ENVIRONMENTAL ASSESSMENT

for

FINAL RULE TO ESTABLISH THREE ADDITIONAL MANATEE PROTECTION AREAS IN FLORIDA

July 2003

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I. Summary

We, the Fish and Wildlife Service (Service), propose to establish three manatee protection areas in Florida. We are taking this action under the Endangered Species Act and the Marine Mammal Protection Act to reduce the level of take of Florida manatees (*Trichechus manatus latirostris*). These areas include three manatee refuges, where certain waterborne activities are regulated.

II. Introduction

A. SECTION ONE - PURPOSE AND NEED

1. Introduction:

The authority to establish protection areas for the Florida manatee is provided by the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*) and the Marine Mammal Protection Act (MMPA) of 1972, as amended (16 U.S.C. 1361 *et seq.*), and published in Title 50 of the Code of Federal Regulations, Part 17, Subpart J. We have discretion, by regulation, in accordance with 5 U.S.C. 553 and 43 CFR Part 14, to establish manatee protection areas whenever substantial evidence shows such establishment is necessary to prevent the taking of one or more manatees. Furthermore, we may establish manatee protection areas on an emergency basis when we determine that there is substantial evidence that there is imminent danger of a taking of one or more manatees, and that such establishment is necessary to prevent such taking. "Take", as defined by the ESA, means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or to attempt to engage in any such conduct. "Harm" is further defined as an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering. "Harass" is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering. [50 CFR 17.3]

We may establish two types of manatee protection areas: manatee refuges and manatee sanctuaries. A manatee refuge, as defined in 50 CFR 17.102, is an area in which we have determined that certain waterborne activities would result in the taking of one or more manatees, or that certain waterborne activities must be restricted to prevent the taking of one or more manatees, including but not limited to a taking by harassment. A manatee sanctuary is an area in which we have determined that any waterborne activity would result in the taking of one or more manatees, including but not limited to a taking by harassment. A waterborne activity is defined as including, but not limited to, swimming, diving (including skin and SCUBA diving), snorkeling, water skiing, surfing, fishing, the use of water vehicles and dredge and fill activities.

The West Indian manatee is federally listed as an endangered species under the ESA (32 FR 4001) and the species is further protected as a depleted stock under the MMPA. Florida manatees, a subspecies of the West Indian manatee (Domning and Hayek, 1986), live in freshwater, brackish, and marine habitats in coastal and inland waterways of the southeastern

United States. The majority of the population can be found in Florida waters throughout the year, and nearly all manatees use the waters of peninsular Florida during the winter months. The manatee is a cold-intolerant species and requires warm water temperatures generally above 20˚ Celsius (68˚ Fahrenheit) to survive during periods of cold weather. During the winter months, most manatees rely on warm water from industrial discharges and natural springs for warmth. In warmer months, they expand their range and occasionally are seen as far north as Rhode Island on the Atlantic Coast and as far west as Texas on the Gulf Coast.

2. Purpose and Need of Action

Long-term studies, as described below, suggest that there are four relatively distinct regional populations of manatees in Florida: (a) the Northwest Region, along the Gulf of Mexico from Escambia County east and south to Hernando County; (b) the Upper St. Johns River Region, consisting of Putnam County from Palatka south to Lake and Seminole counties; (c) the Atlantic Region, consisting of counties along the Atlantic coast from Nassau County south to Miami-Dade County and that portion of Monroe County adjacent to the Florida Bay and the Florida Keys; and counties along the lower portion of the St. Johns River north of Palatka, including Putnam, St Johns, Clay and Duval counties; and (d) the Southwest Region, consisting of counties along the Gulf of Mexico from Pasco County south to Whitewater Bay in Monroe County. We have concluded that these groups meet the criteria for designation as separate stocks, per the MMPA (67 FR 69081).

Despite significant efforts dating back to the late 1970s and early 1980s, scientists have been unable to develop a useful means of estimating or monitoring trends in the size of the overall manatee population in the southeastern United States (O'Shea, 1988; O'Shea *et al.*, 1992; Lefebvre *et al.*, 1995). Even though many manatees aggregate at warm-water refuges in winter and most, if not all, such refuges are known, direct counting methods (*i.e.*, by aerial and ground surveys) are unable to account for uncertainty in the number of animals that may be away from these refuges at any given time, the number of animals not seen because of turbid water, and other factors. The use of mark-resighting techniques to estimate manatee population size based on known animals in the manatee photo-identification database has also been impractical, as the proportion of unmarked manatees cannot be estimated.

The only data on population size include un-calibrated indices based on maximum counts of animals at winter refuges made within one or two days of each other. Based on such information in the late 1980s, the total number of manatees throughout Florida was originally thought to include at least 1,200 animals (Service, 2001). Because aerial and ground counts at winter refuges are highly variable depending on the weather, water clarity, manatee behavior, and other factors (Packard *et al.*, 1985; Lefebvre *et al.*, 1995), interpretation of these data to assess short-term trends is difficult (Packard and Mulholland, 1983; Garrott *et al.*, 1994).

Beginning in 1991, the State of Florida initiated a statewide, synoptic, aerial survey program to count manatees in potential winter habitat during periods of severe cold weather (Ackerman, 1995). These surveys are much more comprehensive than those used to estimate a minimum population during the 1980s. The highest statewide, minimum count from these

surveys was 3,276 manatees in January 2001; the highest count on the east coast of Florida included 1,814 animals (January 2003) and the highest on the west coast included 1,756 (January 2001).

Due to the problems mentioned above, we do not know what proportion of the total manatee population is counted in these surveys. These uncorrected counts do not provide a basis for assessing population trends, although trend analyses of temperature-adjusted aerial survey counts may provide insight to general patterns of population growth in some regions (Garrott *et al.*, 1994, 1995; Craig *et al.*, 1997; Eberhardt *et al.*, 1999).

It is possible, however, to monitor the number of manatees using the Blue Spring (Volusia County) and Crystal River (Citrus County) warm-water refuges. At Blue Spring (in the Upper St. Johns River Stock), with its unique combination of clear water and confined spring area, it has been possible to count the number of resident animals by identifying individual manatees from scar patterns. The data indicate that this group of animals has increased steadily since the early 1970s when it was first studied. During the 1970s the number of manatees using the spring increased from 11 to 25 (Bengtson, 1981). In the mid-1980s about 50 manatees used the spring (Service, 2001), and by the winter of 1999-2000, the number had increased to 147 (Hartley, 2001).

In the Northwest Stock, the clear, shallow waters of Kings Bay (Citrus County) have made it possible to monitor the number of manatees using this warm-water refuge at the head of Crystal River. Large aggregations of manatees apparently did not exist there until recent times (Service, 2001). The first careful counts were made in the late 1960s. Since then, manatee numbers have increased significantly. From 1967 to 1968, Hartman (1979) counted 38 animals in Kings Bay. By 1981-1982, the maximum winter count had increased to 114 manatees (Powell and Rathbun, 1984), and in November 2000, the maximum count was 301 (Service, 2003).

Both births and immigration of animals from other areas have contributed to the increases in manatee numbers at Crystal River and Blue Spring. Animals may be further attracted to these areas because of local manatee protection areas. Three manatee sanctuaries (areas in which waterborne activities are prohibited) in Kings Bay were established in 1980; an additional three were added in 1994, and a seventh in 1998. The increases in counts at Blue Spring and Crystal River are accompanied by estimates of adult survival and population growth that are higher than those determined for the Atlantic coast (Eberhardt and O'Shea, 1995; Langtimm *et al.*, 1998; Eberhardt *et al.*, 1999).

While aircraft synoptic surveys provide a "best estimate" of the minimum Florida manatee population size, there are no confidence intervals (derived through reliable, statistically based, population-estimation techniques) for these estimates. With the exception of a few places where manatees may aggregate in clear, shallow water, not all manatees can be seen from aircraft because of water turbidity, depth, surface conditions, variable times spent submerged, and other considerations. Thus, results obtained during typical manatee synoptic surveys yield unadjusted partial counts. While these results are of value in providing information on where manatees occur, likely relative abundance in various areas, and seasonal shifts in manatee

abundance, they do not provide good population estimates, nor can they reliably measure trends in the manatee population. Consequently, the Florida Manatee Recovery Plan (Service, 2001) concludes that "[d]espite considerable effort in the early 1980s, scientists have been unable to develop a useful means of estimating or monitoring trends in size of the overall manatee populations in the southeastern United States."

Population models employ mathematical relationships based on survival and reproduction rates to estimate population growth and trends in growth. A deterministic model (a model in which there are no random events) that uses classical mathematical approaches and various computational procedures with data on reproduction and survival of living, identifiable manatees suggests a maximum population growth rate of about 7 percent per year, excluding emigration or immigration (Eberhardt and O'Shea, 1995). This maximum was based on studies conducted between the late 1970s and early 1990s in the well-protected winter aggregation area at Crystal River and did not require estimation of the population size. The analysis showed that the chief factor affecting the potential for population growth is survival of adults.

Estimated adult survival in the Atlantic Stock (a larger region with less protection) has suggested slower or no population growth between the late 1970s and early 1990s. This modeling shows the value of using survival and reproduction data obtained from photo-identification studies of living manatees to compute population growth rates with confidence intervals, providing information that can be used to infer long-term trends in the absence of reliable population size estimates. Collection of similar data has been initiated only recently in that area of Florida from Tampa Bay to the Caloosahatchee River (beginning in the mid-1990s) and none is available for many of the remaining areas used by manatees in southwestern Florida (Southwest Stock).

A population viability analysis (PVA), in which random events, such as red tide and extremely cold winters, are incorporated into a model, was carried out for manatees based on age-specific mortality rates estimated from the age distribution of manatees found dead throughout Florida from 1979 through 1992 (Marmontel *et al.*, 1997). This method of estimating survival relied on certain assumptions that were not fully testable; despite this, the results again pointed out the importance of adult survival to population persistence. Given a population size that reflected a 1992 minimum population estimate, the PVA showed that if adult mortality as estimated for the study period were reduced by a modest amount (for example, from 11 percent down to 9 percent), the Florida manatee population would likely remain viable for many years. However, the PVA also showed that slight increases in adult mortality would result in extinction of manatees within the next 1,000 years.

The above review demonstrates that using statewide population size "estimates" of any kind is scientifically weak for estimating population trends in manatees. The weight of scientific evidence suggests that the potential for population increases over the last two decades is strong for two protected aggregation areas. New population analyses, based on more recent (since 1992) information, are not yet available in the peer-reviewed literature.

In 2001, the Manatee Population Status Working Group (MPSWG) provided a statement

summarizing what they believed to be the status of the Florida manatee at that time (Wildlife Trust, 2001). The MPSWG stated that, for the Northwest and Upper St. Johns River stocks, available evidence indicated that there had been a steady increase in animals over the last 25 years. The statement was less optimistic for the Atlantic Stock due to an adult survival rate that was lower than the rate necessary to sustain population growth. The MPSWG believed that this stock had likely been growing slowly in the 1980s, but then may have leveled off or even possibly declined. They considered the status of the Atlantic Stock to be "too close to call." Such finding was consistent with high levels of human-related and, in some years, cold-related deaths in this stock. Regarding the Southwest Stock, the MPSWG acknowledged that further data collection and analysis would be necessary to provide an assessment of the manatee's status in this stock. Preliminary estimates of adult survival available to the MPSWG at that time indicated that the Southwest Stock was similar to the Atlantic Stock and "substantially lower than [the adult survival estimates] for the Northwest and Upper St. Johns regions." The Southwest Stock was cited as having had high levels of watercraft-related deaths and injuries and natural mortality events (*i.e.*, red tide and severe cold).

