



# Manatee Protection and Boating Safety Comprehensive Management Plan

Indian River County Environmental Planning Section  
August 2004

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## EXISTING CONDITIONS

### INTRODUCTION

Indian River County is located on the east coast of Florida in the Treasure Coast Region. The county is bounded by Brevard County on the north, the Atlantic Ocean on the east, St. Lucie County on the south and Osceola and Okeechobee counties on the west. Along the west coast of Indian River County's 22.4-mile barrier island lies the Indian River Lagoon (IRL), an estuary of national significance. This estuarine system is reported as being one of the most diverse estuaries in North America, and is home to one of the largest concentrations of Florida Manatee (*Trichechus manatus latirostris*) in Florida.

In 1989, an interagency team headed by the U.S. Fish & Wildlife Service (USFWS) developed a Florida Manatee Recovery Plan (FMRP). On October 24, 1989, the Governor and Cabinet approved the recommendation submitted by the Florida Department of Natural Resources [now the Florida Fish and Wildlife Conservation Commission (FWC)] to protect the manatee and its habitat, and to increase boating safety in the state's waterways. Thirteen "key" counties, including Indian River County, were identified, and directed by the Governor and Cabinet to develop comprehensive management plans to reduce manatee mortality and enhance boating safety.

The purpose of the *Indian River County Manatee Protection and Boating Safety Comprehensive Management Plan* (MPP) is to establish a strategy that equitably balances manatee protection, habitat preservation, and boating safety with commercial and recreational marine interests. The principal focus of this effort is the identification and implementation of protection and management practices necessary to ensure the recovery and protection of the Florida Manatee's population.

The existing conditions section of this MPP identifies and describes "high use" manatee areas, manatee habitat, natural resource constraints, boat use and traffic patterns, existing marinas/boat facilities, manatee legislation and protection, and boating safety issues. The analysis section identifies potential boat facility and boat ramp sites. Criteria are established for the siting of new and the expansion, rearrangement, or conversion of existing boat facilities based on the previously mentioned issues. The goal, objectives, and policies, contained in the Action Plan, which is a part of this MPP, address the issues identified in the analysis section.

### Definitions

Following are the definitions for use in this MPP:

**1:100 powerboat to shoreline ratio (1:100 ratio):** a ratio used to determine the maximum number of powerboats that can be authorized at a particular boat facility where the ratio applies. The maximum number of powerboats is calculated as follows:

$$L_s / 100 = \text{maximum number of powerboats}$$

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Where  $L_s$  = linear length of contiguous shoreline, as measured along the mean high water line, that is controlled or owned by the property owner of the existing or proposed boat facility. For the purpose of this MPP, 'controlled' means that the person has sufficient title interest (e.g., lease, easement, or other similar legal instrument) that legally authorizes the person to act as if that person owned to the mean high water line. The result of this formula shall be scientifically rounded to the nearest whole number.

**Aquaculture:** any activity devoted to the hatching, raising, and breeding of fish, aquatic plants or animals for sale or personal use.

**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. For the purposes of this MPP the term boat is synonymous with the terms vessel and watercraft and also includes personal watercraft (e.g., jet skies, ski doos).

**Boat facility:** a public or private structure or operation where boats are moored, including commercial, recreational, and residential marinas. A dry storage facility is considered part of a boat facility if the dry storage facility has the capability of launching vessels into adjacent waters. For the purpose of this MPP, single-family docks, as defined herein, are not considered boat facilities.

**Boat Ramp:** A structural, natural, or man-made feature that facilitates the launching and landing of boats into a waterbody.

**Channel of the Intracoastal Waterway:** all waters within the navigable channel of the Atlantic Intracoastal Waterway in the Indian River in Indian River County, Florida, and which navigable channel is a part of the inland waterways, and which said navigable channel is located by buoys or other markers placed by the U.S. Coast Guard (USCG) or Florida Inland Navigation District (FIND) together with the area extending a distance of one hundred (100) feet from each side of said channel in a direction away from the center of such channel and the sides of which channel being as determined and marked by the buoys and markers placed by USCG or FIND.

**Dry slip:** a space designed for the storage of 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.

**Existing facility:** A boat facility or boat ramp that was permitted and/or authorized, constructed, and in operation as of the effective date of this plan or the date of any subsequent revisions, whichever is the latest date.

In addition, for the purposes of this MPP, the term 'existing facility' shall also include the following:

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Any boat facility or boat ramp that was built prior to the need for permits from federal, state, or local agencies and that, if proposed today, may not meet the permitting requirements of those agencies. Such a boat facility or boat ramp does not have to have been in continuous use from the time of construction to the present. The boat facility or boat ramp, however, must have been maintained and must currently be in functional condition. For the purpose of this definition, 'functional condition' means, for a boat facility, a person must be able to get from the land to the boat slips safely, without getting wet; for a boat ramp, functional condition means a person must be able to safely launch and land a boat of the type that would normally be used at that particular boat ramp. If the boat facility or boat ramp is not in functional condition, the boat facility or boat ramp is not an "existing facility."

**Expanding or expansion, boat facility:** an increase in the number of vessels that can moor at an existing boat facility. This can be accomplished by the addition of new slips (wet or dry) or by any other means that results in an increase in the number of vessels that can moor at a particular boat facility.

**Expanding or expansion, boat ramp:** any modification to an existing boat ramp or related facilities (e.g., parking) that would result in an increase in boat traffic volume that can be accommodated at the ramp at any given time; or any such modification that would result in an increase in the size of vessels that can be accommodated at the boat ramp.

**High Manatee Use Area:** an area of high manatee use is defined as an area that has greater than seven (7), the countywide average number of, manatees in a 3-mile radius. This is calculated using the aerial survey data collected from June 1985-December 1987 during 63 flights. The total number of manatees located in a 3-mile radius of the project site is divided by the total number of flights (63) and then compared to the countywide average (7) for these surveys.

**High Watercraft-Related Manatee Mortality:** An area where watercraft-related manatee mortality, within a 3-mile radius of a project (Average Project Mortality), is greater than the proportional average watercraft-related mortality for Indian River County (Proportional County Average). The Proportional County Average is calculated based on actual manatee watercraft-related mortality from 1993 through 2001 plus the MPP goal of no more than one (1) watercraft-related mortality per year for each year beyond 2001.

The Proportional County Average is determined as follows:

$$\text{Proportional County Average} = ((M_1 + G) / Y) * PA$$

Where:  $M_1 = 18$ , total manatee watercraft-related deaths in the Indian River County, including watercraft-related manatee deaths outside of county limits within three miles of the north and south county lines, from 1993 through 2001.

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G = The MPP goal of no more than one (1) watercraft-related mortality since 2001, not including 2001, counting the current year as one (1) (e.g., project is submitted June 23, 2003, G = 2)

Y = number of years from 1993, including 1993, through the date of formal submittal; the year in which the formal submittal occurs will be considered as one year (e.g., project submitted on June 23, 2003, Y = 11). Formal submittal is the date the project is first submitted, for permit review, to either FDEP, SJRWMD, or Indian River County, whichever occurs first.

PA = 21%, this is the proportional area of 3-mile radius calculated as:

$$\begin{aligned} PA &= (D/L) \times 100 \\ PA &= (6/28.4) \times 100 \\ PA &= 21\% \end{aligned}$$

Where: D = diameter of a 3-mile radius circle (6 miles)  
L = length of Indian River County (22.4 miles) plus 3 miles north and south (Total: 28.4 miles)

To determine if a proposed project is within an area of High Watercraft-Related Manatee Mortality, a comparison is made between the Proportional County Average (calculated above) and the average mortality within a 3-mile radius area around the project (Average Project Mortality). This is calculated as:

$$\text{Average Project Mortality} = M_2/Y$$

Where:  $M_2$  = number of manatee watercraft-related deaths within the 3-mile radius around the proposed site from 1993 through the date of the formal submittal.

Y = number of years from 1993, including 1993, through the date of formal submittal, the year in which the formal submittal occurs will be considered as one year (e.g., project submitted on June 23, 2003, Y = 11).

If  $M_2/Y > ((M_1 + G)/Y) \times PA$  then the project is deemed to have a High Watercraft-Related Manatee Mortality. The numbers that result from the two calculations (Proportional County Average and Average Project Mortality) shall be scientifically rounded to three decimal places.

**Jungle Trail Narrows:** an area of the Indian River Lagoon (IRL) with boundaries described as follows:

- The north boundary being an imaginary east-west line that is ½ mile south of the CR 510 bridge (Wabasso Causeway);

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- The east boundary being the eastern most mean high water line (MHWL) of the IRL;
- The south boundary being an imaginary east-west line extending through ICW Channel Marker 109; and
- The west boundary being the MHWL of the IRL along the eastern most side of Pine Island.

**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.

**Marina, Commercial:** a commercial watercraft complex on and/or adjacent to a waterway which provides services available to the general public including: rental of wetslips or dry storage space and associated boat lifting and/or launching, boat rentals, sale of marine fuel and lubricants, wastewater pump-out facilities, sale of fishing bait and equipment, and/or charter boat operations. Additional services may include the construction, reconstruction, repair, or maintenance of boats, marine engines and/or marine equipment; sale or lease of watercraft; and seafood processing.

**Marina, Recreational:** a commercial watercraft complex on and/or adjacent to a waterway which provides services available to the general public including: rental of wetslips or dry storage space and associated boat lifting and/or launching, boat rentals, sale of marine fuel and lubricants, wastewater pump-out facilities, sale of fishing bait and equipment, charter boat operations, and/or providing for minor repair services for watercraft, not involving removal of watercraft from the water or removal of inboard or outboard engines from the watercraft. Accessory service uses may include on-shore restaurants and bars, hotels, or motels.

**Marina, Residential:** a watercraft complex containing five (5) or more wet slips located on a waterway used primarily for recreational purposes, and where vessel mooring is clustered in a common area, rather than docks located behind individual residences. No sales, fueling or repair facilities shall be associated with these marinas. A **private residential marina** contains wet slips and/or dry slips used only as accessory to a principal multi-family development use. A **public/private residential marina** has a portion of its wet slips and/or dry slips designated for rental by the general public, with the remaining wet slips and/or dry slips used accessory to a principal multi-family development use.

**Mean high waterline:** the intersection of the tidal plain or mean high water with the shore. Mean high water is the average height of high waters over a nineteen-year period.

**Occasional Manatee Use Area:** An area of occasional manatee use is defined as an area that has less than or equal to the countywide average number of manatees in a 3-mile radius. This will be calculated using the aerial survey data collected from June 1985-December 1987 during 63 flights. The total number of manatees located in a 3-

mile radius of the project site is divided by the total number of flights (63) and then compared to the countywide average (7) for these surveys.

**Powerboat:** a boat propelled or powered by machinery or any mechanical devices.

**Rearrangement, boat facility:** any change in the physical characteristics (e.g., decking, pilings, mooring pilings, support structure) of an existing boat facility including, but not limited to:

1. Physically changing the number of boat slips so that there are the same or less number of slips;
2. Physically moving one or more boat slips creating less or the same number of slips but having one or more boat slips in different locations or a different orientation;
3. Physically adding size to one or more boat slip(s) so as to provide for the potential for the mooring of a larger vessel;
4. Physically change the footprint of the area of the slips;
5. Physically adding or removing decking or support systems for the dock (this does not include routine maintenance and repair) or;
6. Physically relocating any water-dependent activity or structure associated with the boating facility.

**Rearrangement, boat ramp:** any change in the physical characteristics (e.g., decking, pilings, mooring pilings, support structure, lanes, parking spaces, access channel) of an existing boat ramp including, but not limited to:

1. Physically changing the number of lanes so that there are the same or less lanes;
2. Physically moving one or more lanes creating less or the same number of lanes but having one or more lanes in different locations or a different orientation;
3. Physically adding size to one or more lane(s) so as to provide for the potential for launching of a larger vessel;
4. Physically change the footprint of the area of the boat ramp;
5. Physically adding or removing decking or support systems for the dock or a lane (this does not include routine maintenance and repair) or;
6. Physically relocating any water-dependent activity or structure associated with the boat ramp.

**Regularly moored watercraft:** any watercraft vessel habitually or methodically moored or anchored in the same general location for a continual period greater than seventy-two (72) hours or any watercraft vessel which is habitually or methodically moored or anchored in the same general location for a total of four (4) days within any given seven-day period.

**Sailboat or Sail craft:** 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.

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**Single-family dock:** a dock that is used for private, recreational, or leisure purposes for a single-family residence, cottage or other such single dwelling unit and that is designed and operated to moor no more than two boats. This also includes shared single-family docks, with mooring of no more than a total of four boats, which is located on property lines between two upland single-family residences, where the dock is shared for use by both upland, single-family residences. If the dock is not located on the property line between the two upland single-family residences, then the dock is not considered to be a shared dock and therefore, is not a single-family dock. This applies regardless of any legal document, understanding, or recorded document that exists between the two landowners. In all cases, the dock (single or shared) is attached to land owned to the mean or ordinary high water line by the dock owner(s). A single-family dock may include a fishing/observation pier.

**Slip conversion or conversion:** use conversion of 'sailboat-only' designated slips to powerboat slip usage. In the context of this MPP, conversion is not rearrangement.

**Water-dependent uses:** Water-dependent uses shall include those uses whose primary function is derived by direct water access such as, but not limited commercial marinas, commercial charter fishing, touring and diving boat piers, water-ski, sailing, and similar instructional operations, dredge, hauling, marine repair and other related uses.

**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.

### Abbreviations used in this document:

BCC	Board of County Commissioners
CCD	Community Development Department
DCA	Department of Community Affairs
ELC	Environmental Learning Center
FDEP	Florida Department of Environmental Protection
FIND	Florida Inland Navigation District
FMP	Florida Marine Patrol
FWC	Florida Fish and Wildlife Conservation Commission
ICW	Intracoastal Waterway
IRL	Indian River Lagoon
MPP	Indian River County Manatee Protection and Boating Safety Comprehensive Management Plan
PWC	Personal Watercraft (e.g., Jet Ski, Sea Doo)
SJRWMD	St. Johns River Water Management District
USCG	United States Coast Guard
USFWS	U.S. Fish & Wildlife Service

## MANATEE LEGISLATION & PROTECTION

### Federal

Through the Marine Mammal Protection Act of 1972, as amended in 1996, and the Endangered Species Act (ESA) of 1973 (as amended 16 U.S.C. 1531 *et. seq.*), the U.S. Fish and Wildlife Service (USFWS) has been given authority to manage and protect manatees. The ESA, as amended, prohibits any human activities that result in "taking" a listed threatened or endangered species. A "take" is defined in the ESA to include "to harass (i.e. disrupt normal behavior patterns), harm, pursue, wound, or kill." [U.S.C. Section 1532(19)] Habitat alteration in an area suitable for a listed or endangered species is also considered a potential "take."

The ESA defines Manatee "**refuges**" as areas where certain waterborne activities are prohibited or regulated. "**Critical habitats**" are defined as areas that are essential to the conservation of the species. The Florida Manatee Recovery Plan (FMRP) was adopted in 1980 by the USFWS, and subsequently updated in 1989, 1996, and 2001. The USFWS is the lead agency on the Florida Manatee Recovery Plan (FMRP). As such, development and other human activities in designated critical habitat (but not limited to designated critical habitat) are subject to regulations and review by the USFWS. The goal of the revised FMRP is to down-list and ultimately de-list the Florida Manatee, if recovery criteria have been met. To accomplish this goal, the FMRP has established four objectives. These objectives include:

- Minimize causes of manatee disturbance, harassment, injury, and mortality;
- Determine and monitor the status of manatee populations;
- Protect, identify, evaluate, and monitor manatee habitats;
- Facilitate manatee recovery through public awareness and education.

According to the recovery plan, down-listing of the manatee should be considered when threats to manatee habitat or range, as well as threats from natural and manmade factors, have been reduced and when certain population benchmarks for each of the four regions have been achieved, as specified in the FMRP.

### State

As of July 1, 1999 the Florida Game and Fresh Water Fish Commission (FGFWFC), the Florida Marine Patrol (FMP), and the FDEP's Bureau of Protected Species Management were merged into the Florida Fish and Wildlife Conservation Commission (FWC).

The FWC has the authority to review Manatee Protection Plans (MPP) developed by individual counties. Other participating state agencies include: the DCA, the FDEP, water management districts (WMDs), and regional planning councils (RPCs).

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The Florida Manatee Sanctuary Act, Subsection 370.12(2), Florida Statutes, provides for manatee protection. State responsibilities for manatee protection fall under the jurisdiction of the FWC and, to a lesser extent, the FDEP and the St. Johns River Water Management District (SJRWMD). The implementing policies and procedures of these agencies are found in Titles 68 and 39 of the Florida Administrative Code.

The FDEP regulates certain uses to specific areas of the IRL through an Aquatic Preserve Program, which FDEP is responsible for managing. Indian River County shares two (2) Aquatic Preserves with neighboring counties (Figure 1). Aquatic Preserve "Number 7" extends from Malabar in Brevard County, to the northern city limits of Vero Beach, Indian River County. Aquatic Preserve "A-9" extends from the southern city limits of Vero Beach, to the Ft. Pierce Inlet, in St. Lucie County. These aquatic preserves were created by the State of Florida, Board of Trustees of the Internal Improvement Trust Fund, in October of 1969. According to State law, an Aquatic Preserve is defined as: "An exceptional area of submerged lands and its associated waters set aside for being maintained essentially in its natural or existing condition (S.S. 258.35)". Furthermore, the FDEP is charged with presenting recommendations for priority acquisition of critical manatee use areas under the Florida Forever program, and with strengthening aquatic preserve management plans for seagrass protection.

### **Indian River County**

Between 1989 and 1992, Indian River County, in cooperation with the FDEP Division of Marine Resources, Bureau of Protected Species Management, (now FWC) established manatee protection boating speed zones throughout the Indian River County portion of the IRL. After a series of county advisory committee reviews and public hearings, the Governor and Cabinet adopted these speed zones in July 1992. Sign posting was completed in July 1993.

In 2003, the FWC modified two speed zones. Within the Jungle Trail Narrows, the speed zone was changed from seasonal slow speed in the winter and a 30 mph limit in the ICW to an all season slow speed outside the channel and a 30 mph all-season limit in the ICW. Secondly, within the western-most manmade residential canal immediately to the north of the City of Vero Beach Power Plant, a seasonal No Entry (Nov. 15 – Mar. 31) zone was added. Entry by residents is to be controlled by decals attached to the watercraft.

In early 1990, the Indian River County BCC adopted a number of policies to protect the aquatic and wildlife resources of the county. The development of a manatee protection/awareness program was specified under Policy 1.7 of the 2010 Comprehensive Plan Coastal Management Element. Since adoption of the 2010 Comprehensive Plan, additional objectives and policies that address the general aspects of manatee protection, boating safety, and marina facility siting have been incorporated into the 2020 Comprehensive Plan. These objectives and policies can be found in the following areas of the 2020 Comprehensive Plan:

Conservation Element, Objective 7, Wildlife and Marine Habitat  
Coastal Management Element, Policy 1.12  
Coastal Management Element, Objective 3, Boat/Marina Facility Siting

## **PUBLIC AWARENESS AND EDUCATION**

### **Federal, State, Private & Non-profit Educational Programs**

Since the early 1970s, many different government agencies and private organizations have developed manatee education and awareness programs to target various groups in Florida. Organizations, such as Florida Power and Light Company (FPL), the Save the Manatee Club, Florida's oceanaria facilities and environmental education facilities around the state, and government agencies such as the USFWS, Florida's Department's of Natural Resources (DNR-1980s), Environmental Protection (DEP-1990s) and the Florida Fish and Wildlife Conservation Commission (FWC-current), have produced a variety of publications, videos, posters, and web sites that focus attention on the awareness and protection of the endangered Florida manatee. These materials are distributed to Florida's parks, tax collector offices, chambers of commerce, libraries, schools, marinas and visitor centers and to interested individuals or organizations around the world.

In recent years, with the ease of the internet, more opportunities for manatee awareness and protection, boating safety and on-line coursework have improved the opportunities available to Florida's boaters, anglers and recreationers who live, work or play near Florida's waterways. Boating safety courses now include manatee protection information either through testing or educational videos and information is continuously updated. In addition to boating safety, more attention is directed toward environmental conservation or protection of the marine resources, especially in areas of aquatic plants or seagrasses.

The FWC offers an on-line course and certification in boating safety called "How to Boat Smart--Florida Boating Safety Course" and a personal watercraft safety course. Printed versions of the coursework are also available. The courses teach about boating safety, Florida's boating laws, manatee awareness and guidelines and habitat protection. Upon completion of a course, the individual receives a certificate or boating safety card, which allows the individual to be eligible for a discount on their boat or personal watercraft insurance. These boating safety courses meet the requirements and are approved by the National Association of State Boating Law Administrators (NASBLA) and the U.S. Coast Guard. (Visit the FWC web site at [www.MyFWC.com](http://www.MyFWC.com) - Boating/Education to sign up for the course.)

