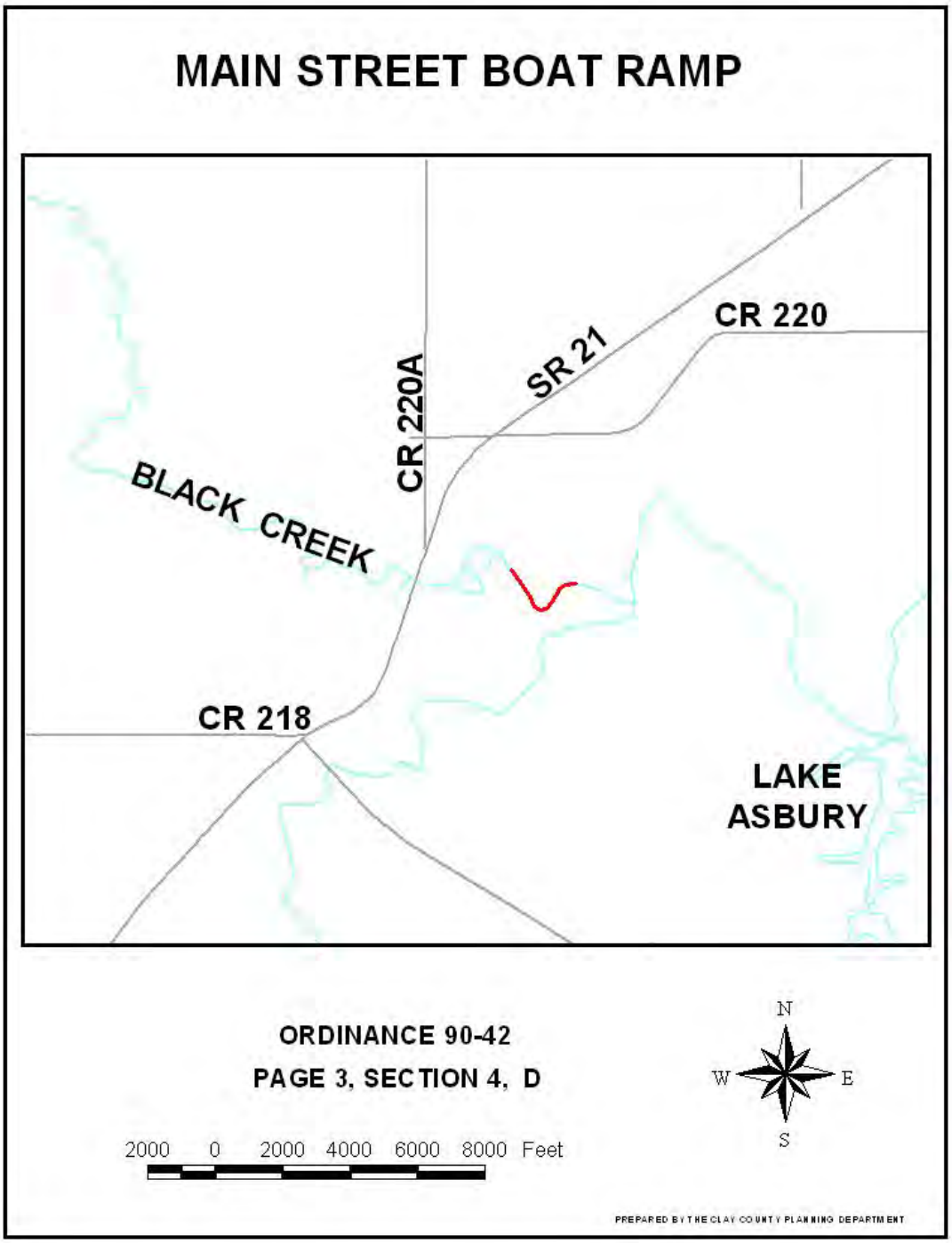


FIGURE 23. Middleburg Boat Ramp Idle Speed/No wake Zone.

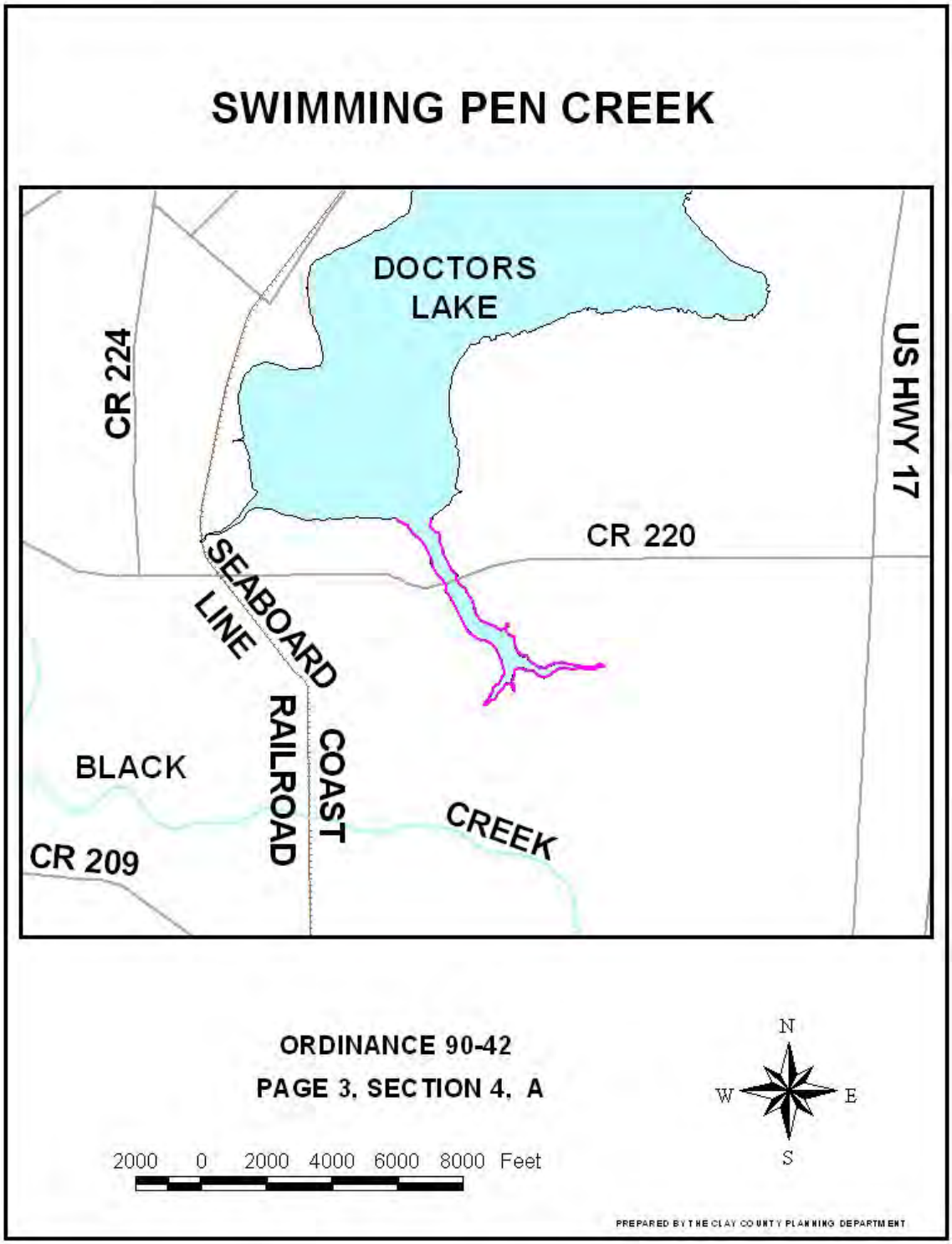


FIGURE 24. Swimming Pen Creek Idle Speed/No Wake Zone.

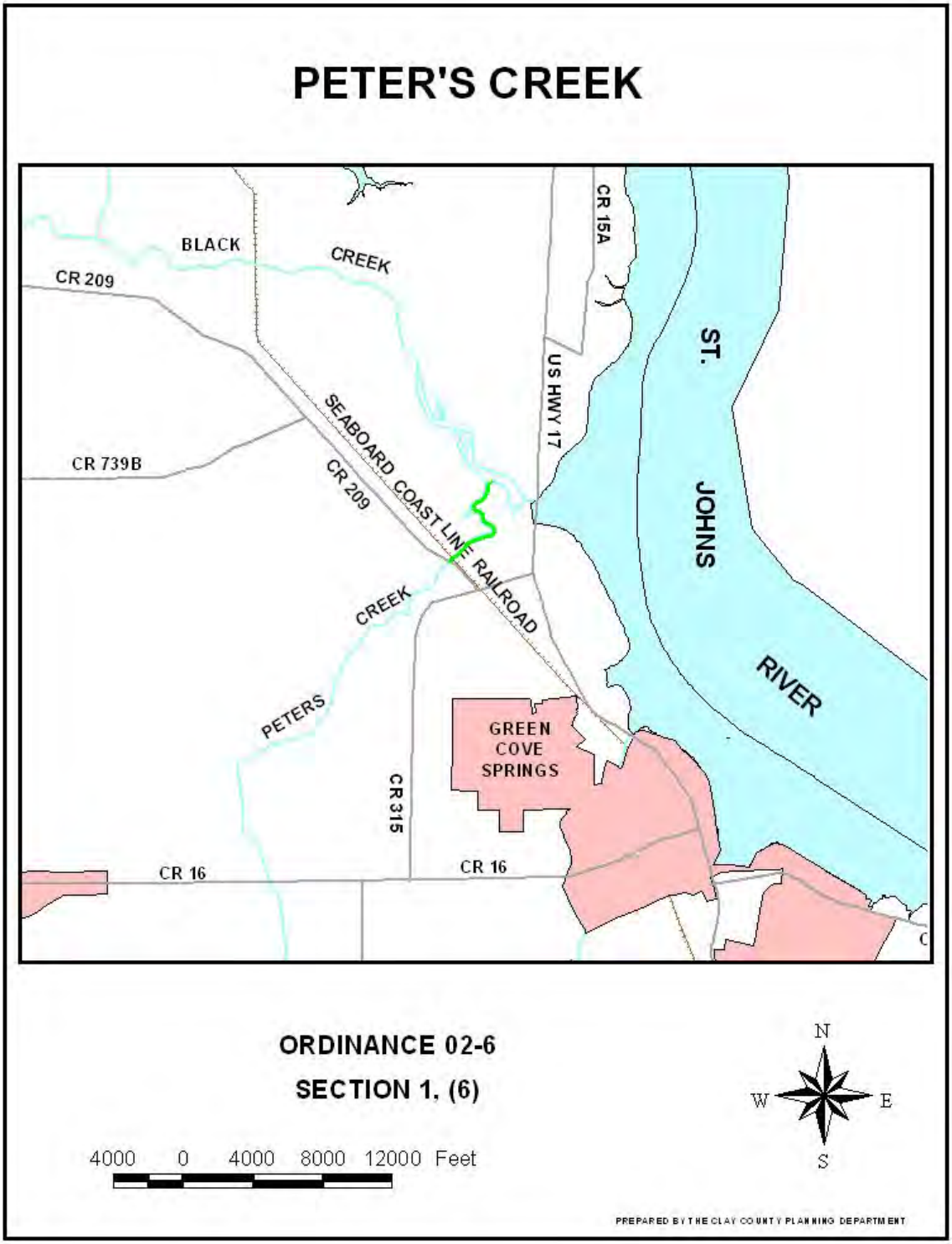


FIGURE 25. Peters Creek Slow Down/Minimum Wake Zone.

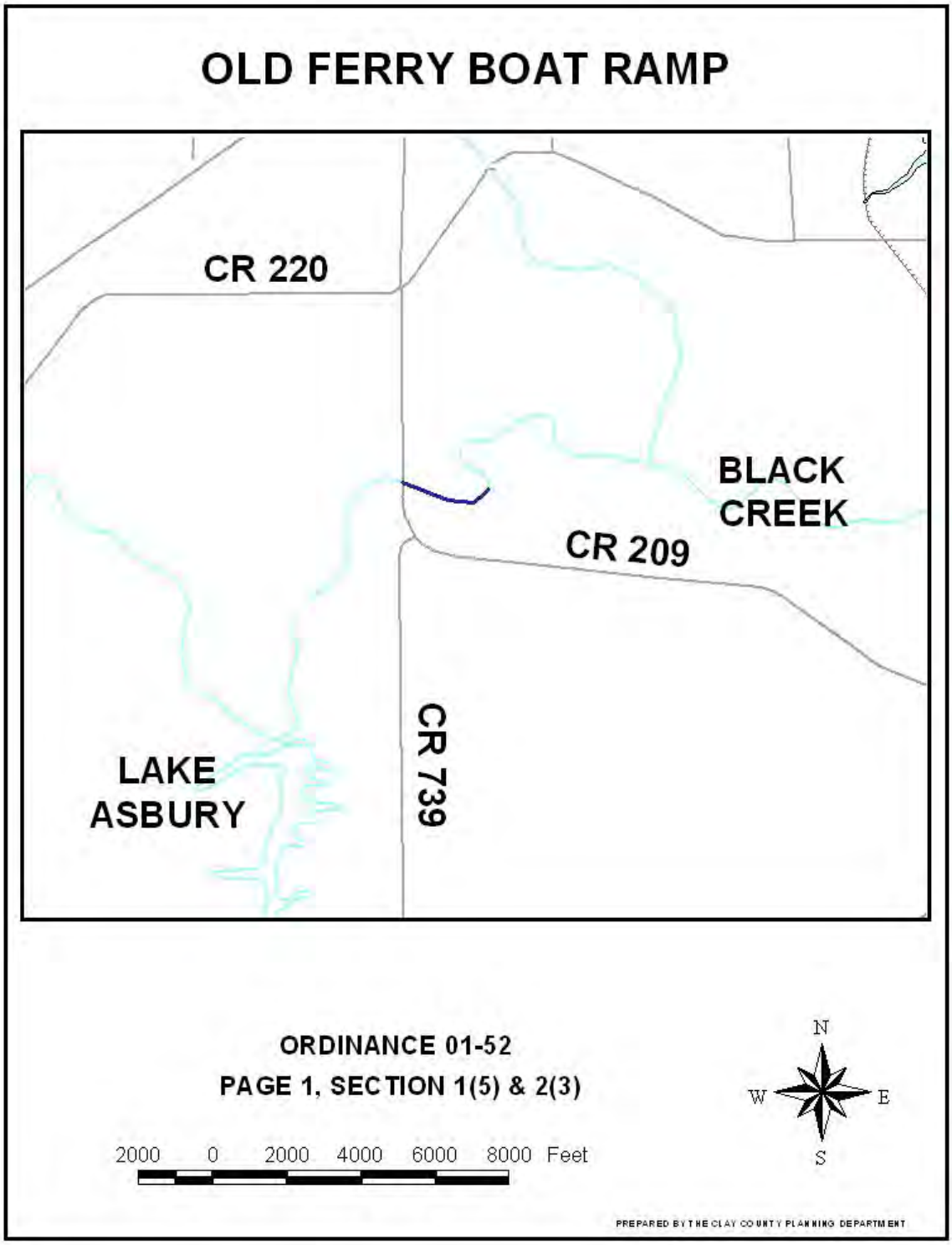


FIGURE 26. Ridaught Boat Ramp Slow Down/Minimum Wake Zone and Ridaught Boat Ramp No Water Skiing Zone.

G. Intergovernmental Component

Regulations

2015 Comprehensive Plan: The Comprehensive Plan will be amended to include reference to the Manatee Protection Plan (Conservation Element).

Once the MPP is approved by the FWC and the USFWS, it will be used by these agencies to evaluate future boat facility projects with possible impacts to manatees. The provisions of the boat facility siting section of the MPP will be used by these agencies to help determine site suitability and appropriate densities for future boat facilities during the manatee impact review.

In considering the construction of new facilities or the expansion, rearrangement, or renovation of existing facilities (work that changes structures, increases the footprint of the existing facility, or adds boat slips or boat trailer parking spaces to a boat facility), the landowner or developer must submit the proposal to the Clay County Development Services Department for initial review to determine consistency with the Clay County 2015 Comprehensive Plan and the Clay County Manatee Protection Plan, as well as to identify land use and zoning for the proposed site. This review process will help evaluate potential impacts of future development on endangered and other affected species as well potential impacts to the St. Johns River ecosystem.

8. Summary of Findings

Registered Vessels in Florida increased by 7% (65,028 vessels) over the last three years (2000-2003). Commercial vessels represented about 3% of all vessels, decreased by 448 during this period. In Clay County, there was a 12% increase (1,319 vessels). Commercial vessels represented 1% of all vessels, decreased by 6. In Duval County, there was a 1% increase (333 vessels). Commercial vessels represented 2% of all vessels, decreased by 44. In Putnam County, there was a 7% increase (544 vessels). Commercial vessels represented 3% of all vessels, decreased by 16. In St. Johns County there was a 8% increase (840 vessels). Commercial vessels represented 3% of all vessels, increased by 25. In general, this represents an increase of some 3,036 vessels and a decrease of 489 commercial vessels in the region.

Submerged Aquatic Vegetation regenerated significantly after a period of drought. The percent of grass bed that was bare decreased to 20% (2003) and 16% (2004) from 42-58% (1998/2002). The percent of grass beds comprising specifically of *Vallisneria americana* tape grass increased to 72% (2003/2004) from 35% (2000) and 52% (2001/2002). Bed length increased 103m (2003) and 109m (2004) from 38m (2002). Diversity index was highest in 2001 (0.88) then decreased to 0.48 (2000); increased to 0.59 (2003) and then increased again 0.92 (2004) indicating a consistent increase since 2002. Prior to 2001 diversity index was 0.54 (1998-2000). Total percent coverage including all observed species increased since 1998 (55%) to 84% (2001); 71% (2002); 97% (2003) and 121% (2004).

Warm Water Attractants. Currently, there are no more warm water outfalls in Duval, Clay or St. Johns Counties. Historically, manatees frequented Jacksonville Electric Authority's Southside Generating Station (Duval County) that closed in October 2001 but little use was

observed in 2003/2004. Clay County does not have any power plants or other types of warm water sources that would attract manatees in colder months. Three fresh water springs exist but are too small to function as attractants to manatees. As a result, small numbers of manatees remain in northeast Florida during the winter months.

Aerial counts of manatees were highest in the LSJR adjacent to Clay County from spring to late fall. The single highest day count of 190 animals was recorded on 06/25/2003 (both river banks). Of the 190 animals observed in the area, 117 manatees were observed on the west bank (62%) and 73 manatees on the east bank (38%). More animals occur on the west bank (58%) versus (42%) east bank. More animals were observed in the north and less in the central areas of Clay County with numbers reduced towards the south. On the west bank, few animals were observed in Black Creek. This was likely due to poor visibility caused by tree overhangs, narrow waterways and dark deep water. On the west bank, the highest numbers of manatees were seen from the Buckman Bridge to Red Bay Point and including Doctor's Lake. On the east bank, the highest counts were reported between Buckman Bridge and Julington Creek and Cunningham Creek to Magnolia Point (Tables 17 and 18). Manatee behavior was not significantly different between seasons or areas except for winter, when no manatees were observed. Behavior means indicated that manatees spent most of their time traveling (18%), resting (27%) and feeding (25%) and the least time cavorting (11%).

The total watercraft deaths in Clay County numbered 13 since 1975. Clay County has less than one watercraft death per year (0.5 per year) over the last decade. Over that time period, there were two watercraft-related deaths in 1998, one in 2001, one in 2003, and one in 2004. Most of the deaths occurred in the northern area near the mouth of Doctor's Lake. In Clay County, watercraft-related deaths have comprised 26.5% of the total deaths in the county.

Manatee Zones. Since the FWC adopted extensive speed zones for manatee protection in 2000 and the USFWS adopted additional zones in 2003, no new regulatory zones are recommended at this time. In addition to the state and federal zones, county-established boating safety zones also exist and provide additional protection to manatees.

Boat ramps study. The highest use boat ramps included Knights (St. Johns River) and Lake Shore (on Doctors Lake). The mean distance traveled from boat ramps was 7.16 miles (SD ± 2.17) and the mode was 5.30 miles (SD ± 4.79) miles. Most boaters claimed that they did not travel much over 3 miles (modal distance) from Whitey's Fish Camp, Lake Shore or Doctors Lake Marina. At Governors Creek, Shands Bridge and Williams Park locations, the boaters claimed that they did not travel more than 1 mile (modal distance) from the ramp. Boaters at Main Street, Old Ferry and Knights boat ramps claimed to travel a modal distance of 8.5 miles.

Weekend use was expectedly higher with a mean of 6.35 (SD ± 5.05) users/weekend day. Weekday use had a mean of 1.82 (SD ± 1.17) users/weekday. Since survey effort was not equal for each ramp, data were presented as boat ramp users per hour. There was no difference between morning and afternoon rates of usage. Weekends and holidays (Memorial Day only) represented peak usage days versus regular weekdays as well as the summer season versus other seasons. Boating traffic on the other summer holidays, July 4th and Labor Day, were not sampled during this vessel traffic study.

Types and classes of vessels using boat ramps in Clay County were determined to be predominantly power vessels less than 20 ft. in length including personal watercraft. Other types of vessels recorded were sailboats and canoes. The most common activities included cruising (42%), recreational fishing (32%) and water skiing (10%). Most other activities consisted of jet skiing and a few maintenance runs for larger recreational vessels (8%). Swimming activities associated with the boating experience made up (5%) of trip followed by trips culminating in land based activities (2%), commercial fishing (1%) and diving (0.4%).

Future boat facility siting is most likely to occur in north/central Clay County waters and may require limits on the number of new boat slips or boat trailer parking spaces to minimize impacts to manatees and manatee habitat. In order to assess boat facility impacts to manatees, a sphere of influence of 5 miles may be used (based on the mode distance traveled by boaters) to evaluate manatee abundance, watercraft-related mortality, and manatee telemetry data. Impacts to submerged aquatic vegetation will also be considered when evaluating new facilities, expansions of existing facilities, or rearrangements. Criteria for the siting of new facilities or the expansion of existing facilities are outlined in this plan.

Land use limitations and designations. Additional conservation areas and park lands such as Green Cove Springs Nature Preserve, Spring Park, Black Creek Ravines, and the Bayard Conservation Area may also affect areas available for future boat facility development.

9. Policy and Plan Recommendations

1. Boat Facilities Siting Criteria

The boat facility review criteria will apply to all facilities of 3 or more wet and/or dry slips and all boat ramp facilities. As such, the boat facility siting section of the MPP will not apply to the construction of single family docks. An existing boat facility is defined as one permitted or in use on the date that the Clay County Manatee Protection Plan is approved by the FWC. All development must meet applicable permit requirements in place at the time of application. An existing boat facility may be reconstructed with at least the maximum number of slips in use on the specified MPP approval date. All existing boat facilities will be allowed to continue to operate, and may renovate, according to permitting guidelines, as long as there is no increase in the number of wet or dry slips (or boat trailer parking spaces), no increase in the footprint of the facility, or unless there are impacts to native submerged aquatic vegetation. Any future boat facility development must meet the Boat Facilities Siting Criteria as established in the Clay County Manatee Protection Plan. These criteria are based on specific habitat protection policies, comprehensive plan language, a detailed assessment of manatee use and manatee mortality in Clay County waters, and characteristics of boating traffic in the county. The boat facility siting policies of the MPP will be used by the FWC, the USFWS, and the regulatory agencies in the permit review process. The manatee impact review will result in a determination of appropriate densities for future boat facility development in Clay County. However, in addition to this assessment for the manatee impact review, all projects would need obtain appropriate permits from the state and federal regulatory agencies. With regard to the

latter, the FWC maintains the role of a commenting agency to the FDEP and the SJRWMD for the manatee impact review component of the environmental permitting process.