Recent information suggests that the overall manatee population has grown since the species was listed in 1967 (50 CFR 17.11). Based on data provided at the April 2002 Manatee Population Ecology and Management Workshop, we believe that the Northwest and Upper St. Johns River stocks and are approaching demographic benchmarks established in the Florida Manatee Recovery Plan (Service, 2001) for reclassification from endangered to threatened status. We also believe that the Atlantic Stock is relatively close to meeting the downlisting benchmark for adult survival and is close to meeting or exceeding other demographic criteria. We are less optimistic, however, regarding the Southwest Stock. Although data are still insufficient or lacking to compare the Southwest Stock's status to the downlisting/delisting criteria, preliminary data for adult survival and modeling results indicate that this stock is below the benchmarks established in the recovery plan, and may be experiencing a population decline.

Although we are optimistic about the potential for recovery in two out of the four stocks, it is important to clarify that in order to downlist or delist the manatee, pursuant to the ESA, all four stocks must simultaneously meet the appropriate criteria as described in the Florida Manatee Recovery Plan (Service, 2001). In addition to meeting the demographic criteria established in the recovery plan, in order for us to determine that an endangered species has recovered to a point that it warrants removal from the List of Endangered and Threatened Wildlife and Plants, the species' status must have improved to the point at which the current classification is no longer appropriate under the threats based listing factors set out in section 4(a)(1) of the ESA. That is, threats to the species must be reduced or eliminated such that the species no longer fits the definitions of endangered, if reclassifying to threatened, or threatened, for delisting. While suggestions of increasing population size are very encouraging, there has been no confirmation that significant threats to the species, including human-related mortality, injury, and harassment, and habitat alteration, have been reduced or eliminated to the extent that the Florida manatee may be reclassified from endangered to threatened status. Accordingly, the Third Revision of the Florida Manatee Recovery Plan (Service, 2001) establishes criteria for downlisting and delisting the Florida manatee under the relevant threat factors in section 4(a)(1) of the ESA. Pursuant to our mission, we continue to assess this information with the goal of

meeting our manatee recovery objectives.

a. Threats to the Species

Human activities, and particularly waterborne activities, are resulting in the take of manatees. Take, as defined by the ESA, means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or to attempt to engage in any such conduct. Harm means an act which kills or injures wildlife (50 CFR 17.3). Such an act may include significant habitat modification or degradation that kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass includes intentional or negligent acts or omissions that create the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns, which include, but are not limited to, breeding, feeding, or sheltering (50 CFR 17.3).

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

Human use of the waters of the southeastern United States has increased dramatically as a result of residential growth and increased visitation in this region. This phenomenon is particularly evident in the State of Florida. The human population of Florida has grown by 146 percent since 1970, from 6.8 million to 16.7 million residents (U.S. Census Bureau, 2003), and is expected to exceed 18 million by 2010, and 20 million by the year 2020. According to a report by the Florida Office of Economic and Demographic Research (2002), it is expected that, by the year 2010, 13.7 million people will reside in the 35 coastal counties of Florida. In a parallel fashion to residential growth, visitation to Florida has increased dramatically. It is expected that Florida will have 83 million visitors annually by the year 2020, up from 48.7 million visitors in 1998. In concert with this increase of human population growth and visitation is the increase in the number of watercraft that travel Florida waterways. In 2002, 961,719 vessels were registered in the State of Florida (Florida Division of Highway Safety and Motor Vehicles, 2003). This represents an increase of 59 percent since 1993. The Florida Department of Community Affairs estimates that, in addition to boats belonging to Florida residents, between 300,000 and 400,000 boats registered in other states use Florida waters each year.

Increases in the human population and the concomitant increase in human activities in manatee habitat compound the effect of such activities on manatees. Human activities in manatee habitat include direct and indirect effects to manatees. Direct effects include injuries and deaths from watercraft collisions, deaths from water control structure operations, lethal and

sublethal entanglements with recreational and commercial fishing gear, and alterations of behavior due to harassment. Indirect effects can result from habitat alteration and destruction, such as the creation of artificial warm water refuges, decreases in the quantity and quality of warm water in natural spring areas, changes in water quality in various parts of the State, the introduction of marine debris, and other, more general disturbances.

The number of watercraft-related deaths each year continues to rise. The following is an excerpt from an analysis conducted by the U.S. Geological Survey's Biological Resources Division (USGS-BRD) for our recent efforts to promulgate incidental take regulations for manatees pursuant to the MMPA. "There has been an increasing trend in watercraft-related mortality in all four stocks over the past decade. This is reflected in increases in the average annual number of watercraft-related mortalities as the period over which the average is taken becomes more recent. For instance, in the Atlantic Stock, the mean observed mortality due to watercraft was 25.8 per year for the period 1990-1999, 29.8 per year for the period 1993-2002, and 37.0 per year for the most recent 5-year period. This trend is statistically significant in all four stocks. The slope of the increase (as fit to the period 1992-2002) does not differ between the Upper St. Johns and Northwest stocks (5.96 percent), nor does it differ between the Atlantic and Southwest regions (9.53 percent). To interpret these rates of increase, however, it is important to compare them to the historic growth rates (1990-1999) in each stock, to account for the increase in watercraft-related mortalities that would be expected due to increases in manatee population size. In the Atlantic and Southwest stocks, the rate of increase in watercraft-related mortality over that period far outstripped the estimated growth rate of those populations (by 8.5 percent in the Atlantic and 10.6 percent in the Southwest). In the Northwest stock, the rate of increase in mortality (6.0 percent) is somewhat larger than the estimated growth rate (3.6 percent). In the Upper St. John's stock, the increase in boat-related mortality can be completely explained by the estimated increase in the population size."

The continuing increase in the number of recovered dead manatees throughout Florida has been interpreted as evidence of increasing mortality rates (Ackerman *et al.*, 1995). Between 1976 and 1999, the number of carcasses collected in Florida increased at a rate of 5.8 percent per year, and deaths caused by watercraft strikes increased by 7.2 percent per year (Service, 2002). Because the manatee has a low reproductive rate, a decrease in adult survivorship due to watercraft collisions could contribute to a long-term population decline (O'Shea *et al.*, 1985). It is believed that a 1 percent change in adult survival likely results in a corresponding change in the rate of population growth or decline (Marmontel *et al.*, 1997).

Collisions with watercraft are the largest cause of human-related manatee deaths. Data collected during manatee carcass salvage operations in Florida indicate that a total of 1,145 manatees (from a total carcass count of 4,545) are confirmed victims of collisions with watercraft (1978 to 2002). This number may underestimate the actual number of watercraft-related mortalities, since many of the mortalities listed as "undetermined causes" show evidence of collisions with vessels and because not all carcasses are found. Collisions with watercraft comprise approximately 25 percent of all manatee mortalities since 1978. Approximately 75 percent of all watercraft-related manatee mortality has taken place in 11 Florida counties (Brevard, Lee, Collier, Duval, Volusia, Broward, Palm Beach, Charlotte, Hillsborough, Citrus,

and Sarasota) (FMRI, 2003b). The last 5 years have been record high years for the number of watercraft-related mortalities.

The second largest cause of human-related manatee mortality is entrapment in water control structures and navigation locks (FMRI, 2003b). Manatees may be crushed in gates and locks or may be trapped in openings where flows prevent them from surfacing to breathe. Locks and gates were responsible for 164 manatee deaths between 1978 and 2002, or approximately 4 percent of all deaths during this period. While there are no well-defined patterns characterizing these mortalities, it is believed that periods of low rainfall increase the likelihood of manatees being killed in these structures. These periods require more frequent, large-scale movements of water, which require more frequent gate openings and closings in areas that attract manatees searching for fresh water. We have been working, through an interagency task force, with various Federal and State agencies to retrofit these structures with reversing mechanisms that prevent manatee crushings.

Manatees are also affected by other human-related activities. Impacts resulting from these activities include deaths caused by entrapment in pipes and culverts; entanglement in ropes, lines, and nets; ingestion of fishing gear or debris; vandalism; and poaching. These activities have accounted for 124 manatee deaths since 1978, an average of more than 4 deaths per year. As with watercraft-related mortalities, these deaths also appear to be increasing, with 40 of these deaths occurring between 1998 and 2002 (an average of 8 deaths per year over the last 5 years).

B. SECTION TWO - LONG-RANGE GOALS AND OBJECTIVES

1. Introduction:

The long-range goals and objectives of Service actions are to promote the protection and recovery of the Federally listed Florida manatee, so that at a future date, it will eventually be downlisted and subsequently removed from the Federal endangered species list.

The Florida Manatee Recovery Plan, Third Revision, (Service, 2001) established four objectives necessary to establish a sustainable population of manatees within the state of Florida. These objectives are to:

a. minimize causes of manatee disturbance, injury and mortality;
b. determine and monitor the status of the manatee population;
c. protect, identify, evaluate, and monitor manatee habitat; and
d. facilitate manatee recovery through public awareness and education.

This rule primarily addresses objective a: “minimize causes of manatee disturbance, injury and mortality.” By establishing refuges and sanctuaries, we intend to reduce the occurrence of take related to human activities within these areas.

2. Long-Range Objectives of Designating Refuges and Sanctuaries

Important solutions to problems that manatees are facing include the creation of manatee protection areas, enforcement of regulations to protect manatees and their habitat, education and outreach, etc. The establishment of sanctuaries and refuges will help promote the protection of manatees by reducing the occurrence of take within these areas. As additional Federal, state and local manatee protection zones are established, manatees will have a network of safe havens for traveling between feeding, resting and wintering areas. Mortality, injury, and harassment will be reduced as a result.

C. SECTION THREE - ISSUES, CONCERNS, AND OPPORTUNITIES IDENTIFIED

1. Issue 1 - Manatee Protection and Recovery

The Florida Manatee Recovery Plan, Third Revision (Service, 2001), substantially addresses the issues, concerns and opportunities associated with manatee protection and recovery and is hereby referenced and included as an attachment to this environmental assessment.

2. Issue 2 - Recreational Access and Uses

The sites identified in this rule serve a variety of recreational purposes. Many of the sites are used by boaters as travel corridors. All sites are within a few miles of public access points and can be accessed from public and private boat ramps, docks, or marinas. Designating these sites may alter recreational use in some areas. We are aware of the impacts this rule on recreational users and has considered these in its review.

3. Issue 3 - Commercial Access and Uses

Several of these sites are used by commercial vessels engaged in the transportation of goods or provision of services. Other sites are located in charter, dive, and tour boat service areas. Many sites are used for commercial fishing, including the crabbing industry. Water dependent facilities, such as bait and tackle shops, dive shops, and marinas, may also be affected by this rule.

4. Issue 4 - Local Economy

Many of the economies of communities along Florida's waterways are dependent, at least partially, on water-related activities. These activities may include commercial ports, marinas, tourism, fishing or any of a wide variety of other activities. This rule will not have a significant economic effect on a substantial number of these entities as defined under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq*.). An initial/final Regulatory Flexibility Analysis is not required. Accordingly, a Small Entity Compliance Guide is not required.

In order to determine whether the rule will have a significant economic effect on a

substantial number of small entities, we utilize available information on the industries most likely to be affected by the designation of three manatee refuges. Currently no information is available on the specific number of small entities that are potentially affected. This rule will add travel time to boating recreationists and commercial activities resulting from extension of existing speed zones. Because the only restrictions on recreational activity result from added travel time, and alternative sites are available for all waterborne activities, we believe that the economic effect on small entities resulting from changes in recreational use patterns will not be significant. The economic effects on small business resulting from this rule are likely to be indirect effects related to reduced demand for goods and services if recreationists choose to reduce their level of participation in waterborne activities. Similarly, because the only restrictions on commercial activity result from the inconvenience of added travel time, and boats can continue to travel up to 40 km-per-hour (25 mph) in most areas, we believe that any economic effect on small commercial fishing or charter boat entities will not be significant. Also, the indirect economic impact on small businesses that may result from reduced demand for goods and services from commercial entities is likely to be insignificant.