Other statewide boating safety courses approved by NASBLA and the Coast Guard that are available on line are:

[www.boater101.com](http://www.boater101.com) targeted to students

[www.boatus.com](http://www.boatus.com) Boat US

[www.boat-ed.com](http://www.boat-ed.com) Boater Education

[www.boatsafe.com](http://www.boatsafe.com) Nautical know-how  
and nationwide:

[www.pwcsafetyschool.com](http://www.pwcsafetyschool.com) for PWC operators

## **Indian River County Manatee Protection and Boating Safety Comprehensive Management Plan**

The Vero Beach Power Squadron (VBPS) and the USCG Auxiliary offer programs beginning in September. These programs cover boating safety, navigation rules, accidents, boat operation, special topics, and boat selection. Also, the USCG Auxiliary places informational literature at marinas, boat dealerships and license bureaus. This literature focuses on Federal Requirements, Visual Distress Signals, Safety Equipment and Tips for Safe Boating.

The Indian River County Sheriff's Office Marine Unit conducts a yearly boating safety class, in partnership with the USCG Auxiliary. This class consists of five to eight one-half day classes during June and/or July. Attendance for the past few years has been around 55 participants.

Additional manatee information relating to manatee protection and awareness and boating near manatees is available on the FWC manatee program's web site: [www.MyFWC.com/psm](http://www.MyFWC.com/psm)

For assistance with school based education programs, please contact the FWC Manatee Education and Information (E&I) section (850) 922-4330 or visit the web site above for on-line information. Staff in the FWC Manatee E&I Section is available to assist with the distribution of printed materials, editing assistance for publications, provision of manatee footage for productions and consultation for whatever educational assistance is needed for manatee awareness or protection. A wide variety of free resources and up-to-date information is available upon request.

Figure 1-A: Aquatic Preserves (North County)

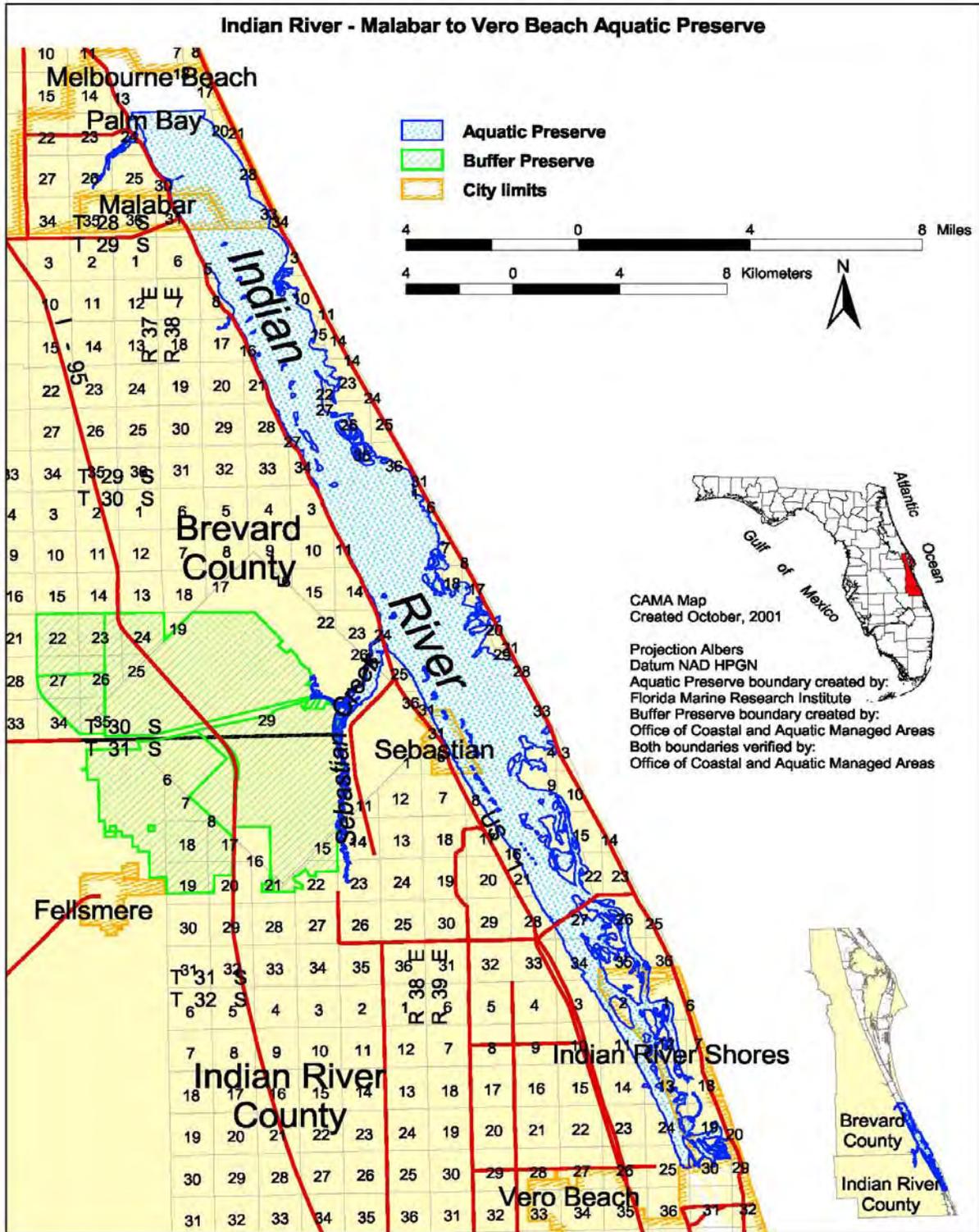
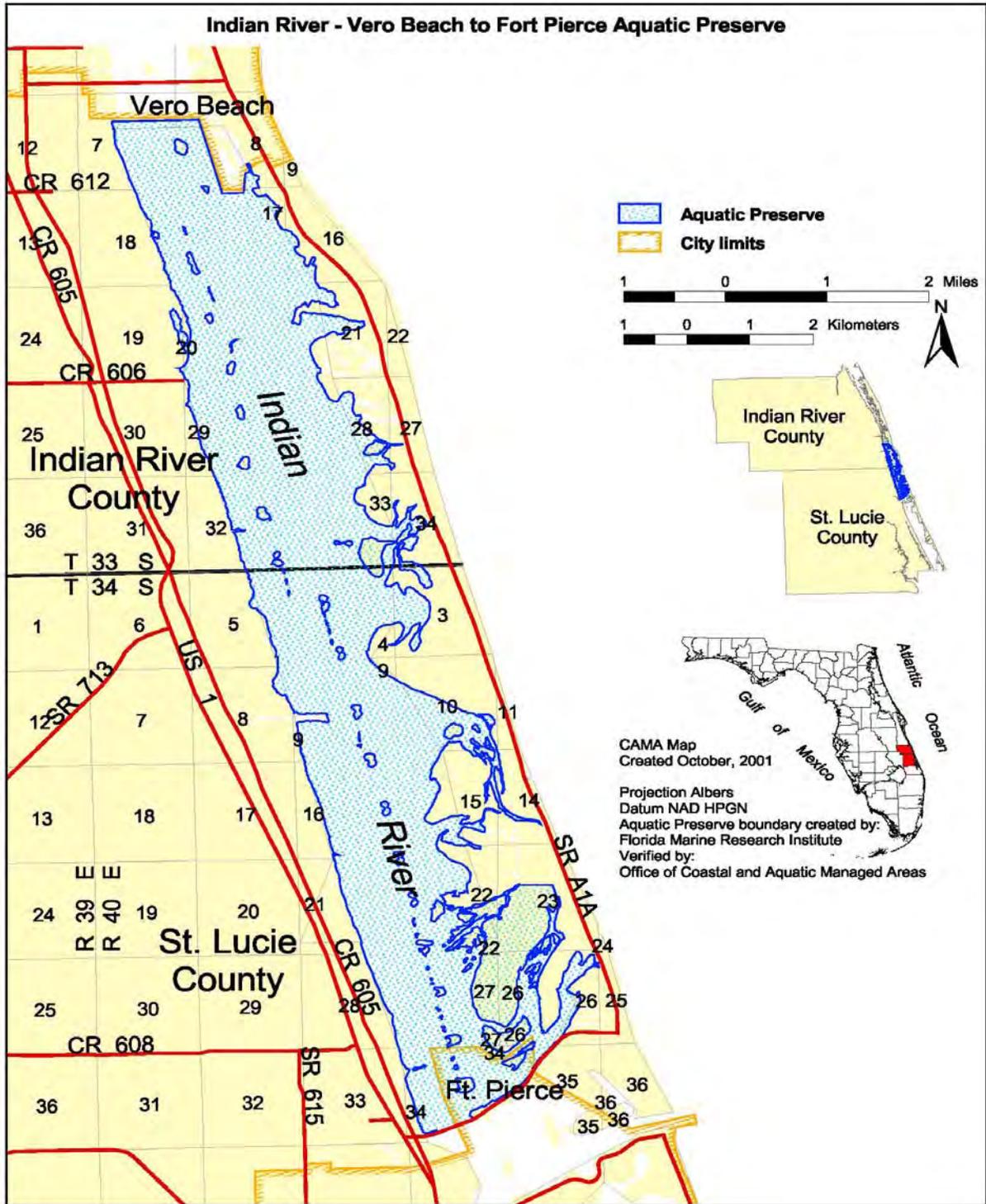


Figure 1-B: Aquatic Preserves (South County)



## **Indian River County Manatee Protection and Boating Safety Comprehensive Management Plan**

The Environmental Learning Center (ELC), located on Wabasso Island, is the County's clearinghouse for environmental educational programs and materials. The ELC makes available a variety of educational graphics and brochures about manatees. Additionally, the ELC offers a boater education course on a regular basis. Educational programs at the ELC are generally categorized as ecoventure programs with emphasis on hands-on fieldwork. These programs are geared for all age groups. In addition the ELC has a contract with the Indian River County School Board to provide environmental education to all students in grades 1, 3, and 4. Summer camps consist of 5- or 7- ½ day events for ages pre-kindergarten through the 7<sup>th</sup> grade.

### **Indian River County Manatee Awareness Initiatives**

An effective method of promoting public awareness about manatees is to place educational boating signs at strategic locations. Currently, signs are posted at the following locations: Sea Oaks marina, Floodtide Marina, Oyster Pointe Resort, Vero Beach Municipal Marina, Grand Harbor Marina, Indian Trails Development, Marbrisa Development, the Moorings Marina, Sembler's Marina, Pelican Pointe Resort, Vero Beach Yacht Club, Reflections, Copeland's Landing, Wabasso Causeway Park, Round Island Park, and the Vero Beach Municipal Power Plant. The Oslo Road boat ramp, and the Donald McDonald Park boat ramp do not have any manatee signs posted.

Indian River County, in cooperation with the USFWS and the ELC, received a grant from the FIND to develop and place a kiosk at the Wabasso Causeway boat ramp. In addition, the county received a grant from the FDEP to design and produce copies of an informational brochure of the County's speed zones entitled the "Boater's Manatee and Speed Zone Guide For Indian River County." Due to the FWC's amendments to the countywide speed zone rule, brochure distribution will have to be suspended until an updated version can be designed and funded.

## **MANATEE HABITAT**

### **Submerged Aquatic Vegetation**

Submerged aquatic vegetation (SAV) consists of seagrasses and algae. It is not only a critical component of the ecology of the Indian River Lagoon (IRL), but also forms the largest component of the Florida Manatee's diet in these waters. Thus, the continued loss of SAV habitat poses a threat to the long-term survival and recovery of the Florida Manatee. Seagrass meadows consist of flowering plants that live underwater and require 15 to 30 percent sunlight penetration to grow. Such high sunlight penetration requirements mean seagrasses are affected by even minor decreases in water clarity, which is now recognized as the predominant threat to seagrass communities. Therefore, the depth at which seagrasses are found is limited by water clarity. In 1989, an estimated 3,260 acres (1,320 hectares) of SAV existed throughout the portion of the IRL located in Indian River County. Factors affecting water column light transmission include turbidity, color, and shading of overwater structures. Causes of turbidity

## **Indian River County Manatee Protection and Boating Safety Comprehensive Management Plan**

include nutrient enrichment, boat wakes, wind energy, coastal construction, stormwater runoff, and dredging.

In Indian River County, extensive and lush beds of seagrasses are found south of the City Limits of Vero Beach, from Oslo Road and the Moorings to the south county line. The sparsest area of seagrass occurs within the City Limits of Vero Beach. Figure 2 identifies the location and relative abundance of SAV within the IRL (SJRWMD, 2001). A study of seagrass distribution, conducted in 1986 by Seagrass Ecosystem Analysts, determined that seagrass distribution patterns were primarily affected by water clarity and depth; with seagrass diversity correlated to distance from an inlet, and the highest diversity and densest coverage occurring near an inlet.

SAV communities identified within the IRL include seven (7) species of seagrasses. In relative order of abundance, these seagrasses include: Cuban shoal grass (*Halodule wrightii*), manatee grass (*Syringodium filiforme*), turtle grass (*Thalassia testudinum*), widgeon grass, (*Ruppia maritima*) paddle grass (*Halophila decipiens*), star grass (*Halophila englemanni*) and Johnson's grass (*Halophila johnsonii*). These seagrasses are illustrated in Figure 3.

Studies suggest that the observed association of manatees and seagrass beds could be related to zonation of seagrass species by nutritive quality and/or density, or a preference by manatees to remain in deeper waters adjacent to their forage source (presumably to allow for avenues of escape). Additionally, studies have found that manatees prefer specific areas that have healthy seagrass beds adjacent to relatively deep water with little boat traffic.

Generally, boat facilities have two potential direct impacts on seagrass habitat. During construction, the IRL's substrate is disturbed by installation of the pilings and water clarity declines due to siltation. Once completed, boat facilities and single-family docks create shade that has the potential to adversely affect existing seagrass beds or prevent the establishment of new seagrass beds. Older docks and roofed boat structures along the IRL that were constructed close to the mean high water line (MHWL) have resulted in degraded seagrass beds.

Under Chapter 18-20, F.A.C., new boat facilities and single-family docks permitted in aquatic preserves are required to be elevated a minimum of five (5) feet above the MHWL, where the dock crosses over a seagrass bed, and are required to be a maximum of four (4) feet in width to reduce shading potential. Also, walkway planking is required to be no more than eight (8) inches wide and spaced no less than one-half (1/2) inch apart to increase light penetration. Shading damage to seagrass communities can be limited by the use of grating in place of opaque planking materials. Portions of dock and pier structures built over seagrass should use grating material to allow light to access the aquatic plants below.

Boat facilities also have significant indirect adverse effects. Dredging (both mechanically and via boat propellers) immediately adjacent to docks and the associated travel corridors to and from the docks may significantly affect seagrass beds if appropriate turbidity controls are not used. Additionally, the shading caused from moored boats and boats on boatlifts can substantially increase the associated seagrass damage.

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A 1992 FDEP report on seagrass scars in Indian River County documents that 25 acres of seagrass are severely scarred; 18 acres of seagrass are moderately scarred; and 330 acres of seagrass are lightly scarred. Irresponsible or careless boating activities may cause significant impacts to seagrass habitat. Both a severe and direct adverse effect on manatee habitat is damage of seagrasses by boating activities in shallow coastal waters and estuaries, resulting in seagrass bed scars.