2. Boat Facility Siting Areas

Clay County was divided into a Northern, Central and Southern Area (Figure 27) based on infrastructure development, human population density, natural habitat, existing and potential land use, and an examination of manatee use and mortality (Table 27). The selection of suitable sites for marina, boat ramps and port usage within these three areas will be subject to specific criteria applied to each expansion/renovation or new boating facility as explained in the following section:

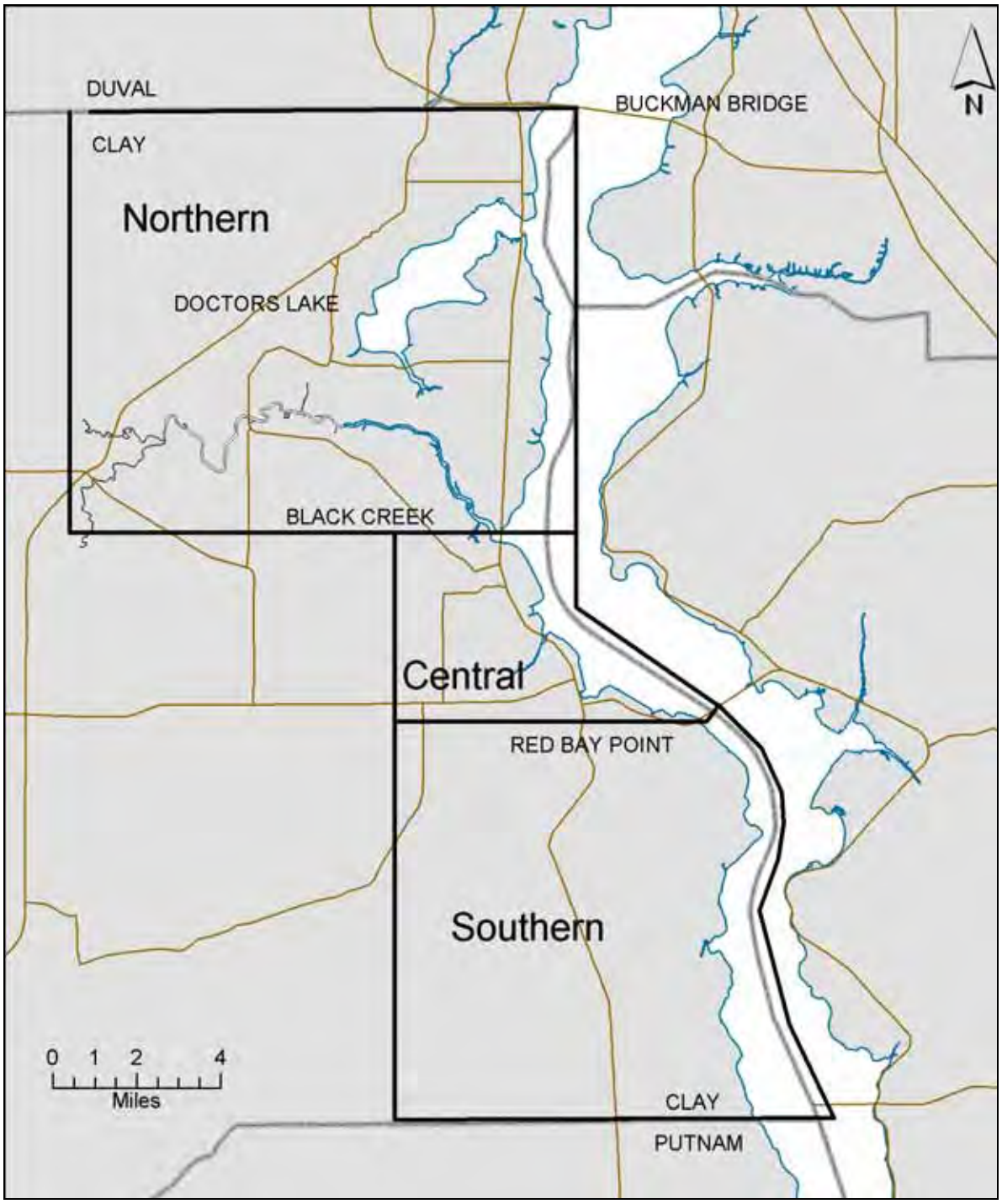


FIGURE 27. Boat Facility Siting Areas.

3. Boat Facility Siting Specific Requirements

New or expanding marine facilities in Clay County shall meet all of the following requirements. Once it has been established that a prospective site meets the requirements in this section and in 3.A through 3.E, the site will be evaluated using the state and federal evaluation process specified in 3.F. to determine appropriate dock density for the site. In addition:

1. The provisions of this plan shall not preempt or nullify any other more restrictive federal, state, or local regulations that apply.

2. For the purpose of the Clay County Manatee Protection Plan, existing boat facilities shall be defined as those facilities which have received all active and required permits and are legally authorized, constructed and in operation as of the state approval date of this plan. All legally existing boat facilities shall be allowed to continue with the existing use, and may renovate according to permitting guidelines, provided there is no change in facility size, including no increase in the number of wet or dry slips, unless the facility meets the expansion criteria as provided in the Clay County Manatee Protection Plan.

3. Boat facilities shall be located in areas where the least amount of dredging and maintenance are required and where aquatic resources (seagrass, oyster bar, freshwater submerged vegetation, etc.) shall not be adversely affected.

4. Marinas and ports should not be located in or adjacent to manatee designated manatee sanctuaries, foraging areas, or in or adjacent to fresh water or warm water discharge habitat areas (Northeast Florida Comprehensive Regional Policy Plan, see Appendix B of this MPP).

Boat launching facilities greatly contribute to the number of boats entering Clay County waters. These ramps shall meet the Specific Requirements, as well as other requirements specific to boat ramps as follows:

1. When feasible and when consistent with other manatee protection considerations, boat ramps should be sited to minimize the travel time to popular locations in order to reduce the impact to manatees from boating travel.
2. The expansion of existing publicly owned boat ramps should be considered before the development of new publicly owned boat ramps.
3. The proposed boat ramp sites shall be compatible with existing land use and zoning regulations.

3.A. Water Depth

1. Water depth at the proposed mooring area of the site shall be at least four (4) feet mean low water (FDEP 62-312-430 (5), FAC, Permitting requirements for Marinas.)

2. Marina basins shall be located where there is an existing basin and access channel and adequate depths to accommodate the proposed use. A minimum of four feet below mean low water shall be required.

3. The applicant shall affirmatively demonstrate that adequate depths exist for ingress and egress of boats to the mooring site, and in no case shall the depth of the access area be less than the minimum depths necessary to avoid damage to native submerged aquatic vegetation bed communities. The access area of the facility shall include all docks, access walkways, finger piers, mooring areas, turning basins, and ingress and egress pathways.

4. Existing water depth at the site must be adequate for the proposed vessel use such that there will be a minimum of one foot clearance between the deepest draft of the vessel (including engine) and the bottom of the waterbody at mean low water.

3.B. Water Quality

1. All new and expanded marinas must 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 for the Water Management Districts and the Florida Department of Environmental Protection shall be met. An environmental resource permit may be required from the above agencies for new stormwater systems or modified systems. (Title XXVIII, Part IV, Chapter 373, Florida Statutes.)

2. Boat maintenance activities in new or expanded marina sites shall be located as far as possible from open water bodies in order to reduce contamination of water bodies by toxic substances common to boat maintenance. Runoff from boat maintenance activities must be collected and treated prior to discharge.

3. National Pollution Discharge Elimination System industrial stormwater permits are required for marinas and boatyards that conduct boatyard activities over land that ultimately discharge to surface waters. These permits must be obtained from the United States Environmental Protection Agency and require that the facility use Best Management Practices and prepare a pollution prevention plan. (Title 40 Code of Federal Regulations Part 122.26)

4. No overboard discharges of trash, human or animal waste, or fuel shall occur from any structures. (FDEP 62-312.080 (7) (b) FAC, Standards for Issuance or Denial of a Permit.)

5. Facilities shall be designed to maximize or improve water circulation patterns and shall not adversely affect existing circulation patterns.

6. Any buffer zones established by Dept. of Agriculture’s Shellfish Environmental Assessment Section shall be maintained and where necessary, enhanced or expanded.

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

8. Prior to the operation of any new marina fueling facility or expansion of an existing facility, fuel management/spill contingency issues shall be coordinated with the State.

9. Sewer pump-out service and facilities shall be available and accessible to all new boat slips constructed or renovated, inside marinas.

3.C. Dredging

1. All dredged material shall be contained on an upland site.

2. Dredging shall not be permitted in or connected to Class II waters, OFW's, Aquatic Preserves, areas that contain ten percent (10%) seagrass or more, and conditionally approved shellfish harvesting waters unless the activity is a federal navigation project, in the best public interest, or is approved maintenance dredging of existing public or private navigational channels, or where dredging may improve water quality by removing accumulated silt or improving circulation, or for maintenance of existing structures and utility crossings.

3. The creation of new navigation canals or expansion (widening and/or deepening) of existing ditches, drainage right-of-ways, drainage easements and stormwater facilities connected to Clay County waters to accommodate boat traffic shall be prohibited unless it is in the public's best interest and does not adversely impact water quality or natural habitat, or unless the activity is an approved maintenance dredging on existing public navigational channels and public canals, or an existing marina's maintenance dredging.

4. New and maintenance dredging projects in the northern section of Clay County waters on the St. Johns River and associated lakes and tributaries, should be performed during the period of November 15 through March 15, when feasible, to minimize potential impacts to manatees. Other dredging windows may be deemed appropriate on a project-by-project basis using the best available manatee data. Specific dredging windows will be recommended for inclusion at the state and federal permitting levels.

5. Aquatic resources such as oyster bar, freshwater submerged vegetation, etc shall not be adversely affected.

6. The marina areas and navigation access channels shall not be dredged to depths greater than necessary to prevent prop dredging.

7. All dredging activities must be done with effective turbidity controls. Where turbidity screens or similar devices are used, they should be secured and regularly monitored to avoid manatee entrapment.

8. Dredging in areas of abundant submerged aquatic vegetation will be prohibited.

3.D. Native Submerged Aquatic Vegetation (NSAV)

Efforts should be made to protect all native submerged aquatic vegetation, including freshwater species, critical to manatee survival. If a proposed new facility or expansion of an existing facility will impact NSAV then the following provisions apply:

1. Any boat facility development or expansion plans must demonstrate no negative impacts to Native Submerged Aquatic Vegetation. NSAV species shall include, but not be limited to the following: sago pondweed (Potamogeton pectinatus), clasping-leaved pondweed (Potamogeton perfoliatus), widgeon grass (Ruppia maritima), tapegrass (Vallisneria americana), and horned pondweed (Zannichellia palustris).

2. Covered boat slips, covered walkways, covered terminal platforms or the boat mooring location shall not be located over submerged aquatic grass beds. However, the access walkway portion of the pier may traverse these resources provided it is elevated a minimum of five feet above mean high water or ordinary high water, contains handrails that are maintained in such a manner as to prevent use of the access walkways for boat mooring or access, and does not exceed a width of six feet, or a width of four feet in Aquatic Preserves.

3. Any wood planking used to construct the walkway surface of a facility shall be no more than eight inches wide and spaced no less than one-half inch apart after shrinkage. An alternative to wood planking would be the use of grating. Walkway surfaces constructed of material other than wood shall be designed to provide light penetration, which meets or exceeds the light penetration provided by wood construction. (Chapter 18-20.004 (5) (a) (4) Florida Aquatic Preserves, FAC.)

4. The siting of new marinas or the expansion, or rearrangement of existing boating facilities/marinas shall be prohibited when the footprint of the boating facility/marina (including all docks, access walkways, finger piers, mooring areas, turn basins, and ingress and egress pathways) has a SAV coverage of thirty percent (30%) or greater using a scientifically acceptable method of coverage determination and such determination is made between the months of May through October.

3.D. Best Management Practices for Marinas

Below is a list of best management practices for marinas, some of which may be required as part of the State and/or Federal permit review processes:

1. 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, but not be limited to, shallowing dredged areas, restoring wetland or submerged vegetation, or marking navigation channels. Such mitigation or restoration may be required as a condition of approval for new, renewed, or expanded facilities. (FDEP 62-312.330 FAC.)

2. Implement and maintain a manatee public awareness program which will include the posting of signs to advise boat users that manatees are an endangered species which frequent the waters of the region’s estuaries and lagoons and which would also show the number to report an injured manatee (1-888-404-FWCC). In any areas with known manatee concentrations,

manatee awareness signs or informational displays shall be specified as part of a wetland resource or environmental resource permit for the facility. (Chapter 18-20.004 (5)(d)(8) Florida Aquatic Preserves, FAC.)

3. Dock designs should not entrap manatees or otherwise prevent them from accessing forage areas.

4. Marine facilities should locate in previously disturbed areas and in areas that have historically been used for marine related activities.

5. Use of upland dry storage shall take precedence over the creation of new wet slips. (Chapter 18-20.004 (5)(d)(6), Florida Aquatic Preserves, FAC.)

6. Existing and new marinas are encouraged to obtain the Clean Marina designation. (Contact FDEP for more information.)

7. All construction activities shall adhere to FWC's Standard Manatee Construction Conditions (Dated 2005).

8. To reduce the risk of entrapment and drowning of manatees, grates or bars shall be installed over pipes or culverts on site that are accessible to manatees and 8-inches or greater, but smaller than eight feet in diameter. Bars no more than 8-inches apart shall be placed on the accessible end(s) to restrict manatee access. Pipes or culverts accessible to manatees that are longer than 200 feet and are connected to water bodies may also require grating.

9. No more than fifty linear feet (50 ft.) of native shoreline vegetation shall be altered (trimmed, cut, removed, killed, or destroyed). Proposed development should minimize impacts to native shoreline vegetation. This should be coordinated with the Clay County Development Services Department, the FWC, the USFWS, and other applicable state and federal agencies.

3.E. Zoning and Land Use Policies

The following specific zoning and land use policies are also applicable to the Clay County MPP.

1. Proposed development sites shall be compatible with existing land use and zoning regulations. Marine facilities shall only be located in those areas that are zoned for their respective use.

2. Residential marinas will not be allowed to have boat slips that exceed the number of multi-family units that are approved and/or constructed.

3.F. State and Federal Permitting Evaluation for projects in Clay County

The provisions of this plan shall not preempt or nullify any other more restrictive federal, state, or local rules, regulations, or requirements that apply**.** It is the applicant's responsibility to

obtain all the necessary permits prior to construction, and compliance with the provisions of this plan does not imply approval of other permitting requirements.

Once it has been determined that the project satisfies all of the above-mentioned requirements and regulations found in the earlier sub-sections of section 3, the state and federal regulatory agencies will review new boat facility projects (new facilities, expansions, rearrangements) of 3 or more slips in Clay County and determine appropriate dock densities as follows:

Where powerboat-to-shoreline ratios are used, the total number of powerboat slips (existing and proposed) or boat trailer parking spaces (for ramps) will be determined based on the amount of existing linear shoreline owned by the applicant at the project site. Table 27 summarizes the future boat facility siting recommendations for Clay County. The boat facility siting recommendations would not affect riparian rights for single family residential uses.

TABLE 27. Boat facility siting recommendations for Clay County, FL. (These recommendations apply to facilities of 3 or more slips or boat trailer parking spaces).

Northern	Area of northern Clay County from Buckman Bridge to Black Creek including Doctors Lake. **Recommendations in these areas shall be at a density of one powerboat or boat trailer parking space per 100 feet of shoreline that is owned by the applicant at the project site.**
Central	Area of central Clay County from Black Creek to Red Bay Point. **From the southern boundary of the Northern boat facility siting zone at Black Creek south to the Port of Green Cove Springs, proposed projects will be subjected to a coordinated case-by-case review of the manatee aerial survey data, manatee death data, manatee telemetry data, boating traffic patterns, primary boating destinations in the vicinity of the project, and potential impacts to manatee habitat or other environmentally sensitive lands. This review will include, at a minimum, the following agencies: Clay County Development Services Department and Parks and Recreation Division, the FWC, the USFWS.** **No ratios for powerboat or trailer parking spaces will be applied to proposed boat facility development from the northern boundary of the Port of Green Cove Springs to the Shands Bridge.**
Southern	Area of southern Clay County from Red Bay Point to the Clay/Putnam County line. **Proposed projects will be subjected to a coordinated case-by-case review of the manatee aerial survey data, manatee death data, manatee telemetry data, boating traffic patterns, primary boating destinations in the vicinity of the project, and potential impacts to manatee habitat or other environmentally sensitive lands. This review will include, at a minimum, the following agencies: Clay County Development Services Department and Parks and Recreation Division, the FWC, the USFWS.**

Project Inconsistency with MPP Provisions

Applications for new or expanding facilities in areas that are limited in powerboat density by the boat facility siting plan can request review for additional powerboat slips on an individual basis. However, full consultation with both Federal and State wildlife agencies will be required, including section 7 consultations by the USFWS. A determination of whether an application should be approved will depend on a case-by-case review of the manatee data, existing manatee protections and the adequacy of manatee protections in relation to current and future development. The location and the activity must be approved by the FWC, the USFWS, the County, and municipality (if applicable) based on a finding that the facility will not have an adverse effect on manatees and that any offsetting measures must represent the same level of protection as what was required under the MPP recommendation.

4. Public Information/GIS

Clay County Planning Department has provided maps showing locations for future land use and zoning, greenway opportunities, regional and community parks, boat ramps and speed zones, parks and recreation facilities, neighborhood parks and planning districts.

5. Education/Awareness

The Clay County 2015 Comprehensive Plan requires as a component of the Manatee Protection Plan that educational materials be placed at all boating facilities. Currently, signs have been placed identifying the limits of existing boat speed zones. Manatee caution signs have been placed at Whitey's Fish Camp boat ramp and Governors Creek boat ramp. All boat ramp facilities were verified as having a sign and educational information about manatees during boat ramp interview studies (Table 29). The regulatory signs for the existing manatee speed zones are the responsibility of FWC or the USFWS, depending on which agency adopted the zones.

In addition, the Clay County Parks, Recreation and Special Events Division should explore the possibility of coordinating with the state and federal agencies on the distribution of manatee and other environmental brochures for placement at marina and boat ramp facilities in the county. This may include speed zone brochures to educate boaters on the manatee speed zones in the north portion of the county.

Educational information on manatees and sources:

a) Florida Department of Environmental Protection (FDEP)

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.

TABLE 28. Manatee aerial survey data from August 19, 2002 to December 9, 2003 covers the area south of Buckman Bridge to Verdiere Point (west bank) and Middle Point (east bank) in northern Putnam County.

Survey date	Adults	Calves	Total	Number of manatees				Total	Manatee groups
				Traveling	Resting	Feeding	Cavorting		
8/19/02	92	6	98	24	19	50	5	98	38
9/10/02	90	1	91	29	0	23	39	91	26
9/28/02	75	5	80	9	27	29	15	80	35
10/9/02	49	0	49	9	27	1	12	49	20
10/29/02	34	0	34	11	13	7	3	34	17
11/19/02	1	0	1	0	1	0	0	1	1
12/4/02	0	0	0	0	0	0	0	0	0
1/8/03	0	0	0	0	0	0	0	0	0
1/22/03	0	0	0	0	0	0	0	0	0
1/26/03	0	0	0	0	0	0	0	0	0
2/12/03	0	0	0	0	0	0	0	0	0
3/14/03	0	0	0	0	0	0	0	0	0
3/26/03	3	0	3	3	0	0	0	3	1
4/12/03	18	5	23	9	14	0	0	23	10
4/28/03	36	4	40	6	34	0	0	40	13
5/14/03	68	5	73	9	19	42	3	73	34
5/29/03	83	5	88	31	12	35	10	88	45
6/12/03	88	7	95	32	20	35	8	95	36
6/25/03	181	9	190	43	30	87	30	190	80
7/9/03	121	6	127	41	15	30	41	127	63
7/25/03	125	3	128	15	41	39	33	128	49
8/12/03	114	11	125	12	59	42	12	125	44
8/26/03	119	7	126	10	46	47	23	126	51
9/10/03	71	6	77	18	26	33	0	77	35
9/30/03	60	1	61	13	31	13	4	61	23
10/21/03	81	6	87	16	30	39	2	87	39
11/12/03	98	12	110	20	58	27	5	110	55
12/9/03	2	0	2	1	1	0	0	2	2
TOTAL	1,609	99	1,708	361	523	579	245	1,708	717
MEAN	57.46	3.54	61.00	12.89	18.68	20.68	8.75	61.00	25.61

Source: Jacksonville University, 2003.

TABLE 29. Inventory of Boat Facilities Signage (January 10, 2005).

Zone	No.	Boat Facility Name	FWC Manatee Awarness sign	Manatee Basics for boaters sign	West Indian Manatee fact sheet sign	Slow speed sign	No wake zone	Slow down min. wake zone	No swim. sign	Monofilament recycling program	Wanted Marine Fish Kill info. sign	Boat safety courses sign	FDNR Prevent Hydrilla sign	Boat Facility Location
		Boat Ramps												
N	1	Main Street	0	1	0			1	1			1		S.R.21(Blanding Blvd.) & Main St.
N	2	Old Ferry	No manatee signage				1		1					Black Ck.(Dr's Inlet/Ridgewood)
N	3	Whitey's Fish Camp	1	1	0					1				Swimming Pen Creek
N	4	Lake Shore	1	0	0	1				1	1			Lake Shore Drive, Dr's. Lake
N	5	Doctors Inlet Marina	0	1	1	1								Mouth of Dr's Lake
N	6	Whitney's Marina Sail Center	0	1	1									Mouth of Dr's Lake
C	7	Knights Boat Ramp	2	2	1					2	1	1		Black Creek/SJR Hw.17
C	8	Governors Creek	2	2	1							1		U.S. Hw 17 in GCS
C	9	Shands Pier	B.C.C. closed as of 1-13-04 for renovations call 904-284-6378. No manatee signage.										1	GCS off S.R.16
S	10	Williams Park	1	1	0					1				C.R. 209
		Marinas												
N	11	Black Creek Water Sports	2	2	1					2	1	1		Black Creek/SJR
N	12	Ralph's Fish Camp	No information closed gates locked.											S.W. Dr's Lake
C	13	Red Bay Marine Repairs	No manatee signage											Adjacent to Port GCS
C	14	Green Cove Springs Marina	No manatee signage											N. Shands Bridge
N	15	Continental Yacht Club	0	1	1									SJR,Orange Park
C	16	Black Creek Marina (Private)	2	2	1					2	1	1		S.E. end of Bridge
		Residential Multi-Slip												
N	17	Creighton Landing	No manatee signage											Mouth of Dr's Lake
N	18	Osprey Bluff Subdivision	No manatee signage											Swimming Pen Creek
N	19	Pace Island FQD												N.E. Dr's Lake
N	20	Eagle Harbor DRI	1	0	0	1				1	1			S.E. Dr's Lake
C	21	Governors Landing (Condo's)	No manatee signage											Mouth of Governors Ck.
C	22	Hoyt House (Condo's)	No manatee signage											SJR Green Cove Springs
N	23	Habersham Harbor Subdivision	No manatee signage											Swimming Pen Creek
		Other relevant boat facilities												
	24	Mandarin Holiday Marina												SR13 Bridge W, Duval Co.
	25	Julington Creek Marina												SR13 Bridge E, Duval Co.
	26	Pacetti's Marina & Campground												Trout Creek, St. Johns Co.
	27	Six Mile Marina												Six Mile Creek, St. Johns Co.
	28	Riverdale Park boat ramp												SJR between Toccoi Pt./Racy Pt.

b) Florida Fish and Wildlife Conservation Commission (FWC)

The primary sections of the FWC involved with manatees are the Florida Wildlife Research Institute (FWRI) and the Imperiled Species Management Section (ISM) of the Division of Habitat and Species Conservation within FWC. Although scientific information (e.g. , mortality statistics) is compiled by FWRI, the majority of FWC's educational materials are made available through ISM. These include a variety of posters, brochures, booklets and videos (Table 30).

c) Clay County Schools

Educational information is available in the Clay County School System; however, there is no established curriculum which specifically focuses on manatees. Students can take an environmental science elective. Individual educators choose much of this material voluntarily and in many cases students are able to engage in field trips to places like Crystal River through an environmental club at school.

d) Harbor Branch Oceanographic Institution (HBOI)

Located on the Indian River Lagoon north of Fort Pierce, HBOI is a marine research facility where scientists provide important information on marine mammals through research and public information. HBOI is open to visitors and offers a lecture series during which speakers present information on their various research projects. Additional information: HBOI, RR1 Box 196, Ft. Pierce, Florida 33450. Telephone: (772) 465-2400.

e) Florida Power and Light Company (FPL)

Florida Power and Light Company is the largest electric utility in the State. FPL does not have any power plants in the Clay County area but does service some addresses along US 17 in Clay County. FPL contributes to manatee research and public awareness by providing funding for aerial manatee surveys, and producing and distributing educational materials and supporting research projects in other parts of Florida. In 1989, FPL produced an informational educational booklet entitled "The West Indian Manatee in Florida." This publication was updated in 2001 and is available through FPL's Environmental Services Department, P.O. Box 14000, Juno Beach, Florida 33408. Also, FPL offers free annual workshops to the public.