In order to determine whether small entities will be affected significantly, we examined county-level earnings data. We compared personal income data for the counties potentially affected to statewide averages to provide some background information about each county's economic situation. Because specific information about earnings of small entities potentially affected (both the total level and the amount of earnings potentially affected by the rule) is not available, we examined county-level earnings for industries potentially impacted by the designation. We further analyzed county business patterns data to examine the numbers of establishments in the affected counties that have a small number of employees. As stated above, economic impacts are believed to be minor and mostly will not interfere with the existing operation of small businesses in the affected counties.

Selected economic characteristics of the five affected counties are shown in Table 1. As demonstrated in the table, all counties except St. Johns have a lower per capita income than the State average. Growth in total personal income is slower than the statewide average in Duval, Lee, and Volusia counties. St. Johns County greatly exceeds the statewide average in growth in both total and per capita personal income. For all five counties, the services sector represents the industry with the greatest earnings. The proportion of industry earnings attributable to amusement and recreation (a subcategory of the services industry potentially impacted by the rule) was relatively low for each county, ranging from one to five percent of total industry earnings. As a result, a small impact to the recreation sector is unlikely to have a significant effect on county-level income. Similarly, the proportion of industry earnings related to the fishing sector was less than 0.2 percent for each county. Thus, a small impact to the fishing sector is unlikely to adversely affect county-level income.

Table 1
ECONOMIC CHARACTERISTICS OF THE FIVE AFFECTED COUNTIES IN FLORIDA - 2000

Counties	Per Capita Personal Income 2000 ($)	10-year Annual Growth of Per Capita Income[a]	Total Personal Income 2000 (000$)	10-year Annual Growth of Total Personal Income[a]	Total Earnings by Industry - All Industries (000$)	Amusement and Recreation Industry Earnings		Fishing Industry Earnings	
						Thousands of $'s	Percent of Total	Thousands of $'s	Percent of Total
Clay	25,421	3.8%	3,601,576	8.4%	1,225,569	18,565	1.5%	73	0.01%
Duval	27,084	4.1%	21,118,751	6.3%	19,916,074	194,900	1.0%	3,440	0.02%
Lee	26,655	3.0%	11,833,528	7.0%	6,379,956	106,875	1.7%	10,619	0.17%
St Johns	40,635	7.7%	5,057,864	15.9%	1,553,900	82,280	5.3%	581	0.04%
Volusia	22,574	3.6%	10,046,808	6.2%	4,748,268	128,280	2.7%	(b)	na
State of Florida	27,764	4.0%	445,739,968	7.2%	282,260,357	5,392,786	1.9%	85,609	0.03%

Source: Bureau of Economic Analysis(BEA), Regional Economic Information System, Regional Accounts Data, Local Area Personal Income (http://www.bea.doc.gov/bea/regional/reis/)

[a] Growth rates were calculated from 1990 and 2000 personal income data.

[b] BEA has withheld this information in order to avoid disclosure of confidential information.

The employment characteristics of the five affected counties are shown in Table 2. The latest available published data for the total number of establishments broken down by industry and county are from 1997. We included the following SIC (Standard Industrial Classification) categories, because they include businesses most likely to be directly affected by the designation of the manatee refuges:

- Fishing, hunting, trapping (SIC 09)
- Water transportation (SIC 44)
- Miscellaneous retail (SIC 59)
- Amusement and recreation services (SIC 79)
- Non-classifiable establishments (NCE)

Table 2

EMPLOYMENT CHARACTERISTICS OF THE FIVE AFFECTED COUNTIES IN FLORIDA - 1997
(Includes SIC Codes 09, 44, 59, 79, and NCE[a])

Counties	Total Mid-March Employment[b] (All Industries)	Mid-March Employment[b] (Select SIC Codes)	Total establishments (All Industries)	Select SIC Codes (Includes SIC Codes 09, 44, 59, 79, and NCE[a])				
				Total establishments	Number of establishments (1-4 employees)	Number of establishments (5-9 employees)	Number of establishments (10-19 employees)	Number of establishments (20+ employees)
Clay	28,106	1,940	2,747	255	158	48	30	19
Duval	361,302	14,459	21,016	1,510	877	330	164	139
Lee	135,300	7,734	11,386	974	602	193	92	87
St Johns	33,173	1,971	3,127	273	177	58	24	14
Volusia	127,948	7,116	10,716	989	643	188	73	85

Source: US Census County Business Patterns (http://www.census.gov/epcd/cbp/view/cbpview.html)

[a] Descriptions of the SIC codes included in this table as follows:

SIC 09 - Fishing, hunting, and trapping

SIC 44 - Water transportation

SIC 59 - Miscellaneous retail service division.

SIC 79 - Amusement and recreation services

NCE - non-classifiable establishments division

[b] Table provides the high-end estimate whenever the Census provides a range of mid-March employment figures for select counties and SIC codes.

As shown in Table 2, the vast majority (over 80 percent) of these business establishments in each of the five affected counties have less than ten employees, with the largest number of establishments employing less than four employees. In addition, in 1997, only four to seven percent of total mid-March employment for industries in the affected counties was in the industries likely to be affected by the rule. Any economic impacts associated with this rule will affect some proportion of these small entities.

Since the designation is for the development of manatee refuges, which only require a reduction in speed, we do not believe the designation would cause significant economic effect on small businesses. For example, because the manatee refuge designations will not prohibit any commercial fishing activity, and because there is a route available for boats to travel at up to 40 km-per-hour (25 mph) in most areas, it is unlikely that the rule will result in a significant economic impact on commercial fishing entities. Currently available information does not allow us to quantify the number of small business entities such as charter boats or commercial fishing entities that may incur direct economic impacts due to the inconvenience of added travel times resulting from the rule. An examination of county level information indicates that these economic impacts will not be significant for the affected counties. Based on an analysis of public comment, further refinement of the impact on small entities may be possible. In addition, the inconvenience of slow speed zones may cause some recreationists to change their behavior, which may cause some loss of income to some small businesses. The number of recreationists that will change their behavior, and how their behavior will change is unknown; therefore the impact on potentially affected small business entities cannot be quantified. However, because boaters will experience only minimal added travel time in most affected areas, we believe that this designation will not cause a significant economic impact on a substantial number of small entities.

III. Alternatives

A. SECTION ONE - ALTERNATIVES CONSIDERED IN DETAIL

1. Alternative 1 - Baseline Management (No Action)

Under the “No Action” alternative, we would not create any new refuges for the Florida manatee. The existing network of speed zones and protection areas would remain. We would rely on State and local agencies to establish any new restricted areas which may be necessary through county or state-wide manatee protection plans.

2. Alternative 2 - Creation of Three Refuges

This alternative is our preferred alternative. Adoption of this alternative will result in the designation of three new manatee refuges. Areas designated as refuges include the Caloosahatchee River - San Carlos Bay (Lee County), the lower St. Johns River (Duval, Clay, and St. Johns counties), and the Halifax and Tomoka rivers areas (Volusia County) where manatees are at risk from watercraft collisions.

B. SECTION TWO - ALTERNATIVES CONSIDERED BUT NOT ANALYZED

1. Alternative 3 - Increase Enforcement of Existing Regulations Without Establishing New Refuges and Sanctuaries

This alternative would focus management on those areas already designated as either refuges or sanctuaries. We would not create any new refuges or sanctuaries for the Florida manatee. We would rely on increased efforts by Federal, State and local agencies to increase law enforcement within the previously designated areas.

IV. Affected Environment

A. SECTION ONE - SANCTUARY/REFUGE ECOSYSTEM

1. Habitat

a. Location

The refuges are located within the inland waters of Florida in Clay, Duval, Lee, St. Johns, and Volusia counties. These counties are found on the east and west coast of Florida and geographically bound the Atlantic Ocean and Gulf of Mexico.

b. Climate

The Florida climate is generally characterized as transitional between temperate and subtropical conditions in the northern portions of the state and tropical conditions found in the Keys. Summers are generally long, warm and relatively humid while winters are mild with occasional periods of cold. The climate is influenced by warm ocean currents in the Atlantic Ocean and the Gulf of Mexico. Average temperatures during the winter months typically range from about 45˚ to 50˚ Fahrenheit (F) with occasional cold fronts bringing temperatures to 15° τo 20° F for short periods of time.

c. Floodplain, Wetlands, and Other Aquatic Resources

All of the sites include aquatic habitats. The designation of a site as a refuge will result in restricted human activity in the area. These restrictions will regulate watercraft speeds within the manatee refuges. Research has shown that wash associated with boat traffic, especially at higher speeds, can cause shoreline erosion and damage to emergent plants. Evidence of this has been shown where boat wash has removed the mud binder among shell substrate and loosens mangrove prop roots in Everglades National Park. Observations by officials indicate that many of the mangrove islands along heavily traveled canals and the Intracoastal Waterway are disappearing (Snow 1989). Planned management actions (*i.e.*, slow speeds) may act to reduce shoreline erosion and therefore the need for shoreline protection, such as bulkheads, in some areas. The reduced erosion and turbidity will be beneficial to floodplains, wetlands, and other aquatic resources such as submerged aquatic vegetation within the restricted zones. Designation

of a site will also reduce prop-cutting in submerged aquatic vegetation and benefit other aquatic resources by minimizing disturbances caused by faster moving watercraft. These designations will not adversely impact area values as floodplains, wetlands, or other aquatic resources.

d. Water Quality

Water quality at each of the sites varies. This variation is dependent upon the kinds of human activities that may be associated with the respective waterbodies and watersheds. The designation of speed zones within refuge areas may act to reduce some uses, such as water skiing and personal watercraft operation, that could contribute to degraded water quality. Overall, the resultant creation of speed zones will have a limited impact on water quality.

e. Ground Water

None of the sites are important ground water recharge areas. The designation of these sites will not affect the ground water recharge or quality in those areas.

2. Wildlife

a. West Indian Manatee

Manatee protection areas have been established at sites throughout coastal Florida where conflicts between boats and manatees have been well documented and where manatees are known to frequently occur. We are providing additional protection or enhancing existing protection areas by establishing additional manatee refuges at three locations in Florida.

Federal authority to establish protection areas for the Florida manatee is provided by the ESA and the MMPA, and is codified in 50 CFR, part 17, subpart J. We have discretion, by regulation, to establish manatee protection areas whenever there is substantial evidence showing such establishment is necessary to prevent the taking of one or more manatees. In accordance with 50 CFR 17.106, areas may be established on an emergency basis when such takings are imminent.

We may establish two types of manatee protection areas: manatee refuges and manatee sanctuaries. A manatee refuge, as defined in 50 CFR 17.102, is an area in which we have determined that certain waterborne activities would result in the taking of one or more manatees, or that certain waterborne activities must be restricted to prevent the taking of one or more manatees, including but not limited to, a taking by harassment. A manatee sanctuary is an area in which we have determined that any waterborne activity would result in the taking of one or more manatees, including but not limited to, a taking by harassment. A waterborne activity is defined as including, but not limited to, swimming, diving (including skin and scuba diving), snorkeling, water skiing, surfing, fishing, the use of water vehicles, and dredge and fill activities.

b. Other Listed Species

Other listed species will also be protected under this rule. These species include Gulf and short nose sturgeon, green sea turtles, hawksbill sea turtles, Kemp's ridley sea turtles, leatherback sea turtles, loggerhead sea turtles, wood storks and bald eagles. Sturgeon and other fishes may benefit from this rule inasmuch as damage to sea grasses and wetland fringes will be minimized by boat speed reductions and prohibitions which will minimize the effect of boat wash on these resources. Sea turtles may benefit from these measures as well, especially in light of their vulnerability to boat strikes; the same boat speed reductions and prohibitions that are beneficial to manatees should also help to minimize the number of boat and sea turtle interactions that may occur within the protected areas. Reduced boat speeds and prohibitions should help to minimize harassment associated with bird activities.

