United States Department of the Interior

FISH AND WILDLIFE SERVICE
South Florida Ecological Services Office
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Vero Beach, Florida 32960

January 4, 2005

Colonel Robert M. Carpenter
District Engineer
U.S. Army Corps of Engineers
701 San Marco Boulevard, Room 372
Jacksonville, Florida 32207-8175

Service Log No.: 4-1-04-PL-5970
Corps Application No.: SAJ-2004-138 (IP-JWS)
Date Received: September 9, 2004
Applicant: Maltese Developments, Incorporated
County: Charlotte

Dear Colonel Carpenter:

This document is the Fish and Wildlife Service's (Service) biological opinion for the multi-slip dock project listed above resulting in 18 additional slips within Reach 37 of the U.S. Army Corps of Engineers' (Corps) Reach Characterization for Florida Waters (Corps 2001) in Charlotte County, Florida. Reach 37 encompasses the waters of the Peace River (from Charlotte Harbor to approximately 2 miles north of State Road 70), and all connecting tributaries and residential canal systems in Charlotte County and Desoto County, Florida.

This biological opinion addresses the potential effects of this project on the southwest subpopulation of the West Indian (= Florida) manatee (*Trichechus manatus*) (manatee) within Reach 37 in accordance with section 7 of the Endangered Species Act of 1973, as amended (ESA) (16 U.S.C. 1531 *et seq.*) and the Marine Mammal Protection Act of 1972, as amended (MMPA) (16 U.S.C. 1461 *et seq.*). No other listed species will be affected by the proposed action.

This biological opinion was prepared based on information provided by the Corps, the Corps' Reach Characterization (Corps 2001), the *Florida Manatee Recovery Plan* (Service 2001), the *South Florida Multi-Species Recovery Plan* (Service 1999), data supplied by the Florida Fish and Wildlife Conservation Commission (FWC) and by the Florida Marine Research Institute (FMRI), and other sources of information. A complete administrative record of this consultation is on file at the Service's South Florida Ecological Services Office in Vero Beach, Florida.

CONSULTATION HISTORY

On the date listed above, the Service received a public notice from the Corps requesting concurrence on a "may affect" determination for the manatee and initiation of formal consultation for the proposed action. The proposed action would authorize the construction of a multi-slip dock project resulting in 18 slips. The Service acknowledges the Corps' determination of "may affect" for the manatee.

By letter dated July 14, 2004, the Service stated that we could not initiate formal consultation for the manatee until we received a manatee impact review from the FWC's Bureau of Protected Species Management to determine if the proposed multi-slip dock satisfies the requirements of 373.414(1)(a)2, Florida Statutes that govern manatee protection measures in State waters.

On September 9, 2004, the Service received a copy of the FWC recommendations regarding the above-listed project. The FWC recommended the incorporation of the *Standard Manatee Construction Conditions* in the project design and manatee educational signage be installed and maintained on the project site. The FWC also recommended that the total number of boat slips be limited to 18 slips.

BIOLOGICAL OPINION

DESCRIPTION OF PROPOSED ACTION

The proposed action would authorize the construction of a residential development known as "Hunter Creek" which includes an 18-slip docking facility and community boat ramp. The proposed action would authorize the placement of fill in 0.38 acre of wetlands, the construction of a 6-foot by 291-foot access pier, a 6-foot by 20-foot terminal platform, nine 3-foot by 20-foot finger piers, 18 mooring piles, and a 14-foot by 90-foot concrete boat ramp. The Corps has assigned application number SAJ-2004-138 (IP-JWS) to this project. The proposed project is located in Section 14, Township 40 South, Range 23 East, Punta Gorda, Charlotte County, Florida.