TABLE 30. Partial list of information available through FWC's Imperiled Species Management Section.

Video	A Closer Look at Manatees
	The State of Manatees
	Manatee Messages: What can you do?
	Roll on Manatees
	Silent Sirens
	The Best of Manatees
	What in the World is a Manatee?
	Endangered Mermaids—The Manatees of Florida
	Audubon's Animal Adventures – Manatee Adventures
	Protecting Florida's Springs
	Manatees—Florida's Gentle Giants
Posters	The Florida Manatee—A Florida Treasure
	Manatee Behavior
	Mini-poster: The Florida manatee
Brochures/Fact Sheets/Booklets	The Florida Manatee—A Florida Treasure
	Where are the manatees?
	Manatee Decal Collection
	Manatee Facts
	Sea Stats - Manatees
	Florida's Seagrass Meadows
	Monofilament Recycling Program
	Commonly Asked Questions
	The West Indian Manatee in Florida
	Propeller Guard Issues
Educational materials	The Manatee—Florida's Endangered Marine Mammal (Middle/High School)
	Manatees—Florida's Gentle Giants (Elementary)
	What do I want to be when I grow up?
	Way of the Manatee Treasure Box Report
	Book list
	Sunshine State Standards relating to educational materials—manatees
Web sites	www.MyFWC.com -- Imperiled Species Section
	www.efieldtrips.org/manatees (Internet field trip)
	http://research.myfwc.com (Manatees)

Also available for education/information purposes:

Video footage	18 minutes of B:roll footage, no sound, BetaCam SP or VHS—manatee behavior (on loan for productions)
Artwork	Black and white graphics—manatees
Photographs	Photo gallery located on web site

Updated: 01/05—Florida Fish and Wildlife Conservation Commission, Imperiled Species Management Section, Education and Information Program.

f) Save the Manatee Club (SMC)

The Save the Manatee Club headquarters is located in Maitland, Florida. The SMC is the single largest non-profit organization in the U.S. dedicated to the sole protection of manatees. The Club provides educational materials through its web site, http://www.savethemanatee.org/, and the following:

Manatees – An Educator's Guide (5th Edition)
Florida's Gentle Giants: 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 2-12)
Mary Manatee: A Tale of Sea Cows

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

g) Other local conservation organizations and educational initiatives

St. Johns River Keeper Organization: with offices at Jacksonville University, 2800 University Blvd. N., Jacksonville FL 32211. Telephone (904) 256-7591

Boating Safety Courses: These are not yet available in Clay County, but may be taken on-line at the following web address (http://boat-ed.com/fl/).

Pamphlets: Pamphlets may be periodically mailed to all waterfront property owners and registered boaters. Pamphlets include basic information about manatees, a Manatee Protection Plan Speed Zone Map, the hotline number for reporting manatee sightings and/or injuries, and other pertinent information. The FWC's hotline number is 1-888-404-FWCC. This number should be used to report a manatee that is dead, injured or being harassed.

Kiosks: Kiosks may be located at major boating facilities in Clay County. The County's Parks and Recreation Department could use traveling education displays at fishing tournaments, conferences and other special events. While not in use, these displays may be used in libraries where they can provide a more long term and beneficial exhibit.

School curriculum: Jacksonville University provides a slide presentation that is available to elementary, middle, and secondary school students, among other civic organizations. This could be made available to County staff for educational purposes. Also, the FWC provides teacher resource kits for loan to schools. These kits have proved to be useful educational tools.

Public service announcements: Weather broadcasting stations can provide information to boaters about manatees as part of an on-going education awareness program. This would be coordinated with Clay County staff.

Public displays at boat facilities: Sets of maps at a larger scale can be generated and displayed at boating-related businesses about boating safety and manatee speed zones.

Manatee Hotline Telephone at Jacksonville University: Any person observing a manatee should contact (904) 256-7575 to report manatee sightings.

h) Other Regional, State and Federal Organizations

These entities have a variety of information concerning manatees that may include interactive and static exhibits and /or educational programs that could be incorporated into school curricula.

United States Fish and Wildlife Service (USFWS)

USFWS is the primary federal agency involved in the conservation of the nation's wildlife. The Service operates the National Wildlife Refuge System. Additionally, the USFWS is responsible for enforcing the Endangered Species Act and the Marine Mammal Protection Act. USFWS issues concerning manatee protection, such as the Recovery Plan, are administered at the USFWS North Florida Ecological Services Office in Jacksonville, Florida, as well as the review and issuance of permits for federal dredge/fill and boat facility projects in Clay County. The current contact is John Milio. Telephone: (904) 232-2580.

U.S. Geological Survey (USGS)

The USGS Sirenia Project is based in Gainesville, Florida and conducts field research on manatees. Telephone: (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 is permitting, information about manatees is available through the ACOE's Public Affairs Office, P.O. Box 4970, Jacksonville, Florida 32232. Telephone: (904) 232-1650.

Saint 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. They are also responsible for implementing the state's Surface Water Improvement and Management (SWIM) Program and for mapping submerged aquatic vegetation in some areas of the state. The SJRWMD publishes and distributes a variety of brochures and environmental education information from their District headquarters located at 3301 Gun Club Road, West Palm Beach. Telephone: (561) 686-8800. Or contact the Palatka Office (386) 329-4500.

Florida Inland Navigation District (FlND)

FIND is responsible for maintaining the Intracoastal Waterway (ICW) for navigation. This agency also installs and maintains the signs, which identify the boundaries of manatee-related vessel speed zones, in many parts of the state but not in Clay County waters. FIND, which is

based in Jupiter, Florida, also prints and distributes the pamphlets that identify speed zones in many counties on the east coast of Florida. These brochures are available by contacting FIND at 1314 Marcinski Rd., Jupiter, FL 33477. Telephone: (561) 627-3386.

Homosassa Springs State Wildlife Park

This FDEP facility located north of Tampa near Florida's west coast now houses several long-term captive manatees and a research facility. The public may view manatees from an underwater viewing area and obtain a variety of information about manatees. Further information can be obtained from Homosassa Springs State Wildlife Park, 9925 W. Fishbowl Dr., Homosassa Springs, Florida 33408. Telephone: (352) 628-5343.

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. Telephone: (407) 351-3600 or (407) 363-2613.

Audubon of Florida

Audubon of Florida is a state-wide 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, 1331 Palmetto Ave., Winter Park, Florida 32789.
Telephone: (407) 539- 5700.

Miami Seaquarium

The Miami Seaquarium is another state-approved manatee care and rehabilitation facility and has a variety of on-going manatee education and research programs. Captive manatees can be viewed by visitors, and educational materials and presentations are given about manatees. Miami Seaquarium, 4400 Rickenbacker Causeway, Miami, Florida 33149.
Telephone: (305) 361- 5705.

Lowry Park

Located in Tampa in Hillsborough County, Lowry Park in is another state-approved manatee rehabilitation facility offering year-round care and public viewing of manatees. Additional information can be obtained from Lowry Park Zoo, 7530 N. Blvd., Tampa, Florida 33604. Telephone: (813) 935-8552 and Education: (813) 932-0245.

Moore’s Creek Manatee Observation and Education Center

Located in Fort Pierce, wild manatees can be viewed at the non-profit center year-round. Observers can stand along a covered observation walkway or climb a second story observation tower to see the animals in Moore's Creek. The Manatee Observation and Education Center’s

primary purpose is to promote understanding and responsible actions for the fragile ecosystems of the Treasure Coast and their inhabitants. Educational curriculum for grades kindergarten through fifth are taught as a part of the educational program on subjects such as manatees, butterflies, insects, endangered species, and sea turtles. Interested teachers who would like to schedule a class should call (772) 466-1600, ext. 3337. Educational special events such as Naturefest, Spring Break camp, Summer Camps, Brown Bag Lunch Lecture Series, and exciting guest speakers are also provided. For more information, call (772) 466-1600, ext. 3333. Moore's Creek Manatee Observation and Education Center, 480 North Indian River Drive, Fort Pierce, FL 34950 or http://www.manateecenter.com/about.html

National Estuary Program (NEP)

The Environmental Education Resource Directory
The Summer Institute Programs – summer workshop series for teachers (1991)
The Boaters Guide to the Indian River Lagoon
The Indian River Lagoon Owner's Guide
Pamphlets/brochures
Posters
Program's slide show
Lagoon Partner Fund grant program for environmental education projects ($2,500-$5,000)

6. Future Needs

1) There is a need to continue aerial surveys and incorporate these into the periodic review by the Clay County Board of Commissioners.

2) There is a need to regularly update information from Clay County waters including tributaries and Doctors Lake.

3) Commercial and recreational vessel activity need to be regularly updated for Clay County waters including all tributaries and Doctors Lake. Any future surveys of boating activity information should be coordinated with FWC staff (ISM).

4) There is a need to track increases in boat slips each year together with manatee mortality and habitat information. This effort should be coordinated with the FWC and DEP or the SJRWMD.

Clay County needs to formulate some additional ideas for manatee and environmental education that are specific to their county or the LSJR and decide how to fund these initiatives. Besides aerial survey data, more in-depth information is needed on boating traffic patterns and use, particularly the specific intervals at which the marinas and ramps will be surveyed. The Clay County MPP needs to have a detailed implementation schedule for each type of future initiative including agency responsibility, funding sources, and target dates for completion. To be included in this section are details about data updates, the development of educational

materials, mail-outs, comprehensive plan revisions, habitat protection initiatives, and other county-specific initiatives.

7. Implementation

Once the Clay County MPP has been adopted by the Clay County Board of County Commissioners, it will be submitted to the FWC and USFWS for approval. Upon approval by these agencies, the MPP can then be used by the state and federal wildlife agencies in their permit review processes.

Once adopted by the Clay County Board of County Commissioners and the FWC, the provisions of the MPP shall be adopted into the Clay County Comprehensive Plan at the next amendment cycle. The FWC will work with the Department of Community Affairs on the review of the necessary amendments to the comprehensive plan. The Clay County MPP will be evaluated every 5 years, in coordination with the comprehensive plan cycle.

10. Glossary

Boat – A vehicle designed for operation as a watercraft propelled by oars, sails or one or more internal combustion engine(s). A boat shall not be considered as a recreational vehicle even though it has facilities for temporary living quarters.

Boat Facilities **-** Boat facilities are defined as marinas with wet or dry storage, boat ramps or other launching facilities, or multi-family residential docks. Single-family docks with two(2) or fewer wet and/or dry slips are not considered boat facilities.

Boat facility siting plan **-** A county-wide plan for the development of boat facilities which specifies preferred and non-preferred locations for boat facility development based on an evaluation of natural resources, manatee data, and recreation and economic demands. It is one component of a Manatee Protection Plan.

Boat ramp **-** A structural, natural or man-made feature that facilitates the launching and landing of boats into a waterbody. For the purposes of this plan, a trailer parking space is considered equivalent to a "slip." A boat ramp may also be referred to as a boat facility.

Boat slip **-** For the purposes of marine/dock facilities and multifamily and single family docks, a boat slip is a component of a docking facility which can permanently accommodate no more than one boat or vessel.

Boat yard **-** Any vessel storage, maintenance, or repair facility with haul-out capacity which is not necessarily located proximal to a waterbody.

Case-by-Case Review – In the southern section of Clay County, a coordinated, project-specific review of the manatee abundance data, manatee death data, manatee telemetry data, boating traffic patterns, primary boating destinations in the vicinity of a project, and potential impacts to manatee habitat or other environmentally sensitive lands based on the data available at the time

of the review. This review will involve the Clay County Parks and Recreation Department, the FWC, and the USFWS.

Channel - A marked navigation channel unless otherwise described or designated, and is not intended to mean an access or side channel unless otherwise designated for the purpose of regulation.

Class III waters - The surface waters of the State of Florida are classified as Class III – Recreation , Propagation and Maintenance of a Healthy, Well-Balanced Population of Fish and Wildlife, except for certain waters, which are described in subsection 62-302.400(12), F.A.F. A water body may be designated as an Outstanding Florida Water or an Outstanding National Resource Water in addition to being classified as Class I, Class II, or Class III.

Comprehensive Plan - An official document in ordinance form adopted by the local government setting forth its goals, objectives and policies regarding the long term development of the area within its jurisdiction. In the County, this refers to the text and maps adopted and amended by the Clay County Board of Commissioners pursuant to Chapter 163 (Part II), et. seq., Florida Statutes as amended.

Conveyance Structure - Any ditch, pipe, or culvert in which a manatee, adult or infant, could become trapped.

Critical habitat - Federally designated areas, which, pursuant to the Endangered Species Act of 1973, have been determined to include physical and/or biological features that are essential to the survival of an endangered species (such as the manatee) which may require special management considerations or protection.

Dredging – Mechanical or other methods used to remove submerged land.

Dry slip – A space designed for the storage of a single watercraft in an upland location.

Dry storage facility – An upland structure used for storing watercraft. A dry storage facility may be either a water-dependent or a water related use.

Down-listing - In order to down-list the manatee from "endangered" to "threatened", population modeling must indicate that the population is growing or is stable and that mortality is at acceptable levels or are decreasing, and that habitats are secure and threats to them are controlled or decreasing.

Emergent aquatic vegetation - Erect, rooted, herbaceous angiosperms that may be temporarily to permanently flooded at the base, but do not tolerate prolonged inundation of the entire plant; e.g. Spartina alterniflora and/or Juncus roemerianus**.**

Endangered species - A species which is in danger of extinction throughout all or a significant portion of its range due to 1) destruction, drastic modification or severe curtailment of habitat, or

2) its over utilization for commercial or sporting purposes, or 3) effect of disease or pollution, or 4) other natural or man-made factors.

Essential habitat - A criterion for determining areas where dock facilities should be limited. Essential habitat is any land or water area constituting elements necessary to the survival and recovery of the manatee population from endangered status which may require special management considerations and protective measures. The constituent elements include, but are not limited to: space for individual and population growth and for normal behavior; available food sources with adequate water depth and quality; warm and fresh water sources; sites for breeding and rearing of offspring; and habitats protected from disturbances that are representative of the geographical and seasonal distribution of the species.

Existing Facility – For the purposes of the Clay County Manatee Protection Plan, existing boat facilities shall be defined as those facilities which have received all active and required permits and/or authorized, constructed and in operation as of the effective date of this plan. All legal and properly permitted existing boat facilities shall be allowed to continue with the existing use, and may renovate according to permitting guidelines, provided there is no change in facility size, including no increase in the number of wet or dry slips, unless the facility meets the expansion criteria as provided in this MPP. The effective date of this plan will be the date of State approval by the FWC.

Idle speed - The minimum speed that will maintain the steerageway (a rate of motion sufficient to make a ship or boat respond to movements of the rudder) of a motorboat.

Idle speed zone - A zone in which vessels create no wake and are not permitted to proceed at a speed greater than that necessary to maintain steerageway of the vessel. While operating within an idle speed zone, all vessel operators shall exercise a high degree of care for manatee presence.

Lane - A part of a boat ramp that allows for the launching and landing of one boat at a time. A boat ramp can have more than one lane.

Maintenance Dredging – Mechanical or other methods used to remove submerged land that has previously been legally dredged.

Manatee Protection Plan - A comprehensive County-wide plan to ensure the long range protection of manatees and their habitat.

Manatee Protection Zone - An area designated for the protection of manatees due to their concentration in the area, documented manatee mortality, critical feeding area, or other reasons.

Marina – Any facility used for the wet or dry storage, loading, unloading, and/or launching of boats. Marina facilities include but are not limited to commercial marinas, commercial docking structures, and public and private boat launching facilities/boat ramps. This facility type includes multifamily/residential docking facilities.

Miles - Statute miles.

Mitigation - To mitigate, to make or become less severe or intense, moderate. The three types of mitigation in order of priority, as defined by the United States Fish and Wildlife Service, are as follow:

1. Avoiding the impact altogether by not taking a certain action or parts of an action.
2. Minimizing the impact by limiting the degree of magnitude of an action and its implementation.
3. Rectifying the impact by repairing, rehabilitating, or restoring the affected area.

Mortality data - Data which provide the cause of death for manatees as well as the geographic location where the carcass was recovered.

Motorboat - Any boat or vessel propelled or powered by machinery.

Multi-slip docks - Moorings of three or more vessels.

New or Expanding Boat Facility – A marine facility that is proposed to be built, restored, revitalized, renovated, or otherwise increased in size or scope.

Optimum sustainable population - The level of population at which mortality and injury have been reduced to a point such that a species can be considered viable and self-sustaining. This level can only be determined when appropriate methodology and data are available to develop adequate population models.

Outstanding Florida Waters (OFWs) – Waterbodies which exhibit unique characteristics in terms of quality and value designated by the State for additional protection from further pollution and degradation.

Percent SAV cover – Submerged aquatic vegetation coverage shall be determined on a project site using a scientifically acceptable method of coverage determination during the months of May through October.

Pier – A structure in, on, or over submerged lands, which is not used by the public primarily for fishing or swimming. A pier shall not include the mooring of boats.

Preferred Area – No powerboat or boat trailer parking space per 100 feet of shoreline ratios will be applied to proposed boat facility development in this preferred area.

Powerboat– Any vessel that is primarily propelled or powered by an internal combustion engine and that is used or is capable of being used as a means of navigation or transportation on water. Sailboats with auxiliary engines are not considered powerboats for the purpose of this plan.

Project site – The project site is defined as all docks, access walkways, finger piers, mooring areas, turning basins, and ingress and egress pathways.

Recovery - For the Florida manatee, as required by the Marine Mammal Protection Act of 1972, recovery will be achieved when "the health and stability of the marine ecosystem" can be maintained and when "optimum sustainable population" levels can be determined and maintained.

Refuge - A manatee protection area in which the United States Fish and Wildlife Service has determined that certain waterborne activity 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 taking by harassment.

Sailboat – Any boat that is designed for or that uses sails as its primary method of propulsion. A sailboat can incorporate the use of an auxiliary mechanical device for propulsion.

Sanctuary - A manatee protection area in which the United States Fish and Wildlife Service has determined that any waterborne activity would result in the taking of one or more manatees, including but not limited to taking by harassment. Sanctuaries are areas reserved exclusively for the manatees, where they may conduct activities such as; breeding, nursing, and resting free from any harassment by humans.

Seagrass - Submerged vegetation found in estuaries of fresh and salt water mixes.

Shoreline or Shore - The interface of land and water.

Slip – A space designed for the mooring or storage of a single watercraft, which include wet or dry slips, anchorage, beached or blocked, hoist, parked on trailers, open or covered racks, seawall, or the number of parking spaces for boat ramps. Piers authorized only for fishing or observation are not considered wet slips.

"Slow Speed" and "Slow Speed Minimum Wake" - as defined by 68C-22.002 (4) may be used interchangeably and mean that a vessel must be fully off plane and completely settled into the water. The vessel must then proceed at a speed which is reasonable and prudent under the prevailing circumstances so as to avoid the creation of an excessive wake or other hazardous condition which endangers or is likely to endanger other vessels or other persons using the waterway. Due to the different speeds at which vessels of different sizes and configurations may travel while in compliance with this definition, there is no specific numerical speed assigned to Slow Speed.
A vessel that is:
(a) Operating on plane is not proceeding at this speed;
(b) In the process of coming off plane and settling into the water or coming up onto plane is not proceeding at this speed;
(c) Operating at a speed that creates an excessive wake or other hazardous condition which unreasonably or unnecessarily endangers other vessels or other persons using the waterway, or is likely to do so, is not proceeding at this speed;
(d) Completely off plane and which has fully settled into the water and is proceeding at a reasonable and prudent speed with little or no wake is proceeding at this speed.

Slow Speed Zone – An area where vessels may not be operated at greater than Slow Speed, as defined above and in 68C-22.002(7), F.A.C.

Sovereignty Lands – Those lands including, but not limited to: tidal lands, islands, sandbars, shallow banks, and lands waterward of the ordinary or mean high water line, to which the State of Florida acquired title on March 3, 1845, by virtue of statehood, and of which it has not since divested its title interest.

Special Management Areas - A specific geographical area which, because of its unique or especially sensitive environment, requires special management techniques.

Submerged aquatic vegetation(SAV) - Vascular or non-vascular hydrophytes either rooted or non-rooted which lie entirely beneath the water surface, except for flowering parts in some species; e.g. Vallisneria americana and/or Eichornia crassipes.

Terminal Platform – That part of a dock or pier, including finger piers, that is connected to the access walkway, is located at the end point of the facility, and is designed, to secure and load or unload a vessel or conduct other water dependent activities.

Threatened Species - A species which may become an endangered species within the foreseeable future in all or a significant portion of its range due to 1) destruction, drastic modification or severe curtailment of habitat, or 2) its over utilization for commercial or sporting purposes, or 3) effect of disease or pollution, or 4) other natural or man-made factors.

Transitory boat slip – One that is used by a vessel for a very brief period of time (generally not overnight) and/or is used by various vessels. Examples would include water dependent public transportation dockage and courtesy slips at a fuel dock or restaurant. In this MPP, future recommendations for boat facilities will apply to both permanent and transitory slips.

Vessel - A craft, especially one larger than a rowboat, designed to navigate on water.

Wake – All change in the vertical height of the water's surface caused by the passage of a vessel including, but not limited to, a vessel's bow wave, stern wave, or propeller wash.

Warm-water refuge - A natural or manmade warm water habitat which maintains a temperature equal to or greater than minimum required manatees' survival (approximately 66° F or 19° C).

Water-Dependent or Water-Related Uses - Activities which can be carried out only on, in, or adjacent to, water areas because the use requires access to the water body for: waterborne transportation, including ports or marinas, recreation, electrical generating facilities, or water supply; or uses that provide goods and services directly associated with the waterway or water dependent use.

Waters - Waters means waters of the State of Florida.

Wet slip – A space designed for the mooring of a single watercraft in water. Such spaces may extend from a dock or shoreline but shall not be allowed to project from a pier.

Wharf fender **-** Usually inflatable bumper which may be 10 feet by 5 feet in size. When lowered to the side of a vessel, leaves approximately 4 to 5 feet of space between the vessel and the bulkhead.