B. SECTION TWO - SOCIO-ECONOMIC COMPONENTS

1. Public Use and Facilities

All refuge sites described in this rule experience varying degrees of human use.

Caloosahatchee River Area: In the Caloosahatchee River Manatee Refuge, affected waterborne activities include transiting, fishing, sailing, waterskiing, and personal watercraft use. The number of registered recreational vessels in Lee County in 2002 was 45,413 (Division of Highway Safety and Motor Vehicles, 2003). Based on aerial surveys and boat traffic surveys conducted in 1997 and 1998, the highest number of vessels observed on the Caloosahatchee River sites on a given day was 477 vessels. Based on aerial, boat traffic, and boater compliance surveys of the Caloosahatchee River, over 60 percent of vessels observed were small powerboats, while less than seven percent were personal watercraft (*e.g.*, jet skis) (Gorzelany, 1998). Waterskiing and personal watercraft use in the Caloosahatchee primarily occurs between the Caloosahatchee and Cape Coral Bridges (Lee County, 2003). Shell Point and Redfish Point are also popular access areas where personal watercraft use may be affected (Florida Fish and Wildlife Conservation Commission (FWCC), 2002). The Caloosahatchee River area is also a popular location for recreational guiding for snook and redfish fishing, particularly at night (FWCC, 2003c). The extra time required for anglers to reach fishing grounds could reduce onsite fishing time and could result in lower consumer surplus for the trip. The number of anglers on the Caloosahatchee, and their origins and destinations are currently unknown. One study indicates that approximately 70 percent of the boat traffic on the Caloosahatchee originates from the Cape Coral Canal system (FWCC, 2002). Another boat traffic survey indicated that the majority of boat traffic exits the Caloosahatchee River in the morning and enters the river in the afternoon. The majority of vessels leaving the Caloosahatchee River travel south toward the Sanibel Causeway and Gulf of Mexico. Approximately 94 percent of vessel traffic on the Caloosahatchee was reported as “traveling,” while less than one percent was engaged in “skiing” based on boater compliance observations at 10 sites along the Caloosahatchee River (Gorzelany, 1998).

Based on these trends, it appears that most recreational waterborne activity on the

Caloosahatchee River will be affected by the manatee refuge. While the designation will cause an increase in travel time, it is unlikely that the increase will be great enough to cause a significant economic dislocation. Much of the boat traffic on the Caloosahatchee likely originates from the Cape Coral Canal system (FWCC, 2002), and would experience added travel time of approximately 15 minutes (from Cape Coral Bridge to Sanibel Causeway) for a trip that currently lasts 50 minutes. At most, a boat traveling from Beautiful Island to the Sanibel Causeway will experience an estimated added travel time of 20 minutes to 35 minutes (depending on time of the year) due to the final designation; currently this trip would take approximately 1 and one-quarter hours.

The small percentage of recreational boaters using the river for waterskiing or personal watercraft use will choose either to go to alternative sites such as San Carlos Bay or Pine Island Sound or to forgo the activity. The amount of added travel time to get to an alternative site will depend on the origin of the trip and whether the trip originates from a dock or a ramp. For example, ramp users may choose to trailer their boats to a different location, closer to the alternative site and may experience little added travel time. For dock users, under the rule, travel time on the Caloosahatchee from the Cape Coral Bridge to the Sanibel Causeway could be approximately 1 and one-quarter hours. The amount of added travel time and the expected quality of the experience will likely influence the recreationists' choice of whether to travel to an alternative site or forgo the activity. The number of recreationists who will use alternative sites or forgo recreational activities is unknown, but it is not expected to be a large enough number to result in a significant economic impact.

St. Johns River Area: In the Lower St. Johns River Manatee Refuge, the affected recreational waterborne activities are likely to include cruising, fishing, and waterskiing. Based on a survey of boat ramp users in Duval County, these three activities were the most popular reasons cited as the primary purpose of the trip. Recreational fishing was cited as the primary purpose by 62 percent of those surveyed, while cruising was cited by 19 percent and waterskiing was cited by 7 percent (Jacksonville University, 1999). The total number of recreational vessels registered in Duval, Clay, and St. Johns counties in 2002 is 57,388 (Division of Highway Safety and Motor Vehicles, 2003). The portion of these vessels using the St. Johns River area covered by the designation is unknown. Recreational fishing for bass, redfish, sea trout, croaker, and flounder, as well as shrimping with nets, are popular activities in the near shore waters of the St. Johns River south of the Fuller Warren Bridge. Because the submerged aquatic vegetation near shore provides food, and docks provide protection, for the fish, this is where the fishing activity primarily takes place (FWCC, 2003c). Because recreational fishing is likely occurring primarily in existing slow speed areas, the extension of slow speed zones by not more than 152 meters (500 feet) further will not have a significant effect. Recreationists engaging in fishing or cruising are unlikely to experience much impact due to the regulation. The expanded/extended buffers are not expected to increase travel times by any more than about 8 minutes (one way). The designation will cause some inconvenience in travel time, but alternative sites within the proximity of designated areas are available for all waterborne activities. Because the designated areas are part of larger waterbodies where large areas remain unrestricted, the impact of the designation on recreational waterborne activities in the St. Johns River and adjacent waterbodies will be limited. Recreationists engaging in cruising, fishing, and waterskiing may experience

some inconvenience by having to go slower or use undesignated areas; however, the extension of slow speed zones is not likely to result in a significant economic impact.

Halifax River and Tomoka River Area: In the Halifax River and Tomoka River Manatee Refuge, affected waterborne activities include fishing, traveling, cruising, waterskiing, and personal watercraft use. Based on a boating activity study that relied on a variety of survey mechanisms, the two most popular activities in the Intracoastal Waterway in Volusia County were recreational fishing and traveling (Volusia County Environmental Management Services, 1996). Recreationists engaging in fishing or traveling are unlikely to experience much impact due to the regulation. The two most popular destinations are the Mosquito Lagoon and the Ponce Inlet area (Volusia County Environmental Management, 2002). Recreationists engaging in fishing or traveling may experience some inconvenience by having to go slower; however, small changes in boater behavior due to the extension of slow speed zones should not result in a significant economic impact.

For the Tomoka River, the primary activity affected by the designation is waterskiing. A ski club has used the river in an area currently designated at 40 km-per-hour (25 mph). This will change to slow speed for a portion of the year. The nearest alternative site where these recreationists can water ski is at least 11 to 16 km (7 to 10 miles) away (Volusia County, 2003). It is estimated that the on-the-water travel time for the skiers to reach the nearest alternative site could be up to 2 ½ hours. The regulation may cause some water skiers to forgo this activity, or may reduce the quality of their experience. The number of skiers that may be affected and the number of trips per year are not currently known. With additional information on the number of affected individuals, we could estimate the impact of lost or diminished skiing days given the value of a waterskiing day published in the literature. One study by Bergstrom and Cordell (1991) suggested the lost surplus value may be $38/day (2002$) for a day of waterskiing. They applied a multi-community, multi-site travel cost model to estimate demand for 37 outdoor recreational activities and trip values, including water skiing. The analysis was based on nationwide data from the Public Area Recreational Visitors Study collected between 1985 and 1987 and several secondary sources.

In the Halifax River, one of the activities that may be affected by the designation is personal watercraft (PWC) use. These activities are primarily taking place in the recreational zones located south of the Seabreeze Bridge and north of the Dunlawton Bridge. PWC likely represent a very small portion of vessels on the Intracoastal Waterway in Volusia County. Based on a boating activity study from 1994 to 1995, less than two percent of observations in the Intracoastal Waterway area were PWCs (based on 12,000 observations during aerial, boat ramp and shoreline, and mailing surveys) (Volusia County Environmental Management Services, 1996). The number of pleasure PWC in Volusia County in 2000 was 2,432, with 204 rental PWC (FWCC, 2000a). The nearest alternative site for using personal watercraft is near the Dunlawton Bridge, where an area remains unrestricted between the channel and the expanded shoreline buffer, or in the Ponce Inlet vicinity, approximately 20 km (12.5 miles) downriver. Under the rule, travel time from the Daytona Beach watersports area (south of Seabreeze Bridge) to the Ponce Inlet area would be approximately one hour. Added travel time to reach alternative sites would depend on the origin of the trip, which is currently unknown. The regulation may

cause some personal watercraft users to forgo this activity, or may reduce the quality of their experience. The number of PWC users that may be affected and the number of trips per year are not currently known. To the extent that these recreationists choose to forgo the activity, this could also impact local businesses that rent personal watercraft.

Currently, not enough data are available to estimate the loss in consumer surplus that water skiers in the Tomoka River or PWC users in the Halifax River will experience. While some may use substitute sites, others may forgo the activity. The economic impact associated with these changes on demand for goods and services is not known. However, given the number of recreationists potentially affected, and the fact that alternative sites are available, it is not expected to amount to a significant economic impact.

a. Affected Commercial Charter Boat Activities

Various types of charter boats use the waterways in the affected counties, primarily for fishing and nature tours. The number of charter boats using the Caloosahatchee, Halifax, and St. Johns Rivers, and their origins and destinations, are currently unknown. For nature tours, the extension of slow speed zones is unlikely to cause a significant impact, because these boats are likely traveling at slow speeds. The extra time required for commercial charter boats to reach fishing grounds could reduce onsite fishing time and could result in fewer trips. The fishing activity is likely occurring at a slow speed and will not be affected. In the Caloosahatchee and St. Johns Rivers, fishing charters may experience some impact from the extension of slow speed zones, depending on their origins and destinations. Added travel time may affect the length of a trip, which could result in fewer trips overall, creating an economic impact. In the Halifax River, it is likely that most fishing charters are heading offshore or to the Mosquito Lagoon and will experience little impact from the rule (Volusia County, 2003).

b. Affected Commercial Fishing Activities

Several commercial fisheries may experience some impact due to the regulation. Specifically, the blue crab fishery and, to a lesser extent, mullet fishing, along the Caloosahatchee River; the crab and shrimp industries in the St. Johns River; and the crab and mullet fishing industries in Volusia County may experience some economic impact. To the extent that the regulation establishes additional speed zones in commercial fishing areas, this may increase the time spent on the fishing activity, affecting the efficiency of commercial fishing. While limited data are available to address the size of the commercial fishing industry in the manatee refuges, county-level data generally provide an upper bound estimate of the size of the industry and potential economic impact. This section first provides some background on the blue crab industry in Florida, and then addresses the impact of the rule on the commercial fishing industry for each manatee refuge area.

One industry in particular that may be affected by the rule is the blue crab fishery, which represents a sizeable industry in the State of Florida. Based on a study done for the Florida Fish and Wildlife Commission, Division of Marine Fisheries (Murphy *et al.*, 2001), between 1986 and 2000 the average annual catch statewide was 6.4 million kilograms (14.1 million pounds)

(39.7 million crabs). However, year to year fluctuation is significant, including highs of 8.2 million kilograms (18 million pounds) statewide in 1987 and 1996 and a low of 2.5 million kilograms (5.5 million pounds) statewide in 1991. In the last 3 years, blue crab landings have been depressed throughout the East Coast and Gulf of Mexico, though specific reasons for this are unknown at this time (FWCC, 2003d). Landings in 2001 were approximately 3.4 million kilograms (7.4 million pounds) statewide. Based on a 2001 weighted average price of $1.06 per 0.5 kilograms (pound) of crab, this represents just under $8 million (FMRI, 2003c). Data from 2001 on marine fisheries landings from FMRI is preliminary and subject to revision.