To reduce direct construction-related effects to the manatee, the Corps will incorporate *Standard Manatee Construction Conditions* (FWC 2001) as a condition of the Department of the Army permits, if issued, for the project listed above. Indirect effects of the project to the manatee have been ameliorated by providing boater education and manatee awareness programs and brochures to local marinas, State, county, and city public offices, and at local boating events; by establishing and posting appropriate manatee speed zones in the project vicinity; and by providing enforcement of these zones by Federal and local law enforcement agencies.

Seagrasses may occur in the project area. If present, the Corps will require the applicant to avoid impacts to seagrasses by constructing the project based on the *Dock Construction Guidelines for Florida* developed by the Corps and National Oceanic and Atmospheric Administration National Marine Fisheries Service (NOAA Fisheries) (formerly the National Marine Fisheries Service [NMFS]) (Corps and NMFS 2001).

These proposed action resulted in a "may affect" determination after processing it through the Corps and Florida Department of Environmental Protection's (DEP) January 2, 2001, Manatee Key. [Note - Service concurrence for the key was provided in a letter dated January 2, 2001]. The Service acknowledges the Corps' determination of "may affect" for the manatee.

We selected the Corps' Reach Characterization as the basis for our geographic area analysis. The Corps compiled existing data relevant to the evaluation of the potential effects of watercraft access projects on manatees. The information contained in the Reach Characterization included manatee use data such as aerial surveys and radio telemetry; manatee habitat characteristics such as warmwater sites, seagrass distributions, and bathymetry; human use characteristics such as relative dock densities, boat densities, and navigation channels; and existing manatee protection measures (speed zones). Throughout Florida, the Corps defined 80 segments or "reaches" based on manatee use, manatee habitat characteristics, and human use characteristics and compiled this information into its Geographic Information System (GIS) database. The Corps also provided the Service with the applicant's completed Manatee Checklist which provides additional site-specific information on the factors defined in the Reach Characterization database.

The action area is determined by the reach boundaries that best encompass the direct and indirect effects of the project under consideration. This reach analysis is supplemented with a county review approach because many factors important to manatee protection are provided at the county level. Manatee protection plans (MPP) are produced by counties, manatee speed zones are designated by the State with county participation or by counties directly, and county sheriffs' departments provide enforcement within county boundaries. This combined analysis provides a more holistic evaluation of factors affecting manatees than a piecemeal project-by-project review and also identifies localized threats and options that may be applied to minimize these threats.

Action Area

The proposed project is located within Reach 37. Vessels using the new multi-slip facility would likely travel through waters of the Peace River (from Charlotte Harbor to approximately 2 miles north of State Road 70), Charlotte Harbor, and the Gulf of Mexico in Charlotte County, Florida. Therefore, for the purposes of this consultation, the Service defines the action area for this biological opinion as all waters within Reach 37, in Charlotte County, Florida.

New watercraft access projects may have a number of direct and indirect effects on manatees and manatee habitat. Direct impacts include potential direct harm or harassment of manatees during construction activities and are generally addressed through application of the *Standard Manatee Construction Conditions* (http://www.floridaconservation.org/psm/permit/construct.htm) codeveloped by the Corps, Service, and FWC. Anticipated direct impacts to habitat, such as the presence of seagrasses within the project footprint are minimized through modifications in the project design during the permit review process and/or the application of *Dock Construction Guidelines for Florida* developed by the Corps and NOAA Fisheries (Corps and NMFS 2001). These two minimization efforts are routinely included as conditions of Department of the Army permits issued for construction projects in manatee habitat and have previously undergone section 7 consultation.

Indirect effects to manatees include effects to routine movement and migration patterns to freshwater, foraging, calving, and breeding areas, and associated behavior patterns. Indirect effects also include effects to manatee habitat caused by operation of the proposed watercraft access projects. Construction of the proposed watercraft access project may provide increased access by watercraft to areas frequented by manatees or may alter watercraft traffic patterns in such a way as to increase watercraft-manatee interactions. The lack of protective measures for manatees, such as speed zones, signage, and enforcement, may lead to increased harassment of manatees or increased watercraft collisions with manatees. Depending on the location, construction of watercraft access projects may encourage watercraft to travel through important manatee habitat features such as submerged aquatic vegetation, warmwater refugia, and freshwater, foraging, calving, and breeding areas, thereby potentially altering manatee habitat and manatee habitat use patterns.