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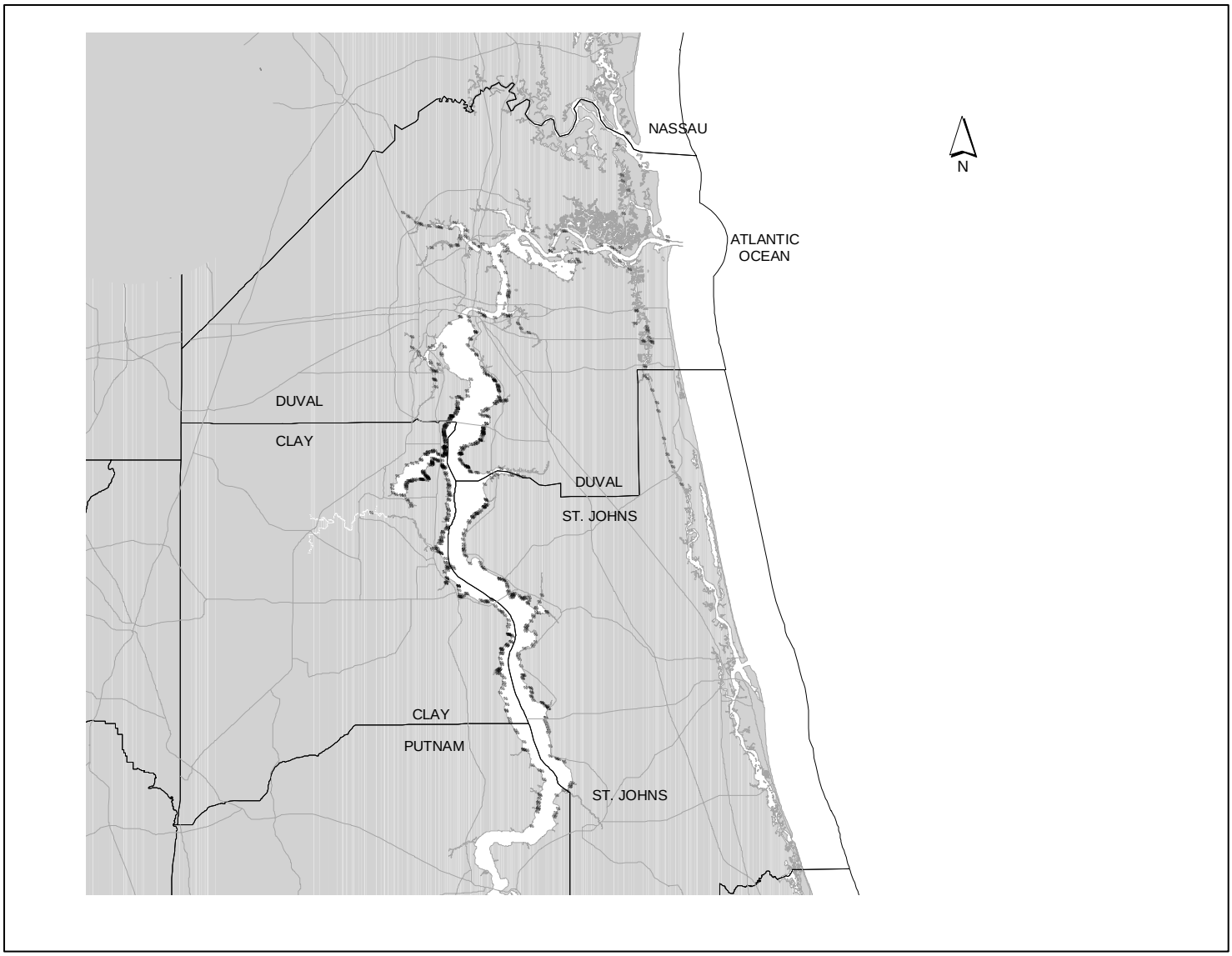
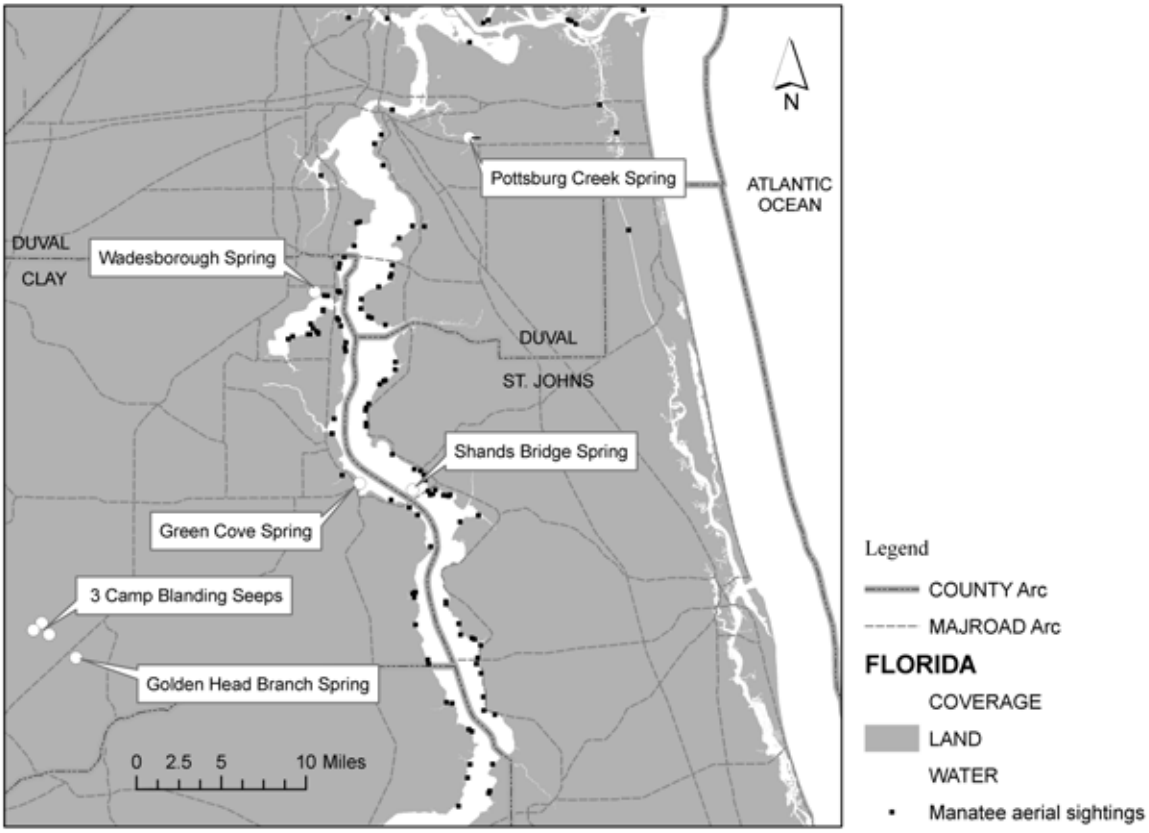
Series A: Manatee Aerial Sightings

SERIES A. Aerial sightings of manatees in northeast Florida, 2002-2003.



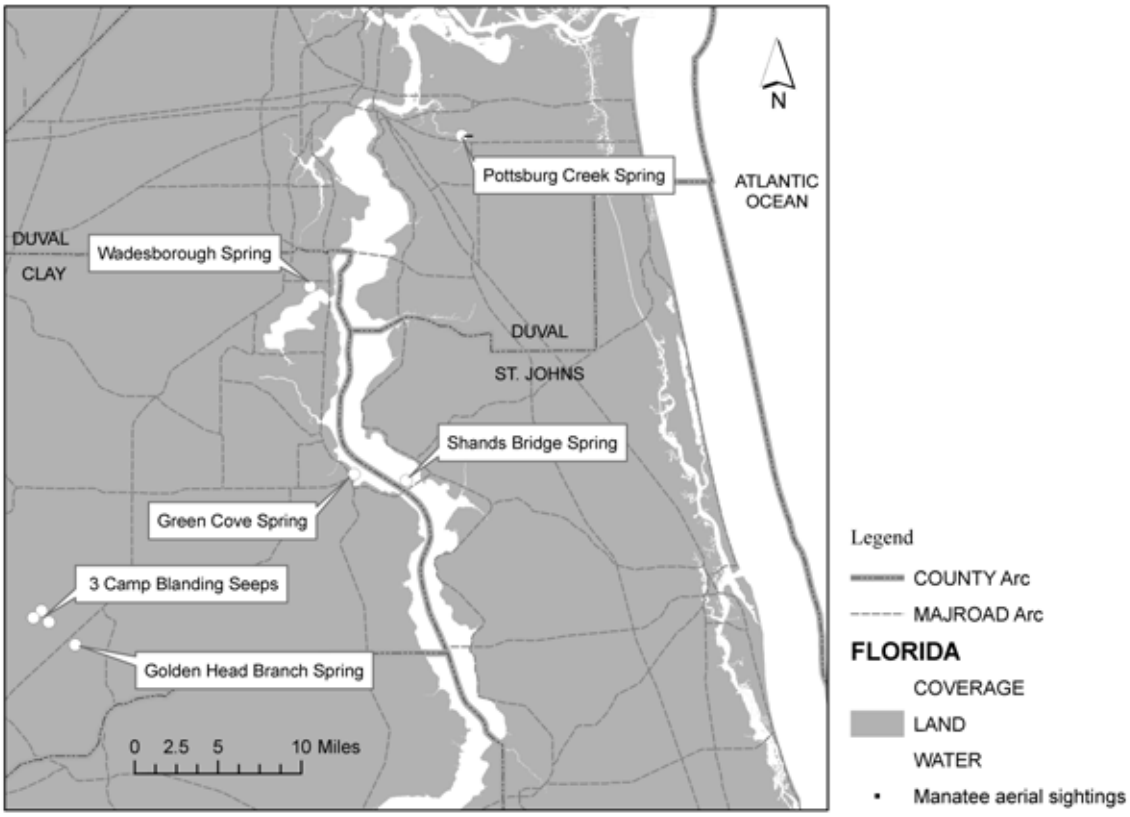
Note: Each dot may represent one or more manatees.
Source: Jacksonville University, 2003.

SERIES A - Manatee aerial sightings in relation to area springs, Northeast Florida.(Fall, 2002).



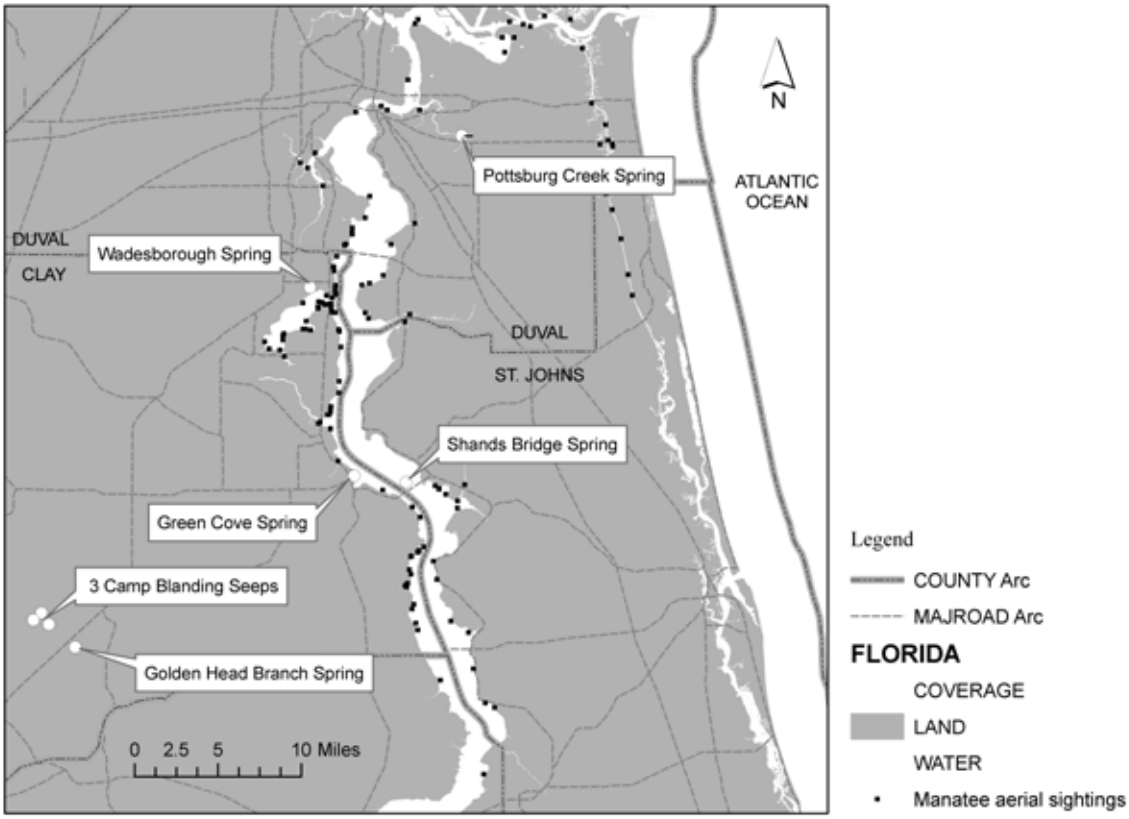
Source: Jacksonville University 2004.
Note: Each dot represents the location of a sighting, not the number of manatees sighted.

SERIES A - Manatee aerial sightings in relation to area springs, Northeast Florida.(Winter 2002-2003).



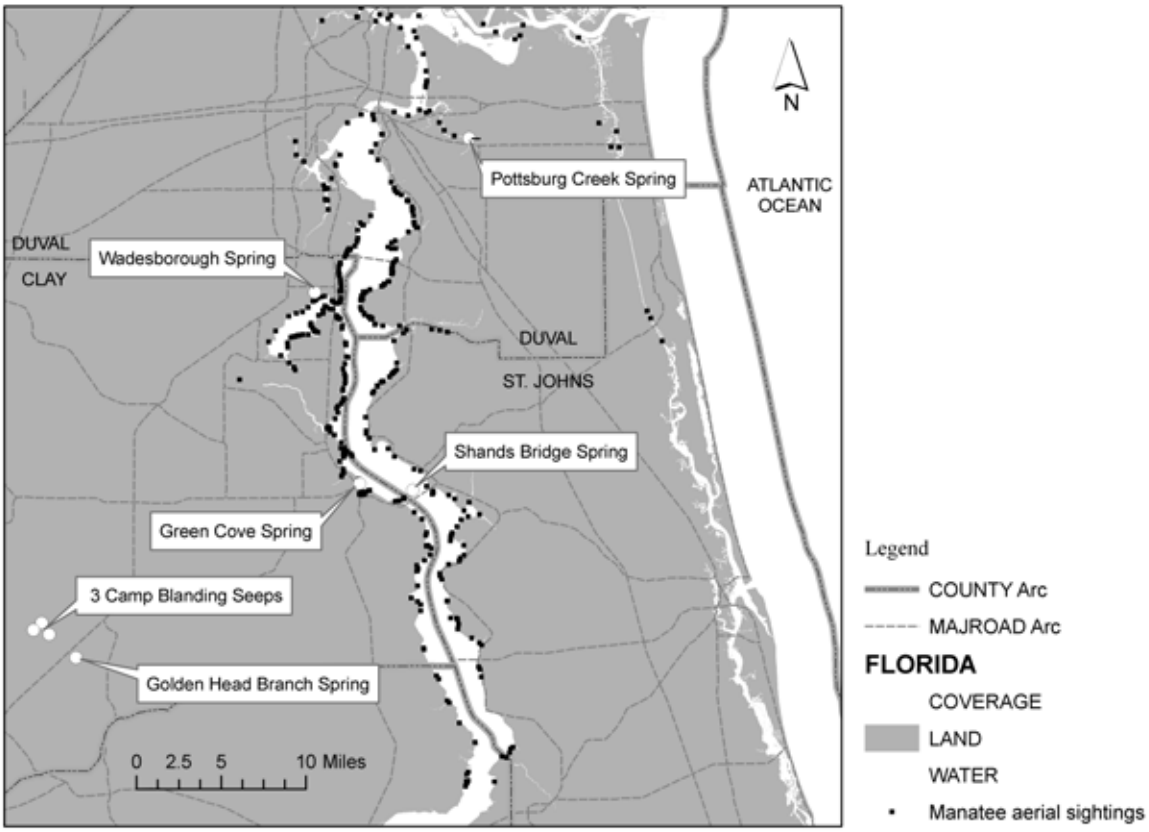
Source: Jacksonville University 2004.
Note: Each dot represents the location of a sighting, not the number of manatees sighted.

SERIES A - Manatee aerial sightings in relation to area springs, Northeast Florida.(Spring 2003).



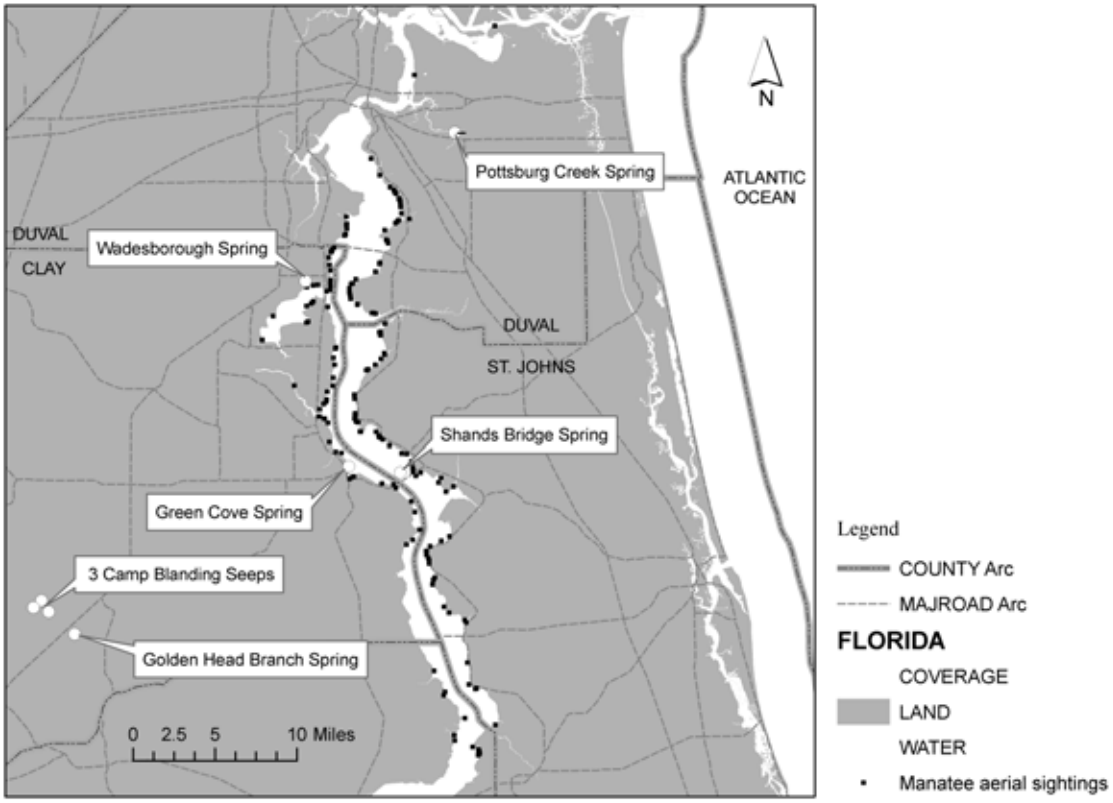
Source: Jacksonville University 2004.
Note: Each dot represents the location of a sighting, not the number of manatees sighted.

SERIES A - Manatee aerial sightings in relation to area springs, Northeast Florida.(Summer, 2003).



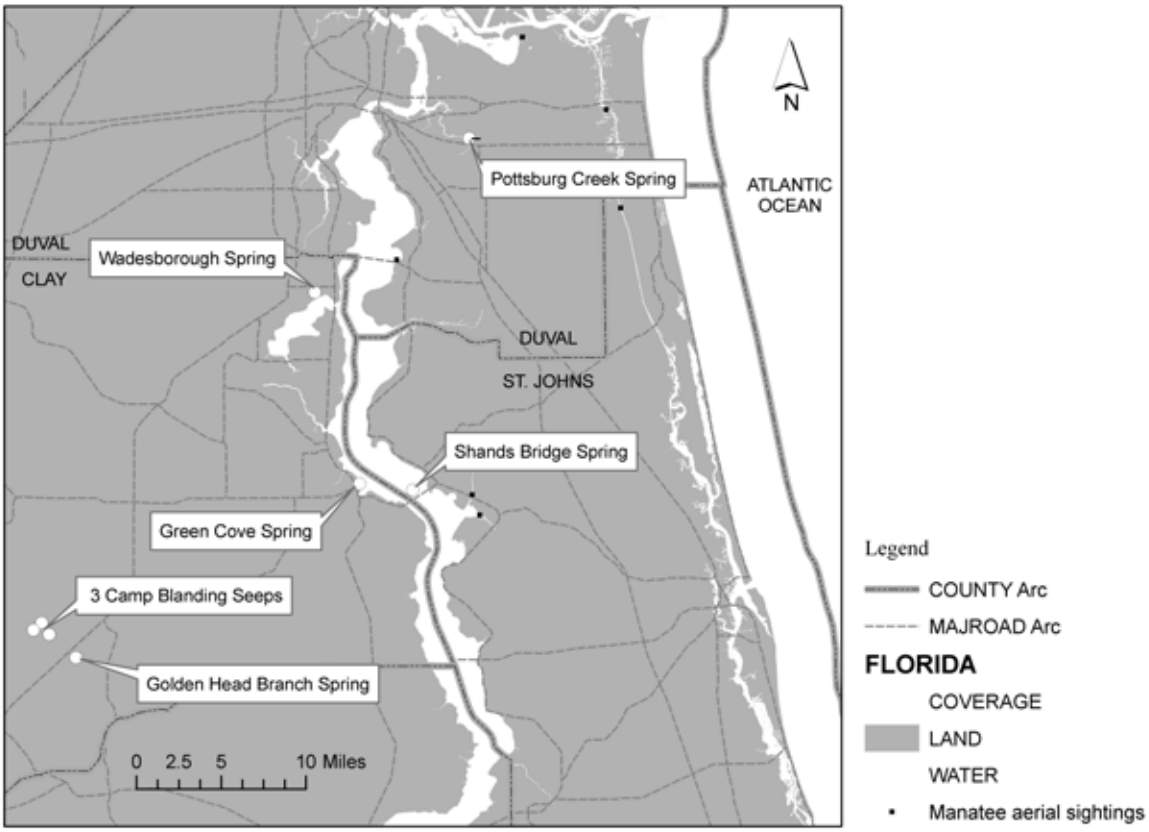
Source: Jacksonville University 2004.
Note: Each dot represents the location of a sighting, not the number of manatees sighted.

SERIES A - Manatee aerial sightings in relation to area springs, Northeast Florida.(Fall, 2003).



Source: Jacksonville University 2004.
Note: Each dot represents the location of a sighting, not the number of manatees sighted.

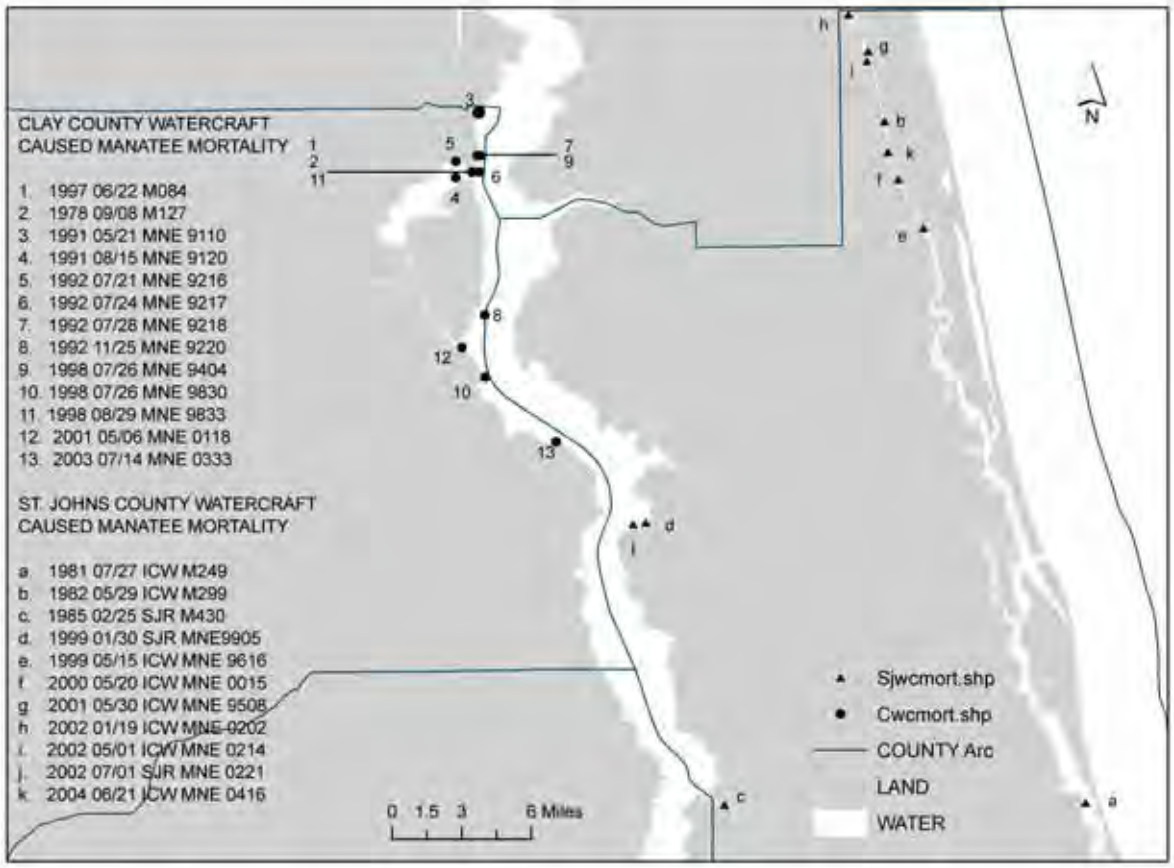
SERIES A - Manatee aerial sightings in relation to area springs, Northeast Florida.(Winter, 2003-2004).



Source: Jacksonville University 2004.
Note: Each dot represents the location of a sighting, not the number of manatees sighted.