Caloosahatchee River Area: Lee County, where the Caloosahatchee River Manatee Refuge is located, had 157 licensed blue crab boat operators in 2001 (FMRI, 2003c). Crabbing in the Caloosahatchee is likely to be minimally impacted by limited extension of slow speed areas. In slow speed areas crab boats have to travel at slower speeds between crab pots, thereby potentially reducing the number of crabs landed on a daily basis. For example, to the extent that crab boat operators frequently change fish pot locations in search of optimal fishing grounds, this activity could be slightly affected by extension of some existing slow speed zones (FWCC, 2003a).

In 2001, blue crab landings in Lee County were 175,805 kilograms (387,585 pounds), and the weighted average price was $1.06 per 0.5 kilograms (pound) for blue crab statewide. The entire value of the blue crab fishery in Lee County is estimated to be $411,167 (FMRI, 2003c). Only a very small portion of this value is likely to be affected, as the activity will still occur but with some limited changes due to additional speed zones. In addition, this figure includes landings for all of Lee County. The number of crab boats operating and the amount of blue crab landings occurring in areas that would be newly designated speed zones under this rule is unknown. Crabbing likely occurs in parts of Lee County outside of the Caloosahatchee River, including Charlotte Harbor, San Carlos Bay, Estero Bay, etc. (FWCC, 2003e). The county-wide figures provide an upper bound estimate of the economic impact on this fishery; this would assume that the regulation closed down the entire fishery, which is not the case.

In Lee County, commercial mullet fishing is also occurring in the Caloosahatchee River Manatee Refuge area. These fishermen may also be impacted by slower commuting times from boat launch (e.g., dock or ramp) to fishing grounds. However, fishing activity associated with mullet fishing generally includes slow net casting within a relatively small geographic area (FWCC, 2003e). Therefore, speed limits are likely to have a very limited effect on mullet fishing. In 2001, based on mullet landings in Lee County of 997,903 kilograms (2.2 million pounds), and the weighted average price of $0.66 for mullet statewide, the value of the mullet fishery in Lee County is estimated to be $1.4 million (FMRI, 2003c). Only a very small portion of these values is likely to be affected, as the activity will still occur but with some changes due to additional speed zones. In addition, this figure includes landings for all of Lee County. The amount of mullet fishing occurring in areas that would be newly designated speed zones under this rule is unknown.

St. Johns River Area: In the Lower St. Johns River Manatee Refuge, most of which is in Duval County, current commercial fishing can be divided into activity south and north of the

Fuller Warren Bridge. Commercial fishing north (i.e., downstream) of the bridge consists primarily of shrimping, while commercial fishing activity south of the bridge consists primarily of blue crab fishing. Commercial net shrimping is not allowed south of the Fuller Warren Bridge (Jacksonville Port Authority, 2003).

Commercial blue crab fishing occurs both north and south of the Fuller Warren Bridge. Crab fishing is likely to be impacted by the manatee refuge. The extension of the shoreline buffer zone may impact fishing operations because the majority of crabbing activity takes place in the submerged aquatic vegetation, which is located along the immediate shoreline (FWCC, 2003b). Therefore, when crabbers enter and exit these shoreline areas, they will be required to travel slowly (*i.e.*, 6.4 to 12.9 km per hour (4 to 8 mph)) for not more than 152 additional meters (500 feet) (incremental to the existing variable width shoreline buffer). In addition, travel between pots within the buffer will also be slowed, thereby potentially reducing the number of crabs landed on a daily basis. However, once outside the shoreline buffer, boats can travel up to 40 km-per-hour (25 mph) in areas downstream of the Fuller Warren Bridge, and at unrestricted speeds upstream.

There were 61 commercial licences for blue crab issued in Duval County in 2001 (FMRI, 2003c). In 2001, based on blue crab landings in Duval County of 506,401 pounds, and the weighted average price of $1.06 per 0.5 kilogram (pound) for blue crab statewide, the value of the blue crab fishery in Duval County is estimated to be $537,213 (FMRI, 2003c). Only a small portion of this value is likely to be affected, as the activity will still occur but with some changes due to additional speed zones. In addition, this figure includes landings for all of Duval County. The number of crab boats operating and the amount of blue crab landings occurring in areas that are newly designated speed zones under this rule is unknown. The county-wide figures provide an upper bound estimate of the economic impact on this fishery; this would assume that the regulation closed down the entire fishery, which is not the case.

Commercial shrimping north of the Fuller Warren Bridge in the St. Johns River is likely to receive minimal impact due to the extension of year-round slow speed areas outside of the marked channels. Impacts to this industry are likely to be minimal because shrimp boats tend to trawl at a slow speed. Nonetheless, shrimp boats will still be required to travel at slower speeds between fishing grounds, thereby potentially increasing the time it takes to access fishing areas and reducing shrimp landed on a daily basis (Jacksonville Port Authority, 2003).

The majority of commercial shrimping activity in the St. Johns River occurs between the mouth of Trout River and the Fuller Warren Bridge, which approaches the northern limit of the St. Johns Manatee Refuge (Jacksonville Port Authority, 2003). Commercial shrimping activity in Duval County also occurs along the Nassau River, which represents the border between Duval and Nassau County, and, to a lesser extent, along the Intracoastal Waterway (FWCC, 2003f). Shrimp landings in Clay County are negligible, based on the fact that commercial shrimping is not allowed upriver of the Fuller Warren Bridge. Shrimp landings in St. Johns County most likely represent activity along the Intracoastal Waterway and not in the St. Johns River area. While some limited commercial bait shrimping occurs along this stretch of river, the vast majority of commercial shrimping in this area is related to the harvest of shrimp for food

production (FWCC, 2003e). In 2001, based on shrimp landings in Duval County of 997,903 kilograms (2.2 million pounds), and the weighted average price of $2.33 for shrimp statewide, the value of the shrimp fishery in Duval County is estimated to be about $5.2 million (FMRI, 2003c). Less than one percent of commercial shrimp landings in 2001 in Duval County are related to bait shrimp (FMRI, 2003c); therefore, these figures represent only food shrimp harvest. Only a small portion of this value is likely to be affected, as the activity will still occur but with some changes due to additional speed zones. In addition, this figure includes landings for all of Duval County. The number of shrimp boats operating and the amount of shrimp landings occurring in areas that would be newly designated speed zones under this rule is unknown. The county-wide figures provide an upper bound estimate of the economic impact on this fishery; this would assume that the regulation closed down the entire fishery, which is not the case.

Halifax River and Tomoka River Area: In Volusia County, the Halifax River and Tomoka River Manatee Refuge includes a variety of waterways, including the Tomoka River, the Tomoka Basin, Halifax Creek, and the Halifax River. In these areas, it is likely that blue crab and mullet fishing activities will be impacted by the speed zones. As discussed above for Lee County, crab boats will have to travel at slower speeds in some locations between crab pots, thereby potentially reducing the number of crabs landed on a daily basis. The speed limits may also slow transit speeds between fishing grounds for both crab and mullet fishing boats. As noted above, mullet fishing activity generally includes slow net casting and, therefore, such activities are unlikely to receive much impact. Note also that along the Halifax River, a corridor is available for boats to travel up to 25 mph. The manatee refuge area along the Halifax River stretches from the Flagler-Volusia County line in Halifax Creek past the Ponce de Leon Inlet to the South Causeway Bridge (New Smyrna Beach), a distance of approximately 43.5 km (27 miles). The waterbody ranges from 0.5 km (0.3 miles) to just over 1.6 km (1 mile) in width. The manatee refuge also includes tributaries and river basins of varying length and width. The number of fishing boats operating and the amount of blue crab and mullet landings occurring in areas that are newly designated speed zones under this rule is unknown.

There were 128 licensed blue crab operators in Volusia County in 2001. In 2001, based on blue crab landings in Volusia County of 230,577 kilograms (508,337 pounds), and the weighted average price of $1.06 for blue crab statewide, the value of the blue crab fishery in Volusia County is estimated to be $539,266 (FMRI, 2003c). In 2001, based on mullet landings in Volusia County of 188,675 kilograms (415,958 pounds), and the weighted average price of $0.66 for mullet statewide, the value of the mullet fishery in Volusia County is estimated to be $272,591 (FMRI, 2003c). Only a very small portion of these values is likely to be affected, as the crabbing and fishing activities will still occur but with some changes due to additional speed zones. In addition, crabbing and mullet fishing occur in parts of Volusia County outside of the manatee refuge area, including Mosquito Lagoon, St. Johns River, Lake George, etc. (Ponce Inlet Authority, 2003). The county-wide figures provide an upper bound estimate of the economic impact on these fisheries; this would assume that the regulation closed down the entire fishery, which is not the case.

Given available data, the impact on the commercial fishing industry of extending slow

speed zones in portions of the Caloosahatchee, St. Johns, and Halifax Rivers cannot be quantified. The designation will likely affect commercial fishermen by way of added travel time, which may result in an economic impact. However, because the manatee refuge designations will not prohibit any commercial fishing activity, and because there is a corridor available for boats to travel up to 40 km-per-hour (25 mph) in most affected areas, it is unlikely that the rule will result in a significant economic impact on the commercial fishing industry. It is important to note that in 2001, the total annual value of potentially affected fisheries is approximately $8.3 million (2001$); this figure represents the economic impact on commercial fisheries in these counties in the unlikely event that the fisheries would be entirely shut down, which is not the situation associated with this rule.

2. Economic Conditions

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

3. Cultural Resources

Aquatic areas of the state have been historically important to indigenous and colonial cultures. Areas identified in this rule may have been used for food collection, navigation and trade. Restrictions resulting from the refuge designations will not adversely impact any archeological sites that may be present

V. Environmental Consequences

A. ALTERNATIVE 1 - Baseline Management (No Action)

1. Proposed Action

Under the "No Action" alternative, we would not initiate any new management practices within the areas described in the rule. All current management practices, such as enforcing the existing sanctuaries, refuges and speed zones, will continue as before.

2. Effects on Manatees

The "No Action" alternative would not give the Service any additional capability in reducing the amount of take on manatees in areas with identified problems. Over the last five years there have been 406 watercraft-related manatee deaths and 87 other human-related manatee mortalities. Human related deaths have contributed to 33 percent of all reported manatee mortalities in the last five years. Without additional protective measures in areas with documented take of manatees that currently lack sufficient regulation, the number of human-related manatee deaths is expected to increase as public use of the waterways increases. The goal of the Endangered Species Act, including species specific recovery plans, is to recover

listed species to sustainable population levels and to eventually down or delist. Without the ability to reduce potential take by designating refuges for this species, we are limited in methods available to it to protect the manatee. We believe that increases in human-related manatee mortality will continue. We finds that the "No Action" alternative is not acceptable due to the expected increase in take that will result as the public use of Florida's waterways continues to increase.

3. Effects on Public Use

The "No Action" alternative would allow current use of the waterways by humans to continue with no further regulation imposed by the Service. Public use of these areas and manatee deaths will continue to be monitored even if the areas are not designated as refuges. Use of the waterways by the public will continue to grow as the State's population and visitor numbers increase. Due to this expected increase in human use of areas that manatees frequent and the related increase in potential for take, we find that the "No Action" alternative is not acceptable.

4. Conculsion

This alternative, under which we would not initiate any new management practices within the areas described in the rule, all current management practices, such as enforcing the existing sanctuaries, refuges and speed zones, will continue as before. This alternative would not give the Service any additional capability in reducing the amount of take on manatees in areas with identified problems. Public use of these areas would will continue to be monitored, but additional restrictions would not be imposed. Failing to adopt appropriate protective measures within our authority and resources for reducing the potential take of manatees is not acceptable to us.