STATUS OF THE SPECIES/CRITICAL HABITAT

Species/Critical Habitat Description

Manatees are massive fusiform-shaped mammals with skin that is uniformly dark grey, wrinkled, sparsely haired, and rubber-like. Manatees possess paddle-like forelimbs, no hind limbs, and a spatulate, horizontally flattened tail. Females have two axillary mammae, one at the posterior base of each forelimb. Their bones are massive and heavy with no marrow cavities in the ribs or long bones of the forearms (Odell 1982). Adults average about 10 feet in length and 2,200 pounds in weight, but may reach lengths of up to 15 feet (Gunter 1941) and weigh as much as 3,570 pounds (Rathbun et al. 1990). Newborns average 4 to 4.5 feet in length and weigh about 66 pounds (Odell 1981). The nostrils located on the upper snout, open and close by means of muscular valves as the animal surfaces and dives (Husar 1977; Hartman 1979). A muscular flexible upper lip is used with the forelimbs to manipulate food into the mouth (Odell 1982). Bristles are located on the upper and lower lip pads. Molars designed to crush vegetation form continuously at the back of the jaw and move forward as older ones wear down (Domning and Hayek 1986). The eyes are very small, close with sphincter action, and are equipped with inner membranes that can be drawn across the eyeball for protection. The ears are external, minute, with no pinnae. The anatomy of the internal ear structure indicates that they can hear sounds within a relatively narrow low frequency range, that their hearing is not acute, and that they have difficulty in localizing sound (Ketten et al. 1992). However, Gerstein (1995) suggested that manatees may have a greater low-frequency sensitivity than other marine mammal species that have been tested.

Critical habitat for any species is described as the specific area within the geographic area occupied by the species, at the time it is listed under the provisions of section 4 of the ESA, on which are found those physical or biological features (*i.e.*, constituent elements): (1) essential to the conservation of the species; and (2) which may require special management considerations or protection [ESA §3 (5)(A)].

Critical habitat for this species was designated in 1976 (50 CFR 17.95). Designated critical habitat on the west coast of Florida includes Crystal River in Citrus County, portions of the Little Manatee River in Hillsborough County, the Manatee River in Manatee County, the Myakka River in Sarasota and Charlotte Counties, the Peace River in DeSoto and Charlotte Counties, and the Caloosahatchee River in Lee County. It also includes all the coastal waters in Lee, Collier, and Monroe Counties between Gordon's Pass (Collier County) and Whitewater Bay (Monroe County).

Designated manatee critical habitat on the east coast of Florida includes those intracoastal waters connecting rivers and bays from the Florida/Georgia border south to Key Largo in Monroe County, excluding those waters in Broward County, Florida. Manatees also have critical habitat designated between Key Largo and mainland Miami-Dade County in Florida Bay.

Constituent elements for any designated critical habitat include those physical and biological features essential to the conservation of the species. No specific primary or secondary constituent elements were included in the critical habitat designation. However, researchers agree that essential habitat features for the manatee include seagrasses for foraging, shallow areas for resting and calving, channels for travel and migration, warmwater refuges during cold weather, and fresh water for drinking (Service 2001).

Life History

Manatees are herbivores that feed opportunistically on a wide variety of aquatic vegetation. Feeding rates and food preferences depend, in part, on the season and available plant species. Manatees frequently feed in water depths of 3 to 9 feet where aquatic vegetation is abundant. Seagrasses appear to be a staple of the manatee diet in coastal areas (Ledder 1986; Provancha and Hall 1991; Kadel and Patton 1992; Koelsch 1997; Lefebvre et al. 2000). Manatees can remain submerged for several minutes with the longest submergence record lasting 24 minutes (Reynolds 1981).