Series B: Manatee Mortality

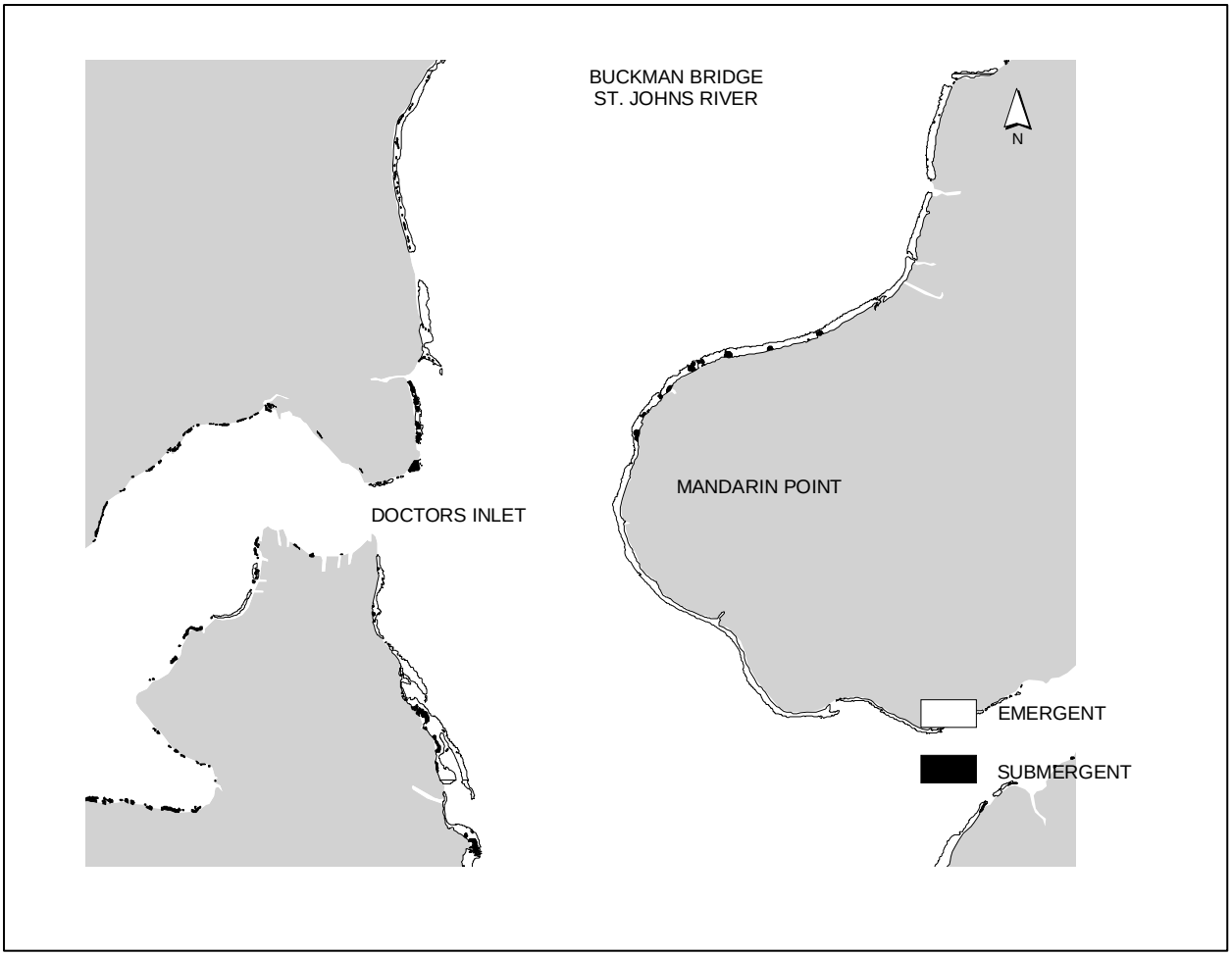
SERIES B. Manatee mortality from watercraft for Clay and St. Johns Counties, 1977-2004.



Source: FWC/FWRI, 2004.
Note: Map shows locations of carcasses recovered in the area (Clay-circles and St. Johns-triangles).

Series C: Submerged Aquatic Vegetation

SERIES C. Grass Bed Extents in Clay County 1998.

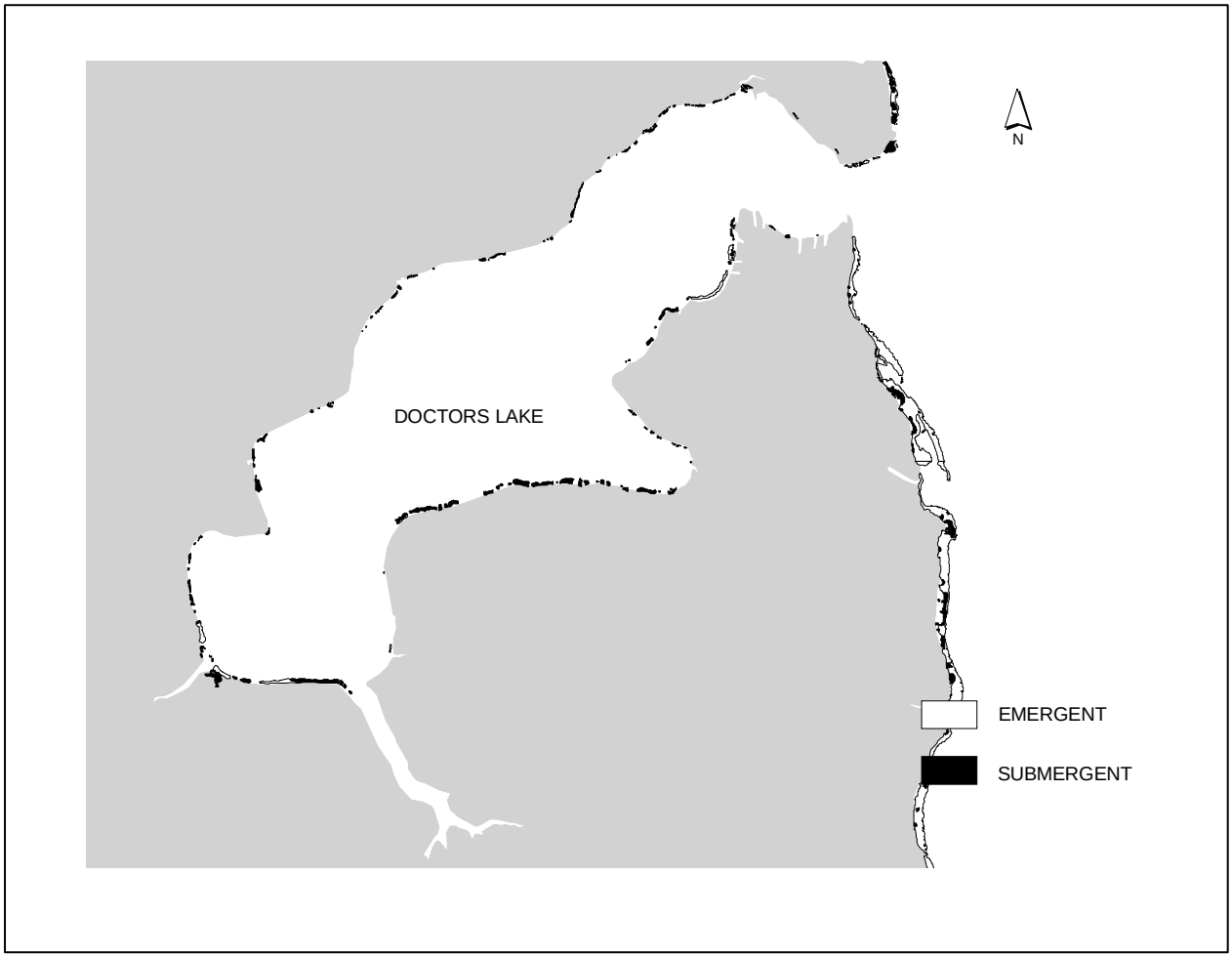


Source: St. Johns River Water Management District, 2002.

SERIES C. Grass Bed Extents in Clay County 2001.

Source: St. Johns River Water Management District, 2002.

SERIES C. Grass Bed Extents in Clay County 1998.



Source: St. Johns River Water Management District, 2002.

SERIES C. Grass Bed Extents in Clay County 2001.

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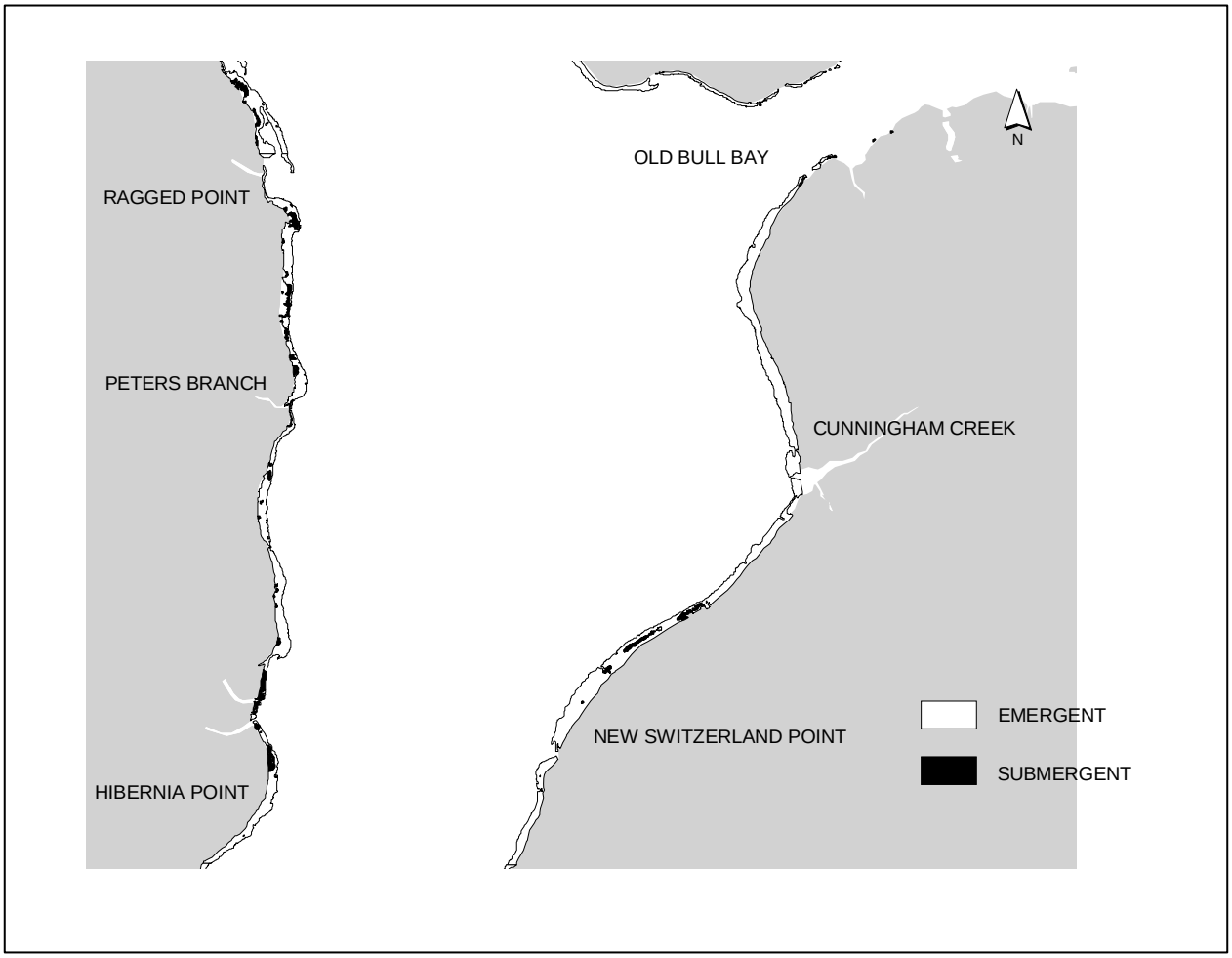
SERIES C. Grass Bed Extents in Clay County 1998.



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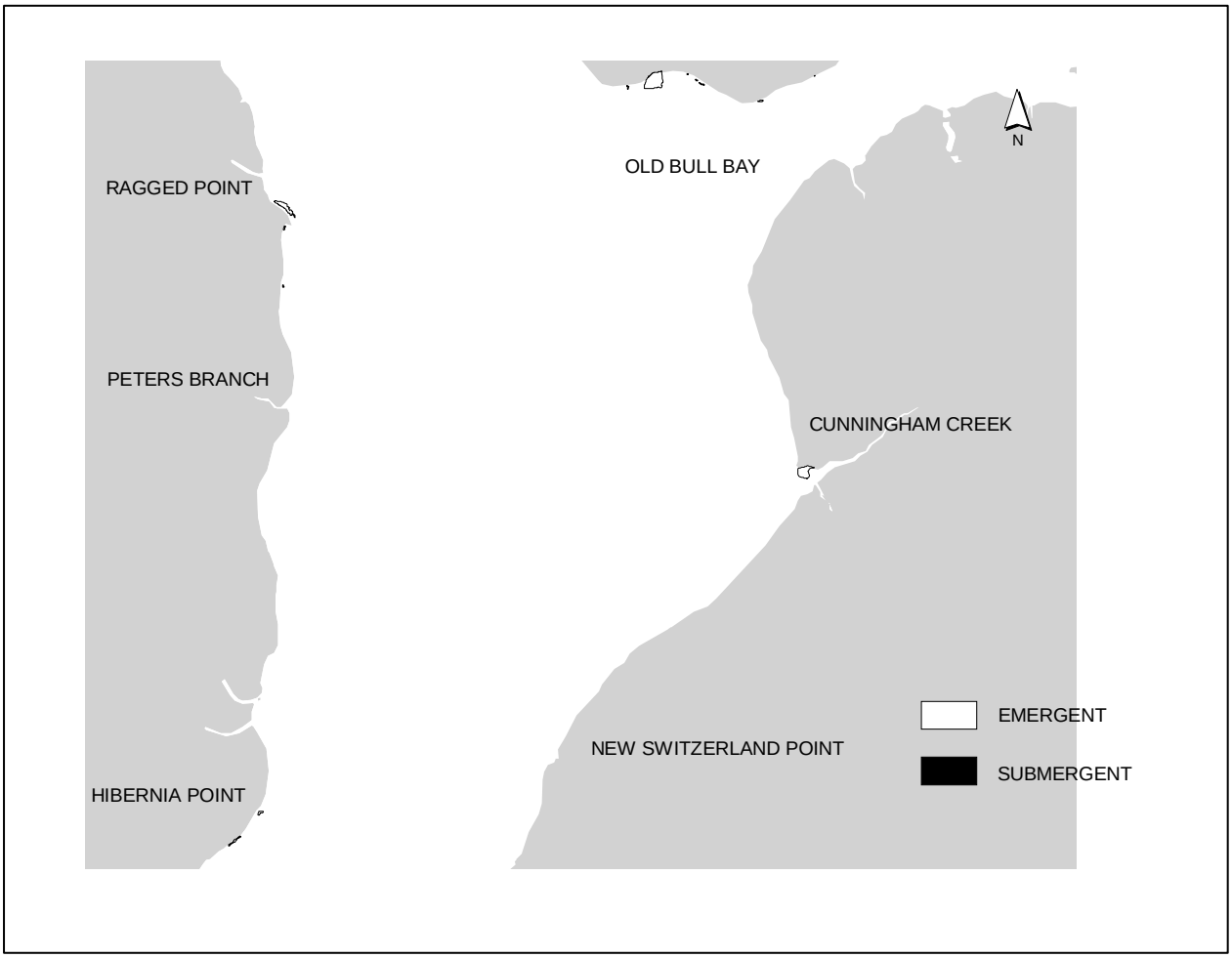
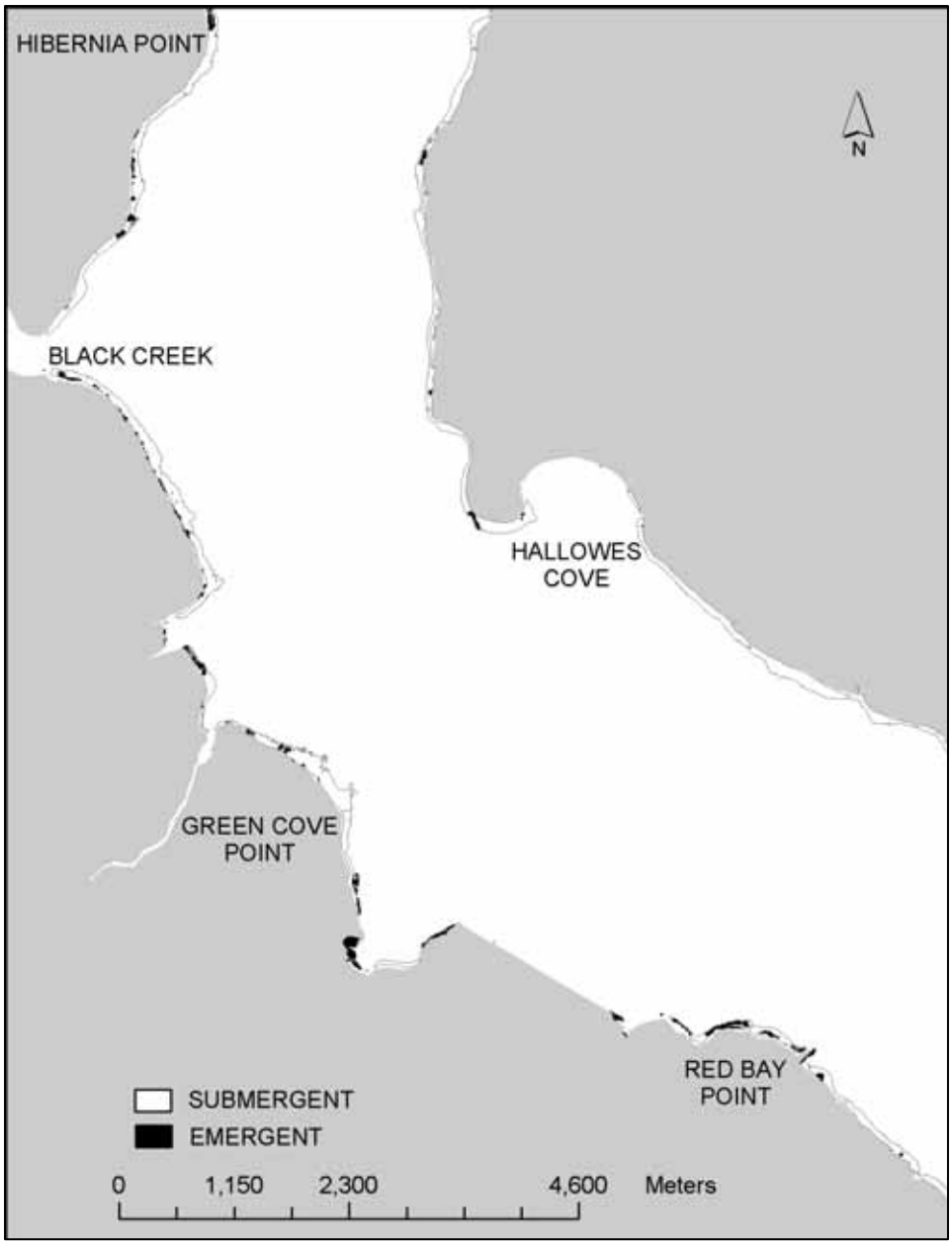
SERIES C. Grass Bed Extents in Clay County 2001.



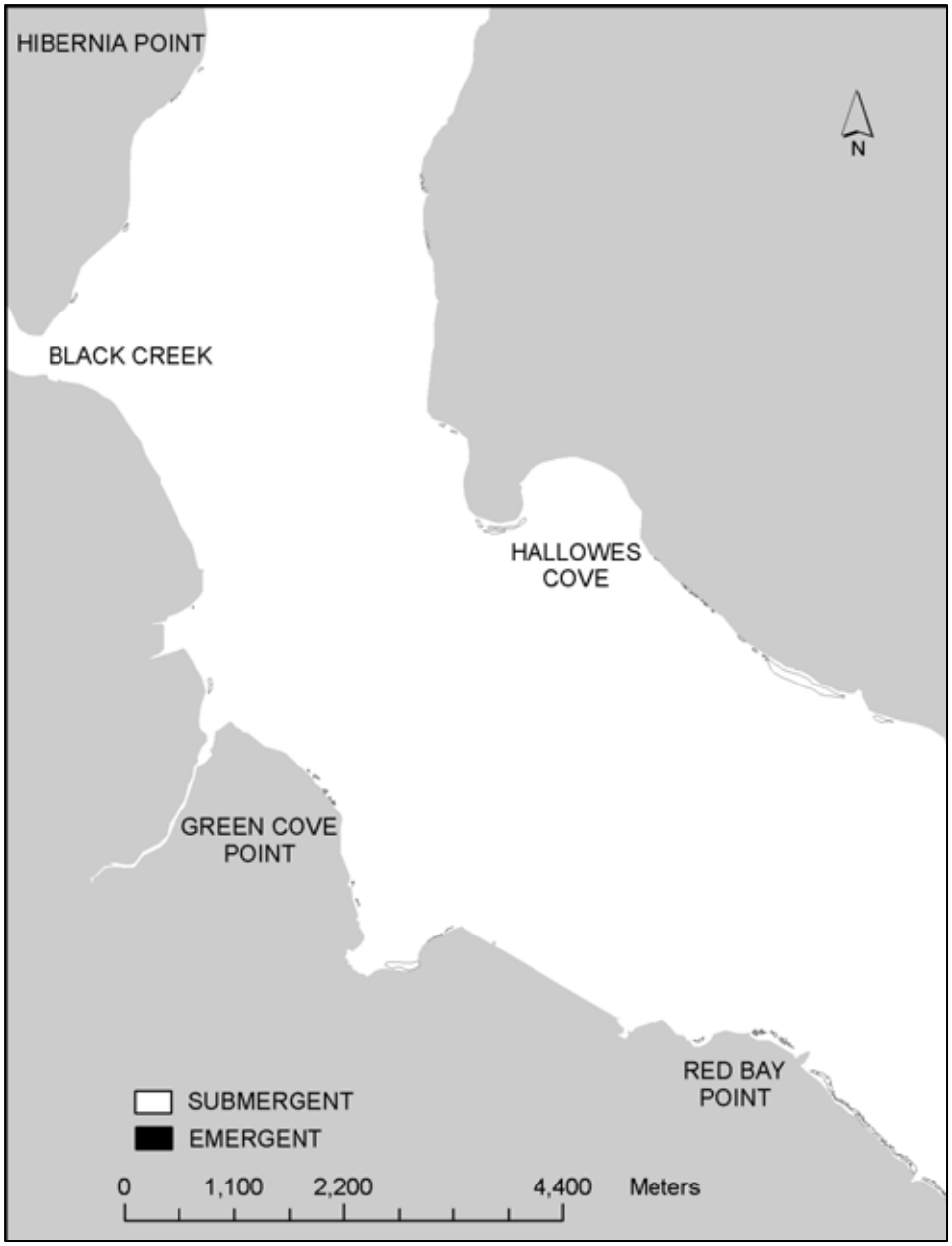
Source: St. Johns River Water Management District, 2002.

SERIES C. Grass Bed Extents in Clay County 1998.