B. ALTERNATIVE 2 - Creation of Three Refuges

1. Proposed Action

This alternative is our preferred alternative. Adoption of this alternative will result in the designation of three new manatee refuges. Areas affected by this designation are listed below.

a. Caloosahatchee River-San Carlos Bay Manatee Refuge

For the purpose of regulating vessel speeds, a manatee refuge will be established in portions of the Caloosahatchee River and San Carlos Bay in Lee County (in the Southwest Stock) from the Seaboard Coastline Railroad trestle, downstream to Channel Marker "93," and from Channel Marker "99" to the Sanibel Causeway. Except as provided in 50 CFR 17.105, watercraft will be required to proceed as follows:

i. from the Seaboard Coastline Railroad trestle at Beautiful Island, downstream to a Channel Marker "25," a distance of approximately 1.6 km (1 mile), slow speed

in the marked navigation channel from November 15 to March 31, and not more than 40 km-per-hour (25 mph) in the channel from April 1 to November 14;

ii. from a point 152 meters (500 feet) east of the Edison Bridge downstream to a point 152 meters (500 feet) west of the Caloosahatchee Bridge, approximately 1.1 km (0.7 miles) in length, slow speed year-round, shoreline-to-shoreline including the marked navigation channel;

iii. from a point 152 meters (500 feet) west of the Caloosahatchee Bridge downstream to a point 152 meters (500 feet) northeast of the Cape Coral Bridge, a distance of approximately 10.9 km (6.8 miles), year-round, slow speed shoreline buffers extending out to a distance of approximately 402 meters (1,320 feet) from the shore. Vessel speeds between these buffers (including the marked navigation channel) are limited to not more than 40 km-per-hour (25 mph) throughout the year, with the exception of seaplanes;

iv. from a point 152 meters (500 feet) northeast of the Cape Coral Bridge downstream to a point 152 meters (500 feet) southwest of the Cape Coral Bridge, a distance of approximately 0.3 km (0.2 mile), slow speed outside the marked navigation channel and a speed limit of not more than 40 km-per-hour (25 mph) in the channel, year-round;

v. from a point 152 meters (500 feet) southwest of the Cape Coral Bridge to Channel Marker “72," a distance of approximately 1.9 km (or 1.2 miles), year-round, slow speed shoreline buffers extending out to a minimum distance of approximately 402 meters (1,320 feet) from the shore. Vessel speeds between these buffers (including the marked navigation channel) are limited to not more than 40 km-per-hour (25 mph) throughout the year;

vi. from Channel Marker “72" to Channel Marker “76" (in the vicinity of Redfish Point), for a distance of approximately 1.8 kilometers (1.1 miles) in length, slow speed year-round shoreline-to-shoreline, including the marked navigation channel;

vii. from Channel Marker “76" to Channel Marker “93," a distance of approximately 5.2 kilometers (3.2 miles), in length, year-round, slow speed shoreline buffers extending out to a minimum distance of approximately 402 meters (1,320 feet) from the shore. Vessel speeds between these buffers (including the marked navigation channel) are limited to not more than 40 km-per-hour (25 mph) throughout the year; and

viii. In San Carlos Bay, from Channel Marker “99" to the Sanibel Causeway, slow speed year-round within the following limits-- a northern boundary described by the southern edge of the marked navigation channel, a line approximately 2.9 kilometers (1.8 miles) in length; a southern boundary described by the Sanibel

Causeway (approximately 1.9 kilometers (1.2 miles) in length); a western boundary described by a line that connects the western end of the easternmost Sanibel Causeway island and extending northwest to Channel Marker “7" (approximately 2.9 kilometers (1.8 miles) in length); the eastern boundary includes the western limit of the State-designated manatee protection area (68C-22.005) near Punta Rassa (approximately 2.9 kilometers (1.8 miles) in length). However this area excludes the marked navigation channel from Channel Marker “99" to the Sanibel Causeway and adjacent waters, as marked.

b. Lower St. Johns River Manatee Refuge

For the purpose of regulating vessel speeds, a manatee refuge will be established in portions of the St. Johns River (in the Atlantic Stock) and adjacent waters in Duval, Clay, and St. Johns Counties from Channel Marker “73" upstream to the mouth of Peter’s Branch (including Doctors Lake) in Clay County on the western shore, and to the southern shore of the mouth of Julington Creek in St. Johns County on the eastern shore. Except as provided in 50 CFR 17.105, watercraft will be required to proceed as follows:

i. from Channel Marker “73" upstream to the Main Street Bridge, a distance of approximately 16.8 kilometers (10.4 miles), slow speed, year-round, outside the navigation channel and not more than 40 km-per-hour (25 mph) in the channel (from Channel Marker “81" to the Main Street Bridge, the channel is defined as the line of sight extending west from Channel Markers "81" and "82" to the bridge fenders of the Main Street Bridge);

ii. from the Main Street Bridge to the Fuller Warren Bridge, a distance of approximately 1.6 km (or 1.0 miles) slow speed (channel included) year-round; and

iii. upstream of the Fuller Warren Bridge, a 213 to 305-meter (700 to 1,000-foot), slow speed, year-round, shoreline buffer to the south bank of the mouth of Peter’s Branch in Clay County along the western shore (approximately 31.1 km or 19.3 miles); and in Doctors Lake in Clay County, slow speed, year-round, along a 213-274-meter (700-900-foot) shoreline buffer (approximately 20.8 km or 12.9 miles); and a 213-305-meter (700-1,000-foot), slow speed, year-round, shoreline buffer to the south bank of the mouth of Julington Creek in St. Johns County along the eastern shore (approximately 32.5 km or 20.2 miles) to a line north of a western extension of the Nature’s Hammock Road North.

c. Halifax and Tomoka Rivers Manatee Refuge

For the purpose of regulating vessel speeds, a manatee refuge will be established in portions of the Halifax River and associated waterbodies in Volusia County (in the Atlantic Stock) from the Volusia/Flagler county line to New Smyrna Beach. Except as provided in 50 CFR 17.105, watercraft will be required to proceed as follows:

i. from the Volusia County/Flagler County line at Halifax Creek south to Channel Marker “9," a distance of approximately 11.3 km (7.0 miles) in length, not more than 40 km-per-hour (25 mph) in the channel;

ii. from Channel Marker “9" to a point 152 meters (500 feet) north of the Granada Bridge (State Road 40) (including the Tomoka Basin), a distance of approximately 5.0 km (3.1 miles) in length, not more than 40 km-per-hour (25 mph) in areas between the existing 91-meter (300-foot) buffers (and including the marked navigation channel);

iii. in the Tomoka River, the current 40-km-per-hour (25-mph) zone approximately 1.6 km (1 mile) downstream of the I-95 bridge will be slow speed shoreline to shoreline from April 1 through August 31;

iv. from 152 meters (500 feet) north to 305 meters (1,000 feet) south of the Granada Bridge (State Road 40), a distance of approximately 0.5 km (0.3 miles) in length, slow speed, year-round, channel included;

v. from a point 305 meters (1,000 feet) south of the Granada Bridge (State Road 40) to a point 152 meters (500 feet) north of the Seabreeze Bridge, a distance of approximately 6.4 km (4.0 miles) in length, not more than 40 km-per-hour (25 mph) in areas between the existing 91-meter (300-foot) buffers, and including the marked navigation channel;

vi. from 152 meters (500 feet) north of the Seabreeze Bridge, to 152 meters (500 feet) north of the Main Street Bridge, a distance of approximately 1 km (0.6 miles) in length, slow speed, year-round, channel included;

vii. from Channel Marker “40" south of the Seabreeze Bridge to a point a minimum of 152 meters (500 feet) north, as marked, of the Dunlawton Bridge, a distance of approximately 6.6 kilometers (4.1 miles) in length, not more than 40 km-per-hour (25 mph) in areas between the existing 91-meter (300-foot) buffers, and including the marked navigation channel;

viii. from a minimum of 152 meters (500 feet) north, as marked, to a minimum of 152 meters (500 feet) south, as marked, of the Dunlawton Bridge, a distance of approximately 0.3 km (0.2 miles) in length, slow speed, year-round, channel included. The existing 30-meter (100-foot) shoreline buffer immediately north and west of the bridge/causeway for a distance of approximately 640 meters (2,100 feet) would also be increased to 91 meters (300 feet) as marked;

ix. from a minimum of 152 meters (500 feet) south, as marked, of the Dunlawton Bridge to Ponce Inlet, a distance of approximately 10.5 km (6.5 miles) in length, not more than 40 km-per-hour (25 mph) in waters not more restrictively designated; along the western shore of the Halifax River, a distance of

approximately 3.1 km (1.9 miles), not more than 40 km-per-hour (25 mph) in the waters not more restrictively designated; in Rose Bay, a distance of approximately 2.7 km (1.7 miles), not more than 40 km-per-hour (25 mph) in waters not more restrictively designated; in Turnbull Bay, a distance of approximately 3.9 km (2.4 miles), not more than 40 km-per-hour (25 mph) in waters not more restrictively designated; and

x. in the Intracoastal Waterway and adjacent waters from Redland Canal to the A1A Bridge (New Smyrna Beach), for a distance of approximately 5.3 km (3.3 miles) in length, slow speed, year-round, channel included.

2. Reason for Determination

In order to establish a site as a manatee protection area, we must determine that there is substantial evidence showing such establishment is necessary to prevent the take of one or more manatees. In documenting historic manatee use and harm and harassment, we relied on the best available information, including aerial survey and mortality data and additional information from FMRI and the U.S. Geological Survey's Sirenia Project, manatee experts, the public, and our best professional judgment.

a. Caloosahatchee River - San Carlos Bay

Manatee presence has been documented in the designated areas through aerial surveys, photo-identification studies, telemetry studies, and a carcass salvage program (FMRI, 2002). Per these data and analysis, it is apparent the Caloosahatchee River is used throughout its length throughout the year by manatees. Primary winter-use areas include the Florida Power and Light Company's Fort Myers Power Plant and Matlacha Pass, upstream and downstream (respectively) of the refuge. The power plant is a major winter refuge for manatees. On January 6, 2001, 434 manatees were observed wintering in this region (FMRI, 2003a).

In warmer months, manatees use is concentrated within the existing 402-meter (0.25-mile) buffer. They use the river as a travel corridor between upstream fresh water, foraging, and resting sites and downstream foraging areas. Manatees use the canal systems in Fort Myers and Cape Coral (between the Edison Bridge upstream and Shell Point) to rest and drink fresh water (Weigle *et al.*, 2002). Manatees travel west of Shell Point to feed in the seagrass beds in San Carlos Bay and adjacent waterways.

A more in-depth analysis of the telemetry data indicates that manatees appear to travel along shallow areas relatively close (within approximately 402 meters or 0.25 miles) to shore and cross the river in narrow areas near Redfish Point and Shell Point (FMRI, 2002). The Redfish and Shellfish Point sections of the river represent specific areas where manatees and boats overlap during their travels (Weigle *et al*., 2002). The funneling of high-speed watercraft and manatees through these narrow areas increases the likelihood of manatee/watercraft collisions in this area. Four watercraft-related manatee mortalities occurred in this area since January 2001 (FMRI, 2003b). Given these findings, we designated Shell Island (the area around

Shell Point) as a manatee refuge on November 8, 2002 (67 FR 68450).

The number of registered vessels in Lee County has increased by 25 percent over the past 5 years (from 36,255 vessels in 1998 to 45,413 in 2002) (FMRI, 2002). According to the recent FMRI study of manatee mortality, manatee habitat, and boating activity in the Caloosahatchee River (FMRI, 2002), vessel traffic increases as the day progresses and doubles on the weekends compared to weekdays. The highest volumes of traffic were recorded in the spring and lowest volume in the winter. Highest vessel traffic densities occurred at Shell Point where the Caloosahatchee River and San Carlos Bay converge. Many of the boats in the lower Caloosahatchee River originate from the Cape Coral canal system and head toward the Gulf of Mexico.