Figure 2-A : Submerged Aquatic Vegetation - North County

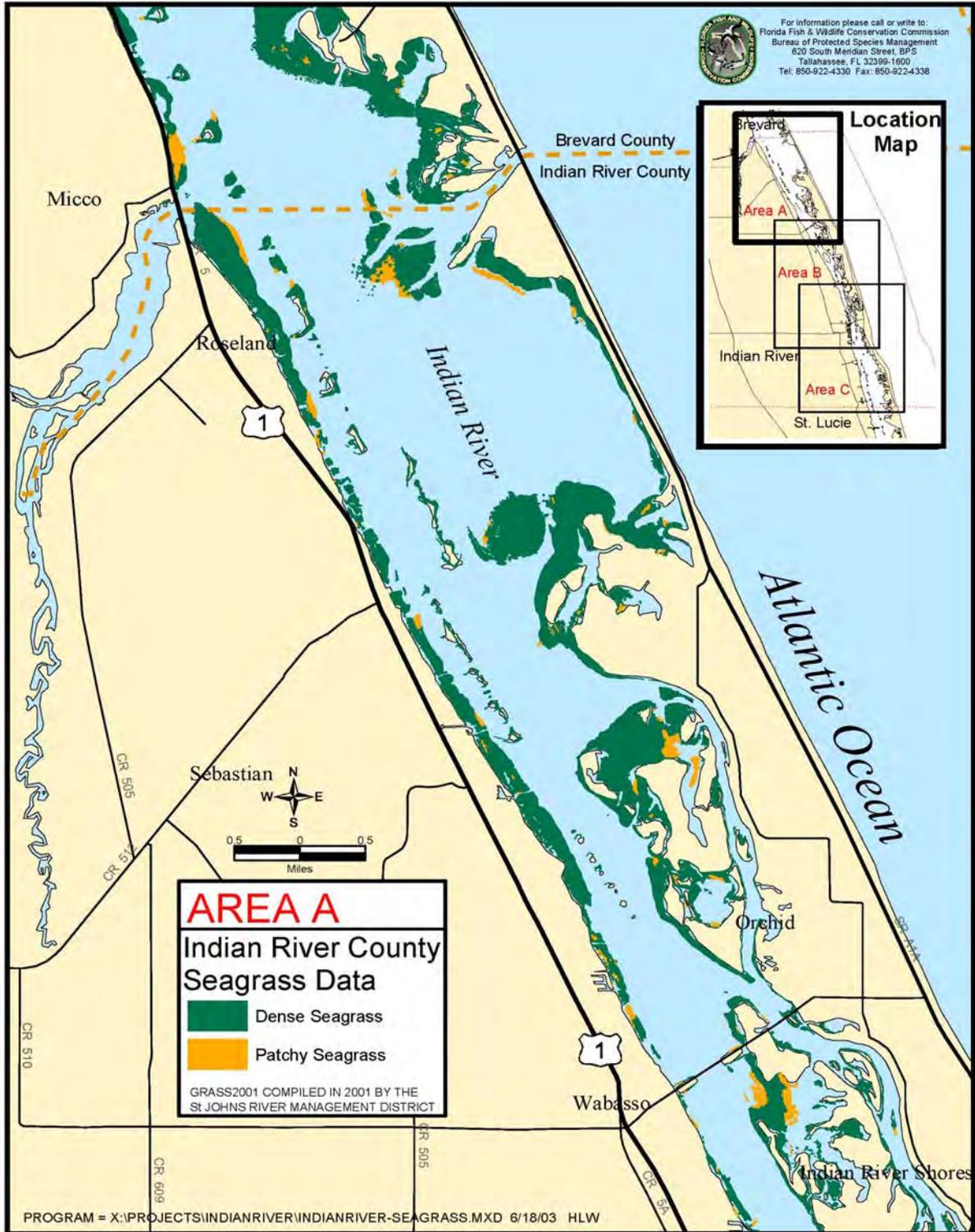


Figure 2-B : Submerged Aquatic Vegetation - Central County

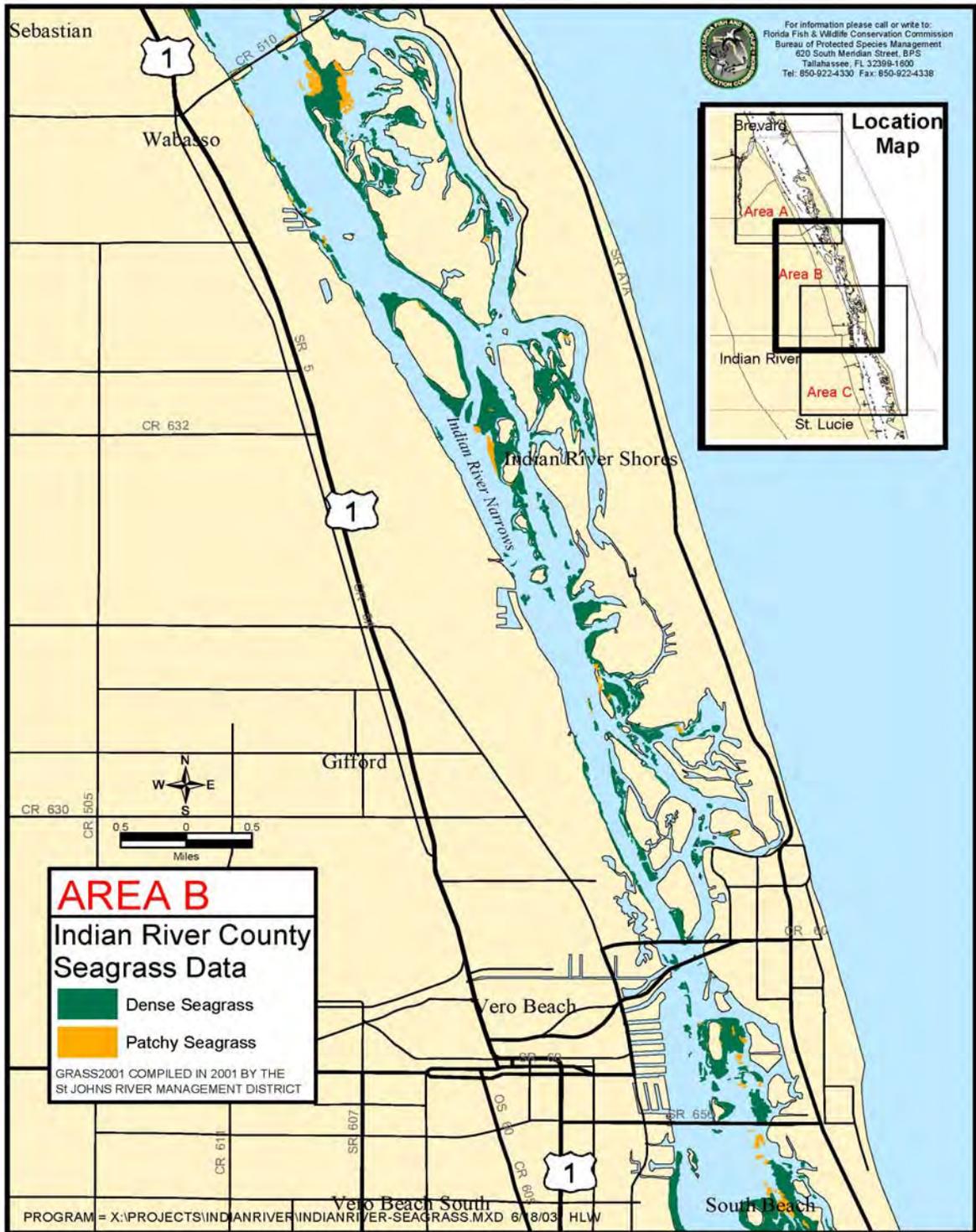
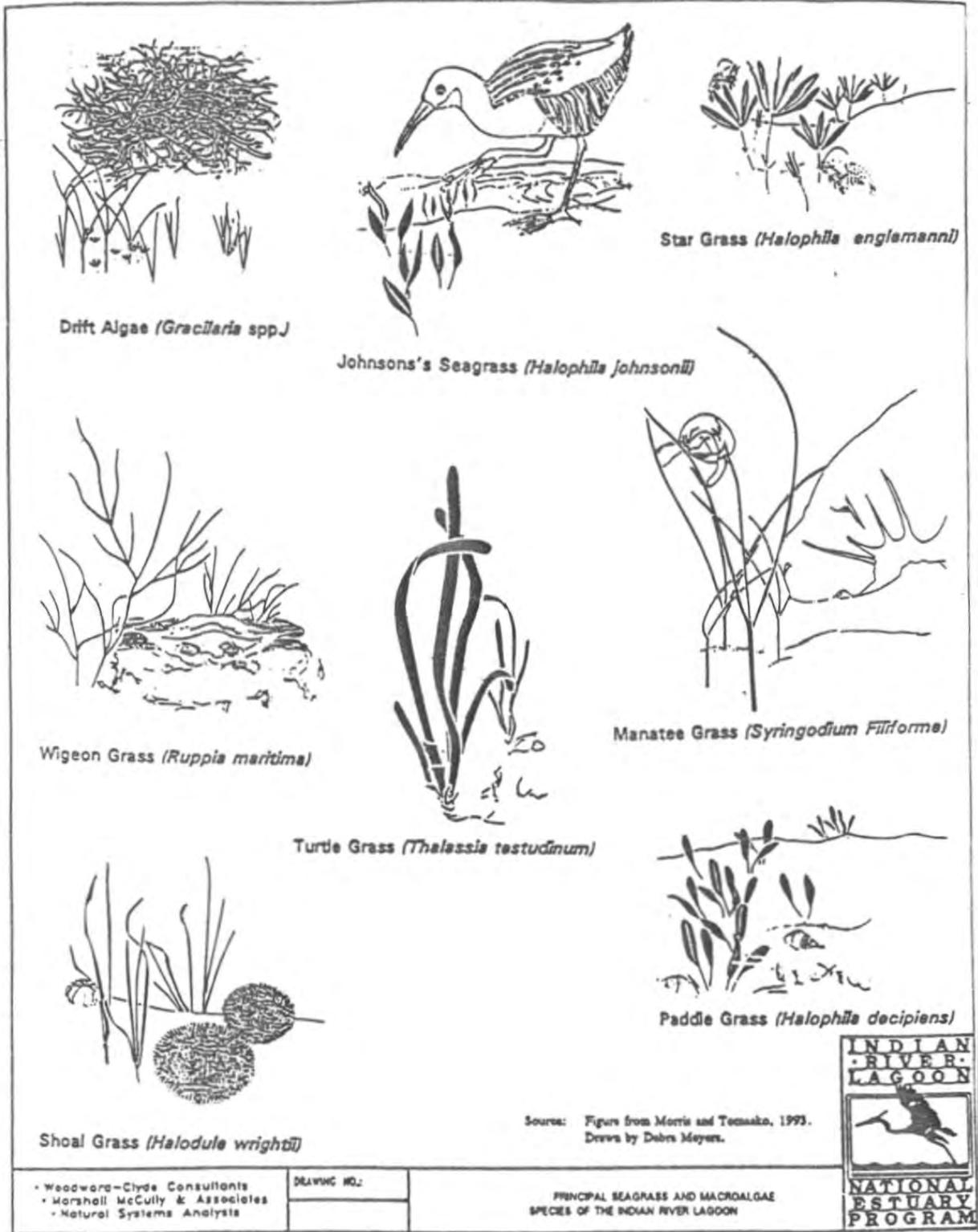




FIGURE 3



## **Indian River County Manatee Protection and Boating Safety Comprehensive Management Plan**

Water quality degradation caused by coastal construction, urbanization and boat traffic has an indirect effect on SAV by decreasing the amount of sunlight in the water column.

A 1976 study found that "prop scars" in Florida result from boats that run in water less than one (1) meter deep at mean low water level (MLWL); many of these scars are recognizable for as long as five (5) years. Studies conducted in Tampa Bay by the Florida Marine Research Institute (FMRI) have shown that *Thalassia* beds will recover to natural short-shoot densities in approximately 3.6 to 6.4 years, since *Thalassia* is a successional climax species. The colonizing seagrasses, *Halodule* and *Syringodium*, may recover at a faster rate since they have rapidly expanding root systems. *Halodule* may recover in 0.9 to 1.8 years in an interior bed, while scars in a less dense seagrass bed fringe may recover between 2.3 to 4.6 years. When open sediments are regularly disturbed, a scouring effect prevents recolonization of even pioneer seagrass species.

### **Spoil Islands**

In Indian River County, there are 55 spoil islands in the IRL. Most of these spoil islands are located west of the Intracoastal Waterway (ICW), and nearly half are located in the Malabar-Vero Beach Aquatic Preserve (Aquatic Preserve #7). A 1990 Florida Department of Natural Resources (FDNR, now FDEP) Spoil Island Management Plan classified 31 of the islands for conservation, with the remaining islands classified for various degrees of recreational and educational public access. Although large aggregations of manatees have not been documented around these spoil islands, aerial surveys demonstrate that manatees utilize the shallow seagrass beds located near these islands. These island seagrass fringes are most likely utilized for foraging and not as resting or shelter areas, thus preventing the documentation of large aggregations.

### **Pelican Island National Wildlife Refuge**

The Pelican Island National Wildlife Refuge (PINWR) consists of approximately 5,000 acres of the IRL and mangrove islands between C.R. 510 and the Sebastian Inlet and east of the ICW. The PINWR is managed by the USFWS for the purpose of protecting nesting colonies of brown pelicans and other wading birds. The island is off-limits to visitors, and boats are required to maintain a minimum distance of 150 feet from the island due to the extensive year-round use by wading birds and pelicans.

### **Warm Water Refuge Areas**

When water temperatures drop below 68 degrees Fahrenheit, manatees become susceptible to cold-related disease and death, and will seek out warm water sources. Although the Vero Beach Municipal Power Plant near the 17th Street Causeway is considered a relatively minor warm water refuge area, it may be important for pre- and post-winter migrations. The Vero Beach Municipal Power Plant may be used as a stop-over point for manatees traveling south in early winter or north in early spring; however, this migration is not limited to early winter and spring time frames. Manatees are known to travel both north and south from the Vero Beach Plant throughout the winter. Foraging resources and travel corridors, which are close to

## **Indian River County Manatee Protection and Boating Safety Comprehensive Management Plan**

thermal refuges and used by manatees, are critical to a large percentage of the regional manatee population. A major concern is the vessel traffic within and adjacent to warm-water discharge areas and the adverse effects on manatees using the refuge. Also, manatees have been injured from monofilament line and fishing hooks at the warm-water sites. This is because warm-water refuge areas are popular for fishing in winter months. These human actions can drive manatees into colder waters, making them more susceptible to disease or cold stress. Issues relating to interruptions of thermal discharge are contained in the policies section of this MPP.

### **County Distribution**

Although manatees are present year-round in Indian River County, the number varies with the season. In particular, the St. Sebastian River is thought to serve as the most important east coast concentration area for the Florida manatee between wintering areas in south Florida and summering areas in northern Brevard County. Much of the entire east coast population depends on Indian River County waters at some time during the year for feeding and resting or as a travel corridor.

The overall distribution of manatees in Indian River County is a function of a variety of natural and human factors. The complex individual and social dynamics of the species make it difficult to precisely identify, on a consistent basis, the location of manatees in the waters of Indian River County. Ground and aerial surveys, however, have documented several factors that can be used to predict, on seasonal and temporal scales, areas where manatees are known to carry out portions of their lifecycles. Manatee occurrence in Indian River County is affected by the location of preferred foraging habitat, adequate water depth for traveling and/or resting, location of deep water areas adjacent to shallow water seagrass beds utilized for feeding, availability of freshwater sources, ambient water temperature, location of warm-water refuge, and availability of quiet areas for calving and resting.

Aerial surveys conducted in 1985 and 1987 by the FDNR, and radiotelemetry data for 1986 through 1991, indicated areas of high manatee use throughout portions of the IRL in Indian River County. These High Manatee Use Areas (see definitions) are the confluence of the St. Sebastian River with the IRL; the St. Sebastian River, C-54 canal, and Sebastian Inlet areas; the vicinity of the Vero Beach Municipal Power Plant; and the area from Porpoise Point south to the county line.

Significant manatee use areas (Occasional Manatee Use Areas, see definitions) also include the waters east of Pine Island, John's Island Creek, and the Indian River Narrows south to Gifford, including waters associated with the ICW which are used during seasonal migrations to and from warm-water refuge. Manatees also depend on associated canals and tributaries, including the Hobart Landing marina canals, the Grand Harbor development canals, the River Shores subdivision canals, and Vero Shores subdivision canals. In general, data indicate that manatees occur year-round along the eastern and western shores, as well as near island shorelines in the county. Other locations where fewer manatees have been documented include: the Main Relief Canal, Oslo, Hole-in-the-Wall Island vicinity, and John's Island vicinity. Figure 4 depicts manatee abundance areas in Indian River County.

Figure 4-A: Manatee Abundance Data (North County)

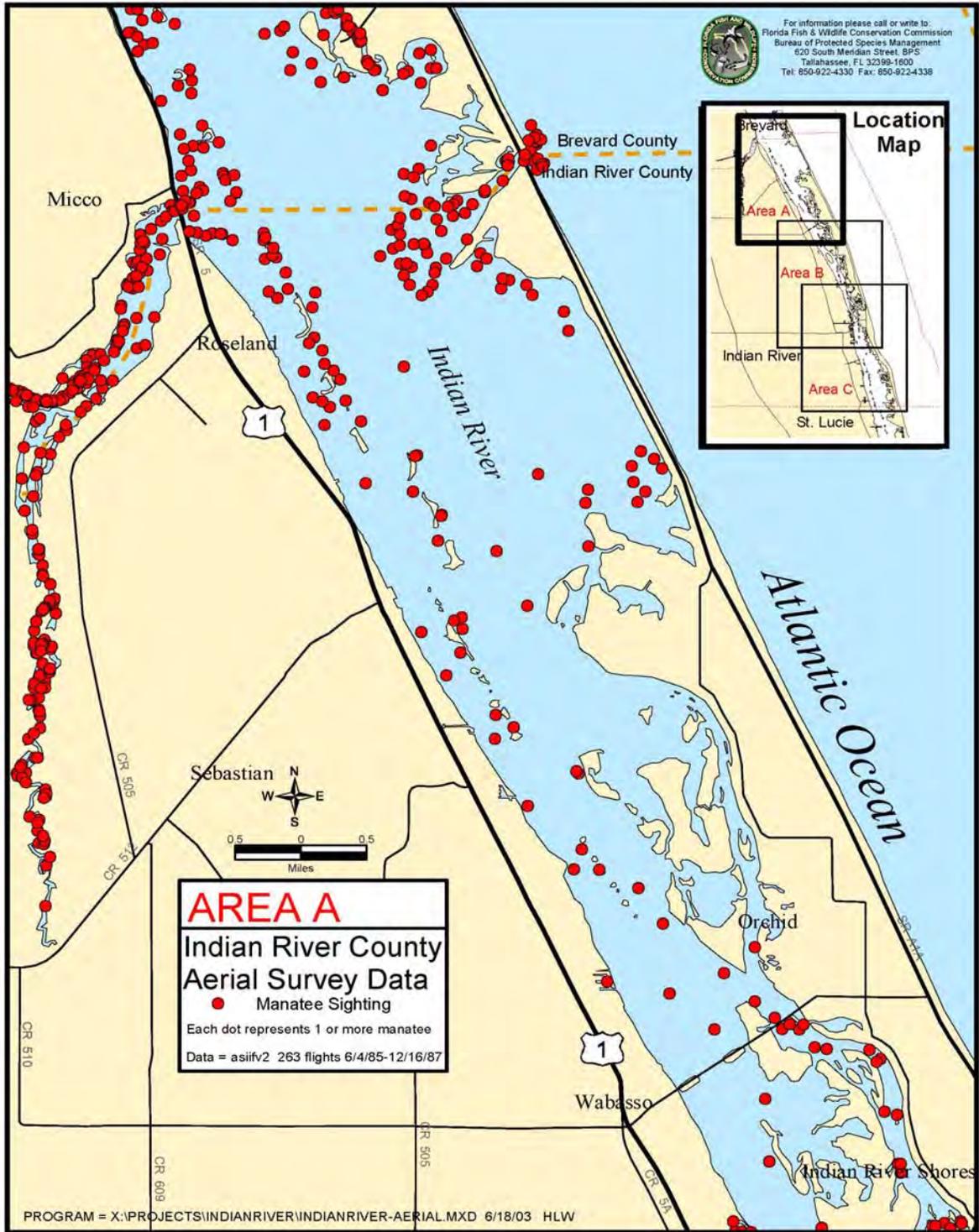
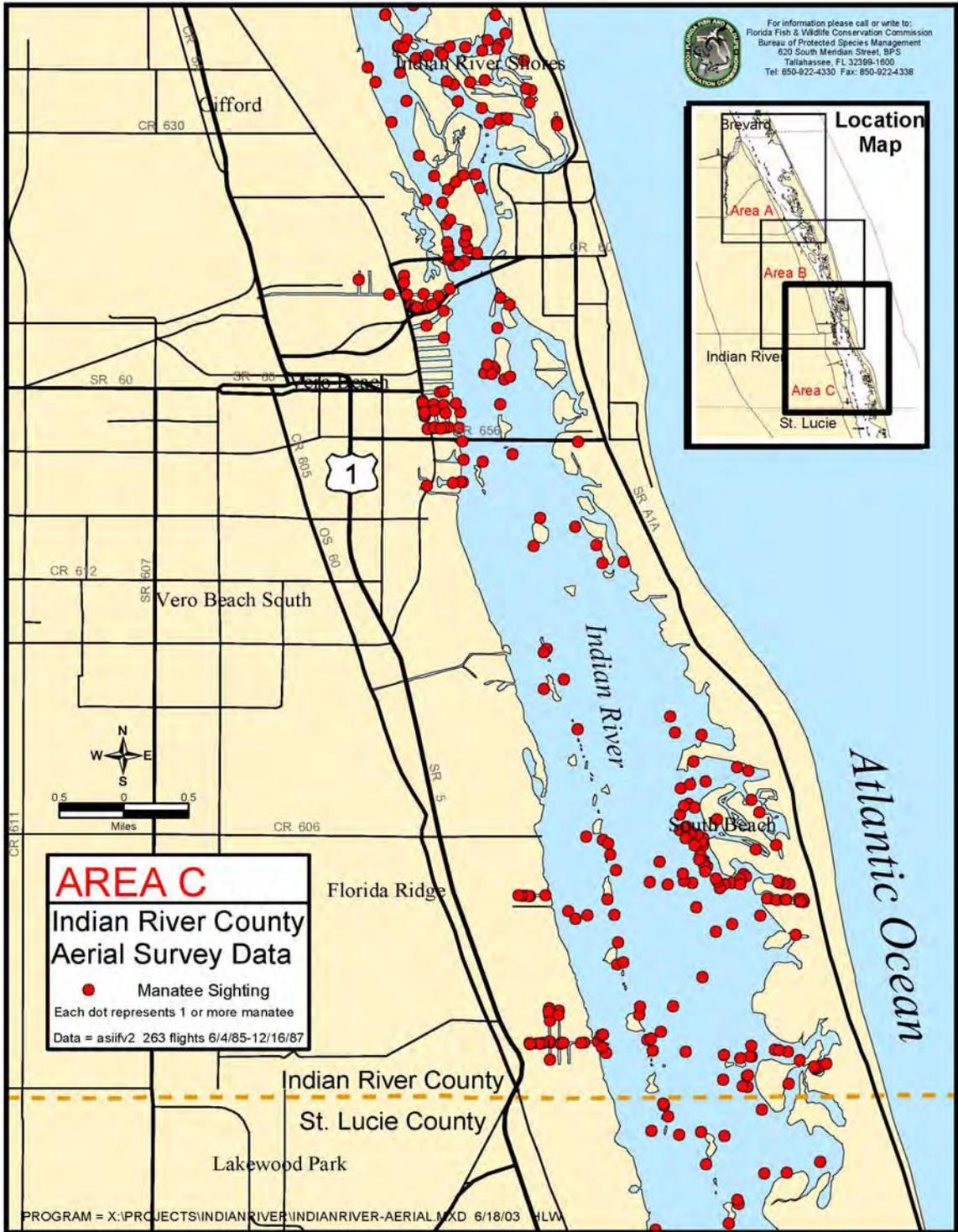




Figure 4-C: Manatee Abundance Data (South County)



New manatee aerial surveys to examine manatee abundance and distribution in Indian River County waters are currently being flown by FWC staff. These bimonthly surveys began in July 2002 and will be completed in June 2004. The results of the surveys will be discussed in the next revision of the MPP.

## **MANATEE MORTALITY**

### **Threats to Manatees**

There is general agreement among researchers and state and federal agencies that a fundamental threat facing manatees is human-induced mortality, both through direct impacts and habitat destruction. While watercraft-related mortalities are the leading cause of human-induced mortalities, marine debris is another cause of injury and death of manatees and other inhabitants of the IRL ecosystem. The amount of marine debris in the marine habitat has increased as a result of increased boating activities. Items such as fishing line, plastic bags, crab traps and abandoned nets increase the chance of human-related manatee injury or death. Furthermore, water-borne pollutants cause indirect harm by reducing the amount of SAV. To date, a causal relationship between pollution and manatee mortality has not been documented, but exposure to water-borne pollutants may cause chronic problems for manatees, such as impaired immune system health. Finally, feeding manatees causes harm by: reducing manatees' natural fear of humans; altering normal manatee migration and behavior; interfering in the mother-calf relationship; causing food-related illness; and bringing manatees into areas of increased exposure to humans and water-related activities.