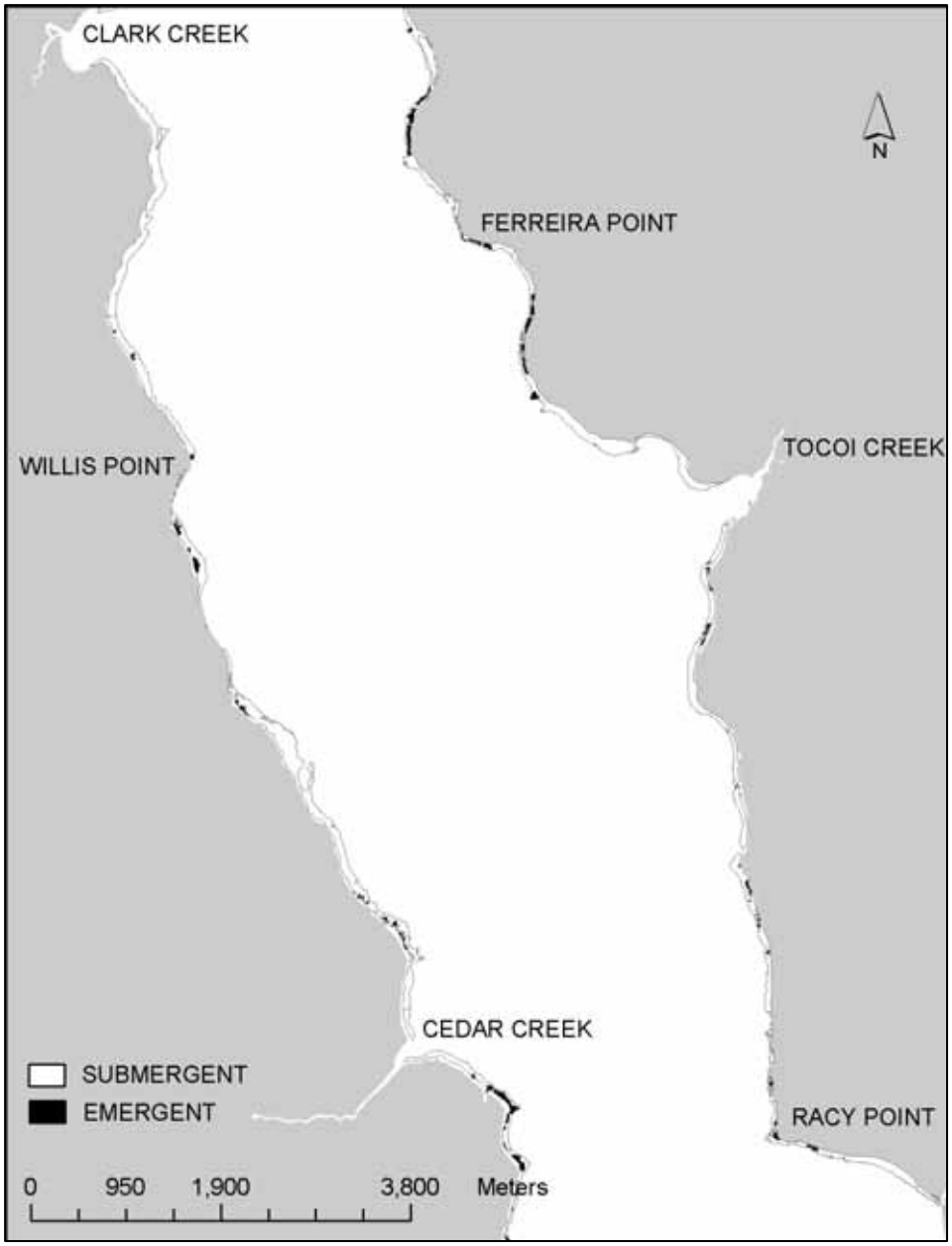
Source: St. Johns River Water Management District, 2002.

SERIES C. Grass Bed Extents in Clay County 2001.



Source: St. Johns River Water Management District, 2002.

SERIES C. Grass Bed Extents in Clay County 1998.



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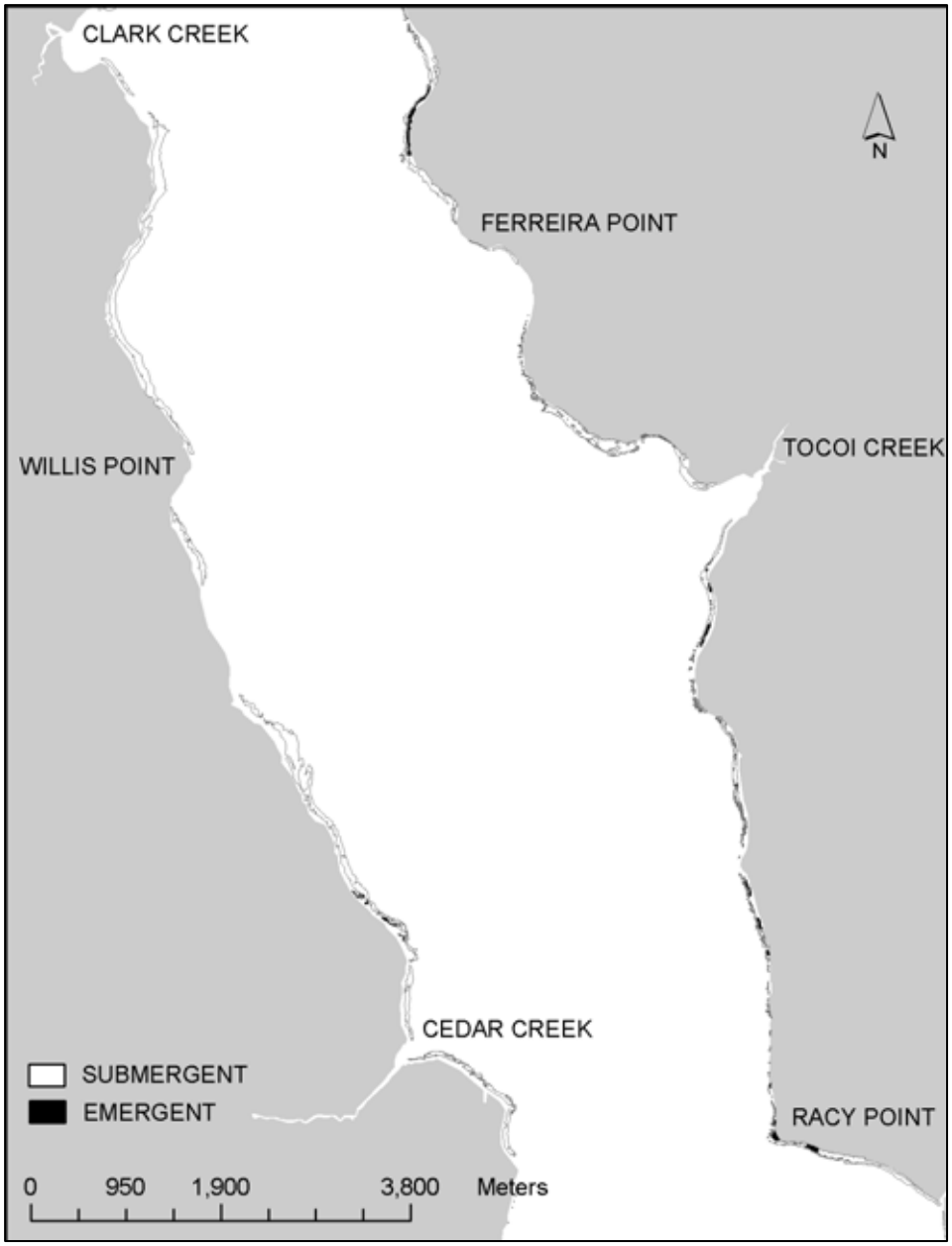

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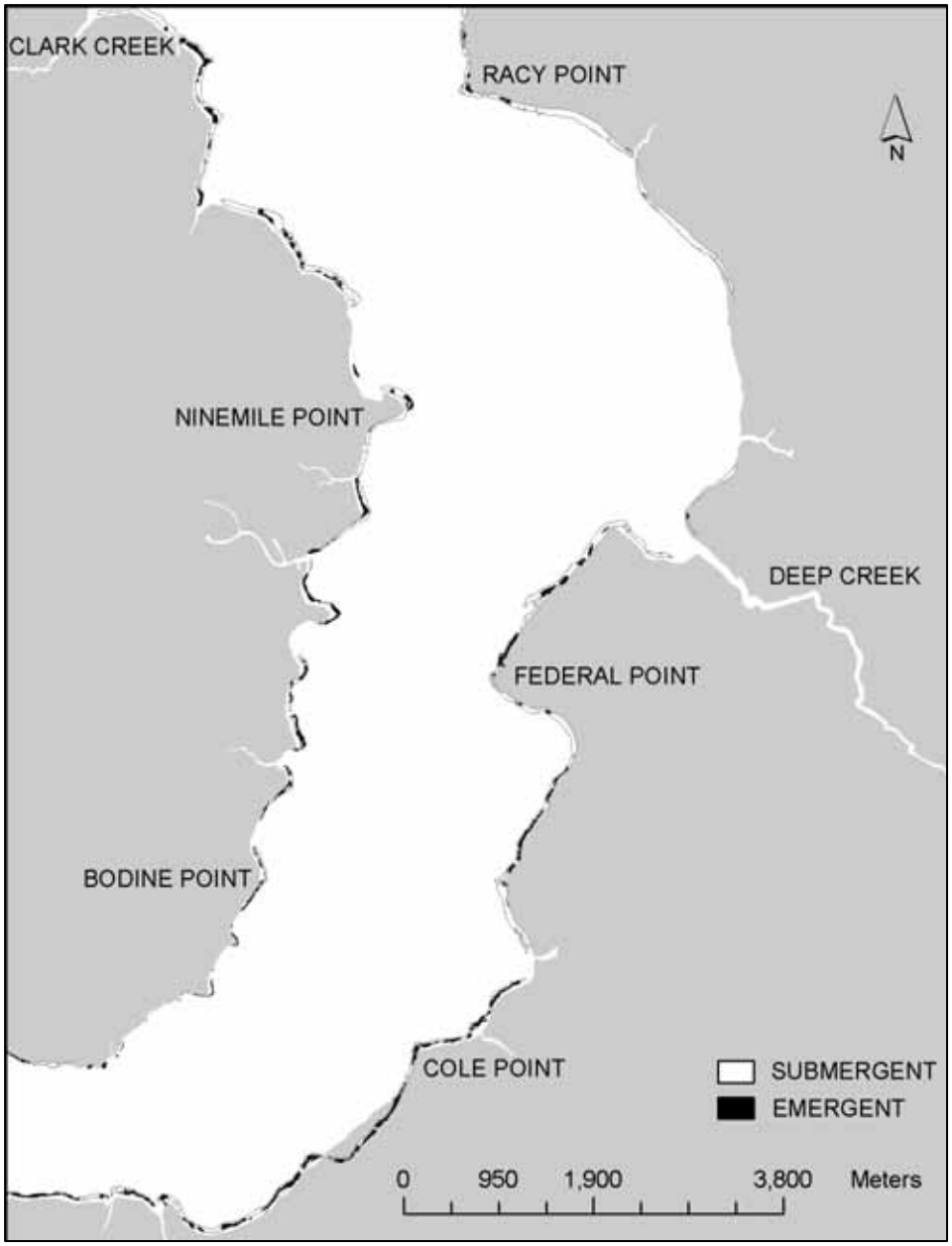

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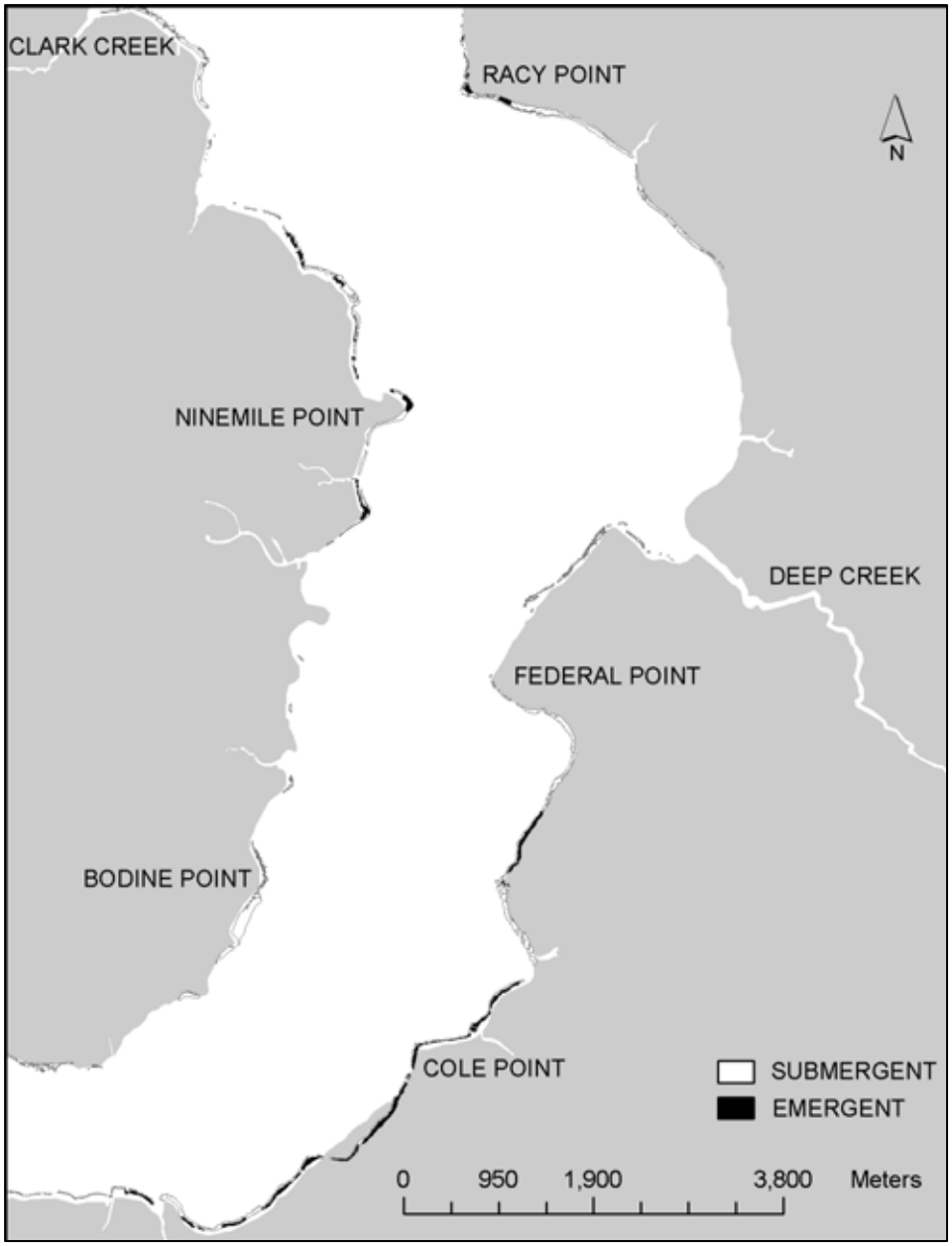
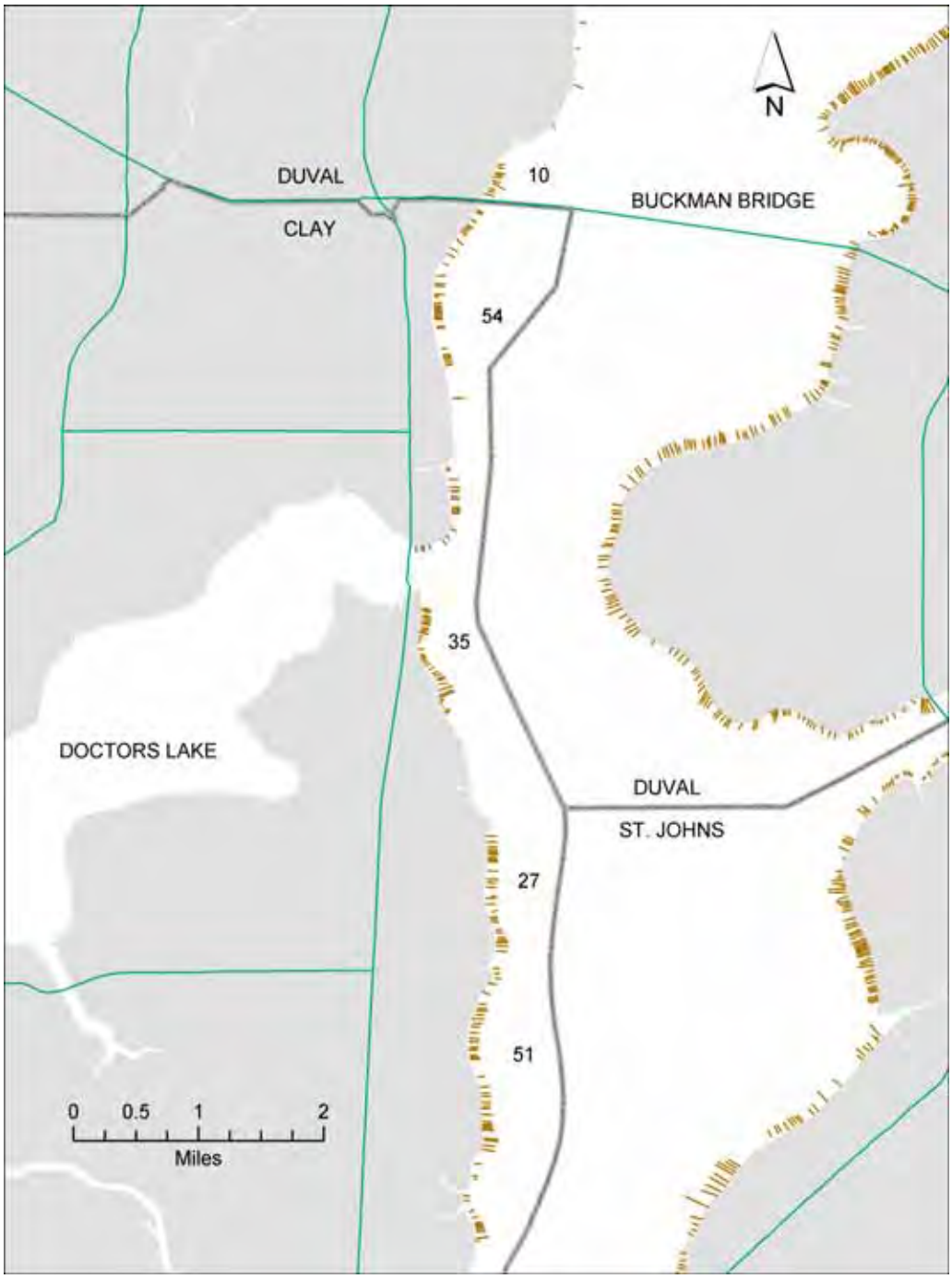


Source: St. Johns River Water Management District, 2002.

Series D: Commercial & Residential Docks

Series D: Commercial & Residential Docks in Clay County, 1995.

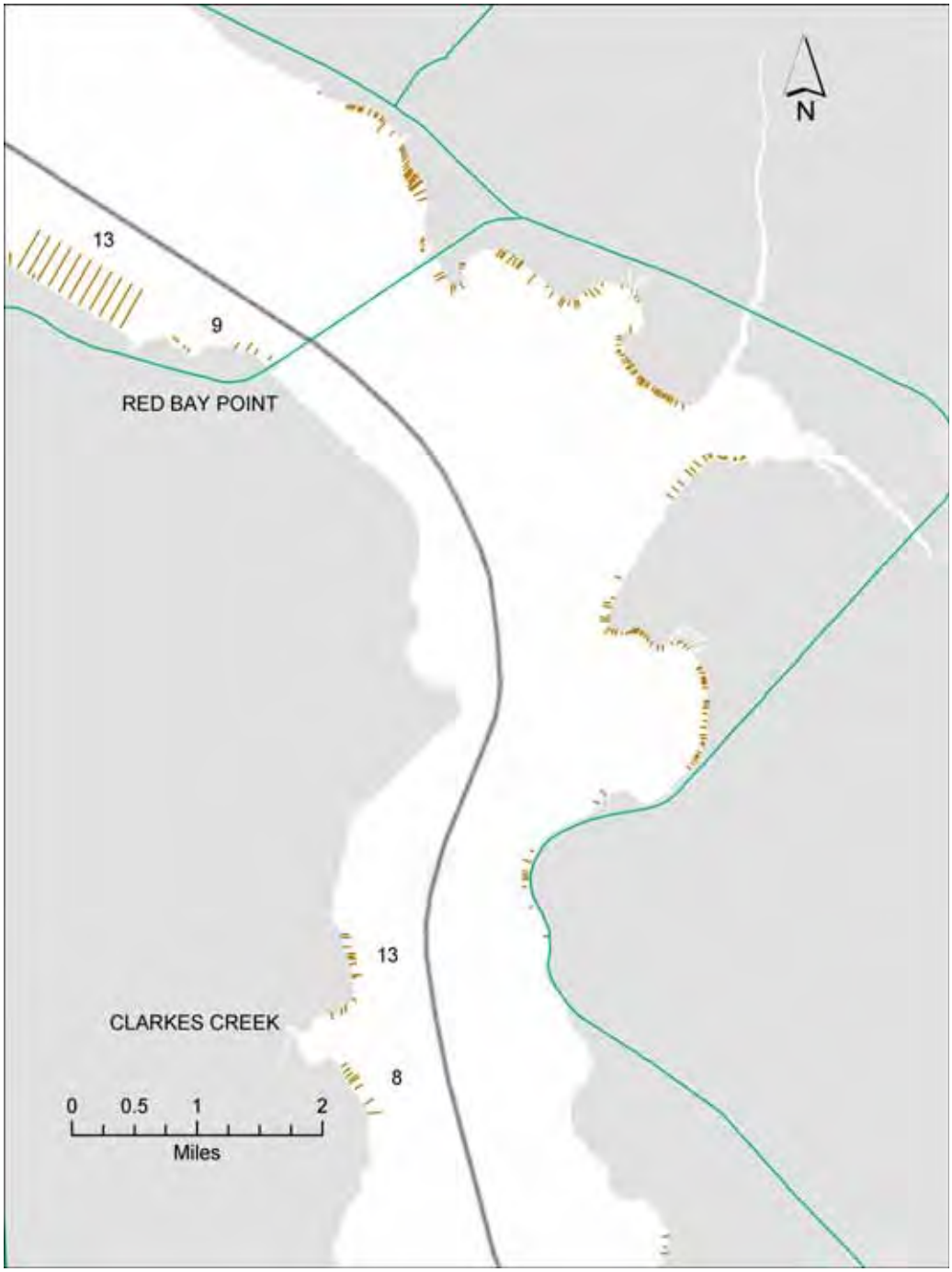


Source data: SJRWMD, 1995
Note: Docks do exist in Doctors Lake and Black Creek but are not shown.
Numbers indicate conglomerations of docks.

Series D: Commercial and Residential Docks in Clay County, 1995.

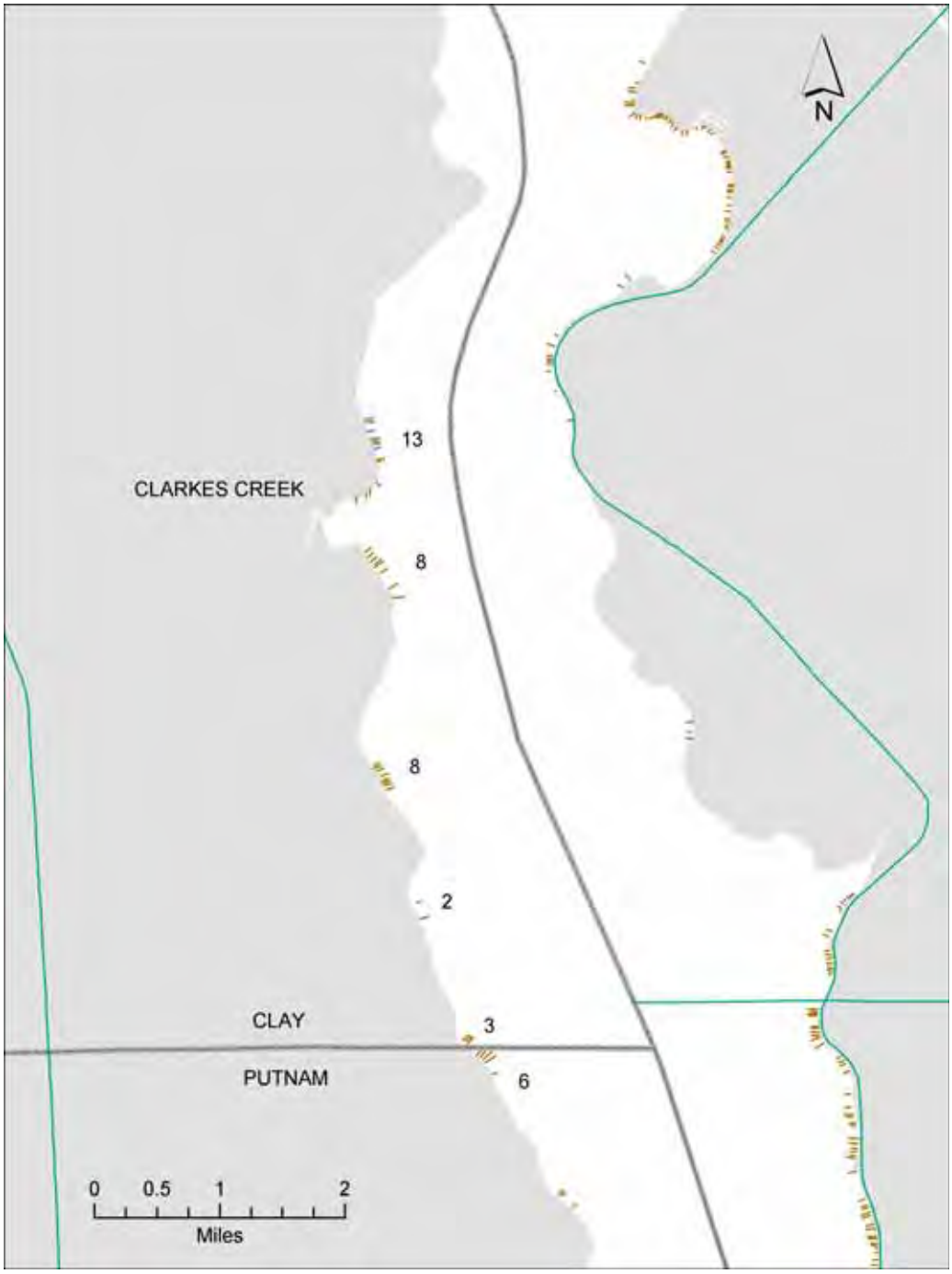
Source data: SJRWMD, 1995
Note: Docks do exist in Black Creek but are not shown.
Numbers indicate conglomerations of docks. Clay County Port has 13 commercial docks.