Breeding takes place when one or more males (ranging from 5 to 22 individuals) are attracted to an estrous female to form a temporary mating herd (Rathbun et al. 1995). Mating herds can last up to 4 weeks, with different males joining and leaving the herd daily (Hartman 1979; Bengston 1981; Rathbun et al. 1995; Rathbun 1999). Permanent bonds between males and females do not form. During peak activity, the males in mating herds compete intensely for access to the female (Hartman 1979). Successive copulations involving different males have been reported. Some observations suggest that larger, presumably older, males dominate access to females early in the formation of mating herds and are responsible for most pregnancies (Rathbun et al. 1995). Although breeding has been reported in all seasons, Hernandez et al. (1995) reported that histological studies of reproductive organs from carcasses of males found evidence of sperm production in 94 percent of adult males found between March and November. Females appear to reach sexual maturity by about age 5 but have given birth as early as 4 (Marmontel 1995; Odell et al. 1995; O'Shea and Hartley 1995; Rathbun et al. 1995), and males may reach sexual maturity

at 3 to 4 years of age (Hernandez et al. 1995). Manatees may live in excess of 50 years (Marmontel 1995), and evidence for reproductive aging is unclear (Marmontel 1995; Rathbun et al. 1995).

Calf dependency usually lasts 1 to 2 years after birth (Hartman 1979; O'Shea and Hartley 1995; Rathbun et al. 1995; Reid et al. 1995). Calving intervals vary greatly among females, with an average birth cycle of 2 to 2.5 years, but may be considerably longer depending on age and perhaps other factors (Marmontel 1995; Odell et al. 1995; Rathbun et al. 1995; Reid et al. 1995). Females that abort or lose a calf due to perinatal death (small manatees, less than 60 inches in length) (O'Shea and Hartley 1995), may become pregnant again within a few months (Odell et al. 1995) or even weeks (Hartman 1979).

Manatees often use secluded canals, creeks, embayments, and lagoons, particularly near the mouths of coastal rivers and sloughs, for feeding, resting, playing, mating, and calving (Marine Mammal Commission [MMC] 1986 and 1988). Manatees frequent coastal, estuarine, and riverine habitats and are capable of extensive north-south migrations. Based on telemetry, aerial surveys, photo-identification sighting records, and other studies over the past 20 years, manatee distribution in the southeastern United States is better understood (Beeler and O'Shea 1988; O'Shea 1988; MMC 1984 and 1986; Lefebvre et al. 1989). In general, the data reveal that manatees exhibit opportunism as well as predictable patterns in their distribution and movement.

They are able to undertake extensive north-south migrations with seasonal distribution determined by water temperature below 68°F (20°C). Manatees depend on areas with access to natural springs, manmade warmwater refugia, areas with vascular plants, and freshwater sources. Manatees normally migrate along shorelines and use deeper corridors to access shallow water feeding and resting areas. When ambient water temperatures drop below 68°F in autumn and winter, manatees aggregate within the confines of natural or artificial warmwater refuges (Lefebvre et al. 1989) or move to the southern tip of Florida (Snow 1991). Most warmwater artificial refuges are created by outfalls from power plants or paper mills. As water temperatures rise, manatees disperse from these winter aggregation areas. While some remain near their winter refuges, others undertake extensive migrations along the coast of Florida and far up rivers and canals. Most manatees return to the same warmwater refuges each year. However, some manatees use different refuges in different years, and others use two or more refuges in the same winter (Reid and Rathbun 1984; Rathbun et al. 1990; Reid et al. 1991). There are numerous lesser known, minor aggregation areas used as temporary thermal refuges. Many of these areas are canals or boat basins where warmwater temperatures persist as temperatures in adjacent bays and rivers decline.