### **Statistics**

From 1974 through December 2003, there were 5,052 manatee mortalities documented throughout the State of Florida (Table 1). Of those, 98 (1.9 %) manatee mortalities were recorded in Indian River County. Human-related causes of death include: watercraft collisions, drowning in nets, ingested debris, and manatees being crushed by water control structures. Of the total manatee mortalities recorded in Indian River County between 1974 and December 2003, 28 deaths were the result of human-related causes (Table 2). This represents 28.6 % of all deaths in Indian River County. All of these human-related mortalities were attributed to collisions with watercraft. This compares to the watercraft-related mortality of 24.5 % (1,237) for the entire state over the same timeframe. Some factors influencing watercraft collisions include: watercraft size and type; on-water traffic patterns and their overlap with manatee travel and feeding areas; channel depth and configuration of water bodies; and marina/boat facility siting.

**TABLE 1**  
**Total Manatee Mortality State Wide and within Indian River County**  
**From 1974 Through 2003**

	State wide	IRC	IRC % of State	Mean Annual Deaths	
				State wide	IRC
1974-1999	3770	70	1.9	145	2.7
2000-2003	1282	28	2.2	320.5	7
<b>TOTAL 1974-2003</b>	<b>5052</b>	<b>98</b>	<b>1.9</b>	<b>168.4</b>	<b>3.3</b>

**TABLE 2**  
**Watercraft Related Manatee Mortality State Wide and within Indian River County**  
**From 1974 through 2003**

	State wide	IRC	IRC % OF STATE	Mean Annual Deaths	
				State Wide	IRC
1974-1999	910	20	2.2	35	< 1 (0.8)
2000-2003	327	8	2.4	81.8	2
<b>TOTAL 1974-2003</b>	<b>1237</b>	<b>28</b>	<b>2.3</b>	<b>41.2</b>	<b>&lt;1 (.9)</b>

According to FWC-FMRI data, 1996 and 2000 were record years for mortalities in Indian River County and the State of Florida. In 1996, there were a total of 60 watercraft-related deaths recorded in the State of Florida. Of these, four (4) watercraft-related deaths, approximately 6.7% of state's total for 1996, were recorded in Indian River County. Similarly, in 2000, four (4) watercraft-related manatee deaths were recorded in Indian River County. Statewide, the total manatee mortality in 2000 was 272, of which 78 were watercraft-related. This resulted in Indian River County accounting for 5.1% of all watercraft-related mortalities in the State during 2000.

**BOATING ACTIVITY**

**Boat Registrations**

According to data from the FWC, there were 10,668 vessels (recreational and commercial), excluding canoes and other non-motorized watercraft, registered in Indian River County in 2002. This figure represents a 24.9% increase in recreational boat registrations in Indian River County since 1993, the year in which signs identifying speed zones were installed in the Indian River Lagoon. Table 3 lists the number of boat registrations in Indian River County. Table 4 lists the size class of boats registered in Indian River County for 1997-1998.

**TABLE 3**  
**Number of Registered Vessels in Indian River County**  
**1981 - 2002**

<b>YEAR</b>	<b>TOTAL VESSELS*</b>
1981	4,502
1982	5,283
1983	5,705
1984	6,015
1985	6,381
1986	6,705
1987	7,005
1988	7,502
1989	8,027
1990	7,991
1991	8,208
1992	8,239
1993	8,543
1994	8,886
1995	8,884
1996	9,059
1997	9,237
1998	9,001
1999	9,510
2000	9,489
2001	10,298
2002	10,668

*\* Total includes recreational and commercial*

**Table 4**  
**Categorization of Powerboats**  
**Registered in Indian River County (1997-1998)**

<b>Class</b>	<b>Length (in feet)</b>	<b>Power- Boats</b>	<b>Commercial Boats</b>
A-1	Under 12'	1,409	33
A-2	12' –15'11"	2,720	127
1	16' –25'11"	3,810	251
2	26' – 39'11"	464	59
3	40' – 64'11"	103	23
4	65' – 109'11"	1	1
5	110' or more	0	0
<b>TOTAL</b>		<b>8,507</b>	<b>494</b>

Source: Department of Motor Vehicles

### **Watercraft Type**

In 1995 the Florida Institute of Technology (FIT) conducted a study of boating activity within the IRL in Indian River and St. Lucie Counties (Morris, *et al.*, 1995). All the information presented under this heading (Watercraft Type) and the following heading (On-Water Traffic Observations) is from this study. The purpose of this study “was to provide baseline data that describes and quantifies boat activity, its pattern and composition.” One of the methods used was “on-water surveys of boating activity.” Data was collected for each boat encountered (e.g., type and class, location, speed, activity) between 0900 hours and 1500 hours, during the months of September through May and from 0900 hours to 1700 hours from June through August. This survey found that the Class 1 powerboat (16 to 25 feet in length) was the most frequently encountered boat in the IRL comprising 59.2% of all on-water observations. Of the 9985 boats observed, 90% were power (all classes), 7% sail (all classes), and 3% jet skies.

### **On-Water Traffic Observations**

#### **Temporal Patterns**

In general, the highest boating activity occurs during the afternoon hours. Weekend days account for over 70% of boating activity. The highest on-water traffic regularly occurs around holidays. Peak boating use was recorded during the months of May through July while the period from November through January represented the lowest boating use. This seasonal occurrence is partly a reflection of the annual migration of winter residents to central and southern Florida and partly due to weather conditions.

#### **Spatial Patterns**

Aerial surveys indicate that the majority of the boat traffic is outside the marked channels. Boats also tended to congregate in areas that contained inlets to the ocean.

## **Traffic Origins**

According to the boating study, the largest portion of on-water traffic is generated by boat ramps, followed by private docks and marinas. The boat ramps located at Riverside Park and MacWilliams/Boat Basin Park, both of which are located within the City of Vero Beach, are responsible for contributing the most on-water traffic.

For private docks, the most frequently observed boat was the Class 1 powerboat. The shoreline area from Vero Beach to Fort Pierce contributed the majority of the traffic. "At present shoreline locations are at approximately 50% occupancy. Complete occupancy would potentially double the number of watercraft that would use the interinlet waterway."

Marinas contributed the least amount of boat traffic in the study; however, the marinas were not at storage capacity. "At storage capacity they would potentially contribute approximately 1300 additional watercraft to the interinlet traffic."

## **BOATING SAFETY**

### **Boat Accident Statistics**

Reportable boating accidents and injuries documented in Indian River County totaled 83 and 50, respectively, from 1997 through 2002. A "reportable boating accident" is defined as involving at least \$500 in damage, a fatality, a missing person or an injury that requires treatment beyond basic first aid. Table 5 lists the accidents reported in the IRL in Indian River County for the years 1997-2002.

Recently, the State adopted a new method of calculating the rate of accidents, injuries, and fatalities. The new formula (example: accidents) is (# of registered vessels) / (# of accidents) = 'accident rate', expressed as one boat accident per "X" number of registered vessels.

The county's accident rate and fatality rate for 1997 was 1:543 and 1:9,237 respectively. Both of these rates are higher than the state's accident rate of 1:604, and the state's fatality rate of 1:11,571 (Table 6). Using the data from 1997 through 2002, it appears that the vessel accident rate in Indian River County has been fairly stable. While the year 1999 looks like an outlier, there is not enough information to determine if there is a specific cause for such a large decrease in the accident rate. There is, however, a noticeable trend toward a lower accident rate. During this same time period the statewide accident rate also appears to be fairly stable, although the trend toward a lower accident rate seems to be less pronounced than that for the County.

**TABLE 5**  
**Indian River County Accident Information from**  
**1997 – 2002**

<b>YEAR</b>	<b>REPORTED ACCIDENTS</b>	<b>FATAL</b>	<b>INJURIES</b>	<b>DAMAGE</b>	<b>RANK*</b>	<b>RATE**</b>
1997	17	0	15	\$22,125	20	1:543
1998	15	1	8	\$264,600	20	1:600
1999	9	0	6	\$60,100	30	1:1057
2000	16	0	12	\$29,375	19	1:593
2001	14	2	5	\$53,850	20	1:736
2002	12	0	4	\$31,200	20	1:8889

\* rank is the numerical position of Indian River County relative to other counties; the county with the most reported accidents is RANK 1, the lowest is RANK 67

\*\* rate =( # of registered vessels / # of accidents) and is expressed as 1 accident per X registered vessels

**TABLE 6**  
**State Wide Accident Information from**  
**1997 - 2002**

<b>YEAR</b>	<b>REPORTED ACCIDENTS</b>	<b>FATAL</b>	<b>INJURIES</b>	<b>DAMAGE</b>	<b>RATE*</b>
1997	1251	67	754	\$5,211,276	1:604
1998	1282	70	650	\$8,908,462	1:631
1999	1292	58	589	\$8,007,231	1:642
2000	1194	46	641	\$6,932,031	1:737
2001	1093	54	494	\$7,951,346	1:863
2002	1159	52	510	\$8,222,719	1:830

\* rate =( # of registered vessels / # of accidents) and is expressed as 1 accident per X registered vessels

### **Speed Zone Compliance and Enforcement**

At least five (5) warnings a day are given to offenders of manatee protection speed zones in Indian River County. Between January 1992 and February 1997, 1,174 citations were issued to boaters. Of these, manatee speed zone warnings comprised 543 of the citations, and arrests accounted for 105 citations.

Several law enforcement agencies have the authority to enforce boating regulations within Indian River County. These agencies include: the FWC (marine and inland units), USFWS, USCG, and the Indian River County Sheriff's Office.

## **Indian River County Manatee Protection and Boating Safety Comprehensive Management Plan**

Currently, the FWC has four positions assigned to Indian River County. This is the maximum staffing level for this area and it is unlikely that additional staff will be assigned to Indian River County. Additionally, the FWC has a public outreach program. The Indian River County Sheriff's Office has two full-time deputies assigned to on-water patrols. The cities of Sebastian and Vero Beach conduct on-water patrols on a part-time basis within their jurisdictions. The USFWS and the USCG both have enforcement capabilities within the Indian River Lagoon.

### **Personal Watercraft**

PWC have become increasingly popular in recent years. The USCG defines a PWC as a Class "A" vessel (i.e., less than 16 feet) powered by an inboard motor. A PWC is operated by a person sitting, standing or kneeling on the vessel, as opposed to being operated by a person inside the vessel. The number of registered PWC in the state increased by 18 percent between 1994 and 1995, becoming the fastest growing segment of the maritime industry.

FMP statistics indicated that PWC comprise eight (8) percent of registered watercraft, and were involved in 38 percent of all accidents reported statewide in 1995. Between 1991 and 1995, injuries and accidents attributed to PWC increased statewide by 178 percent and 168 percent, respectively. In Indian River County, PWC operators were responsible for five (5) of the 11 reportable boating accidents (45%), and three (3) out of the five (5) (60%) injuries reported in 1995. As previously mentioned, the proliferation of PWC vessels is likely to reverse the trend exhibited in recent years towards fewer accidents and injuries for all types of vessels.

PWC safety is an important issue, especially since PWC are responsible for a disproportionate number of boating accidents. Concerns about safety include PWC conflicts relating to operation in high traffic and multi-use areas, "buzzing" or jumping the wakes of larger boats, and other reckless practices referred to as "hotdogging" (weaving in and out of boat traffic). Recklessness can mostly be attributed to "second tier" users (i.e. inexperienced operators that have borrowed or rented a PWC). In fact, 46 percent of all accidents attributed to PWC statewide involved PWC that were rented and/or were operated by users with less than 20 hours of experience.

Nuisance is another common complaint directed toward PWC operators. Noise level for PWCs averages 70 decibels (dB), and due to their design characteristics, PWCs can operate in shallow water areas near the shore, exacerbating noise levels.

Additionally, significant impacts to the IRL, including damage to SAV (a critical manatee habitat and food source), increased suspended sediment and stress to wildlife, are the result of shallow water operation.

### **Designation of Speed Zones**

In 1992, Indian River County, in cooperation with the FDEP Division of Marine Resources, Bureau of Protected Species Management (now FWC), established boating speed zones

throughout the IRL and St. Sebastian River. The Governor and Cabinet subsequently adopted these speed zones. The primary purpose of these speed zones is manatee protection. Nevertheless, boating safety benefits occur from having the zones. Figure 5 depicts the existing speed zones in the IRL.

## **BOAT FACILITIES**

### **Single-Family Docks**

According to the 1995 FIT report entitled A Boating Activity Study for Indian River and St. Lucie Counties, approximately 56 percent of the boat slips throughout the County are occupied year round. The report also states that single-family docks are the second greatest contributor of on-water traffic countywide, following public boat ramps. Furthermore, the majority of on-water traffic originating from single-family docks occurs within the vicinity of Vero Beach.

Collectively, single-family docks have significant potential for impacting physical and biological systems of the IRL, particularly due to the use and location of docks as they may affect seagrass beds. Potential impacts generally associated with multi-slip facilities (vs. single-family docks) include seagrass shading, pollution, and circulation problems. The extent of these potential impacts varies with dock location and resource characteristics. However, federal, state and local regulations require that new single-family docks be designed to mitigate and reduce these potential impacts.

### **Boat Ramps**

Many boat owners in the County utilize boat ramps to access the IRL. As part of the FIT Boat Study, boat ramp use was surveyed. Besides ramps at the Sebastian Inlet State Recreational Area, there are 15 public and 1 private boat ramps within Indian River County. An inventory of boat launch facilities located throughout the County is contained in Table 7. Figure 6 shows the general location of boat ramps in Indian River County.

- **North Section**

The Sebastian Inlet State Recreation Area has two (2) boat ramps on the Indian River County (south) side of the park. Both the Sebastian City dock and Main Street boat ramp are located in the city of Sebastian and each have two lanes. Neither charges a fee for use.

Both Donald MacDonald Park and Dale Wimbrow Park have one (1) boat ramp each available for public use. Both parks are located along the St. Sebastian River in the unincorporated County. The Main Street Boat Ramp and the Sebastian City Dock are located within the City Limits of Sebastian. Both public facilities each have one (1) boat ramp.

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- **Central Section**

The Wabasso Causeway Park, located in central Indian River County, has two (2) boat ramps. Riverside Park, located on the barrier island west of State Road (S.R.) A1A, within the city limits of Vero Beach, has two (2) boat ramps. MacWilliams Park, on the barrier island north of Beachland Boulevard, has four boat (4) ramps available for public use.

**Table 7  
Boat Launch Facilities in Indian River County**

<b>Facility Name</b>	<b>Boat Ramps</b>	<b>Boat Lanes</b>	<b>Location</b>
Sebastian Inlet Recreation Area	2	3	Unincorporated (barrier island)
Dale Wimbrow Park	1	1	Unincorporated (St. Sebastian River)
Donald MacDonald Park	1	1	Unincorporated (St. Sebastian River)
Sebastian City Dock	1	2	City of Sebastian (mainland)
Main Street Boat Ramp	1	2	City of Sebastian (mainland)
Pelican Pointe*	1	2	Unincorporated (mainland)
Wabasso Island Park	2	3	Unincorporated (C.R. 510 causeway)
MacWilliams/Boat Basin Park	4	4	City of Vero Beach (barrier island)
Riverside Park	2	3	City of Vero Beach (barrier island)
Oslo Riverfront Conservation Area†	1	1	Unincorporated (mainland)
Round Island Park	2	2	Unincorporated (barrier island)
<b>TOTAL</b>	<b>18</b>	<b>24</b>	

\*Private facility

† Unimproved facility accessible only to small watercraft

Sources: A Boating Activity Study for Indian River and St. Lucie Counties: A Supplement to the 1990 Interinlet Study, FIT (1995); Indian River County Public Works Department; City of Vero Beach/Indian River County Parks Department

Figure 5-A : Manatee Protection Boating Speed Zones (North County)

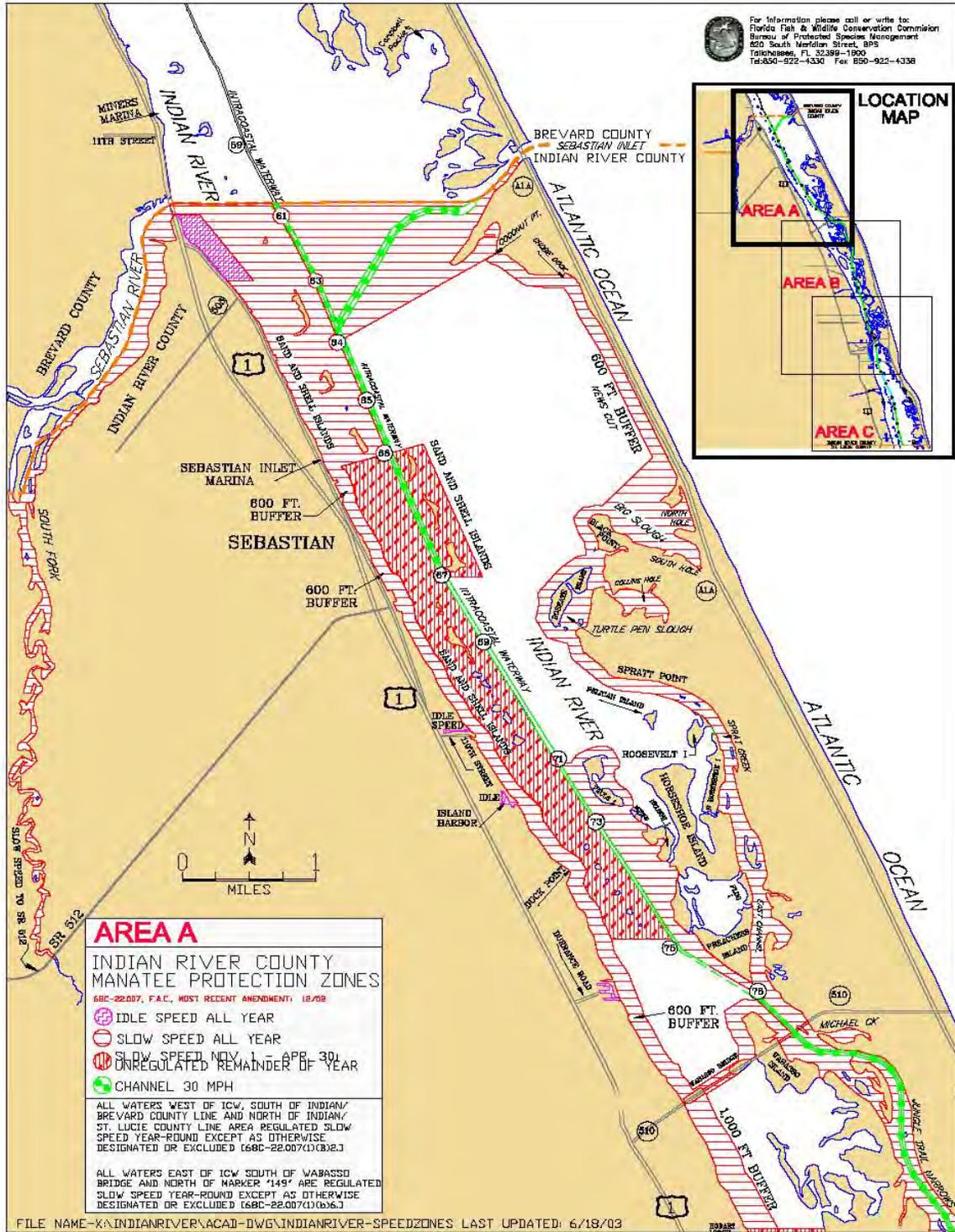


Figure 5-B : Manatee Protection Boating Speed Zones (Central County)