Series D: Commercial and Residential Docks in Clay County, 1995.



Source data: SJRWMD, 1995.
Numbers indicate conglomerations of docks.

Series D: Commercial and Residential Docks in Clay County, 1995.



Source data: SJRWMD, 1995.
Numbers indicate conglomerations of docks.

Appendix A.

2015 Comprehensive Plan's relational listings of land use categories:

Residential Land Uses

Density Allowed							
		Potential Maximum Density					
Land Use	**Base Maximum Density**	**With Points & Clustering**	**Without Points**	**Has Central Water & Sewer Only**	**With Points and Central Water & Sewer**	**Infill Meeting TND Criteria**	**Low & Moderate Income or/ Elderly or Handicapped Housing**
Agriculture	1 du/20 acres	-	-	-	-		-
Agriculture/ Residential	1 du/10 acres	1 du/5 acres	-	-	-		-
Rural Residential	1 du/5 acres	1du/acres	-	-	-		-
Rural Reserve	1.5 du/ gross acre						
Rural Fringe	1 du/acre	-	2 du/acre	-	3 du/acre		-
Urban Fringe	1du/acre	-	-	4 du/acre	-	6 du/ac	-
Urban Core	2 du/acre	-	-	6 du/acre	10 du/acre	15 du/ac	16 du/acre
Commercial	N/A			1 du/1000 sf*			
Mixed Use	15 du/acre**						

Note: du = dwelling unit
*Residential units within the commercial category will be limited to 300 per year and must be accompanied by a mixed use PUD application.
**Lands designated Mixed Use must be located such that application of the locational criteria in FLUE Policy 3.3 produces 100 points.

Non-Residential Land Uses

Land Use	Maximum Intensity (FAR)
Commercial	40%
Mixed Use	25%
Institutional	50%
Industrial	50%
Business Park*	20%
Recreation	20%

Note: FAR = Floor area ratio
* Within the parcel designated as "Business Park" on the Future Land Use Map and the Future Commercial and Industrial Land Use Map Series by Ordinance No. 2005-62, Business Park development shall not exceed 1,500,000 square feet and Industrial development shall not exceed 1,000,000 square feet. These development limitations may be increased or eliminated by amendment to this policy adopted contemporaneously with or subsequent to amendments to the adopted Capital Improvements Schedule that add necessary transportation capacity improvements to accommodate additional development.

Density Bonus for Clustering and Open Space Preservation

Requirement	Land Use			
	Agriculture/Residential		Rural Residential	
Subdivision Size	1-20 Lots	Over 20 Lots	1-20 Lots	Over 20 Lots
Minimum Size of Development Tract	10 Acres	105 Acres	5 Acres	21 Acres
Minimum Open Space Requirement (see c. below)	50%	50%	35%	35%
Minimum Lot Size Without Central Water and Sewer	1 Acre	1 Acre	0.5 Acre	0.5 Acre

Appendix B.

EXCERPTS FROM THE NORTHEAST FLORIDA COMPREHENSIVE REGIONAL POLICY PLAN

Regional Issue: Protection of Endangered Species

Regional Goal: 10.2.1 By 1991, prevent extinction and further reductions in the population size of endangered, threatened and species of special concern of plant and animal species that occur within the region.

Policies

10.2.1.1 Habitat of viable populations of threatened, endangered, or species of special concern of plants or animals should be protected for future generations. Animal species shall be referenced from the lists of U.S. Fish and Wildlife Service (USFWS) and Florida Game and Freshwater Fish Commission (FGFWFC) as published in the FGFWFC Official List of Endangered and Potentially Endangered Flora and Fauna in Florida. Plant species shall be referenced from the USFWS, categories UR1 and UR3. Silviculture and agriculture using BMPs, which specifically include practices for the protection of threatened, endangered, and listed species habitat consistent with this policy, should not be considered destruction of referenced species' habitat unless State or federal law otherwise provides. Habitat of viable populations referenced herein should be protected by local, regional, and State regulatory programs. These programs should include acquisition; or by creation of incentives such as exchange or transfer of development rights, waiver of zoning code requirements which, as an example, require setbacks of minimum numbers of parking spaces or granting of mitigation credit, if the credit would be acceptable to regulatory agencies and a regulatory strategy should be developed to accomplish this policy.

10.2.1.2 Development proposed adjacent to Outstanding Florida Waters, wildlife sanctuaries, wildlife refuges, national forests, state preserves, parks, gardens, sanctuaries, forests, and publicly-owned wildlife management areas in the region should be environmentally compatible in order to conserve wildlife populations and referenced plants.

10.2.1.6 Marinas and ports should not be located in or adjacent to manatee designated sanctuaries, foraging areas, or in or adjacent to fresh water or warm water discharge habitat areas.

10.2.1.9 Manatee protection plans should be included as part of the Coastal Zone or Conservation Element of the local comprehensive plan.

Regional Goal: 10.2.2 By 1991, the region's population should have environmental education programs available to them.

Policies

10.2.2.1 An educational program should be adopted in primary, secondary, and post-secondary school curricula concerning the wildlife and ecological relationships of Florida and the Northeast Florida region. Use of environmental agency programs should be encouraged in all civic and community groups throughout the region.

Appendix C

CLAY COUNTY

EXCERPTS FROM THE CONSERVATION ELEMENT, GOALS, OBJECTIVES AND POLICIES

The Conservation Element provides the framework for the preservation, protection and wise use of the County's natural resources. The intent of this element is to provide a basis for effective decision-making regarding the appropriate use of natural resources when faced by increasing growth and urban development, in addition to the identification and preservation of important ecological systems.

Despite the rapid growth experienced in the County over the last two decades, there remains an abundance of natural resources. However, as growth pressures increase, so does the need for protection and management of these resources. This element undertakes a responsible approach to stewardship of natural resources by recognizing the contribution of these resources to Clay County's quality of life.

The goals, objectives, and policies concerning natural resources have been divided into five main areas: air quality, water resources, natural vegetative communities and wildlife, mineral resources and soils, and hazardous waste management.

Air quality is not considered to be a major problem at the present. However, measures are included to prevent substantial degradation of the County's air quality as growth continues.

Preventing further harm to the water quality of the County's lakes, rivers, and groundwater is high on the agenda of this element. A program to implement comprehensive monitoring and protection of County waters is proposed, along with methods to ensure the continuing natural functions of waterbodies, wetlands and floodplains.

Protection measures are proposed to conserve important areas of native vegetation through a range of techniques. Perhaps the best protective technique of all will be through the designation of land uses in the Future Land Use Element. The best examples of diverse ecological communities are found in undeveloped areas. Once such communities are identified, they can best be protected by directing urban growth away from them. A program of identification will be undertaken, and growth into those areas will be regulated. Wildlife protection is accomplished by preserving habitat critical to the survival of wildlife species.

Future land use designation of areas appropriate for the extraction of mineral resources will serve to protect the economic value of these areas by preventing encroachment of other types of development. At the same time, measures to minimize environmental degradation from the adverse impacts of mining activities are proposed.

The management of hazardous waste is a growing concern statewide and nationally. Proposals are included to address the County's progressive role in preventing damage to the environment from the inadequate storage and disposal of these wastes.

The element also contains policies to continue joint land acquisition efforts for environmentally sensitive areas. The County will actively participate with the St. Johns River Water Management District through the Save Our Rivers (SOR) program and with the State of Florida through the Conservation and Recreation Lands (CARL) program.

The statement of goals, objectives, and policies in this Conservation Element is one of the foundations for the revision, preparation, and adoption of land development regulations to meet the requirements of Rule 9J-5, FAC. These policies are derived from an analysis of the existing conditions within the natural environment of the County, as well as an examination of the other elements of the Growth Management Plan.

The following goals, objectives, and policies have been developed for the use of local policy makers in guiding and directing the decision making process regarding the conservation of natural resources. For purposes of

definition, the included goals are a generalized statement of a desired end state toward which objectives and policies are directed. The objectives provide the attainable and measurable ends toward which Clay County directs specific efforts. The policies provided are the specific recommended actions that the County will follow in order achieve the identified objectives.

GOALS, OBJECTIVES AND POLICIES

Unless otherwise specified, all policies will be implemented upon Plan adoption.

GOAL

To preserve, conserve and appropriately manage the natural resources of Clay County and provide protection of environmentally sensitive lands, life and property from natural and man-made hazards.

Objective 1: To help absorb carbon-based emissions and other pollutants, annually averaged air samples recorded by the Florida Department of Environmental Protection shall meet or exceed minimum air quality standards as defined by the United States Environmental Protection Agency.

Policy 1.1: By 2001, to reduce pollution generated from automobiles, the County shall:

~~a. Adopt Land Development Regulations to allow multi-family residential development in certain Commercial plan categories and zoning districts~~.

a.~~b.~~ Adopt Land Development Regulations to include a Traditional Neighborhood Development zoning category.

b.~~c.~~ Adopt Land Development Regulations to require landscaping and vegetative buffers between arterial roadways and new residential developments.

c.~~d.~~ Adopt Land Development Regulations to require sidewalks concurrent with all new residential development within the Urban Service Area and along all collector and arterial roadways within the County unless adjacent development on both sides of the proposed development do not have existing sidewalks.

Policy 1.2: Adopt land development regulations that require tree planting and/or preservation.

Policy 1.3: Coordinate with the Florida Department of Environmental Protection to identify air sampling data and minimum air quality standards needed to determine compliance with Objective 1.

Objective 2: Prevent further degradation of ambient water quality and conserve and protect the quantity of surface water resources [9J-5.013(2)(b)(2)].

Policy 2.1: The County shall regulate future waterfront development (excluding manmade lakes or stormwater facilities). The following criteria shall apply:

a. All structures shall be set back a minimum of 50 feet landward from the Ordinary High Water Line or Mean High Water Line, whichever is applicable; for waters designated as Aquatic Preserves or Outstanding Florida Waters, the setback will be 100 feet.

b. All Onsite Sewage Disposal Systems septic tanks and drain fields shall be set back a minimum of 100 feet landward from the Ordinary High Water Line or Mean High Water Line, whichever is applicable; for waters designated as Aquatic Preserves or Outstanding Florida Waters, the setback shall be 150 feet.

All Onsite Sewage Treatment Systems shall be located on the landward side of the primary structure except that infill lots within existing development served by onsite sewage disposal systems shall be exempted when HRS requirements for the distance between wells and onsite sewage treatment systems cannot be obtained.

c. A 25-foot buffer zone of native vegetation shall be preserved landward of the Ordinary High Water Line or Mean High Water Line, whichever is applicable. Exceptions shall be made to trim vegetation within the buffer in order to maintain water views. Up to 25 linear feet or 20 percent of the buffer (whichever is greater) can be removed for the placement of water-dependent uses including dock walkways, boat ramps, etc.

Waterfront lot widths shall be a minimum of one hundred (100) feet at the Ordinary High Water Line or the Mean High Water Line, whichever is applicable.

Policy 2.2: Develop a Comprehensive Stormwater Management Plan, including existing stormwater plans, that shall identify and prioritize specific stormwater problems and recommendations for eliminating these sources of pollution.

Policy 2.3: Adopt land development regulations which contain provisions in the site plan review process to prevent soil erosion and subsequent off-site siltation of surface water bodies.

Policy 2.4: Clay County shall work in cooperation with the Florida Department of Natural Resources and establish "no wake" zones where appropriate (including Black Creek) to reduce shore erosion and protect wildlife.

Policy 2.5: The County, in cooperation with the Soil Conservation Service, shall identify any areas of soil erosion and ~~make recommendations to landowners on how to reduce or eliminate~~ and adopt Land Development Regulations to aid in the reduction or elimination of such erosion.

Policy 2.6: The County shall adopt Land Development Regulations to identify wetlands on all development plans.

Policy 2.7: Unless determined to be permittable by the State and Clay County Health Department, onsite sewage treatment and disposal systems shall be prohibited in floodways and the 10 year floodplain.

Policy 2.8: All septic tanks permitted shall meet or conform with State and Clay County Health Department requirements.

Policy 2.9: Permits for onsite sewage treatment and disposal systems shall not be issued for lots with less than one-half acre of net usable land exclusive of marsh, wetland, surficial water bodies, roads, etc.

Policy 2.10: Inspections of existing onsite sewage treatment and disposal systems shall be required when such system or related dwelling unit is altered, enlarged or replaced, if the system has not been inspected within 3 years.

Policy 2.11: Require, at the time of development or redevelopment, the provision of stormwater management facilities that prevent direct stormwater discharge to a receiving water body. Development of individual single family lots shall include the provision of a swale and berm landward of the Ordinary High Water Line or Mean High Water Line, whichever is applicable, whenever a community stormwater facility is not associated with development of the lot.

Policy 2.12: The County shall coordinate with the SRJWMD and FDEP to identify water quality problems and to propose solutions for resolving them.

Policy 2.13: The County shall establish a capital or user-funded strategic road-paving program to pave roads in areas where water bodies have been determined to be significantly impacted by erosion and siltation from unpaved roads.

Policy 2.14: The County shall coordinate with the SJRWMD to monitor lake levels and develop provisions for resolving low-water level problems.

Objective 3: Prevent further degradation of ambient water quality and conserve and protect the quantity of groundwater resources [9J-5.013(2)(b)(2)].

Policy 3.1: Areas designated by the SJRWMD as high recharge to the Floridan Aquifer 8 inches or more per year shall be protected from incompatible land uses to ensure adequate recharge rates and water quality maintenance. The County will coordinate with the St. Johns River Water Mangement District to review the recharge protection standards as new data becomes available. The following restrictions shall apply:

a. Lakefront lots shall have a 150-foot setback from surface waters (excluding manmade lakes or stormwater facilities) for all septic tank drain fields. Variances will be considered for lots which are vested pursuant to Future Land Use Policies 1.4 and 1.7 and for which the applicable setback identified above would preclude development of the lot consistent with existing single family development in the area. The variance shall provide the minimum relief necessary and shall not reduce the applicable setback above by more than 50%.

b. All development within the high recharge areas shall have maximum impervious surfaces of 15 percent of total lot area, or 30 percent providing that 100-percent retention of stormwater is achieved.

c. The following uses shall be prohibited within those areas having a known recharge rate of eight inches or more per year: wastewater treatment plants, wastewater percolation ponds, Class I and II landfills, mines, feedlots, chicken farms, agricultural chemicals, petroleum products, excluding above ground fuel tanks for residential heating fuels, industrial chemicals or medical waste, land application projects, phosphogypsum tanks; injection control wells; generators of hazardous waste; above ground and underground tankage of hazardous waste; and hazardous waste treatment, storage, disposal and transfer facilities.

d. Direct discharge of stormwater, via sinkholes, drainage wells, etc., shall be prohibited.

e. All developments within the high recharge area shall be designed to have 100 percent retention of on-site runoff for a 25-year/24-hour storm.

f. All new Floridan Aquifer wells in the designated high recharge area shall be cased to SJRWMD standards to ensure that they do not provide a means of contamination to the Floridan Aquifer.

g. Inspections of existing septic tanks and drainfields within the high recharge area shall be required when such septic tank or drainfield or related dwelling unit is altered, enlarged or replaced, if the system has not been inspected within three years.

Policy 3.2: The County shall establish a primary wellhead protection zone having a radius of 200 feet around all potable water supply wells. Potable water supply wells shall be defined as all public and private potable waterwells which serve a minimum of 15 service connections used by year round residents, or serving at least 25 year round residents. Within the wellhead protection zone, all facilities and activities shall comply with the Wellhead Protection Rule (62-521 F.A.C.)

a. New domestic wastewater treatment facilities shall be provided with Class I reliability as described in Chapter 62-600, F.A.C., and flow equalization. New wastewater ponds, basins, and similar facilities shall be lined or sealed to prevent measurable seepage. Unlined reclaimed water storage systems are allowed for reuse projects permitted under Part III of Chapter 62-610, F.A.C.

b. New reuse and land application projects shall be prohibited except for new projects permitted under Part III of Chapter 62-610, F.A.C.

c. New domestic wastewater residuals land application sites, as defined in Chapter 62-640, F.A.C., shall be prohibited.

d. New discharges to ground water of industrial wastewater, as regulated under Chapters 62-660, 62-670, 62-671, and 62-673, F.A.C., shall be prohibited except as provided below:

1. All non-contact cooling water discharges (without additives); and
2. Discharges specifically allowed within a wellhead protection area in Chapters 62-660, 62-670, 62-671, and 62-673, F.A.C.

e. New phosphogypsum stack systems, as regulated under Chapter 62-673, F.A.C., are prohibited.

f. New Class I and Class III underground injection control wells, as regulated in Chapter 62-528, F.A.C., are prohibited.

g. New Class V underground injection control wells, as regulated in Chapter 62-528, F.A.C., are prohibited except as provided below:

1. Thermal exchange process wells (closed-loop without additives) for use at single family residences; and
2. Aquifer storage and recovery systems wells, where the injected fluid meets the applicable drinking water quality standards in Chapter 62-550, F.A.C.

h. New solid waste disposal facilities regulated under Chapter 62-701, F.A.C., are prohibited.

i. New generators of hazardous waste, as regulated under Chapter 62-730, F.A.C., which excludes household hazardous waste as defined in 40 C.F.R. Part 261.4(b)(1) (1994), hereby incorporated and adopted by reference, shall comply with the secondary containment requirements of 40 C.F.R. Part 264 Subpart I (1994), hereby incorporated and adopted by reference.

j. New hazardous waste treatment, storage, disposal, and transfer facilities requiring permits under Chapter 62-730, F.A.C., are prohibited.

k. New aboveground and underground tankage of hazardous wastes regulated under Chapter 62-730, F.A.C., is prohibited.

l. Underground storage tanks regulated under Chapter 62-761, F.A.C., shall not be installed 90 days after the effective date of this rule. Replacement of an existing underground storage tank system regulated under Chapter 62-761, F.A.C., within the same excavation, or addition of new underground storage tanks regulated under Chapter 62-761, F.A.C., at a facility with other such underground storage tanks is exempt from this provision, provided that the replacement or new underground storage tank system is installed with secondary containment as required in Chapter 62-761, F.A.C.

m. Aboveground storage tanks regulated under Chapter 62-762, F.A.C., shall not be installed 90 days after the effective date of this rule. Replacement or upgrading of an existing aboveground storage tank or addition of new aboveground storage tanks which are regulated under Chapter 62-762, F.A.C., at a facility with other such aboveground storage tanks is exempt from this provision, provided that the replacement or new aboveground storage tank system meets the applicable provisions of Chapter 62-762, F.A.C.

n. Storage tanks which meet the auxiliary power provisions of Rule 62-555.320(6), F.A.C., for operation of a potable water well and storage tanks for substances used for the treatment of potable water are exempt from the provisions of this rule. Storage tanks regulated under Chapters 62-761 and 62-762, F.A.C., shall continue to meet the requirements of those chapters.

o. Applicants should take note that to prevent the vertical migration of fluids, a water management district may require a construction permit for new water wells, which shall meet the applicable construction standards contained in Chapter 62-532, F.A.C. *Amendment 05-2, November 2005.*

<u>Policy 3.3:</u> New wells shall meet the requirements stated in Policy 3.2 and shall additionally be located according to Rule 62-555.312(3) F.A.C. as follows:

New wells shall be located no closer than 100 feet from other sanitary hazards that pose a potentially high risk to ground water quality and public health and shall be located no closer than 50 feet from other sanitary hazards that pose a moderate risk to ground water quality and public health. The following are examples of other sanitary hazards that pose a potentially high risk: active or abandoned mines; airplane or train fueling or maintenance areas at airports and railroad yards; animal feeding operations other than those regulated under Rule 62-670.500, F.A.C.; concentrated aquatic animal production facilities; domestic wastewater collection/transmission systems; drainage or injection wells, oil or gas production wells, and improperly constructed or abandoned wells (i.e., wells not constructed or abandoned in accordance with Chapter 62-532, F.A.C.); fertilizer, herbicide, or pesticide storage areas at agricultural sites, golf courses, nurseries, and parks; graveyards; impoundments and tanks that process, store, or treat domestic wastewater, domestic wastewater residuals, or industrial fluids or waste and that are not regulated under Rule 62-670.500, F.A.C.; industrial waste land application areas other than those regulated under Rule 62-670.500, F.A.C.; junkyards and salvage or scrap yards; pastures with more than five grazing animals per acre; pipelines conveying petroleum products, chemicals, or industrial fluids or wastes; and underground storage tanks that are not regulated under Chapter 62-761, F.A.C., but are used for bulk storage of a liquid pollutant or hazardous substance (as defined in Chapter 62-761, F.A.C.) other than sodium hypochlorite solution. The following are examples of other sanitary hazards that pose a moderate risk: aboveground storage tanks that are not regulated under Chapter 62-761, F.A.C., but are used for bulk storage of a liquid pollutant or hazardous substance (as defined in Chapter 62-761, F.A.C.) other than sodium hypochlorite solution; fertilizer, herbicide, or pesticide application areas that are not under the ownership or control of the supplier of water at agricultural sites, golf courses, nurseries, and parks; railroad tracks; stormwater detention or retention basins; and surface water.

The County shall prohibit construction of the above named sanitary hazards within the buffer zone during the entire useful life of the well. *Amendment 05-2, November 2005.*

Policy 3.3: To recharge the aquifer and conserve water resources, the County shall require that all new water-to-air heat pumps have return wells and that water from heat pumps be retained on site.

Objective 4: Reduction of potable water consumption within the Urban Service Area. [9J-5.013(2)(b)(2)]

Policy 4.1: The County shall develop water conservation programs which require the use of water-saving devices~~,~~ and xeriscaping, and shall ~~also~~ promote water conservation through public education and awareness.

Policy 4.2: Clay County will continue to adhere to the St. Johns River Water Management District's emergency water shortage plan.

Policy 4.3: All non-residential and multi-family developments within the Urban Service Area will access water reuse lines located within 500 feet.

Policy 4.4: The Clay County Health Department shall coordinate with the SJRWMD to identify and cap free-flowing wells.

Objective 5: The County shall regulate new development to ensure the preservation and protection of floodplains, wetlands, upland native vegetation communities, wildlife and fisheries.

Policy 5.1: The Clay County Planning Department shall develop and maintain an inventory of environmentally sensitive areas which shall include 100-year floodplains; wetlands as identified by existing sources such as USFWS and SJRWMD; listed wildlife species, habitats supporting wildlife species officially listed by the USFWS and the GFWFC (including species of special concern); existing public and private conservation areas (such as wildlife preserves and state forests) and areas identified by the SJRWMD as having "high recharge" to the Floridan Aquifer.