Natural causes of death include disease, parasitism, reproductive complications, and other nonhuman-related injuries as well as occasional exposure to cold and red tide (O'Shea et al. 1985; Ackerman et al. 1995). Human-related causes of death, excluding watercraft collisions, include manatees crushed in water control structures and navigational locks, poaching and vandalism, entanglement in shrimp nets, monofilament line and other fishing gear, entrapment in

culverts and pipes, and ingestion of debris. Human-related causes of death accounted for at least 6 percent of deaths from 1978 through January 2003. Watercraft-related mortality for the same time period accounted for 25 percent of the total mortality.

Population Dynamics

Long-term studies suggest four regional populations of manatees in Florida:(a) the Northwest subpopulation, comprising approximately 12 percent of the total manatee population, and consisting of the counties along the Gulf of Mexico from Escambia County east and south to Hernando County, Lafayette, and Gilchrist Counties, and Marion County adjacent to the Withlacoochee River; (b) the Upper St. Johns River subpopulation, comprising approximately 4 percent of the total manatee population, and consisting of Putnam County from Palatka south, Volusia, Flagler, and Marion Counties adjacent to the St. Johns River or its tributaries, and Lake and Seminole Counties; (c) the Atlantic subpopulation, comprising approximately 42 percent of the total manatee population, and consisting of counties along the Atlantic Coast from Nassau County south to Miami-Dade County, the portion of Monroe County adjacent to the Florida Bay and the Florida Keys, Okeechobee County, and counties along the lower portion of the St. Johns River north of Palatka, which includes Putnam, St. Johns, Clay, and Duval Counties; and (d) the Southwest subpopulation, comprising approximately 42 percent of the total manatee population and consisting of the counties along the Gulf of Mexico from Pasco County south to Whitewater Bay in Monroe County and DeSoto, Glades, and Hendry Counties. These regional units are based primarily on documented manatee use of wintering sites and from radio-tracking studies of individuals' movements (Bengston 1981; MMC 1988; Rathbun et al. 1990; Beck and Reid 1995; Rathbun et al. 1995; Reid et al. 1995; Deutsch et al. 1998; Service 2001).

The previous recovery plan (Service 1996) identified the need for a population status working group to assess manatee population size and trends. The first meeting of the Manatee Population Status Working Group (MPSWG), a subcommittee of the Recovery Team, was held in March 1998. The goals of the MPSWG are to: (1) assess the status of the manatee population; (2) advise the Service on population recovery criteria for determining when recovery has been achieved; (3) provide interpretation of available information on manatee population biology to managers; (4) make recommendations concerning needed research directions and methods; and (5) obtain rigorous external review of manatee population data, conclusions, and research methods by independent researchers with expertise in population biology.

In 2001, the 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 subpopulations, 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 subpopulation due to an adult survival rate that was lower than the rate necessary to sustain population growth. The MPSWG believed that this region had likely been growing slowly in the 1980s, but since then may have leveled off or even possibly declined. They considered the status of the Atlantic subpopulation 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 region.

Regarding the Southwest subpopulation, the MPSWG acknowledged that further data collection and analysis would be necessary to provide an assessment of the manatee's status in this region. Preliminary estimates of adult survival available to the MPSWG at that time indicated that the Southwest subpopulation was similar to the Atlantic subpopulation and "had substantially lower [adult survival estimates] than for the Northwest and Upper St. Johns River [subpopulations]." The Southwest subpopulation was noted for having high levels of watercraft-related manatee deaths and injuries and natural mortality events (*i.e.*, red tide and cold stress).

Based on recent analyses, Langtimm et al. (2002) estimates of adult survival rates vary among the subpopulations with 96.2 (95 percent confidence interval of 95.3 to 97.2) in the Northwest subpopulation, 96.1 (95 percent confidence interval of 90.0 to 98.5) in the Upper St. Johns River subpopulation, 94.3 (95 percent confidence interval of 92.3 to 96.2 in the Atlantic subpopulation, and 90.6 (95 percent confidence interval of 86.7 to 94.4) in the Southwest subpopulation. Similarly, estimates of population growth rates vary among subpopulations.