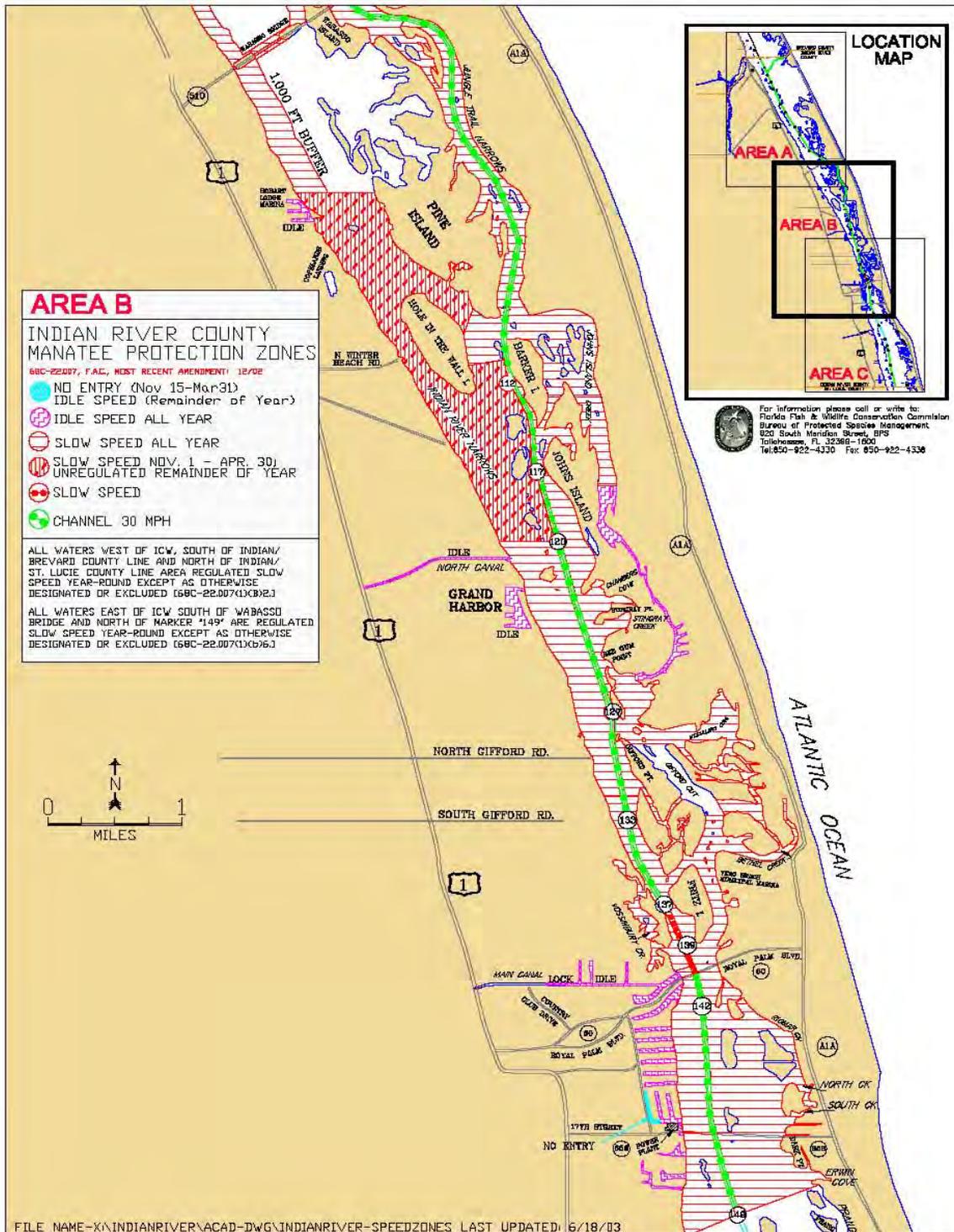
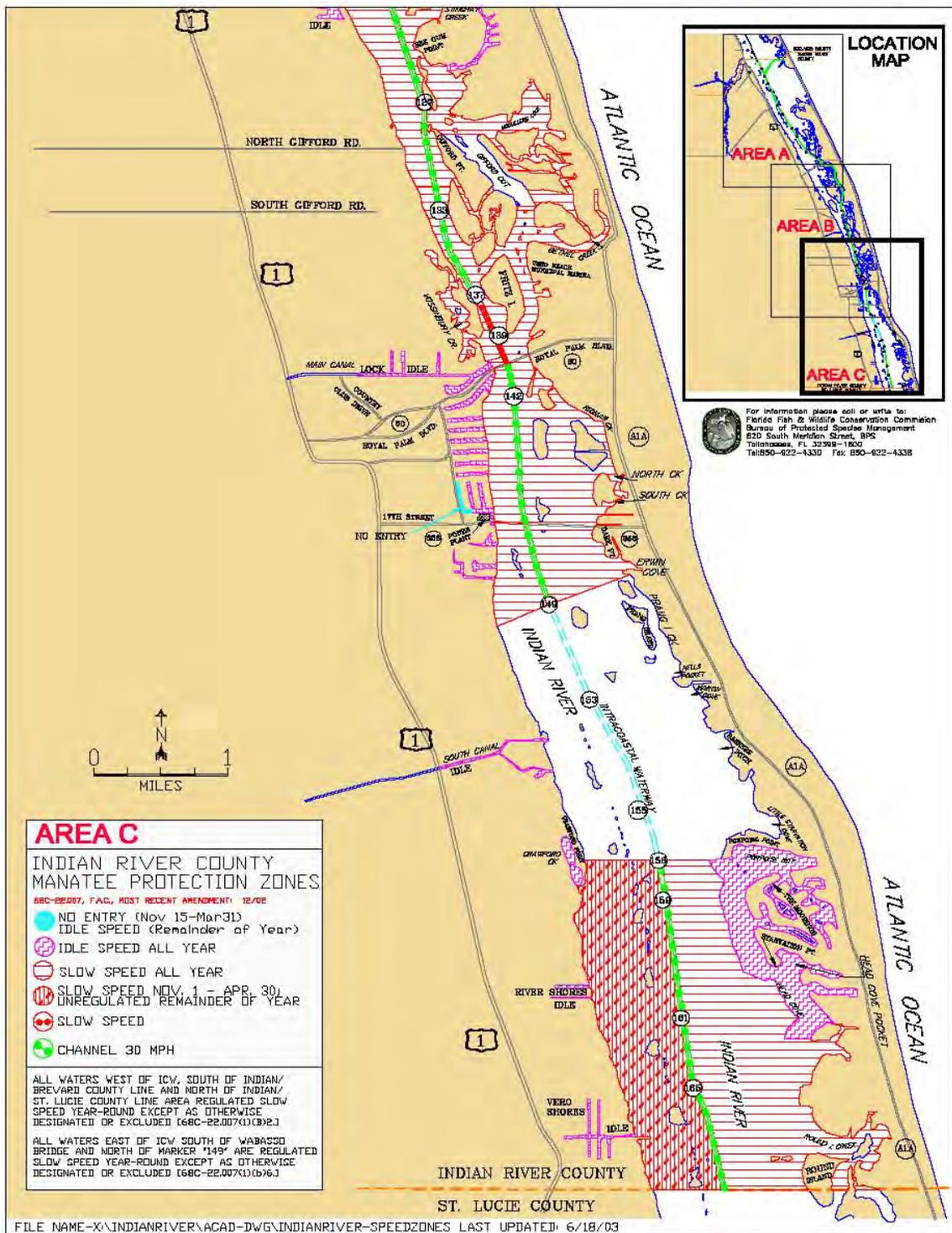
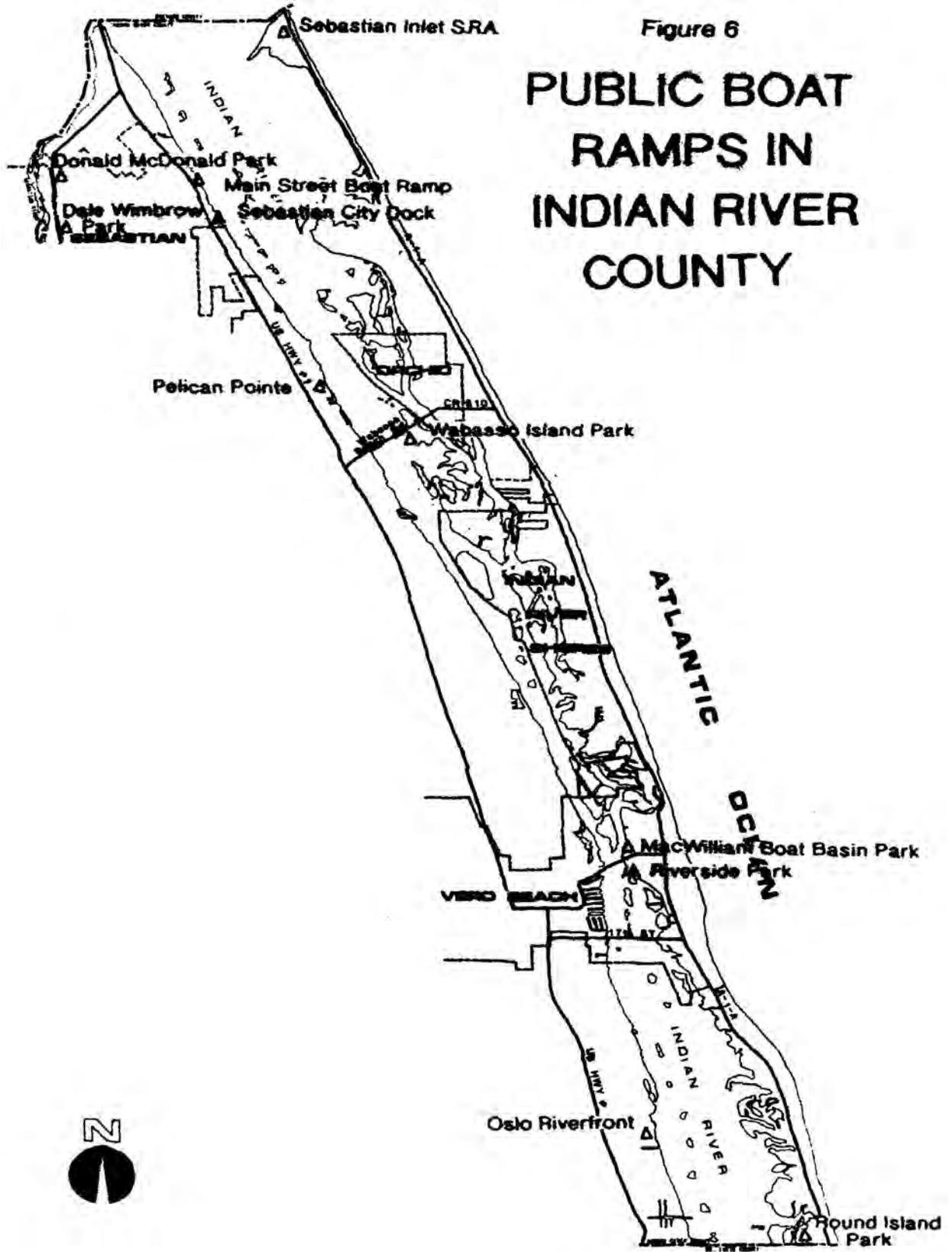


Figure 5-C : Manatee Protection Boating Speed Zones (South County)





- **South Section**

The Oslo boat ramp is located at the east terminus of Oslo Road, east of U.S. Highway 1 and adjacent to the Oslo Riverfront Conservation Area. Shallow channel depths and the lack of formal parking render this ramp limited to small boat access. The Oslo boat ramp also lacks manatee protection signage and trash disposal receptacles. The original plans to improve this boat access have been abandoned due to resource constraints, including mangrove wetlands, dense seagrass beds, and shallow water.

Round Island Park is located near the south county line on both the west and east sides of S.R. A1A. Recent access improvements have been made at the park, including replacement of a boat ramp with two (2) ramps, construction of fishing piers, and posting of manatee awareness graphics.

### **Temporary Docking Facilities**

Two boat docks available for public access to recreational and educational facilities are located at Joe Earman Park and the ELC. During ELC visitor hours, boaters may dock their vessels at the ELC dock to access the educational displays and nature trails. Joe Earman Park is located on the north tip of the "Lost Tree Islands" group, just north of the Merrill Barber Bridge. This park has a boat dock located on the east side of a spoil island, near the popular water skiing area known as "Gifford Cut."

### **Boat Facilities/Marinas**

The unincorporated area of Indian River County contains no port or commercial marina facilities, with the exception of Grand Harbor Marina. There are, however, several public/private residential marina facilities, such as the Sea Oaks Yacht Club on south Jungle Trail and the Moorings marina in the South County. A number of riverfront parks located in the County provide public access to the IRL. A list of all of the commercial, recreational and residential marinas is contained in Table 8. The general location of marinas in Indian River County is depicted in Figure 7. In January 2000, Indian River County and FWC staff gathered this information by visiting each boat facility within the county. Appendix A details specific information about each marina such as water depth, peak months, occupied slips, and contact person. The information regarding these facilities was obtained either from a harbormaster onsite or by visual inspection. This information is not meant to be an accurate representation of all the physical characteristics of each facility; the information is meant to provide a general overview of the nature of the boat facilities in Indian River County.

**Table 8**  
**Commercial, Recreational and Residential Marinas in Indian River County**  
**As of January 2000**

<b>MARINA NAME/OWNER</b>	<b>Wet Slips</b>	<b>Dry Slips</b>
Capt. Hiram's/Sebastian Inlet Marina	66	0
Channel 68	44	0
Copeland's Landing	8	0
Ellie's Restaurant	11	0
Floodtide (May's)	25	0
Grand Harbor	178	0
Indian River Marina	31	58
Indian Trails Development	24	0
Jack Bear	6	0
Libra of Vero Beach, Inc.	31	0
Marbrisa	17	0
Marsh Island	27	0
Moorings Club Marina/Spyglass Harbor	54	0
Offshore Marina	15	0
Oyster Pointe Resort	25	0
Pelican Pointe	16	0
Reflections	24	0
Riomar Bay Yacht Club	53	0
River Run	41	0
Robert Flynn	6	0
Ron Rennick	14	0
Sea Oaks	48	0
Sembler's	91	0
Sportsman's Lodge	9	0
Tidewater Island Club*	16	0
Vero Beach Municipal Marina **	150	0
Vero Beach Yacht Club	26	0
Vero Marine Center	50	0
Wauregan Boat Club	22	0
<b>TOTAL</b>	<b>1,128</b>	<b>58</b>

\* Project in permitting process

\*\* Includes moorings in the IRL

## **Existing Marina Facilities Usage**

- **Wet Storage**

At the present time, there are wetslips (including moorings) in Indian River County. The 1995 FIT Supplement Interinlet Study found that the occupancy of all shoreline locations (boat facilities and single-family docks) was approximately 50%. During the January 2000 boating facility survey conducted by Indian River County and FWC staff, we found an occupancy rate, at boating facilities only, of 55%. However, some marina facilities, such as the City of Vero Beach Municipal Marina, report occupancy rates in excess of 100 percent during the peak season (January-March).

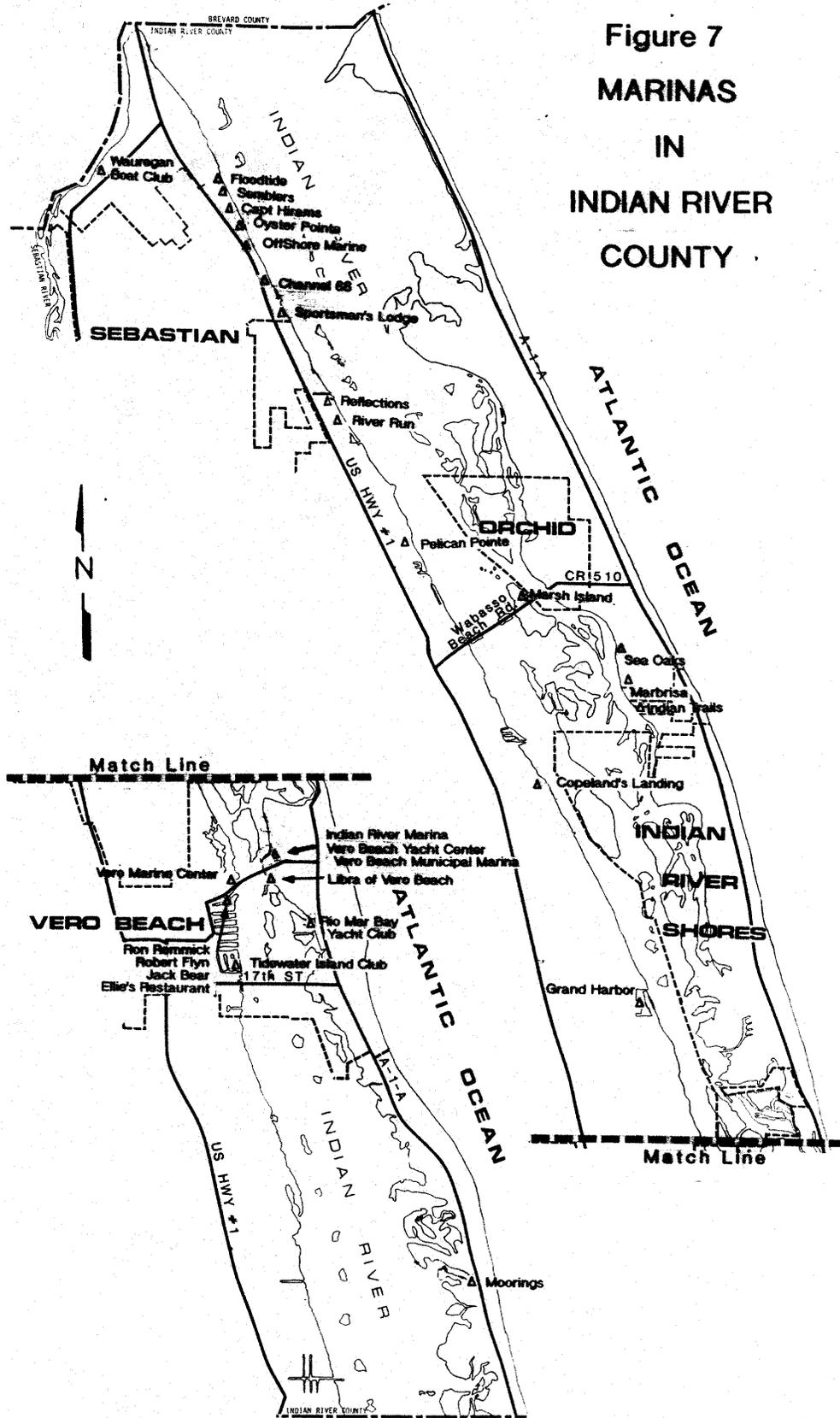
- **Dry Storage**

Data for dry dock storage are more variable due to the marinas' inability to document how many spaces are actually on site. This is because storage capacity at dry dock facilities varies depending on the size of boats stored. For example, a site could hold 100 small boats but only 75 large boats. Of the 29 marinas in Sebastian and Vero Beach, only one has dry storage, totaling 58 spaces, 42 of which were occupied.

- **Pump-out Facilities**

Data collected in the Indian River County/FWC boat facility survey identified four boat facilities that have pump-out facilities. The Vero Beach Municipal Marina, Grand Harbor Marina, Captain Hiram's, and Libra of Vero Beach are the only marinas in Indian River County equipped with such facilities. FDEP's "Clean Marina Program" is currently soliciting grant applications for the installation of pump-out facilities. These matching grants are available to local governments, commercial and nonprofit entities operating marinas, boat ramps, mooring fields and other docking facilities. Projects under this program are eligible to receive federal/state funding of up to 75 percent of the project costs.

**Figure 7  
MARINAS  
IN  
INDIAN RIVER  
COUNTY**



## ANALYSIS

### BOATING SPEED ZONES

#### Speed Zone Compliance

A study entitled An Investigation of Compliance to Boat Speed Regulation in Manatee Protection Zones in Brevard County, Florida (Morris, 1994) presents a general overview of speed zone non-compliance trends in the IRL. In summary, approximately 25 percent of boats operating in the IRL violate speed zones when traveling outside the ICW. PWC are responsible for most of the violations that occur outside the ICW. Overall, approximately 11 percent of boat operators violate speed zones in the ICW. Furthermore, nearly 85 percent of all boat operators violating speed zones are considered to be in blatant non-compliance, such as on a plane in a slow speed zone. Since boat operation is highest during the afternoon hours and on weekends, most non-compliance occurs during these times. This study, however, does not indicate whether or not a greater number of violations in Brevard County occur when the more restrictive winter season speed zones are in effect. To date, no comprehensive study of speed zone compliance has been completed for Indian River County.

#### Enforcement

Since 2000, the number of FWC officers patrolling IRL waters in Indian River County has doubled, from two to four officers. In addition to the FWC officers, two Sheriff's Office marine units are responsible for patrolling the inland waters of Indian River County. The city of Vero Beach and the town of Indian River Shores each have one marine unit that patrols the IRL within the city and town, respectively. Notwithstanding the increase in marine patrol since 2000, addition of more marine patrol units would help to enforce boat speed zones and other boating regulations, in the interest of boating safety and manatee protection.

The county has several opportunities to increase enforcement of speed zone regulations. Under Florida Statutes Section 327.22, the Board of County Commissioners (BCC) is granted the authority to set the annual rate of boater's fees. A nominal increase in this user's fee could provide part of the funding necessary for the county to obtain a cost-share grant to hire an additional FWC officer.

The greatest benefit of raising the boater's registration fee would be realized by hiring an additional Marine Unit Officer for the Sheriff's Office. Since the Sheriff's Office already has three patrol vessels, no additional funding would be necessary for startup costs or to purchase equipment. In addition to increasing the presence of local law enforcement in the IRL, the BCC would retain local control of the funds.

#### Recreational Use Areas

Although there are numerous speed zone areas where water skiing is permitted throughout the year or on a seasonal basis, there are only a few preferred water ski areas. One such area is located near St. Edwards Upper School. This area may not always have ideal skiing conditions, but its location is convenient for students. A well-protected ski area known as

“Gifford Cut” is located just north of the Vero Beach Municipal Marina and east of Joe S. Earman Park. The ICW is located on the west side of the islands and allows the skiers some relief from boat traffic. Another favorite ski location, the "Jungle Trail Narrows," is a congested and hazardous area.