Policy 5.2: Adopt or amend land development regulations to regulate development which impacts upon environmentally sensitive areas, as defined in Policy 5.1, and which address, at a minimum:

a. Proper siting of development structures and infrastructure, including clustering of dwelling units away from sensitive areas.

b. Restrictions on the uses allowed in critical habitats to those found to be compatible with the requirements of wildlife species which are threatened, endangered, or of special concern as identified by the USFWS, FFWGC, and FDNR.

c. Buffer zones of native vegetation adjacent to surface water bodies to prevent erosion, retard runoff, and provide habitat, including setback requirements for buildings and other structures.

d. Management plans which protect endangered wildlife utilizing critical wildlife habitat.

e. Providing incentives, where applicable, to encourage minimizing the environment impacts of development.

~~All~~ The County, in cooperation with the SJRWMD, will review ~~of~~ development proposals for wetland impacts ~~shall be performed by the SJRWMD~~.

Policy 5.3: Upon plan adoption, the County shall utilize other techniques to protect environmentally sensitive lands, including tax incentives, cluster development; TDRs, conservation easements and fee-simple acquisition.

Policy 5.4: New residential development of 50 acres or more located outside the Urban Service Area as depicted on the Future Land Use Map shall be required to provide a vegetation map of the site using Level 3 of the Florida Land Use and Cover Classification System (FLUCCS).

If the map indicates the presence of sandhills, sand pine scrub, or oak scrub communities, a wildlife survey using Game and Fish Commission approved methodologies shall be completed and submitted to the County.

Policy 5.5: The presence of listed wildlife species, found as a result of Policy 5.4, shall require the developer to submit a habitat management plan to preserve such wildlife. Minimum habitat requirements as established by the Florida Game and Fish Commission, for each species present, shall be preserved on site. Where sites are too small for on-site preservation, the developer shall be required to provide fees to purchase lands within the Northeast Florida Wildlife Mitigation Land Bank in Clay County. Fees shall be based on the fair market value of the on-site wildlife habitat. The County will adopt a Listed Species Habitat Protection ordinance which will address requirements of the "Habitat Management Plan."

Policy 5.6: Adopt or amend land development regulations which limit the density of dwelling units within FEMA designated 100 year floodplains such that existing flood storage is maintained and allowable densities do not create potential flood hazards, or degrade the natural functions of the floodplain.

Policy 5.7: The County shall coordinate with appropriate governmental entities to protect environmentally sensitive lands and native vegetative communities which extend into adjacent counties and municipalities.

Specifically, the County will coordinate with the SJRWMD and Duval County to protect and preserve lands within Cecil Field, and with Alachua County to preserve and protect the Floridan Aquifer in the southwestern portion of the County.

Policy 5.8: The County shall support and coordinate with the appropriate agencies in identifying and preserving known viable wildlife corridors which link public lands.

Policy 5.9: The Clay County Parks and Recreation Department shall coordinate County resources with existing state programs such as the Conservation and Recreational Lands (CARL) Program, the Save our Rivers (SOR) Program, and with groups such as the Nature Conservancy and the Trust for Public Land.

Policy 5.10: Clay County shall coordinate in the identification of hydrologically sensitive areas which require public ownership for adequate water resource protection.

Policy 5.11: The Clay County Parks and Recreation Department shall coordinate with the USFWS, FGFWFC and DNR in protecting manatees and their habitats through a manatee protection plan which shall include maintenance of signage identifying manatee habitat and associated speed zones where shown to be needed and provision of educational materials at boat launch and marina facilities.

Policy 5.12: The Clay County Zoning Department shall regulate the excavation and reclamation of borrow pits.

Policy 5.13: All development plans for non-residential, multi-family and residential development shall identify the location of all jurisdictional wetlands as identified by the U.S. Army Corps of Engineers, the Florida Department of Environmental Protection or the St. Johns River Water Management District. Identified wetlands shall be subject to the criteria established for the Conservation designation of the Future Land Use Map.

Policy 5.14: The County shall coordinate with the SJRWMD to develop aquifer recharge overlay districts. Regulations for the protection and preservation of these districts shall be incorporated into the Land Development Regulations.

Objective 6: The County shall have identified and designated areas suitable for the extraction of minerals as a primary use while also adequately protecting air quality, water, soil and wildlife resources from any adverse impacts of mining.

Policy 6.1: Adopt land development regulations that incorporate DNR standards related to mining for the protection of adjacent natural resources. Such standards shall include, at a minimum:

a. Establishing buffer zones to protect shorelines, stream banks, wetlands, and adjacent land uses from off-site degradation caused by mining.

b. Implementation of a mine reclamation plan within one year of closure of the site to mining activities. The reclamation plan shall include standards for contouring the site to minimize stormwater velocity and ponding of trapped stormwater and revegetation of all disturbed areas of the site using native vegetation. Open water areas shall be reclaimed to ensure suitable fish and wildlife habitat.

c. A water use plan for all mining activities, where applicable.

Policy 6.2: Mining for peat shall be prohibited in freshwater swamp habitats.

Policy 6.3: Adopt land reclamation regulations requiring mine operators to guarantee reclamation plans by securing long term performance bonding, establishing a reclamation escrow account or by other means deemed suitable to ensure the land reclamation plan.

Policy 6.4: Require mine operators to file a notice of intent with the County to mine before beginning mining operations. The notice shall include mine locations, mine size, method of extraction, reclamation plan, and type of material to be mined.

Objective 7: Establish procedures to monitor the collection, storage and disposal of hazardous waste generated in Clay County.

Policy 7.1: The County shall establish Environmental Convenience Centers to be located throughout the County for the collection of hazardous wastes generated by households and other low volume generators.

Policy 7.2: The County, in cooperation with the DER, shall hold periodic Amnesty Days as an incentive to collect hazardous wastes generated in the County.

Policy 7.3: Clay County landfill operations shall monitor incoming refuse to prevent the disposal of hazardous wastes.

Policy 7.4: Clay County, in conjunction with private and public institutions, will promote an educational/assistance program which will assist industrial and commercial concerns which generate hazardous wastes in reducing and/or recycling their hazardous waste.

Objective 8: Protect the natural environment from development to ensure the most desirable habitat for existing vegetation and wildlife [9J-5.013(2)(c)].

Policy 8.1: The County shall develop a wide range of programs for the conservation of native vegetative communities such as: acquisition, easements, and incentive programs and shall encourage the application of native or xerophytic vegetation in landscaping for new development.

Policy 8.2: The County shall create landscaping regulations which address the preservation of existing native vegetative communities and the use of native vegetative materials.

Policy 8.3: The County shall create lot clearing regulations to preserve native communities and conserve wildlife habitats.

Objective 9: To conserve, appropriately use and protect soils [9J-5.013(2)(b)].

Policy 9.1: Require the use of one or more soil erosion control measures on-site shall be used during new construction such as:

Temporary grass cover.
Sediment basins.
Mulching. · Temporary fences.
Diversion channels. · Hay bales.
Scheduling of construction to minimize exposure of bare soils.

Appendix D

Ordinance 90-42
Ordinance 90-59
Ordinance 91-39

AN ORDINANCE OF THE BOARD OF COUNTY COMMISSIONERS OF CLAY COUNTY, FLORIDA; ENTITLED THE CLAY COUNTY VESSEL CONTROL AND WATER SAFETY ORDINANCE; PROVIDING A SHORT TITLE; PROVIDING FOR PURPOSE AND AUTHORITY; PROVIDING DEFINITIONS; DESIGNATING A CERTAIN IDLE SPEED/NO WAKE ZONE AND CERTAIN NO WATER SKIING ZONES; ESTABLISHING PROHIBITED ACTS; DECLARING VIOLATION MISDEMEANOR AND ESTABLISHING PENALTIES; PROVIDING FOR POSTING OF SIGNS: DIRECTING FILING WITH THE DEPARTMENT OF ENVIRONMENTAL REGULATION; PROVIDING FOR ENFORCEMENT; PROVIDING EXEMPTIONS; PROVIDING FOR SEVERABILITY; PROVIDING AN EFFECTIVE DATE.

WHEREAS, the Board of County Commissioners of Clay County, Florida has determined that the unregulated operation of vessels on the waterways of Clay County constitutes a potential hazard to the safety and welfare of the citizens of Clay County and others; and,

WHEREAS, Section 125.01, Florida Statutes, authorizes the Board of County Commissioners of Clay County, Florida to adopt regulations which will protect the health, safety and welfare of its citizens and others.

NOW THEREFORE BE IT ORDAINED BY THE BOARD OF COUNTY COMMISSIONERS OF CLAY COUNTY, FLORIDA, that:

Section 1. Short Title: This Ordinance may be cited by its short title as the Clay County Vessel Control and Water Safety Ordinance.

Section 2. Purpose and Authority:

A. The purpose of this Ordinance is to promote safety in and between boating, swimming, and other water-related activities in Clay County, Florida.

B. The Board does hereby declare that the public health, safety and welfare of the citizens of the County and others require designation of specific areas within the County, and the Board is hereby authorized to designate specific areas within the County, within which the operation of Vessels and within which Water Skiing may be regulated or prohibited.

Section 3. Definitions:

FILED & RECORDED
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The following words and phrases, when used in the capitalized form in this Ordinance, whether in noun, verb, or adjectival form, and whether singular or plural shall have the meanings attributed to them in this Section, except where the context otherwise requires.

A. Board: Means the Board of County Commissioners of Clay County, Florida.

B. County: Means Clay County, Florida.

C. Vessel: Means a motor propelled or artificially propelled vehicle and every other description of boat, watercraft, barge and airboat other than a seaplane on the water, used or capable of being used as a means of transportation on water, to include jet skis, non-displacement craft and seaplanes.

D. Person: Means any individual, partnership, firm, corporation, association or other entity.

E. Operate: Means to navigate or otherwise use any Vessel in, on or under the water.

F. Water Skiing: Means the act by any person of being towed by rope, bar, cable or other device behind any Vessel, with or without the assistance of any ski, board, tube or other device. Water Skiing does not include the towing of one Vessel by another at Idle/No Wake Speed or less.

G. Idle/No Wake Speed: Means the minimum speed by which the steering control of a Vessel can be maintained which shall in no event equal or exceed the minimum speed at which the Vessel will plane upon the surface of the water.

H. Idle Speed/No Wake Zone: Means any body of water, or portion thereof, specifically designated by the Board in this Ordinance, or in any amendment hereto, within which the operation of any Vessel at a speed in excess of Idle/No Wake Speed is prohibited.

I. No Water Skiing Zone: Means any body of water or portion thereof, specifically designated by the Board in this Ordinance, or in any amendment hereto, within which Water Skiing is prohibited.

J. Enforcement Officer: Means any duly authorized law enforcement officer, to include but not be limited to the Clay County Sheriff and his duly appointed deputies, the U.S. Coast Guard, the Florida Marine Patrol, and the Florida Game and Freshwater Fish Commission.

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Section 4. Idle Speed/No Wake Zones Designated: The following bodies of water or portions thereof, situated within the County, are hereby designated Idle Speed/No Wake Zones:

A. Swimming Pen Creek Idle Speed/No Wake Zone: Swimming Pen Creek from its confluence with Doctors Lake upstream to its upper-most reaches, inclusive of all tributaries draining therein.

B. North Fork Black Creek Idle Speed/No Wake Zone: North Fork Black Creek from the bridge at S.R. 21 upstream to its upper-most reaches, inclusive of all tributaries draining therein.

C. South Fork Black Creek Idle Speed/No Wake Zone: South Fork Black Creek from the bridge at C.R. 218 upstream to its upper-most reaches, inclusive of all tributaries draining therein.

D. Middleburg Boat Ramp Idle Speed/No Wake Zone: North Fork Black Creek from one hundred (100) yards upstream to one hundred (100) yards downstream of the Middleburg Boat Ramp located at the end of Main Street in Middleburg.

E. Ridaught Boat Ramp Idle Speed/No Wake Zone: Black Creek from one hundred (100) yards upstream to one hundred (100) yards downstream of the Ridaught Boat Ramp located at the end of Old Ferry Road.

Section 5. No Water Skiing Zones Designated: The following bodies of water or portions thereof, situated within the County, are hereby designated No Water Skiing Zones:

A. North Fork Black Creek No Water Skiing Zone: North Fork Black Creek from its confluence with South Fork Black Creek upstream to the bridge at S.R. 21.

B. South Fork Black Creek No Water Skiing Zone: South Fork Black Creek from its confluence with North Fork Black Creek upstream to the bridge at C.R. 218.

Section 6. Violation:

A. It is hereby declared to be prohibited and a violation of this Ordinance for any Person to Operate a Vessel within any Idle Speed/No Wake Zone designated under Section 4 hereof at a speed in excess of Idle/No Wake Speed.

B. It is hereby declared to be prohibited and a violation of this Ordinance for any Person to engage in Water Skiing or to Operate a Vessel from which any Person is Water Skiing within any

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Water Skiing Zo designated under Section hereof.

Section 7. Violation Declared Misdemeanor; Penalties: Any wilful, deliberate and intentional violation of this Ordinance is hereby declared to be a second degree misdemeanor, punishable as provided under general Florida law.

Section 8. Signs: No Person shall be deemed to be in violation of this Ordinance with respect to any particular Idle Speed/No Wake Zone designated under Section 4 hereof, or No Water Skiing Zone designated under Section 5 hereof, unless signs complying with the provisions of Chapter 16N-23, Florida Administrative Code identifying the boundaries of such particular zones have been posted in such a manner and places that a Person Operating a Vessel or Water Skiing therein can reasonably be expected to see and read the same.

Section 9. Filing With The Department of Environmental Regulation: In order to comply with Section 373.023, Florida Statutes, the County Attorney shall send a certified copy of this Ordinance to the Bureau of Water Management, Department of Environmental Regulation, Twin Towers Office Building, 2600 Blair Stone Road, Tallahassee, Florida 32302.

Section 10. Enforcement: The provisions of this Ordinance can be enforced by any Enforcement Officer.

Section 11. Exemptions: Enforcement Officers performing their official duties or acting in an emergency are exempt from the provisions of this Ordinance.

Section 12. Severability: The provisions of this Ordinance are severable. It is declared to be the legislative intent that if any section, subsection, clause or provision of this Ordinance is held invalid, the remainder of this Ordinance shall not be affected thereby.

Section 13. Effective Date: This Ordinance shall become effective as prescribed by general Florida law.

DULY ADOPTED, by the Board of County Commissioners, Clay County, Florida, this 24th day of July, 1990.

BOARD OF COUNTY COMMISSIONERS
CLAY COUNTY, FLORIDA

BY: James B. Jett
James B. Jett, Its Chairman

ATTEST:
John Keene
John Keene
Clerk of the Courts
Ex-officio Clerk to the
Board of County Commissioners

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CERTIFIED, A TRUE COPY OF THE ORIGINAL
JOHN KEENE, CLERK OF THE CIRCUIT
COURT, CLAY COUNTY, FLORIDA
BY: Dale M. Funkle
DEPUTY CLERK

APPROVED AS TO FORM:
Mark H. Scruby
Mark H. Scruby
County Attorney

ORDINANCE 90-59

VESSEL:08-10-90

AN ORDINANCE OF THE BOARD OF COUNTY COMMISSIONERS OF CLAY COUNTY, FLORIDA, AMENDING ORDINANCE 90-42, KNOWN AS THE CLAY COUNTY VESSEL CONTROL AND WATER SAFETY ORDINANCE; TO REDESIGNATE THROUGHOUT THE ORDINANCE THE TERM IDLE/NO WAKE SPEED AS MINIMUM WAKE SPEED AND TO REDESIGNATE THROUGHOUT THE ORDINANCE THE TERM IDLE SPEED/NO WAKE ZONE AS SLOW DOWN/MINIMUM WAKE ZONE; DIRECTING FILING WITH THE DEPARTMENT OF ENVIRONMENTAL REGULATION; PROVIDING AN EFFECTIVE DATE.

NOW THEREFORE BE IT ORDAINED BY THE BOARD OF COUNTY COMMISSIONERS OF CLAY COUNTY, FLORIDA that:

Section 1. Section 3 of Clay County Ordinance 90-42, known as the Clay County Vessel Control and Water Safety Ordinance (hereinafter "Ordinance 90-42"), which Section provides definitions, is hereby amended to redesignate the term Idle/No Wake Speed as Minimum Wake Speed and to redesignate the term Idle/No Wake Zone as Slow Down/Minimum Wake Zone, both of which terms shall now read in their entirety as follows:

G. Minimum Wake Speed: Means the minimum speed by which the steering control of a Vessel can be maintained which shall in no event equal or exceed the minimum speed at which the Vessel will plane upon the surface of the water.

H. Slow Down/Minimum Wake: Means any body of water, or portion thereof, specifically designated by the Board in this Ordinance, or in any amendment hereto, within which the operation of a Vessel at a speed in excess of Minimum Wake Speed is prohibited.

Section 2. Section 4 of Ordinance 90-42 is hereby amended in its entirety to read as follows:

Section 4. Slow Down/Minimum Wake Zones Designated: The following bodies of water or portions thereof, situated within the County, are hereby designated Slow Down/Minimum Wake Zones:

A. Swimming Pen Creek Slow Down/Minimum Wake Zone: Swimming Pen Creek from its confluence with Doctors Lake upstream to its upper-most reaches, inclusive of all tributaries draining therein.

B. North Fork Black Creek Slow Down/Minimum Wake Zone: North Fork Black Creek from the bridge at S.R. 21 upstream to its upper-most reaches, inclusive of all tributaries draining therein.

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C. South Fork Black Creek Slow Down/Minimum Wake Zone: South Fork Black Creek from the bridge at C.R. 218 upstream to its upper-most reaches, inclusive of all tributaries draining therein.

D. Middleburg Boat Ramp Slow Down/Minimum Wake Zone: North Fork Black Creek from one hundred (100) yards upstream to one hundred (100) yards downstream of the Middleburg Boat Ramp located at the end of Main Street in Middleburg.

E. Ridaught Boat Ramp Slow Down/Minimum Wake Zone: Black Creek from one hundred (100) yards upstream to one hundred (100) yards downstream of the Ridaught Boat Ramp located at the end of Old Ferry Road.

Section 3. Subsection A of Section 6 of Ordinance 90-42 is hereby amended in its entirety to read as follows:

Section 6. Violation:

A. It is hereby declared to be prohibited and a violation of this Ordinance for any Person to Operate a Vessel within any Slow Down/Minimum Wake Zone designated under Section 4 hereof at a speed in excess of Slow Down/Minimum Wake Speed.

Section 4. Section 8 of Ordinance 90-42 is hereby amended in its entirety to read as follows:

Section 8. Signs: No Person shall be deemed to be in violation of this Ordinance with respect to any particular Slow Down/Minimum Wake Zone designated under Section 4 hereof, or No Water Skiing Zone designated under Section 5 hereof, unless signs complying with the provisions of Chapter 16N-23, Florida Administrative Code identifying the boundaries of such particular zones have been posted in such a manner and places that a Person Operating a Vessel or Water Skiing therein can reasonably be expected to see and read the same.

Section 5. Filing with the Department of Environmental Regulation: In order to comply with Section 373.023, Florida Statutes, the County Attorney shall send a certified copy of this Ordinance to the Bureau of Water Management, Department of Environmental Regulation, Twin Towers Office Building, 2600 Blair Stone Road, Tallahassee, Florida, 32302.

FILED & RECORDED

Section 6. Effective Date: This Ordinance shall become effective as prescribed by Florida general law.

DULY ADOPTED, by the Board of County Commissioners of Clay County, Florida, this 9th day of October, 1990.

BOARD OF COUNTY COMMISSIONERS
CLAY COUNTY, FLORIDA

BY: James B. Jett
James B. Jett, Its Chairman

ATTEST:

John Keene
John Keene
Clerk of the Courts
Ex-Officio Clerk to the
Board of County Commissioners

APPROVED AS TO FORM:

Mark H. Scruby
Mark H. Scruby
County Attorney

CERTIFIED, A TRUE COPY OF THE ORIGINAL
JOHN KEENE, CLERK OF THE CIRCUIT
COURT, CLAY COUNTY, FLORIDA
BY: Dale M. Kuykle
DEPUTY CLERK

VESSEL:08-10-90

FILED & RECORDED

ORDINANCE 91-39

AMEND/BOATING:04-19-91

AN ORDINANCE OF THE BOARD OF COUNTY COMMISSIONERS OF CLAY COUNTY, FLORIDA, AMENDING CLAY COUNTY ORDINANCE 90-42, KNOWN AS THE CLAY COUNTY VESSEL CONTROL AND WATER SAFETY ORDINANCE, AS AMENDED BY CLAY COUNTY ORDINANCE 90-59, PROVIDING FOR POSTING OF SIGNS AFTER DESIGNATED SLOW DOWN/ MINIMUM WAKE ZONES TO READ "RESUME NORMAL SAFE OPERATION", AND TO PROVIDE FOR POSTING OF SIGNS AFTER DESIGNATED NO WATER SKIING ZONES TO READ "WATER SKIING PERMITTED BEYOND THIS POINT"; DIRECTING FILING WITH THE DEPARTMENT OF ENVIRONMENTAL REGULATION; PROVIDING AN EFFECTIVE DATE.

NOW THEREFORE BE IT ORDAINED BY THE BOARD OF COUNTY COMMISSIONERS OF CLAY COUNTY, FLORIDA, that:

Section 1. Section 8 of Clay County Ordinance 90-42, known as the Clay County Vessel Control and Water Safety Ordinance, as amended by Clay County Ordinance 90-59, is hereby amended to read in its entirety as follows:

Section 8. Signs: No Person shall be deemed to be in violation of this Ordinance with respect to any particular Slow Down/Minimum Wake Zone designated under Section 4 hereof, or No Water Skiing Zone designated under Section 5 hereof, unless signs complying with the provisions of Chapter 16N-23, Florida Administrative Code identifying the boundaries of such particular zones have been posted in such a manner and places that a Person Operating a Vessel or Water Skiing therein can reasonably be expected to see and read the same. With respect to points of exit from any Slow Down/Minimum Wake Zone designated under Section 4 hereof, such signs shall include signs reading "Resume Safe Normal Operations". With respect to points of exit from any No Water Skiing Zone designated under Section 5 hereof, such signs shall include signs reading "Water Skiing Permitted Beyond this Point".

Section 2. Filing With the Department of Environmental Regulation: In order to comply with Section 373.023, Florida Statutes, the County Attorney shall send a certified copy of this Ordinance to the Bureau of Water Management, Department of Environmental Regulation, Twin Towers Office Building, 2600 Blair Stone Road, Tallahassee, Florida, 32302.

Section 3. Effective Date: This Ordinance shall become effective as prescribed by Florida general law.

DULY ADOPTED, by the Board of County Commissioners of Clay County, Florida, this 11 day of June, 1991.

BOARD OF COUNTY COMMISSIONERS
CLAY COUNTY, FLORIDA

BY: _____
Dennis M. Frushone
Its Chairman

ATTEST:

_____
John Keene
Clerk of the Courts
Ex-officio Clerk to the
Board of County Commissioners

APPROVED AS TO FORM:

_____
Mark H. Scruby, County Attorney

CERTIFIED, A TRUE COPY OF THE ORIGINAL
JOHN KEENE, CLERK OF THE CIRCUIT
COURT, CLAY COUNTY, FLORIDA
BY _____
DEPUTY CLERK

Appendix E

Registered Vessels in north east Florida and The State of Florida.

County/State	Year	Total Pleasure	Total Commercial	Total Dealers	Grand Total
Clay	1999/00	13,154	314	17	13,485
	2000/01	10,489	135	0	10,624
	2001/02	11,153	133	0	11,286
	2002/03	11,749	129	65	11,943
Duval	1999/00	31,159	741	111	32,011
	2000/01	31,064	602	0	31,666
	2001/02	31,213	553	0	31,766
	2002/03	31,269	558	172	31,999
St. Johns	1999/00	12,729	585	628	13,942
	2000/01	9,789	284	0	10,073
	2001/02	10,133	277	0	10,410
	2002/03	10,548	309	56	10,913
Putnam	1999/00	10,762	498	24	11,284
	2000/01	7,214	224	0	7,438
	2001/02	7,535	222	0	7,757
	2002/03	7,755	208	19	7,982
Nassau	1999/00	6,544	308	2	6,854
	2000/01	4,724	168	0	4,892
	2001/02	4,802	143	0	4,945
	2002/03	4,984	169	17	5,170
Florida	1999/00	1,170,984	48,784	4,573	1,224,341
	2000/01	839,679	24,321	0	864,000
	2001/02	877,764	23,966	0	901,730
	2002/03	891,741	23,873	13,414	929,028

Source: Dept. Highway Safety & Motor Vehicles, Statistics and Studies, Revenue Reports (2000, 2001, 2002, 2003).