According to a recent analysis by Runge et al. (in review), the growth rate is estimated to be highest in the Upper St. Johns River subpopulation at 6.1 percent per year (95 percent confidence interval of 1.7 to 8.7), followed by the Northwest subpopulation at 5.0 percent per year (95 percent confidence interval of 3.2 to 6.8), and the Atlantic subpopulation at 3.2 percent per year (95 percent confidence interval of 0.3 to 5.7). The growth rate has not been calculated for the Southwest subpopulation, although it is thought that the population is declining or is, at best, stable.

A Population Viability Analysis (PVA), in which random events (such as red tide, extremely cold winter, and loss of warmwater sites) 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 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.

Available evidence indicates that there is relatively little movement of manatees among the regions. The highest dispersal rate assumed by the FWC for the purposes of their recent PVA was 2 percent per year between the Upper St. Johns River subpopulation and the Atlantic subpopulation (FMRI 2002). The FWC assumed that dispersal rates among the other regions did not exceed 0.5 percent per year. This indicates that dispersal from regions in which the population is likely growing (*e.g.*, Northwest subpopulation) is likely not sufficient to compensate for high levels of human-related mortality in other regions (*e.g.*, Southwest subpopulation).

Status and Distribution

Based on telemetry studies, aerial surveys, photo-identification studies, and other research over the past 20 years, manatee distribution in the southeastern United States is better understood (Beeler and O'Shea 1988; O'Shea 1988; MMC 1984, 1986; and Lefebvre et al. 1989). Manatees can be found in Florida waters throughout the year, and nearly all manatees use the waters of peninsular Florida during the winter months. In winter months, most manatees rely on warmwater 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.

The precise status of all four regional populations of manatees has been difficult to quantify due to the lack of a useful and repeatable means of estimating or monitoring the status and trends in the size of these manatee populations (O'Shea 1988; O'Shea et al. 1992; Lefebvre et al. 1995). Even though many manatees aggregate at warmwater refuges in winter and most, if not all, such refuges are known, direct counting methods (*e.g.*, aerial and ground surveys) are unable to account for 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 is also not a statistically and scientifically repeatable method.

It is possible, however, to monitor the number of manatees using the Blue Spring (Volusia County) and Crystal River (Citrus County) warmwater refuges. At Blue Spring (in the Upper St. Johns River subpopulation), 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 (Bengston 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 (W.C. Hartley, DEP, personal communication 2001).

In the Northwest subpopulation, the clear, shallow waters of Kings Bay (Citrus County) have made it possible to monitor the number of manatees using this warmwater 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 (J. Kleen, Service, personal communication).

In the Atlantic and Southwest subpopulations, no similar shallow clear water areas are present that make it possible to monitor the number of manatees using warmwater refugia, although such

refugia are present. In these locations, visual counts of those manatees that can be seen by aerial surveys are the basis of the population estimates and estimates of adult survival and population growth.

The only data on population size include uncalibrated indices based on maximum counts of animals at winter refuges made within 1 or 2 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 aggregation areas during periods of severe cold weather (Ackerman 1995). The highest statewide minimum count from these surveys was 3,276 manatees in January 2001 with 1,520 individuals on the east coast and 1,756 individuals on the west coast. A more recent survey conducted on January 21-22, 2003, provides a minimum population estimate that includes 3,113 individuals with 1,814 and 1,299 manatees on the east and west coasts, respectively (http://www.floridamarine.org).While aircraft synoptic surveys provide a "best estimate" of the minimum 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 observer variability (Lefebvre et al. 1995). While these results are of value in providing information on where manatees occur, 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 "despite 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."