Wabasso Causeway Park can be best described as the County's premier multi-use area. Swimming, fishing, canoeing and boating are regularly observed at the park. Sailboarders are known to congregate toward the west end of Wabasso Causeway Park. Also, PWC users are often found utilizing Wabasso Causeway, since the causeway is one of only a few places in the county where PWCs have public access to a launching site. A watercraft testing area is located in an unregulated zone near the south county line between Channel Markers 149 and 156.

### **Recent Modifications to Speed Zones**

In January 2000, a number of non-governmental environmental organizations filed suit against the Florida Fish and Wildlife Conservation Commission (FWC) alleging that the FWC had not done enough to protect endangered manatees in the state. In September 2002, as part of a settlement of that lawsuit, the FWC approved increased boating speed zone restrictions in the Jungle Trail Narrows and at the Vero Beach Power Plant.

- **Vero Beach Power Plant**

The Vero Beach Power Plant and surrounding IRL waters are considered by the State to be a manatee sanctuary of statewide importance. Prior to September 2002, the speed zone within the Vero Isle “finger” canals, just north of the Vero Beach Power Plant, was “idle speed” year round. In September 2002, boating restrictions within the westernmost finger canal and the western most part of the entrance canal were changed to “no entry” from November 15 through March 31 and idle speed the remainder of the year. Property owners within the ‘no entry’ area receive a decal to allow them access to their property at idle speed.

- **Jungle Trail Narrows**

The Jungle Trail Narrows is a sensitive area with respect to manatee protection. In 2001, the State identified the Jungle Trail Narrows as one of eight “hot spots” in Florida warranting additional manatee protection through revised boating speed restrictions. The sensitivity of the area is largely due to multiple-uses (i.e., water-skiing, existing residential marinas and the Intracoastal Waterway channel) occurring in a narrow section of the Lagoon that serves as a “gauntlet” for migrating manatees. As a result, in September 2002, the State revised boating speed restrictions in the Narrows to slow-speed year-round outside of the Intracoastal channel.

The State’s strengthening of boater speed zone restrictions in IRL waters adjacent to the Vero Beach Power Plant and in the Jungle Trail Narrows is indicative of the sensitivity of those areas with respect to manatee protection. Due to that sensitivity, the establishment of new or expanded boat facilities in those areas should be prohibited or otherwise discouraged, except

in limited circumstances when a facility can be demonstrated to provide a “net benefit” to manatees compared to and in lieu of riparian use alternatives (i.e., single-family docks).

### **Sign Modification and Maintenance**

FMP staff (now FWC) have claimed that 60 percent of speed zone offenders are unaware of manatee protection zone signage or do not take time to interpret the posted signs. Thus, enhancing boater awareness of speed zones is important in decreasing the number of noncompliance cases in manatee protection zones.

Based on recommendations from FMP staff, FIND completed a sign modification and maintenance program for Indian River County in 1997. Forty new speed zones signs were installed in the IRL, and 25 existing signs were replaced or upgraded. In addition to installing speed zone regulatory signs in the IRL, FIND plans to install speed zone informational signs at the most popular public boat ramps. Wabasso Causeway Park will be the first boat ramp to receive the informational sign. There is no conclusive evidence at this time as to whether or not the FIND’s sign modification and maintenance program has increased speed zone compliance.

## **BOAT FACILITIES DEMAND**

### **Marinas**

There will always be a demand for more boat slips (e.g., marinas, single-family dock); however, this demand varies greatly over time and can change significantly from place to place along the Indian River Lagoon. Therefore, calculating the demand for these facilities becomes problematic at best and is not used in this analysis. Regardless, it is a sound assumption that, in general, as the local population grows so does the demand for more boat slips.

### **Boat Ramps**

As with marinas, the demand for boat ramps will continue to grow as the population grows. Since there are more trailered boats in the county than boats in the water, it is likely that the demand for boat ramps will be significantly greater than for marinas. Calculating the demand for boat ramps is just as problematical as for marinas and is not used in this analysis. Unlike marinas, the FDEP has a standard recommendation for the number of boat ramps (lanes) per person in a geographic area. This recommended level of service (LOS) is a minimum of one boat lane per 10,000 residents. At the present time, Indian River County has approximately one boat lane for every 4,792 residents. It must be noted that the current LOS standards do not account for the use of boat lanes by seasonal residents or visitors from outside the county.

According to the data contained in the FIT boating study, the typical zone of influence for boat ramps throughout the County averages three (3) miles or less. The lack of an adequate boat ramp in the southern section of the County might explain why the zones of influence for MacWilliams Park and Riverside Park are twice as large [over six (6) miles] as those for other boat ramps located throughout the County.

## **BOAT FACILITY SITING**

### **Existing LDR Criteria**

Site-specific criteria, which affect boat facility siting in the unincorporated portion of Indian River County, are contained in the county's land development regulations (LDRs). Regulations pertaining to water-dependent uses are contained in LDR Section 932.11(2) *Water-dependent uses*. These regulations require: 1) all water-dependent uses to have sufficient upland facilities and an appropriate zoning classification; 2) adverse impacts to seagrass and shoreline vegetation to be minimized; and 3) applicants for water-dependent uses to submit pollution mitigation plans to the county. Also, these regulations prohibit the siting of boat facilities in approved shellfish harvesting areas and existing seagrass beds.

### **Powerboat to Shoreline Density Ratio**

The FDEP (now FWC) established an interim density threshold of one (1) powerboat per 100 feet of shoreline along the inland waters of the county's shoreline in 1989. This interim measure was to remain in place until a MPP is approved. The state's establishment of this interim measure was for the purpose of providing some level of control over the proliferation of marinas until area specific analysis (in the form of a county MPP) could be performed. There is no requirement that, once a MPP is approved and in place, the 1:100 ratio is to be entirely removed and not used as a method of manatee protection. The 1:100 powerboat to shoreline ratio was not based on scientific data, but was based on riparian rights. Nevertheless, the powerboat to shoreline ratio has proven to be effective in areas of the county with significant natural resources, and should be retained in those areas.

### **Criteria for Siting and Expansion of Boat Facilities**

The FWC has identified the following general categories of constraints/considerations for boat facility siting and expansion:

- proximity to popular boating destinations, such as an inlet or recreational area;
- proximity to the ICW;
- proximity to manatee aggregation areas and manatee habitat;
- extent of manatee use;
- water depth and circulation;
- amount of overlap in patterns of use by manatees and boats;
- number of manatee mortalities;
- natural resources (e.g. the presence of dense SAV on site);
- boat facility demand/recreational needs; and upland site requirements.

The referenced FWC siting factors/considerations provide a basis for developing criteria for the siting of new boat facilities, or for the rearrangement, slip conversion, or expansion of an existing boat facility.

## **Indian River County Manatee Protection and Boating Safety Comprehensive Management Plan**

In order to minimize adverse impacts to manatees and the resources of the IRL, boat facilities are best located:

- in areas with few natural resources;
- in areas with low manatee abundance; and
- in areas with low manatee mortality.

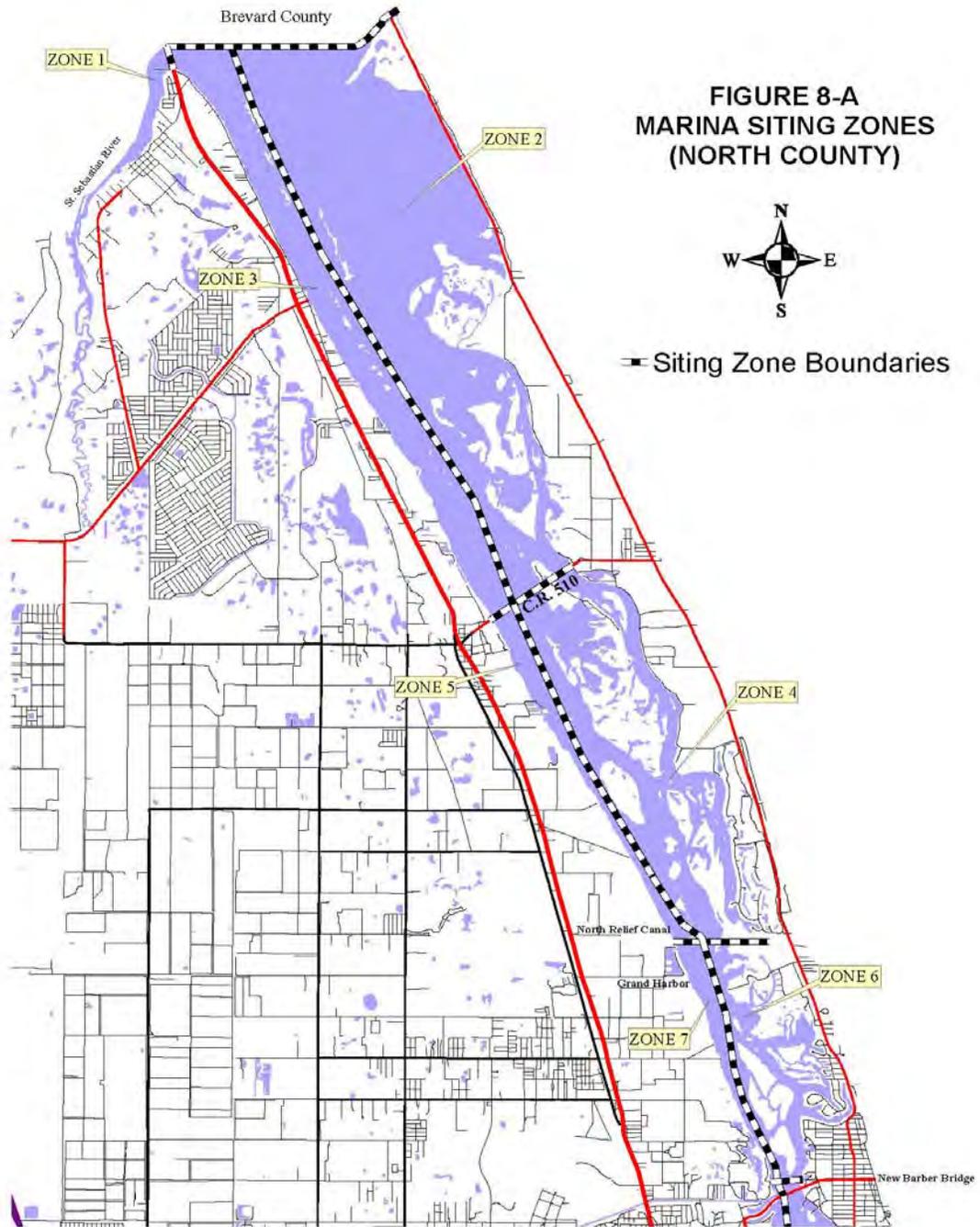
### **Boat Facility Siting Zones**

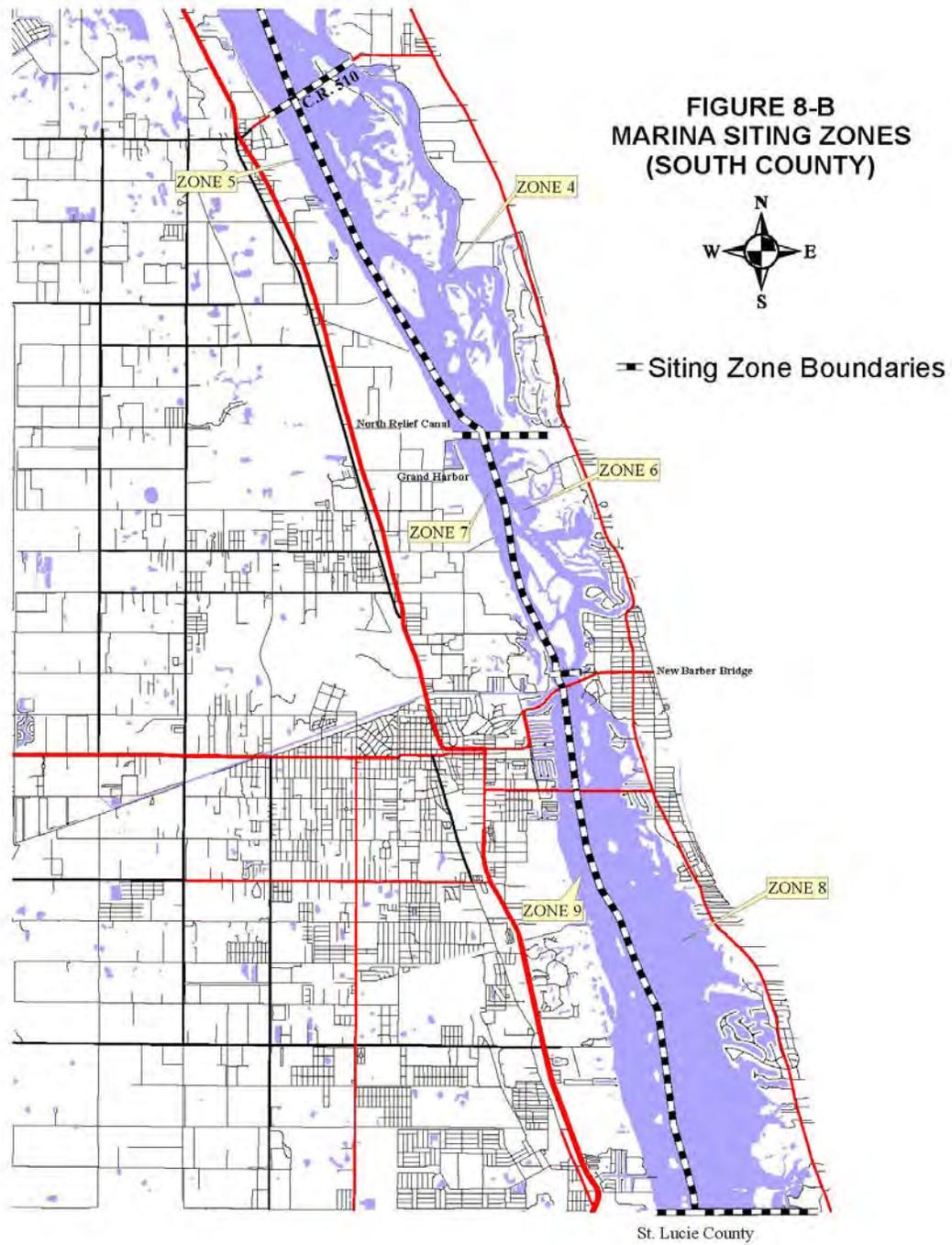
The establishment of boating facility siting zones, based on analysis of maps of the IRL depicting natural resources, manatee abundance and manatee mortality would provide the public with some guidance as to the potential for the expansion of existing boat facilities and for siting new boat facilities. The description of a particular zone's characteristics should be general in nature and should not be considered accurate on a site-by-site basis. Final determination for future boat facility development is made following the criteria-based evaluation of the project site.

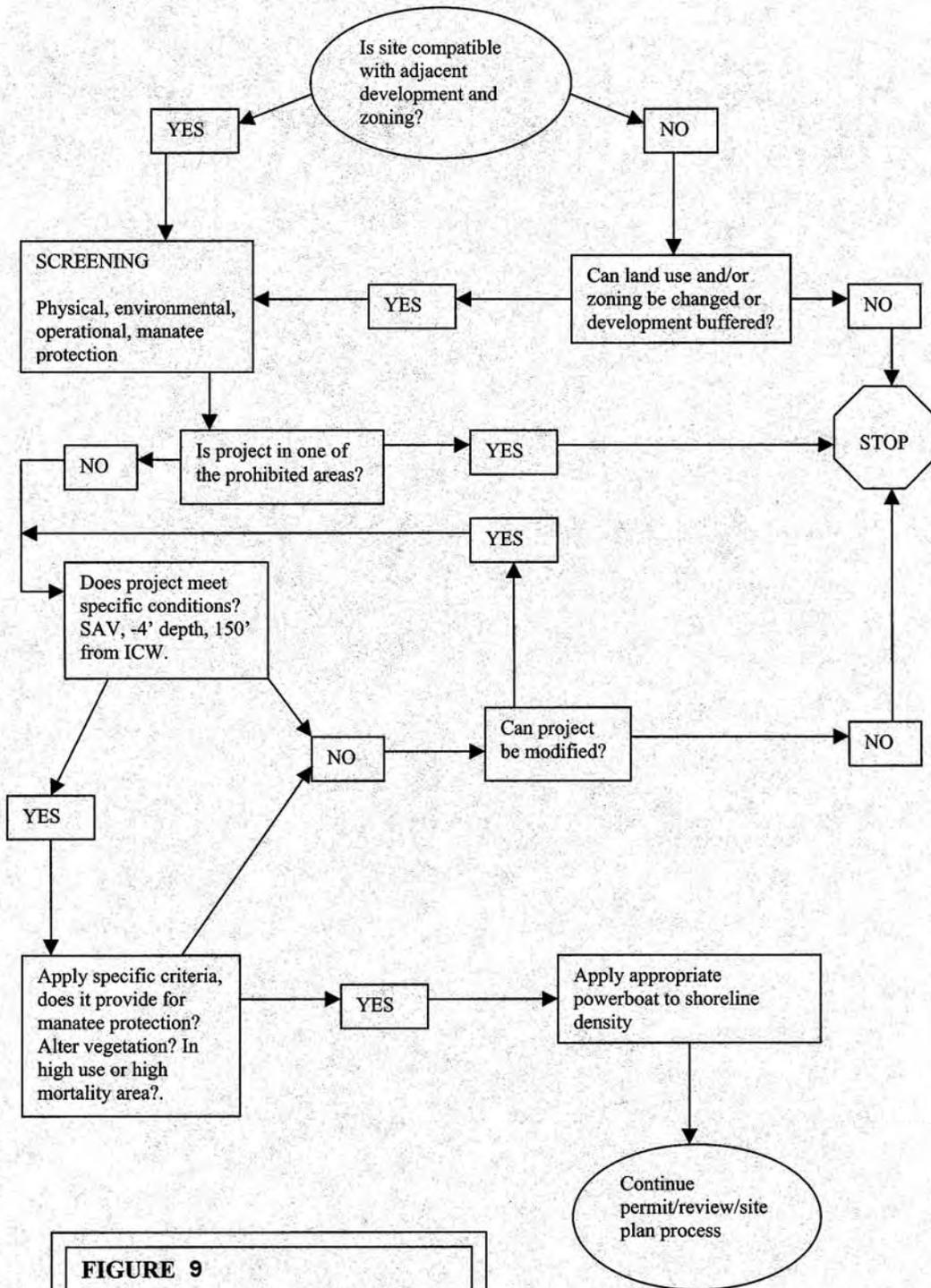
Following are nine boat facility-siting zones for the inland waters of Indian River County. These zones were delineated with consideration of the FWC general categories of constraints for boat facility siting and expansion. The methodology used to identify potential locations for the siting of new boat facilities or the expansion of existing boat facilities is based on the general and specific criteria described in the preceding sections of this MPP.

The locations of these boat facility-siting zones are listed below and are shown in Figure 8.

- Zone 1: that portion of the St. Sebastian River located in Indian River County
- Zone 2: extends north of C.R. 510, east of the ICW, including the Pelican Island National Wildlife Refuge to the Indian River-Brevard County line
- Zone 3: extends north of C.R. 510, west of the ICW, to the Indian River-Brevard County line, excluding the St. Sebastian River;
- Zone 4: extends south of C.R. 510 to the North Relief Canal, east of the ICW;
- Zone 5: extends south of C.R. 510 to the North Relief Canal, west of the ICW;
- Zone 6: extends south of the North Relief Canal to the Merrill Barber Bridge, east of the ICW;
- Zone 7: extends south of the North Relief Canal to the Merrill Barber Bridge, west of the ICW;
- Zone 8: extends south of the Merrill Barber Bridge, east of the ICW to the Indian River- St. Lucie County line; and
- Zone 9: extends south of the Merrill Barber Bridge, west of the ICW to the Indian River- St. Lucie County line.







**FIGURE 9**  
**BOAT FACILITY REVIEW**  
**PROCESS SUMMARY**

## **Results of the Screening Process**

These marina-siting zones were delineated after review of all the aforementioned information and data. County adoption of these zones would serve the public as guidelines for the purpose of determining where new, expanded, or rearranged boating facilities might be located. Following is a detailed description of each of the nine zones. The specific site-by-site criteria noted previously and in Section 1.2 of the Action Plan may result in a different result than by just relying on the zones themselves. As a hypothetical example: A potential marina site is found in Zone 3, where no powerboat to shoreline ratio is automatically applied. The site-by-site criteria are applied and it is found that the site is within a High Manatee Use area. One modification might be to establish a maximum powerboat to shoreline ratio of 1:100, for this particular marina, in order to protect the manatee.