Presently, there are State-designated, manatee speed zones throughout most of Lee County. Seasonal speed zones were established in the Caloosahatchee and Orange rivers around the Fort Myers power plant in 1979 (68C-22.005 FAC). Additional speed zones were established in the Caloosahatchee River downstream of the power plant in November 1989 (68C-22.005 FAC). Speed zones were established countywide in November 1999 (68C-22.005 FAC). The majority of these zones include shoreline buffers that provide protection in nearshore areas frequented by manatees. All zones were to be posted with the appropriate signage by July 2001 (68C-22.004 and 68C-22.005 FAC). Compliance with speed zones in the Caloosahatchee averaged only 57 percent (FMRI, 2002).

According to FMRI's manatee mortality database, 764 manatee carcasses were recorded in Lee County from 1974 to 2002 (FMRI, 2003b). Of this total, 163 manatee deaths were watercraft-related (21 percent of the total number of deaths in Lee County). Over the past 13 years, the County's rate of increase in watercraft-related manatee mortality is higher than the rates of increase in watercraft-related mortality in southwest Florida and in watercraft-related deaths statewide. Areas east of the Edison Bridge and west of Shell Point are areas with recent increases in watercraft-related mortality; eight watercraft-related carcasses have been recovered east of the railroad trestle and seven have been recovered in San Carlos Bay since 2000, including two watercraft-related carcasses in San Carlos Bay since July 2001, when State speed zones were marked (FMRI, 2003b). From January 1, 2003, to June 30, 2003, there have been 7 watercraft related manatee mortalities in Lee County, one of which occurred in the Caloosahatchee River.

In the Caloosahatchee River-San Carlos Bay Manatee Refuge, we have reduced the length of the seasonal slow speed area of the channel from the Seaboard Coastline Railroad trestle from what we had described in the proposed rule. This portion of the manatee protection area was proposed to be approximately 7.2 km (4.5 miles) in length and has been reduced to approximately 1.6 km (1.0 mile). Based on the public and peer review comments as well as a more thorough evaluation by our biologists, we have modified our proposed rule to better reflect the best available information regarding manatee use of this area. The final rule designates the portion of the Caloosahatchee River navigation channel from the Seaboard Coastline Railroad trestle downstream to Channel Marker "25" to be slow speed in the channel from November 15 to March 31, and not more than 25 mph in the remainder of the year.

Aerial survey data indicate that manatees do occur throughout this portion of the river throughout the year. However, the analysis of available data by FMRI (FMRI, 2002) indicates that manatees are less likely to occur near the navigation channel downstream of the general area of Marker “25." This generally coincides with the change in the physiography of the river in this area. The river narrows upstream of channel Marker “25" and Beautiful Island and other smaller islands act to further constrict the river. This explains the change in manatee distribution at this point in the river. Manatees are more likely to be found in and near the navigation channel upstream of Marker “25" than downstream. This fact, combined with the above-referenced lower level of boat traffic in this portion of the river relative to areas further downstream led us to conclude that the existing regulations downstream of Marker “25" were sufficient, whereas increased protection is warranted between Marker “25" and the railroad trestle.

In three segments of the main body of the river, we are establishing “slow speed” shoreline buffers similar to the existing 0.40-km (0.25-mile) shoreline buffers, and are establishing a speed limit not to exceed 40 km-per-hour (25 mph) between the buffers. In the proposed regulation, the shoreline slow speed buffers would have extended out to within 91 meters (300 feet) of the marked navigation channel. We conducted a more detailed review of the recent special study of the Caloosahatchee River by the Florida Marine Research Institute (FMRI, 2002) and it appears that the majority of manatee use in this area occurs within the current 0.40-km. (0.25-mile) shoreline buffer. We believe these changes better reflect the known shoreline use patterns of manatees, allow boaters to have more time to avoid manatees should they be encountered between the buffers, and provide manatees greater time to react to oncoming vessels. Our final regulation states that the slow speed shoreline buffers will have a minimum width of 0.40 km (0.25 mile), as marked, recognizing that in some locations signage may be placed at a slightly greater distance from shore in order to provide a more easily identifiable boundary.

While we acknowledge that water depths of 6 feet or greater afford manatees greater opportunity to avoid collisions with watercraft, it does not appear that the 6-foot contour line approximates manatee distribution in this portion of the river, as this contour extends a great distance from shore in this area (particularly from the western shoreline), whereas manatee aerial survey data show manatee use concentrated closer (generally within 0.40 km (0.25 mile)) to shore.

For the portion of the Caloosahatchee River-San Carlos Bay Refuge between the Caloosahatchee River Bridge and the Cape Coral Bridge, we have concluded that the waterborne activities to be regulated per this rule need not include seaplanes. After reviewing the information provided during the public comment period we have concluded that the seaplane business currently operating on the Caloosahatchee River poses an insignificant and discountable threat to manatees. Based on information provided during the public comment period, the seaplanes operating at this location take off and land in the middle of the river, well outside the existing 0.40 km (0.25 mile) buffer zone. This portion of the river does not receive significant manatee use, based on review of aerial survey and telemetry data. During take-off and landing, the seaplanes are operating at speeds in excess of 40 km-per-hour (25 mph) for no more than a few seconds over a distance of approximately 457 meters (1,500 feet). Given the location on the

river and the short distance involved, it is exceedingly unlikely that seaplanes would encounter manatees while taking off and landing. As such, the final rule states that, in this portion of the Caloosahatchee River, all watercraft, except seaplanes, are required to operate at speeds less than 25 mph.

At Redfish Point, we are reducing the downstream extent of the shoreline to shoreline slow speed zone from Channel Marker “82" to Channel Marker “76" from what was described in the proposed rule. This better reflects the known manatee use patterns and provides a slow speed corridor for manatees crossing between the canals of Cape Coral and Deep Lagoon. We conducted a more detailed review of the available data and concluded that sufficient manatee protection could be achieved in this area by reconfiguring and shortening the slow speed zone. Our analysis of aerial and telemetry data indicates that manatees use is greatest between Channel Markers “72" and “76.”

In San Carlos Bay, the navigation channel and adjacent waters from Channel Marker “99" south to the Sanibel Causeway will be excluded from regulation. The proposal to make this slow speed would have potentially done more harm than good for manatees utilizing the shallow seagrass flats of San Carlos Bay because the high volume of traffic would likely be diverted to the “Miserable Mile” channel where the manatees occur in the adjacent shallow seagrass flats. The diversion of a high volume of watercraft traffic into an already congested channel may have also created a human safety issue. The designation protects the known areas of high manatee use in San Carlos Bay.

We believe the measures in this regulation will improve manatee protection in the Caloosahatchee River and San Carlos Bay and are necessary to prevent the take of at least one manatee in this area by harassment, injury, and/or mortality by extending coverage and/or improving upon existing protection measures in areas used by manatees.

b. Lower St. Johns River

Manatee presence has been documented in this area through aerial surveys, photo-identification studies, telemetry studies, and a carcass salvage program. Manatees occur throughout the manatee protection area; the extent of use varies by habitat type and time of year (White *et al.*, 2002). Telemetry and aerial survey data indicate that peak numbers occur between March and June with heaviest use along the St. Johns River shorelines (typically within 213 meters or 700 feet of shore) upstream of the Fuller Warren Bridge and along the southeast shoreline of Doctors Lake. The latter appears to correlate with the highest quality feeding habitat. Recent studies demonstrate little use during the December through February period (White *et al.*, 2002). While there were warm water discharges (*i.e.*, power plant and industrial effluents) located within the area of the refuge, these man-made attractants no longer exist.

Vessel speeds are currently restricted throughout the manatee protection area. In 1989, boating restricted areas were adopted by Duval County and established by the State of Florida for portions of the St. Johns River. These include a bank-to-bank, slow-speed zone between the

Florida East Coast Railroad Bridge and the Main Street Bridge and a “slow down/minimum wake when flashing” zone between the Main Street and Hart Bridges, activated during special events at the discretion of the Jacksonville Sheriff’s Office (16N-24.016 Duval County Boating Restricted Areas). The first manatee protection areas were adopted in 1989 by Duval County and in 1994 by the State of Florida. These measures included a slow speed (channel exempt) zone from Reddie Point to the Main Street Bridge and a 91-meter (300-foot) shoreline buffer in portions of the St. Johns River upstream of the Fuller Warren Bridge. The manatee protection areas were reconfigured in 2001. Current protection measures consist of shoreline buffers that vary in width from 91 to 274 meters (300 to 900 feet). There are provisions upstream of the Fuller Warren Bridge that include a shoreline buffer of 152 meters (500 feet) or 61 meters (200 feet) from the end of docks, whichever is greater (an expansion of the 1989 91-meter (300-foot) buffer) (68C-22.027 FAC). We believe that the variable shoreline buffers are not adequately posted, which makes these areas hard to enforce and difficult for the boating public to understand and comply with these measures.

Overall, 270 manatee deaths were recorded in Duval County between 1974 and 2002 (FMRI, 2003b). Ninety-four of these deaths included deaths caused by watercraft collision. Fifty-one watercraft-related manatee carcasses were recovered within the manatee protection area. Of these, 24 were recovered between Channel Marker “73" and the Matthews Bridge, 10 were recovered between the Hart and Acosta bridges, 6 were recovered between the Fuller Warren and Buckman bridges, and 11 were recovered upstream of the Buckman Bridge. Most of these carcasses have been recovered in that portion of the river where manatees and boats are most constricted (FMRI, 2003b). From 1994 to 2001, when the area was protected under the initial State rule, watercraft-related manatee deaths averaged two per year between “Channel Marker “73" and the Fuller Warren Bridge. In 2002, subsequent to adoption of the current rule, one watercraft-related carcass was documented in this area; a single watercraft-related carcass was recovered upstream of the Fuller Warren Bridge in 2001.

In the Lower St Johns River Manatee Refuge, we have reduced the downstream extent of the manatee protection area from Reddie Point to Channel Marker “73," a distance of about 1.6 kilometers (1 mile) from what was described in the proposed rule. Existing manatee protection measures downstream of Channel Marker “73" to Reddie Point are sufficient, provided that signage is improved by the State, and moving the boundary will improve compliance in the area without compromising manatee protection. We intend to work with the State to improve the signage in the Reddie Point area.

Shoreline buffers in the St. Johns River upstream of the Fuller Warren Bridge have been revised to be from 213 to 305 meters (700 to 1,000 feet) in the river (as marked) and 213 to 274 meters (700 to 900 feet) in Doctors Lake (as marked). This will encompass the areas of highest known manatee use. The adopted zone width will allow us to approximate the current manatee protection area configuration, remedy the posting issue with the current zones, and minimize any perceived increased risk to human safety in Doctors Lake as a result of our action.

We believe the measures in this regulation will improve manatee protection in the Lower St Johns River and are necessary to prevent the taking of at least one manatee in this area

through harassment, injury, and/or mortality. The regulation extends coverage to currently unprotected areas used by manatees, improves the ability of the public to comply with the vessel operation restrictions, and improves the ability of law enforcement personnel to enforce the restrictions. The configuration is less complicated, easier to post, and will reduce reliance on waterway users to judge distances from the shoreline or the ends of docks and piers. The regulation will not detract from operation of the boater safety zone downstream of the Main Street Bridge during special events.

c. Halifax and Tomoka Rivers

Manatee presence has been documented in this area through aerial surveys, photo-identification studies, telemetry studies, and a carcass salvage program (FMRI, 2003b). In general, manatees primarily use the Halifax River as a travel corridor (Deutsch *et al.*, 1998; Deutsch *et al.*, 2000); manatees use the downtown Daytona Beach area marinas as a source of drinking water and may calve here. The Tomoka River system is a known calving area, as evidenced by observations of calving manatees (McNerney 1982) and aerial observations of significant numbers of cow and calf pairs (FMRI 2003a). Other activities observed throughout these systems include playing and/or engaging in sexual activity, feeding, and resting. Manatees are known to occur in these areas throughout the year (Deutsch *et al.*, 1998; Deutsch *et al.*, 2000), although they are more abundant during the warmer months of the year (FMRI 2003).