Manatees occur year-round on the west coast of Florida; however, they tend to cluster in the Everglades and Ten Thousand Island area, Estero Bay and Caloosahatchee River area, Charlotte Harbor and Crystal River. On the west coast, known cold weather aggregation areas which commonly have 100 or more manatees are Crystal River (Citrus County), Homosassa River (Citrus County), Tampa Electric Company's Big Bend Power Plant (Hillsborough County), Florida Power and Light Company's Fort Myers Power Plant (Lee County), and Faka Union Canal (Collier County). Known cold weather aggregation areas which commonly have 25 to 100 manatees are Florida Power Corporation's Crystal River Power Plant (Citrus County), Tampa Electric Company's Port Sutton Plant (Hillsborough County), Florida Power Corporation's Bartow Power Plant (Pinellas County), Warm Mineral Springs (Sarasota County), and Matlacha Isles (Lee County). Cold weather aggregation areas which commonly have aggregations of less than 25 manatees include Weeki Wachee/Mud/Jenkins Creek Springs (Hernando County) and Florida Power Corporation Anclote Plant (Pasco County).

Manatee distribution and dispersal patterns as well as numbers of individuals within an area can vary considerably from year-to-year and season-to-season. This variability in dispersal patterns is dependent on a variety of biotic and abiotic factors, such as warmwater discharges, freshwater sources, foraging areas, and mating season. At the end of winter, manatees leave warmwater aggregation sites and head for warm weather use areas. There appears to be no significant spring aggregation areas on the west coast, although Charlotte Harbor was visited in the spring by almost half of the 35 manatees radio-tagged at the Fort Myers Power Plant in Lee County in the early 1980s (Lefebvre and Frohlich 1986). During the summer, manatees can be found throughout Florida where water depths and access channels are greater than 1 to 2 meters (3.3 to 6.6 feet) (O'Shea 1988). Summer use areas are generally typified by extensive foraging resources. Seagrasses and other food sources occur throughout coastal Florida. There are an estimated 3.73 million acres of open water habitat in coastal and interior areas, of which an estimated 1.1 million acres are designated manatee critical habitat (FWC and Service GIS data). Almost 57,000 acres of known manatee aggregation habitat exists in the State, 85 percent of which is located in the Atlantic and Southwest subpopulations. Seagrass acreage totals by county for the Southwest subpopulation are as follows: Pinellas-22,919; Hillsborough-6,322; Manatee-12,158; Sarasota-4,164; Charlotte-14,190; Lee-50,509; and Collier-5,250 (F.J. Sargent et al. 1995). Seagrasses are a significant statewide resource essential for a healthy and stable manatee population.

The project discussed in this biological opinion is located in waters accessible to the Southwest subpopulation of manatees. The Southwest subpopulation comprises approximately 42 percent of the total manatee population. The Southwest subpopulation of manatees includes all coastal areas from Pasco County south to Whitewater Bay in Monroe County as well as DeSoto, Glades, and Hendry Counties.

Collection of life history data for the Southwest subpopulation only began in 1995 and is not sufficient to estimate survival rates. The Service understands that the current status statement of the Southwest subpopulation presented by the MPSWG is incomplete. However, we also understand that the other qualitative information warrants consideration in developing a complete view of the overall status of the subpopulation. We believe that there are more manatees now than there were in the 1970s and 1980s. However, this does not mean that the threats have been reduced. For instance, when compared with mortality resulting from watercraft collisions (17 deaths), red tide (75 deaths) has had a greater effect on the Southwest subpopulation of manatees for the same time period (January-July 2003).

Reasons for Legal Protection

In 1967, both the Florida and Antillean subspecies of manatees (*T. manatus latirostris* and *T. manatus manatus*) were listed as endangered (32 FR 4061) and received Federal protection with the passage of the ESA in 1973. However, since the manatee was designated as an endangered species prior to enactment of the ESA, there was no formal listing package identifying threats to the species, as required by section 4(a)(1) of the ESA. However, since that time, threats to the manatee (discussed below) have been identified.