It is important to note that the absence of an applied powerboat to shoreline ratio does not imply large numbers or unlimited number of boats will be allowed.

### **Zone 1**

Located in Brevard County and Indian River County, the St. Sebastian River hosts one of the largest aggregations of manatees, and also maintains one of the highest manatee mortality locations within the IRL system. Between 1974 and 2003, seven (7) watercraft-related manatee mortalities (5 in Brevard County, 2 in Indian River County) have occurred within the St. Sebastian River. Seagrass is not abundant within the St. Sebastian River; however, there are shoreline vegetation resources that serve as a food source for the manatee. In addition, there are important freshwater attractant areas (e.g., the river itself, C-54 canal). Taking all these conditions together, the St. Sebastian River provides significant loafing, feeding, and breeding habitat. Due to the remote locations of Dale Wimbrow Park and Donald MacDonald Park, these boat ramps are the least used launch sites in the county. Due to low on-water traffic, high manatee mortality and high manatee abundance, Zone 1 is not a conducive area for future boat facility development or additional boat ramps/lanes.

### **Zone 2**

Based on historic manatee mortality data and telemetry data, the probability of manatee mortality for Zone 2 is low. Within Zone 2, there are extensive dense seagrass beds, approved shellfish harvesting areas, and the Pelican Island National Wildlife Refuge and the Refuge's associated wildlife. Based on the use of this zone for habitat, the siting of new boat facilities should be prohibited. In order to control growth in existing boat facilities, additional restrictions should be placed on the expansion, rearrangement, or conversion of existing boat facilities.

### **Zone 3**

Compared to other areas of the county, there is relatively little mangrove fringe along the shoreline of the IRL in the City of Sebastian/northern Indian River County area. There are, however, extensive seagrass beds that must be taken into consideration during any review or authorization of any proposed project in this Zone. In addition, there have been 7 watercraft-related deaths in Zone 3, with 4 of these occurring since 1998 (1998, 1999, 2000, and 2002). Existing marina channels within this zone are several feet deeper than the average adjacent water depth of one (1) to two (2) feet. Approximately 500 yards from the City of Sebastian shoreline, the water depth increases to four (4) to five (5) feet. Existing marinas located within Zone 3 are proximate to the ICW and Sebastian Inlet. The commercial, recreational and residential marinas in Zone 3 generate the highest level of on-water traffic attributed to marinas in the county.

It should be noted that there is little potential for dry slip expansion in the City of Sebastian due to the closeness of Indian River Drive to the shoreline of the IRL. However, existing commercial and recreational marinas could increase their number of wet slips, and utilize adjacent parcels along the IRL or west of Indian River Drive to expand upland facilities.

Boat facility and boat ramp usage in this zone has been established over time and does not appear to have had a significant impact on manatees. Submerged aquatic vegetation is extensive in this zone, resulting in a limiting factor in how built-out the submerged bottom and shoreline can become. While boat facility and boat ramp development should be encouraged in this zone, it is recognized that there still exists the potential for manatee impacts based on recent watercraft-related deaths; therefore, all boat facility and boat ramp development within this zone should be required to meet site-specific criteria relating to manatee protection and boating safety.

### **Zone 4**

Zone 4 is not favorable for siting or expanding boat facilities. Although seagrass coverage is sparse in the Jungle Trail Narrows section of the IRL, manatee abundance is significant. Large numbers of manatees have also been observed in the seagrass-covered coves of Johns Island, west of Pople Point and within McCullery Cove. Six (6) watercraft-related manatee mortalities were documented in or near the Indian River Narrows since 1996. The Jungle Trail Narrows has been identified by the FWC as one of eight “hot spots” in the state where manatee abundance, geophysical characteristics, and human activities create an area of high probability of negative effects on manatees. Other issues related to boat facility or boat ramp development include the presence of archeological and historic resources, including Jungle Trail, and shoreline erosion.

There are no properties in Zone 4 with a commercial land use designation, thus recreational and commercial marinas are prohibited in Zone 4. The existing maximum 1:100 powerboat to shoreline density ratio should be retained and applied to any proposed siting of a new residential marina in Zone 4, outside of the Jungle Trail Narrows and the town of Indian River Shores.

Because of the sensitive nature of the Jungle Trails Narrows, future boat facility and boat ramp development should be prohibited. Outside of the Jungle Trails Narrows, there is limited opportunity for boat facility and boat ramp development due to the upland zoning; however, there are limiting factors related to geophysical and natural resources. Much of the IRL west of the ICW is very shallow, and there are significant areas of SAV. Therefore, some level of restriction should be placed on the areas of this zone outside of the Jungle Trails Narrows.

### **Zone 5**

The area along the western shoreline of Zone 5 exhibits moderate seagrass coverage, shallow water, and low manatee use. Zone 5 does not contain the ICW and as a travel-way is unsheltered from the wind. That, combined with the shallow water within this zone, results in a low volume of watercraft use and low impacts to manatees in the zone.

Due to a lack of natural resource constraints, a maximum powerboat to shoreline density ratio should not be applied to Zone 5.

### **Zone 6**

Three (3) watercraft-related manatee mortalities have occurred in this zone: in the vicinity of John's Island, in the vicinity of the Gifford Cut, and near the Vero Beach Municipal Marina. Seagrasses are very sparse in this zone, being generally limited to a narrow band in the shallow waters around the islands in the IRL and in the shallow waters of McCuller's Cove. Water depths are generally much greater than in other areas of the IRL. The average water depth in much of this zone is significantly greater than the four (4) foot average water depth for the IRL as a whole. The probability of watercraft impact to manatees is low since manatee use in this area is low.

The existing 1:100 powerboat to shoreline density ratio should be retained for the portion of Zone 6 lying within the Town of Indian River Shores.

The portion of Zone 6 lying within the City of Vero Beach is conducive to the expansion of existing boat facilities. Furthermore, natural resource constraints, including the presence of seagrass and shoreline vegetation, are minimal. Due to a lack of natural resource constraints and proposed expansion plans, a maximum shoreline/ density ratio should not be applied to the portion of Zone 6 lying within the City of Vero Beach.

### **Zone 7**

There appears to be little manatee use of the IRL west of the ICW, south of Hole in the Wall Island to the Lost Tree Islands, with the only exception being manatee use in the upland cut basin associated with the Grand Harbor Marina. Therefore, the overall probability of watercraft impacts to manatees north of the Merrill-Barber Bridge within Zone 7 is low. Due to an overall lack of natural resource constraints and proposed expansion plans, a maximum shoreline/ density ratio should not be applied to Zone 7.

### **Zone 8**

Although no manatee mortalities attributed to watercraft have been recorded in Zone 8, the probability of watercraft impacts to manatees is high, since Zone 8 is a dense manatee abundance area. Large manatee aggregations have been documented in various areas of this zone including the Moorings Subdivision and Round Island Park. Part of the reason for the manatee abundance may be the warm water refuge at the City of Vero Beach Power Plant located across the IRL west of the ICW in Zone 9. The existing maximum 1:100 powerboat to shoreline density ratio should be retained for Zone 8.

### **Zone 9**

Within this zone, most of the land adjacent to the IRL has been deemed environmentally sensitive due to the presence of estuarine wetlands. Five watercraft-related manatee mortalities have been recorded in Zone 9, including 2 in 2000 and 1 in 2001. The City of Vero Beach Power Plant is a significant manatee aggregation area resulting from the warm water discharge. Portions of the residential canal system associated with the Power Plant have been identified by the FWC as one of eight “safe havens” in the state. The purpose of these “safe havens” is to provide areas for feeding, shelter, and birthing associated with warm water refuge sites. Seagrass density and manatee abundance increase just south of the South Relief Canal outfall, and combined with the abundance associated with the Power Plant increase, the probability of manatee impacts with watercraft in Zone 9. Therefore, the existing maximum 1:100 powerboat to shoreline density ratio should be retained for Zone 9.

In addition to zones, specific criteria found in the Action Plan section will be applied to each request for a new boat facility or for the expansion, rearrangement, or conversion of an existing boat facility. These site-specific criteria have been designed to account for site-specific issues related to manatee protection. These site-specific criteria will be in addition to the boat facility siting zone requirements and criteria.

### **Siting of Boat Ramps**

The FWC siting factors/considerations for multi-slip dock facilities also provide a basis for developing criteria for the siting of new boat ramps, or for the rearrangement, or expansion of an existing boat ramp. In order to minimize adverse impacts to manatees and the resources of the IRL, boat ramps are best located:

- in areas with few natural resources;
- in areas where water depths are appropriate for the type of vessels using the boat ramp;
- in areas with low manatee abundance; and
- in areas with low manatee mortality.

Based on analysis of maps of the IRL depicting natural resources, water depths, existing boat ramp facilities, manatee abundance, and manatee mortality, specific criteria should be applied to each application for a new boat ramp or for the expansion, rearrangement, or conversion of

an existing boat ramp. These site-specific criteria should be designed to account for site specific issues related to manatee protection.

Boat facility siting zones, although intended as general criteria for the siting of multi-slip dock facilities, could also be used to identify general areas of the IRL that are suitable or not suitable for new ramps or for boat ramp expansions.

### **Boat Ramp Site Specific Criteria**

*Areas of prohibition for boat ramps.* There are areas in the IRL that are not conducive for the creation of new boat ramps, or for the expansion, or rearrangement of existing boat ramps. The St. Sebastian River and the Jungle Trails Narrows are two examples of these types of areas. High manatee abundance, high manatee mortality, and manatee travel patterns in these areas create conditions for negative impacts on manatees. Other areas should be considered for having this prohibition. Any areas included in this prohibition should have easily identifiable boundaries or a very specific description of the boundary.

*Projects which have minimal or no impacts on manatees.* Rearrangement of existing boat ramps, under certain circumstances, could have little or no effect on individual manatees or the manatee population. Those circumstances would be a rearrangement the results in:

- no additional lanes;
- no increase in sizes or volume of vessels that could use the boat ramp; and
- no destruction or disturbance of native shoreline vegetation or SAV.

Rearrangement of a boat ramp under the referenced circumstances does not warrant restriction under this MPP.

*Areas of prohibition for boat ramp development based on specific site conditions.* Impacts to SAV associated with boat ramp use should be minimized as SAV is the main food source of manatees. The introduction of additional vessels via a new or expanded boat ramp into an area of high manatee abundance AND high manatee mortality would significantly increase the probability of negative impacts to manatees, and therefore should not be allowed.

In general, new dredging is prohibited within State designated Aquatic Preserves. Within an Aquatic Preserve, the establishment of new boat ramps or the expansion of existing boat ramps that requires dredging will be restricted depending upon an applicant providing evidence that any required dredging be maintenance dredging vs. new dredging (as defined by State Statute and Rule).

*Evaluation criteria for assessing the need for further restriction on the siting of new boat ramps or for the rearrangement or expansion of existing boat ramps.* Once it has been determined that a new boat ramp or a rearrangement of an existing boat ramp is not prohibited in a certain area of the IRL, it is appropriate to impose additional criteria based on other manatee protection factors. For example, the removal or destruction of existing native shoreline vegetation should be limited to the minimum necessary for the development project.

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With an increase in boat traffic resulting from a new or expanded boat ramp, it is important that an applicant provide for shoreline protection from boat wakes and natural wave action. If the proposed site is within a High Manatee Use area OR a High Watercraft-related Manatee Mortality area, as defined in this MPP, site-specific design restrictions should be required to minimize potential adverse manatee impacts. Any maintenance dredging associated with a boat ramp channel should be restricted to the original channel dredging permit depth and design characteristics, or to a maximum of -5 foot depth at mean low water.

## **ACTION PLAN**

Based on the analysis herein of existing conditions and associated data, this section, the Action Plan, sets forth specific actions that Indian River County will take, in the form of policies, to further manatee protection and boating safety objectives. This Action Plan contains the following components: Goal; Objectives and Policies; Implementation; and Evaluation and Monitoring. In the event that there is a conflict or inconsistency between this Action Plan and other portions of the MPP, the Action Plan shall take precedent.

### **GOAL, OBJECTIVES AND POLICIES**

This Goal and associated Objectives and Policies shall be adopted by reference to the existing Coastal Management Element of the Comprehensive Plan (March, 1998) as required by Objective 3 (Policy 3.10) of the Coastal Management Element.

#### **GOAL**

**It is the goal of Indian River County to equitably balance manatee protection, habitat preservation, and boating safety with commercial and recreational marine interests.**

#### **OBJECTIVE 1      Boat Facility and Boat Ramp Siting and Construction**

**Through 2005, there shall be no increased impact to manatee habitat, or the natural resources of the Indian River Lagoon, including seagrass beds, water quality, estuarine wetlands, and mangrove fringe, attributed to the development or expansion of boat facilities or boat ramps in Indian River County.**

- 1.1      The siting of new or expansion, rearrangement, or slip conversion of all boat facilities and boat ramps in Indian River County, and in each municipal government with jurisdiction over a portion of the inland waters of Indian River County, shall be consistent with the assessment criteria and policies established in this MPP.
- 1.2      Boat Facility Siting Zones (1-9), as described in the Analysis section of this MPP, are hereby established. The purpose of these Zones is to provide the public with some guidance as to the potential for the siting of new boat facilities or for the expansion, rearrangement, or conversion of an existing boat facility. The regulatory criteria to be applied to each zone represent the baseline criteria that all proposed projects must meet.

In addition to these Zones, specific criteria will be applied to each request for a new boat facility or the expansion, rearrangement, or conversion of an existing boat facility. These criteria are as follows:

1.      The siting of new boat facilities, or the expansion or slip conversion of existing boating facilities shall be prohibited in the following areas of Indian River County:

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- All of the St. Sebastian River west of the U.S. 1 Bridge; and
  - All of the Pelican Island National Wildlife Refuge.
2. The siting of new boat facilities, or the expansion, slip conversion or rearrangement of existing boating facilities, shall be prohibited in the following areas:
- Within the Town of Orchid;
  - Within the Town of Indian River Shores;
  - Within the area known as the Jungle Trail Narrows; and
  - Within any area designated as both a High Manatee Use area and a High Watercraft-related Manatee Mortality area, as defined in this MPP.

**Exceptions:** The siting of new residential marinas, or the expansion, rearrangement or slip conversion of existing residential marinas, may be allowed in the prohibited areas identified in this Policy Subsection 1.2.2 under the following conditions:

- a. The proposed new or expanded residential marina is in lieu of single-family docks that could otherwise be built through riparian rights at riverfront lots within the development served by the residential marina, and the residential marina will result in less environmental impact than the alternative single-family docks, provided the residential marina will not breach the 1:100 powerboat slip to linear-foot shoreline ratio set forth in Policy 1.14. Under this section, an applicant for a new or expanded residential marina in lieu of single-family docks shall be required to record a conservation easement, in favor of the County or the State, along the shoreline of the riverfront lots that would otherwise be eligible for single-family docks.
- b. Slip conversions of existing boat facilities may be allowed on a one-time basis at a density of 1.5 total powerboat slips per 100 feet of shoreline if the facility is not located in an area of high manatee use and high manatee mortality based on the definitions and criteria in the MPP, and if the powerboat to shoreline restriction has been in place prior to July 1993, when the countywide speed zone rule was posted.
- c. The physical rearrangement of boat facilities may be authorized in the above noted areas of prohibition provided the following criteria are met:
  - i. The number of slips at the boat facility is not increased (i.e., expansion);
  - ii. The number of boats that can moor at the boat facility is not increased;
  - iii. The size of the rearranged slips or mooring area is not increased;
  - iv. The resulting footprint of the structure is not increased; and

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- v. The rearrangement will result in the removal or cessation of any non-water dependent structure or activity associated with the existing boat facility, as applicable.

In every case, the rearrangement shall result in a net benefit to manatee and manatee habitat protection.

3. The siting of new or the expansion, rearrangement, or slip conversion, of existing boating facilities shall be prohibited when one or more of the following conditions are met:
  - a. The footprint of the boating facility (including all docks, access walkways, finger piers, mooring areas, turning basins, and ingress and egress pathways) has a SAV coverage of ten (10) percent or greater using a scientifically acceptable method of coverage determination and such determination is made between the months of May through October;
  - b. The water depth within mooring areas, turning basins, and ingress and egress pathways is less than -4 feet at MLW unless the following criterion is met:
    - One-foot clearance at MLW between the lowest portion of the vessel (with the engine in the down position) and submerged aquatic vegetative resources (or submerged bottom, in areas devoid of vegetative resources) within the mooring areas, turning basins, and ingress and egress pathways.
  - c. There is less than a 150' distance between the waterward most projection of the boat facility (including mooring pilings and boats) and the ICW channel.
4. The siting of new or the expansion, rearrangement, or slip conversion, of existing boating facilities shall be evaluated using all the following criteria:
  - a. No more than 100 linear feet of native shoreline vegetation shall be altered (trimmed, cut, removed, killed, or destroyed);
  - b. A site located within a High Manatee Use area, or a High Watercraft-related Manatee Mortality area, as defined in this MPP shall be subject to site-specific design restrictions to minimize potential adverse manatee impacts, including (but not limited to): restrictions on the total number of boat slips allowed; use of more upland storage instead of wet storage; restrictions on the maximum size of boats that use the facility (powerboat:sailboat ratio); re-design of the facility/marina; establishment of a powerboat to length of

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shoreline ration (e.g., one powerboat per 100 feet of shoreline); and/or reduction in the size of the facility/marina; and

- c. The following sections of the Action Plan, Objective 1, Boat Facility and Marina Siting and Construction, sections 1.2, 1.4, 1.5, 1.6, 1.7, 1.8, 1.14, and 1.15.

Using the evaluation criteria in Section 4 above may result in additional restrictions on the design, size, shape, and use of the boating facility/marina. These restrictions may include, but are not limited to: the total number of boat slips allowed, use of more upland storage instead of wet storage, restricting the maximum size of boats that use the facility/marina, restricting the number of powerboats that use the facility (powerboat to sailboat ratio), re-designing the facility/marina, establishing a powerboat to length of shoreline ratio (e.g., one powerboat per 100 feet of shoreline), or reducing the size of the facility/marina.

5. In addition, any new or the expansion, or rearrangement, or slip conversion, of existing boating facilities will be required to comply with all applicable state and federal permitting and authorization processes.
6. Notwithstanding the other criteria of this Policy 1.2, slip conversions of existing boat facilities in Indian River County may be allowed on a one-time basis at a density of 1.5 total powerboat slips per 100 feet of shoreline if the facility is not located in an area of high manatee use and high manatee mortality based on the definitions and criteria in the MPP, and if the powerboat to shoreline restriction on the existing facility has been in place prior to July 1993, when the countywide speed zone rule was posted.

The process of evaluation can be generally represented by Figure 9, which shows a diagrammatic representation of the process. This flow chart is meant to be a guide not an absolute process.

1.3 The following boat ramp siting criteria shall be used to evaluate any new boat ramp or the rearrangement or expansion of an existing boat ramp. These criteria shall be applied to all boat ramps (e.g., new, existing, private, public, commercial, recreational, multi-family, or individual single-family).

1. The rearrangement of existing boat ramps shall not be subject to the boat ramp siting criteria unless any one of the following are true:
  - a. The rearrangement will result in more lanes than currently exist (i.e., expansion);

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- b. The rearrangement will result in the boat ramp being able to increase the volume of traffic (e.g., increase the number of parking spaces, make the boat ramp more accessible, deepen or widen the access channel);
  - c. The rearrangement will result in the boat ramp being able to be used by larger vessels (e.g., increase the size of the parking spaces, deepen or widen the access channel); or
  - d. The rearrangement, or the associated construction, will destroy, alter, or disturb any native upland, shoreline vegetation, or SAV.
2. The siting of new or the rearrangement or expansion of existing boat ramps shall be prohibited in the following areas of Indian River County:
- All of the St. Sebastian River west of the U.S. 1 Bridge;
  - All of the Pelican Island National Wildlife Refuge;
  - The area known as Jungle Trail Narrows;
  - Town Limits of Orchid;
  - Town Limits of Indian River Shores;
  - If the proposed site is within a High Manatee Use area AND a High Watercraft-related Manatee Mortality area, as defined in this MPP.
3. The siting of new or the rearrangement or expansion of existing boat ramps shall be prohibited when one or more of the following conditions are met:
- a. The footprint of the new boat ramp or the rearrangement or expansion of the existing boat ramp (including all proposed lanes, docks, access walkways, finger piers, mooring areas, turning basins, and ingress and egress pathways) has a SAV coverage of ten (10) percent or greater using a scientifically acceptable method of coverage determination and such determination is made between the months of May through October;
  - b. The site, whether new or existing, is located within a High Manatee Use area, AND a High Watercraft-related Manatee Mortality area as defined in the MPP; or
  - c. The site, whether new or existing, is located such that new dredging will be required or necessary to provide access to the ICW or to deeper water AND the site is located within or on land adjacent to a FDEP designated Aquatic Preserve. This does not include manmade waterbodies such as canals or basins, or privately owned submerged bottom.