Two hundred and eight manatee deaths occurred in Volusia County between 1974 and 2002 (FMRI, 2003b). This number includes 60 watercraft-related deaths. Of these, 30 carcasses attributed to watercraft were recovered in coastal Volusia County, (including 6 in the Tomoka River system and 16 in the Halifax River). Twenty of these carcasses were recovered over the past 10 years and seven of these over the past 2 years. Three of the watercraft-related carcasses were found in the Tomoka River in 2001. Carcass recovery sites for manatees known to have died as a result of watercraft collision include the lower Tomoka River and tributaries, the Halifax River in downtown Daytona Beach, areas to the south of Channel Marker “40" and the Dunlawton Bridge, and areas to the south of Ponce Inlet. Watercraft-related deaths occur between the months of March and October, with most occurring in May, June, and July.

The existing, State-designated manatee protection areas in coastal Volusia County were adopted by the State of Florida in 1994 (68C-22.012 FAC). These measures include slow and idle speed restrictions in the Tomoka River and associated waterbodies (except for in those areas upstream and downstream of Alligator Island), 91-meter (300-foot) shoreline buffers along most of the Halifax River (with maximum speeds varying between 40 and 48 km per hour (25 and 30 mph) outside of the buffers), slow speeds in the downtown Daytona Beach area (except for a watersports area to the south of Seabreeze Bridge), and a complex of varying restrictions between the Dunlawton Bridge and New Smyrna Beach. The existing State measures include 10 different types of restrictions that are used to restrict 30 discrete areas within the area of the final refuge. Fifteen watercraft-related manatee carcasses were recovered within the area of the final refuge since the State protection areas were first adopted. Seven of these deaths occurred in 2001, and no watercraft-related deaths were known to have occurred in

2002.

In the Halifax and Tomoka Rivers Manatee Refuge, there have been several changes from the proposed rule. In the Tomoka River we are including only a seasonal slow speed zone in the area currently designated as 40 km-per-hour (25-mph) immediately downstream of the I-95 bridge. This will protect manatees during their highest use period. We believe the existing slow and idle speed zones in the river to be adequate and the year-round zones are possibly more restrictive than necessary given the seasonality of manatee use.

We are maintaining the current 91-meter (300-foot) slow speed buffer zones in much of the river and are adopting a 40-km-per-hour (25-mph) speed limit between the buffers. This will provide sufficient protection in areas known to be used by manatees and will improve compliance by making the zones easier to understand. It will also avoid creating any additional safety risks to boaters as a result of our action. We had proposed a 305-meter (1,000-foot) buffer in many of these areas. In some cases, these buffers could have compressed high speed use into very small areas as much of the river is very close to 610 meters (2,000 feet) wide. The practical effect of our proposed rule would have been to make the river slow speed outside the ICW channel. In areas where the river is somewhat wider than 2,000 feet, the proposed rule would have created unregulated "pockets" that would have been difficult or impossible to regulate, and would have been of no practical use to boaters. While our stated intent in proposing a 1,000-foot shoreline buffer was, in part, to make the regulations in this area more understandable and enforceable, the proposed rule would have actually had the opposite effect by creating the unregulated "pockets" discussed above, thereby, potentially compromising manatee protection instead of enhancing it. Additionally, the FWCC noted that manatee use data for this portion of Volusia County are limited and dated. We agree and further note that the limited available data do not support the need for a "slow-speed outside the channel" designation. We have, therefore, concluded that establishment of a 1,000-foot shoreline buffer is not prudent.

Subsequent to the publication of the proposed rule, we also examined possible alternatives for expanding the shoreline buffers to some other distance from shoreline. As stated previously, wider buffers are generally more protective; so expansion of the existing 300-foot buffer to some greater distance would arguably improve manatee protection. As indicated above, the widest possible buffer for the Halifax River would have been 1,000 feet (as proposed), or slow speed outside the channel for all practical purposes, which was determined to be unwarranted. Additionally, the quality of the available data is such that we cannot conclude that substantial evidence supports expansion of the shoreline buffer to some distance other than the currently designated 300 feet. In other words, we conclude that the selection of some other width for the shoreline buffer would be arbitrary. We support the FWCC's ongoing efforts to collect additional data regarding manatee distribution and habitat use in this area, in order to provide for better informed decision-making.

In other portions of the Halifax River and adjacent waterbodies north and south of Ponce Inlet, we are placing a 40-km-per-hour (25-mph) cap on speeds not more restrictively regulated. We had proposed slow speed outside of marked channels in many of these areas.

The key features of this final designation in the Halifax and Tomoka Rivers are the elimination or modification of watersports areas and slowing boat speeds around the bridges' areas, which may function as pinch points where manatees and boats are forced into close proximity. We believe these are the areas that are most problematic for manatees within the original proposal and are the measures necessary to avoid take of manatees.

We believe the measures in this regulation will improve manatee protection in the Halifax and Tomoka Rivers and will prevent the take of at least one manatee in this area through harassment, injury, and/or mortality by reducing boat speeds in areas used by manatees, and by improving the ability of the public to understand and thus, comply, with protection measures through simplification of restrictions.

This alternative is our preferred alternative.

3. Special Area Management

Manatee refuges designated in this rule will be posted with regulatory signs compliant with Federal and State signage requirements and will be consistent with extant Federal, State and local government signage designating manatee protection areas in the vicinity of these sites. We will ensure that the sites are posted and that signs are maintained. In addition to posting these areas, we will enforce these measures with Service law enforcement agents.

4. Effects on Public Use

Public use of waters designated as refuges would be affected to varying degrees depending on site-specific restrictions. Areas designated as refuges would have site-specific restrictions placed on waterborne activities; some restrictions would be seasonal and others year-round. These restrictions would primarily limit the speed at which watercraft travel while in the designated areas. Designated areas include watercraft travel corridors, recreational areas (including fishing and water skiing areas, areas used by personal watercraft, and other uses), marine industrial sites, and sites used for other activities. The effect of such restrictions would require recreationists to change operating behaviors and/or use alternate sites, especially in the case of recreationists engaged in high speed activities.

5. Conclusion

This alternative, which includes the designation, posting and enforcement of refuges, would be expected to increase public awareness of the potential for take of Florida manatees in areas of high manatee use. Public use of these areas would be affected to varying degrees due to certain restrictions within the proposed refuges. These restrictions should provide the manatee some protection from take in manatee use areas. This alternative is our preferred alternative.

C. ALTERNATIVE 3 - Increase Enforcement of Existing Regulations without Establishing New Refuges and Sanctuaries

1. Proposed Action

This alternative would focus management on those areas already designated as either refuges or sanctuaries. We would not create any new refuges or sanctuaries for the Florida manatee. We would rely on increased efforts by Federal, state and local agencies to increase law enforcement within the previously designated areas.

2. Effects on Manatees

Increased law enforcement within existing manatee refuges and sanctuaries will improve compliance with respective restrictions and should result in a reduction in the number of local manatee deaths and incidences of injury and harassment. However, enforcement cannot reduce the number of these takings in areas that lack regulations or in areas where existing regulations are inadequate to minimize the take of manatees. We have determined that such areas exist; therefore, relying solely on increased enforcement of existing zones would not address identified problems and is unacceptable to us.

3. Effects on Public Use

Studies have shown that boater compliance within existing speed zones is less than what is required to significantly reduce manatee injuries and deaths. Under this alternative, increased patrols and enforcement of existing regulations would be initiated to cut down on violations. This alternative would not affect that portion of the public who are in compliance with existing regulations. Individuals violating posted restrictions would be fined and negligent boat handling practices should be curtailed.

4. Conclusion

Due to the inability of increased law enforcement to minimize take of manatees in areas with lacking or inadequate protective measures, this alternative is not acceptable to us. We have made, and will continue to make, enforcement of existing regulations a high priority. Additionally, we will devote appropriate enforcement resources to any additional manatee protection areas designated.

D. SUMMARY OF IMPACTS OF ALTERNATIVES

1. Biological Value of the Refuges and Sanctuaries

These sites are important for their use as travel and migration corridors, and as feeding, calving, mating and resting areas. The selection of these sites was based on their importance to manatees as individual sites and as important links within the local ecosystem. Details can be found in Section V B. 2. a - c in this document.

2. Adequacy of Funding

At this time, we believe that there is sufficient funding available to manage the number and size of protected areas currently proposed.

3. Past Actions

Suggestions to the effect that manatee populations may be increasing in the face of past actions by Federal, State, and local governments are encouraging. However, there has been no confirmation that significant threats to the species, including human-related mortality, injury, and harassment, and habitat alteration, have been reduced or eliminated to the extent that the Florida manatee may be reclassified from endangered to threatened status. Pursuant to our mission, we continue to assess this information with the goal of meeting our manatee recovery objectives.

4. Future Actions

Possible future actions associated with the preferred alternative include enhanced law enforcement in the areas designated as refuges and the possible designation of additional areas as refuges and sanctuaries if the need becomes apparent. Such actions are consistent with our goal of recovering the Florida manatee to the extent that it would be removed from the Federal endangered species list.

5. Cumulative Effects

Observations by law enforcement officers and manatee researchers imply that "take" of manatees and human-related manatee mortalities are reduced in areas designated as refuges or sanctuaries. This indicates that, on a site-specific basis, previous actions to protect the manatee have been successful. However, areas outside of existing refuges and sanctuaries continue to experience human-related manatee injuries and mortalities. The designation of additional refuges and sanctuaries in areas heavily used by manatee and humans alike is expected to decrease the potential for "take" in these areas and will enhance public awareness of the measures necessary to protect the manatee. The cumulative impact of designating additional refuges and sanctuaries on the public has also been assessed. Impacts such as loss of recreational areas, increase in travel time, and general inconvenience that many boaters may experience due to these refuges and sanctuaries will generally be limited to small areas within their overall travel area.

VI. Consultation and Coordination with Others

A. PUBLIC INVOLVEMENT

In the April 4, 2003, proposed rule (68 FR 16602), we requested all interested parties to submit factual reports or information that might contribute to the development of a final rule. We published legal notices announcing the proposal, inviting public comment, and announcing the schedule for public hearings, in the Fort Myers News-Press, Daytona Beach News-Journal,

Naples Daily News, Orlando Sentinel, Charlotte Sun-Herald, Sarasota Herald-Tribune, Florida Times-Union, St. Augustine Record, and Clay Today. We held the public hearings at the Harborside Convention Hall in Fort Myers, Florida, on May 13, 2003; the Ocean Center in Daytona Beach, Florida, on May 14, 2003; and at the University Center, University of North Florida, in Jacksonville, Florida, on May 15, 2003. Approximately 3,325 people were in attendance at the public hearings. We received oral comments from 203 individuals. The comment period closed on June 3, 2003.

In addition to soliciting comments from the public, we solicited peer review comments from three independent experts in manatee ecology, boating activity, and waterway regulation, from The Ocean Conservancy, Mote Marine Laboratories, and the United States Coast Guard, respectively.

During the comment period, we received approximately 5,931 written and oral comments concerning the proposal. Most were form letters expressing support for the proposed designation; however, most substantive comments expressed concern or opposition to the proposed action.

B. LIST OF AGENCIES AND INDIVIDUALS RECEIVING COPIES OF THIS EA

To date, no agencies or individuals have received copies of this EA.

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VIII. Appendix

(INCLUDE FLORIDA MANATEE RECOVERY PLAN, THIRD REVISION)