In the event that all the required or necessary dredging is determined by the FDEP or the SJRWMD to be maintenance dredging then this subsection [3(c)] does not apply. The determination of maintenance dredging shall be made in writing by the FDEP or SJRWMD and submitted to County

Planning staff. It is the responsibility of the applicant, the property owner, or developer to secure this written documentation. If any of the required or necessary dredging is determined to not be maintenance dredging (i.e., new dredging) then that part of the proposed project involving the proposed new dredging and any other activity or structures associated with the proposed new dredging, is prohibited.

4. The siting of new or the rearrangement or expansion of existing boat ramps shall be evaluated using all the following criteria:
  - (a) No more than 100 linear feet of native shoreline vegetation shall be altered (trimmed, cut, removed, killed, or destroyed);
  - (b) A site located within a High Manatee Use area, OR a High Watercraft-related Manatee Mortality area, as defined in this MPP shall be subject to site-specific design restrictions to minimize potential adverse manatee impacts, including (but not limited to): restrictions on the total number of boat lanes allowed; restrictions on the maximum size of boats that use the boat ramp; limitations on the size of boat trailer parking spaces; limitations on the depth of the boat ramp and/or the ingress – egress channel; posting of informational signs; installation of navigational aids; re-design of the boat ramp; and/or reduction in the size of the boat ramp.
  - (c) Maintenance dredging, as determined in writing by the FDEP or the SJRWMD, shall be restricted to those areas where maintenance dredging has been determined and shall conform to one of the following situations using the order in which the situations are presented:
    - i. The dredging shall conform with the original dredging permit specifications, if one was issued;
    - ii. The dredging shall conform with the original design specifications, if the existing project was done prior to the issuance of permits required by federal, state, or local government entities;
    - iii. The dredging shall be no deeper than to a maximum water depth of five (5) feet at mean low water, and no wider, at the top of the submerged bottom, than to safely allow the passage of two boats side-by-side, the size of which the boat ramp was/is designed to accommodate.

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- (d) If there is no existing access channel that provides for adequate water depth from the boat ramp to the ICW or to deeper water (i.e., not maintenance dredging) AND the site is not within or adjacent to a FDEP designated Aquatic Preserve, then the proposed project may be authorized if the following are complied with:
  - a. The area of new dredging shall not have a SAV coverage of greater than ten (10) percent as determined using a scientifically acceptable method of coverage determination and such determination is made between the months of May through October;
  - b. The total length of new dredging shall not exceed 500 feet.
  - c. The boat ramp facility shall have informational signs in clear view of boaters launching and landing vessels. Signs used to comply with this section shall be in addition to any signs required by the regulatory agency. Signs shall also be installed that warn boaters of the need to stay in the channel.
  - d. The access channel shall be marked in accordance with U.S. Coast Guard and FWC standards.
  
- 1.4 Within the unincorporated portion of Indian River County, private residential marinas shall be permitted with administrative permit approval in the following Residential Single-family (RS), and Residential Multi-family (RM) zoning districts: RS-1, RS-2, RS-3, RS-6, RT-6, RM-3, RM-4, RM-6, RM-8, and RM-10.
  
- 1.5 Within the unincorporated portion of Indian River County, public/private residential marinas shall be permitted with special exception approval in the following Residential Single-family (RS), and Residential Multi-family (RM) zoning districts: RS-1, RS-2, RS-3, RS-6, RT-6, RM-3, RM-4, RM-6, RM-8, and RM-10.
  
- 1.6 Within the unincorporated portion of Indian River County, recreational marinas shall be permitted in general commercial (CG) and heavy commercial (CH) zoning districts. Recreational marinas shall be permitted with special exception approval in the following zoning districts: office-commercial-residential (OCR), neighborhood commercial (CN), and limited commercial (CL).
  
- 1.7 Within the unincorporated portion of Indian River County, commercial marinas shall be permitted in the following zoning districts: heavy commercial (CH), light industrial (IL), and general industrial (IG). Commercial marinas shall be permitted in the general commercial (CG) zoning district with administrative permit approval.

## **Indian River County Manatee Protection and Boating Safety Comprehensive Management Plan**

- 1.8 The county shall require an on-site mitigation plan to be submitted as part of any proposal to site or expand a boat facility within an area of the IRL exhibiting environmental constraints, such as manatee use, the presence of seagrass beds and/or shoreline vegetation. Off-site restoration and/or mitigation to seagrass beds or estuarine wetlands are alternative techniques that may be considered in the event that on-site mitigation is not practical. No fee-in-lieu payments will be accepted as mitigation.
- 1.9 By July 2005, the County shall coordinate with the Town of Indian River Shores, the Town of Orchid, the City of Sebastian and the City of Vero Beach concerning siting of marina/boat facilities and the overall implementation of this MPP by conducting public workshops and by soliciting comments from the staff and elected officials of these municipal governments.
- 1.10 In the event that an existing marina is destroyed by a natural disaster, the marina may be re-built within the same footprint of the damaged structure provided that the marina was in compliance with regulations at the time of its construction. Existing Marinas that are re-built shall be consistent with the policies listed under Objective 1 of this MPP.
- 1.11 Covered boat slips, covered terminal platforms, and unwallied boat shelters shall not be permitted in areas where SAV coverage is ten (10) percent or greater.
- 1.12 Floating docks and dock designs which have the potential to entrap manatees or prevent them from accessing foraging areas shall be prohibited.
- 1.13 By 2005, the County Environmental Planning Section, in cooperation with the FWC's Bureau of Protected Species Management, will produce a map titled Constraints to Boat Facility Siting in the IRL. This map will display the areas of high, medium and low constraints throughout the county. Density thresholds and limitations for development shall apply to sites within these locations. This map will be kept on file in the Community Development Department, and will be used to conduct site-specific reviews of boat facility siting and expansion proposals.
- 1.14 A maximum density threshold of one (1) powerboat slip per 100 feet of shoreline along the IRL shall apply in Zone 1, Zone 2, Zone 4, the portion of Zone 6 lying within the Town of Indian River Shores, Zone 8, and Zone 9.
- 1.15 The County shall encourage the expansion and upgrading of existing boat facilities as an alternative to constructing new boat facilities by considering the removal of the 1:100 powerboat shoreline density ratio on a case-by-case basis from the following Marina Siting Zones: Zone 3, Zone 5, the portion of Zone 6 lying within the City of Vero Beach, and Zone 7. As a minimum a 1:100 powerboat: shoreline density ratio may be applied, if warranted, using the criteria in Section 1.2.

**OBJECTIVE 2      Boating Safety and Law Enforcement**

**Through 2005, the annual accident rate in Indian River County will be at or below the 1995 baseline rate of 131 accidents per 100,000 registered boaters. Furthermore, there will be no incidence of watercraft-related human fatalities.**

- 2.1 By the end of 2005, the county shall request that the FWC adopt the following speed zone amendments for Indian River County:

Gifford Cut: Extend the “unregulated” speed zone north toward Channel Marker 127;

Wabasso Causeway: Establish a year-round slow speed zone within 300 feet of the western shoreline of Wabasso Island, continuing 300 feet north and south of Wabasso Causeway (C.R. 510); and

Create a 400-foot “Idle Speed” zone, within the ICW, centered under each bridge over the Indian River Lagoon

Eliminate the “Slow Speed” zone in the ICW north of the Barber Bridge (SR 60).

- 2.2 By the end of 2005, the County, in cooperation with the FWC, local law enforcement agencies, and local boaters’ interest organizations, will establish a Citizen's Marine Patrol.

**OBJECTIVE 3      Education/Public Awareness**

**By 2005, informational kiosks displaying manatee protection practices, safe boating practices, and the designated speed zones of the inland waters of the county will be installed at all public boat ramps in Indian River County.**

- 3.1 By 2005, the County shall obtain funding from the FIND and the FWC to construct informational kiosks at boat ramps and other strategic locations, such as fishing piers.
- 3.2 The County, in cooperation with the FWC, USFWS, FIND, and the ELC, will distribute manatee awareness and boating safety materials to local boaters at the time of yearly boat registration and other appropriate locations such as marinas, bait and tackle shops, and public parks.
- 3.3 By 2005, the County shall initiate a monofilament line recycling program by placing marked collection receptacles at boat ramps, marinas, bridges, and strategic locations.
- 3.4 All existing and new boat facilities (public and private) shall be required to post manatee awareness signs.

- 3.5 By 2005, all rental vessels, including personal watercraft, in Indian River County shall be required to display stickers or plasticized cards with boating safety and manatee protection information.

#### **OBJECTIVE 4 Manatee Protection Measures**

**Through 2005, the annual number of manatee mortalities in Indian River County shall be no more than five (5) excluding unusual events such as red tide or disease outbreaks. Of these annual mortalities, no more than one (1) mortality shall be watercraft-related.**

- 4.1 The county, in cooperation with the City of Vero Beach Utilities Department and the FWC Bureau of Protected Species Management will ensure that disruptions to outflow, and/or inadequate temperatures to sustain manatees during winter are minimized, and that all necessary precautions to minimize hazards at the power plant are initiated.
- 4.2 By 2005, the county shall obtain funding to retrofit stormwater outfalls in tidal waters to reduce the risk of entrapment and drowning of manatees. Any submerged or partially submerged pipes or culverts accessible to manatees during any tidal phase, larger than 8 inches in diameter but less than eight (8) feet in diameter, shall be grated with bars no more than eight (8) inches apart installed across the mouth of the outfall.

#### **IMPLEMENTATION**

As required by Department of Community Affairs (DCA) Rule 9J-5.012 3 (g), DCA Rule 9J-5.012 (3) (c) (8), and Chapter 163, Part II (6), Florida Statutes, the marina siting criteria contained in this MPP will be adopted by ordinance, as part of the Coastal Management Element of the Indian River County Comprehensive Plan.

The Environmental Planning Section of the Community Development Department will be responsible for coordinating with the appropriate agencies to ensure that the policies of the Indian River County Comprehensive Manatee Protection and Boating Safety Plan are implemented. The policies contained in this MPP shall be adopted under Sections 932.08 and 932.10 of the County's Land Development Regulations. Table 9 identifies the type of action required, the entity or entities responsible for taking action, and the date of implementation.

#### **EVALUATION & MONITORING**

The Community Development Department's Environmental Planning Section will be responsible for the overall monitoring and evaluation of this MPP. Due to the unpredictable nature of manatee mortality and boating accidents, monitoring will occur on a continual basis. Periodic updates will incorporate revised population projections, manatee mortality data, boat registration, traffic patterns, speed/safety zones, and other relevant information. Modifications that strengthen the policies contained in this MPP may become necessary if human fatalities and/or human-induced manatee mortality increases.

## Indian River County Manatee Protection and Boating Safety Comprehensive Management Plan

A formal evaluation of the Indian River County Manatee Protection and Boating Safety Comprehensive Management Plan shall be presented to the Marine Advisory/ Narrows Watershed Action Committee on a five-year basis, and shall be updated or amended as necessary. This evaluation will be based on the overall success or failure of this MPP in meeting its stated objectives. The time frames and quantitative measures associated with each objective in this MPP are identified in Table 10.

**TABLE 9  
Implementation Matrix**

<b>Policy</b>	<b>Action(s)</b>	<b>Responsibility</b>	<b>Timing</b>
1.1	Boat facility consistent with MPP	CDD/municipalities	Ongoing
1.2	Marina siting criteria	CDD/municipalities	Ongoing
1.3	Boat ramp siting criteria	CDD/municipalities	Ongoing
1.4	Private residential marina zoning districts (unincorporated county)	CDD	Ongoing
1.5	Public/private residential marina zoning districts (unincorporated county)	CDD	Ongoing
1.6	Recreational marina zoning districts (unincorporated county)	CDD	Ongoing
1.7	Commercial marina zoning districts (unincorporated county)	CDD	Ongoing
1.8	Require mitigation to site or expand marinas	FDEP/FWC/USFWS/CDD	Ongoing
1.9	Coordinate with municipalities	CDD/municipalities	Ongoing
1.10	Require re-built facilities to comply with new standards	CDD	Contingency
1.11	Prohibit covers where SAV coverage exceeds 10%	FDEP/FWC/CDD	Ongoing
1.12	Prohibit dock designs detrimental to manatees	FDEP/FWC/CDD	Ongoing
1.13	Produce map of boat facility siting constraints	FWC/CDD	2005
1.14	Apply 1:100 powerboat to shoreline ratio	CDD/municipalities	Ongoing
1.15	Remove 1:100 powerboat/ shoreline ratio	CDD/municipalities	Ongoing
2.1	Adopt resolution supporting speed zone amendments	BCC	2005
2.2	Establish local citizen's marine patrol	FMP/Sheriff/local boating organizations	2005
3.1	Obtain funding to construct kiosks	CDD/FIND/FDEP	2005
3.2	Distribute educational materials	CDD/ELC/FDEP/FWC// marinas/local boating organizations	Ongoing
3.3	Initiate monofilament line recycling program	CDD/Parks Division/ Solid Waste Disposal District	2005
3.4	Require all existing and new boat facilities to post manatee awareness signs	CDD/FDEP/FWC/municipalities	Ongoing
3.5	Require rental vessels to display manatee protection information	CDD/marinas	2005
4.1	Facilitate coordination between city utilities and FDEP/FWC	FDEP/FWC/City Utilities/CDD	Ongoing
4.2	Obtain funding to retrofit stormwater outfalls	CDD/SJRWMD/Public Works	2005

**TABLE 10**  
**Evaluation Matrix**

<b>OBJECTIVE</b>	<b>MEASURE</b>	<b>TIME FRAME</b>
1	Amount of impact to manatee habitat and natural resources	2005
2	Boating accident and fatality rate	2005
3	Installation of informational kiosks at public boat ramps	2005
4	Number of manatee mortalities	2005

## **REVISION HISTORY**

This section provides a summary of all the revisions made to the MPP. The revisions summarized herein are those that have been adopted at the County level and approved by the FWC at the state level. The purpose is to provide a summary of revisions, not a detailed accounting of every change made. In some cases, this section may make reference to another document, such as an Evaluation and Appraisal Report (EAR). These documents, while not a part of the MPP, are available at the County Administrative Building or online at [www.ircgov.com](http://www.ircgov.com).

### **Original MPP**

In August 2000, the Board of County Commissioners (the Board) adopted the MPP and, in November 2000, the FWC formally accepted the MPP.

### **1<sup>st</sup> Revision**

In January 2002, the Board adopted amendments and the FWC approved the amendments to the MPP. These amendments were to change the definition of “High Manatee Mortality” and to clarify minimum water depth requirements for marinas.

### **2<sup>nd</sup> Revision**

In June 2004, the Board approved amendments to the MPP. In August 2004, the FWC formally accepted the amendments. These amendments were based on a county staff two-year EAR. The revisions included updates to the data and existing conditions sections of the MPP, as well as revisions to MPP policies to allow residential marinas in lieu of single-family docks under certain circumstances, when such marinas are determined to have less adverse impact to manatees than the alternative of single-family docks. The revisions also included a one-time slip use conversion allowance for marinas established prior to the adoption of manatee protection speed zones (July 1993), from a 1:100 powerboat-slip-per-linear-feet-of-shoreline ratio restriction to a ratio of 1.5 powerboat slips per 100 linear feet of shoreline.

**APPENDIX A  
MARINAS IN INDIAN RIVER COUNTY**

# Indian River County Marina Survey - January 2000

LATITUDE  LONGITUDE

MARINA NAME/OWNER

ADDRESS

FACILITY TYPE

TELEPHONE #

FEET OF SHORELINE

TOTAL # OF WET SLIPS  # OF OCCUPIED WET SLIPS

# OF POWERBOATS IN WET SLIPS  # OF SAILBOATS IN WET SLIPS

TOTAL # OF DRY SLIPS  # OCCUPIED DRY SLIPS

# OF POWERBOATS IN DRY SLIPS  # SAILBOATS IN DRY SLIPS

# OF TEMPORARY SLIPS \_\_\_\_\_ # OF TRAILER SPACES:

# OF BOAT RAMP  # OF RAMP LANES:

BOAT LIFT  BOAT RENTALS

SEWAGE PUMPOUTS  BAIT/TACKLE SHOP

MARINE SUPPLIES  FUEL FACILITIES

BOAT AND ENGINE REPAIR  RESTAURANT

EDUCATIONAL MATERIALS

SIGNS

**Comments/Notes**

The signs at this facility were all in good locations. The maintained depth is 5-8 feet. At least 10 manatees were observed surface resting at this facility.

LATITUDE  LONGITUDE   
MARINA NAME/OWNER   
ADDRESS   
FACILITY TYPE   
TELEPHONE #   
FEET OF SHORELINE

TOTAL # OF WET SLIPS  # OF OCCUPIED WET SLIPS

# OF POWERBOATS IN WET SLIPS  # OF SAILBOATS IN WET SLIPS

TOTAL # OF DRY SLIPS  # OCCUPIED DRY SLIPS

# OF POWERBOATS IN DRY SLIPS  # SAILBOATS IN DRY SLIPS

# OF TEMPORARY SLIPS  # OF TRAILER SPACES:

# OF BOAT RAMP  # OF RAMP LANES:

BOAT LIFT  BOAT RENTALS

SEWAGE PUMPOUTS  BAIT/TACKLE SHOP

MARINE SUPPLIES  FUEL FACILITIES

BOAT AND ENGINE REPAIR  RESTAURANT

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LATITUDE  LONGITUDE   
MARINA NAME/OWNER   
ADDRESS   
FACILITY TYPE   
TELEPHONE #   
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# OF POWERBOATS IN DRY SLIPS  # SAILBOATS IN DRY SLIPS

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# OF POWERBOATS IN DRY SLIPS  # SAILBOATS IN DRY SLIPS

# OF TEMPORARY SLIPS 11 # OF TRAILER SPACES: N/A

# OF BOAT RAMP  # OF RAMP LANES: N/A

BOAT LIFT  BOAT RENTALS

SEWAGE PUMPOUTS  BAIT/TACKLE SHOP

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# OF POWERBOATS IN DRY SLIPS  # SAILBOATS IN DRY SLIPS   
# OF TEMPORARY SLIPS \_\_\_\_\_ # OF TRAILER SPACES: N/A

# OF BOAT RAMP  # OF RAMP LANES: N/A

BOAT LIFT  BOAT RENTALS

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# OF BOAT RAMP  # OF RAMP LANES:

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TOTAL # OF WET SLIPS  # OF OCCUPIED WET SLIPS   
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TOTAL # OF DRY SLIPS  # OCCUPIED DRY SLIPS   
# OF POWERBOATS IN DRY SLIPS  # SAILBOATS IN DRY SLIPS

# OF TEMPORARY SLIPS \_\_\_\_\_ # OF TRAILER SPACES: N/A

# OF BOAT RAMP  # OF RAMP LANES: N/A

BOAT LIFT  BOAT RENTALS

SEWAGE PUMPOUTS  BAIT/TACKLE SHOP

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TOTAL # OF DRY SLIPS  # OCCUPIED DRY SLIPS   
# OF POWERBOATS IN DRY SLIPS  # SAILBOATS IN DRY SLIPS

# OF TEMPORARY SLIPS \_\_\_\_\_ # OF TRAILER SPACES: 5

# OF BOAT RAMP  # OF RAMP LANES: 2

BOAT LIFT  BOAT RENTALS

SEWAGE PUMPOUTS  BAIT/TACKLE SHOP

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TELEPHONE #   
FEET OF SHORELINE

TOTAL # OF WET SLIPS  # OF OCCUPIED WET SLIPS   
# OF POWERBOATS IN WET SLIPS  # OF SAILBOATS IN WET SLIPS

TOTAL # OF DRY SLIPS  # OCCUPIED DRY SLIPS   
# OF POWERBOATS IN DRY SLIPS  # SAILBOATS IN DRY SLIPS

# OF TEMPORARY SLIPS # OF TRAILER SPACES:

# OF BOAT RAMP  # OF RAMP LANES:

BOAT LIFT  BOAT RENTALS

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# OF POWERBOATS IN WET SLIPS  # OF SAILBOATS IN WET SLIPS

TOTAL # OF DRY SLIPS  # OCCUPIED DRY SLIPS   
# OF POWERBOATS IN DRY SLIPS  # SAILBOATS IN DRY SLIPS

# OF TEMPORARY SLIPS # OF TRAILER SPACES:

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# OF TEMPORARY SLIPS 10 # OF TRAILER SPACES: N/A

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