Manatees are also protected under the MMPA. The MMPA establishes, as national policy, maintenance of the health and stability of marine ecosystems and, whenever consistent with this primary objective, obtains and maintains optimum sustainable populations of marine mammals. It also establishes a moratorium on the taking of marine mammals, which includes harassing, hunting, capturing, killing, or attempting to harass, hunt, capture, or kill any marine mammal. Section 101(a)(5)(A) of the MMPA allows the Service, upon request, to authorize by specific regulation the incidental, unintentional take of marine mammals by persons engaged in identified activities within specific geographic areas, if the Service determines that such taking would have a negligible impact on the species or subpopulation. Since the manatee, which is comprised of the Florida and Antillean manatee populations (or stocks), is currently listed as "endangered" under the ESA, they are considered "depleted" under the MMPA.

In the case of the manatee, the Service developed the initial recovery plan for the manatee in 1980. This initial plan focused primarily on manatees in Florida, but included Antillean manatees in the Commonwealth of Puerto Rico and the United States Virgin Islands. In 1986, the Service adopted a separate recovery plan for manatees in Puerto Rico. To reflect new information and planning needs for manatees in Florida, the Service revised the original plan in 1989 and focused exclusively on the Florida manatee. This first revision covered a 5-year planning period ending in 1994. The Service revised and updated the plan again in 1996, which again covered a 5-year planning period ending in 2000. In 1999, the Service initiated the process to revise the plan for a third time. An 18-member recovery team, consisting of representatives of the public, agencies, and groups that have an interest in manatee recovery and/or could be affected by proposed recovery actions, was established to draft the third revision. The latest manatee recovery plan, which also covers a 5-year planning period, was finalized in October 2001.

Threats

The main threat faced by manatees in Florida is death or serious injury from watercraft collisions. Another threat includes uncertainty in the availability of warmwater refuges as deregulation of the power industry in Florida occurs. Consequences from an increasing human population and intensive coastal development are also long-term threats to the manatee. Their survival will depend on maintaining the integrity of ecosystems and habitat sufficient to support a viable manatee population. A viable manatee population includes values that are indicative of a stable or increasing population for the periods of analysis and provides us with additional positive recovery indicators, such as progressively higher minimum counts, increasing adult manatee survival, reproduction (cows with calves), and population growth rates.

The largest identified human cause of manatee deaths is collisions with watercraft and/or propellers of watercraft. Between 1976 and 2002, watercraft-related manatee deaths accounted for 25 percent of the total mortality. Data on manatee deaths in the southeastern United States have been collected since 1974 (O'Shea et al. 1985; Ackerman et al. 1995; FWC unpublished data). Data since 1976 were used in the following summary as carcass collection efforts were more consistent following that year. These data indicate an increase in manatee deaths over the last 25 years (Ackerman et al. 1995; FWC unpublished data). This is an increase of an average

of 7.2 percent per year (Ackerman et al. 1995; FWC unpublished data). Watercraft-related manatee deaths were lower in 1992 and 1993, but increased thereafter. From 1996 to 2002, watercraft-related manatee deaths were the highest on record, which also corresponds to an increase in the manatee population and an increase in registered watercraft.

In a parallel fashion, residential growth and visitation to Florida have 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. Concurrent with this increase in human population growth and visitation is the increase in the number of watercraft that travel Florida waterways. In 2002 961,719 watercraft were registered in the State of Florida (Florida Department of Highway Safety and Motor Vehicles 2003). This represents a 59 percent increase in registered vessels since 1993. The Florida Department of Community Affairs estimates that, in addition to watercraft belonging to Florida residents, between 300,000 and 400,000 watercraft registered in other states use Florida waters each year.

There has been an increasing trend in watercraft-related manatee mortality in all four subpopulations over the past decade. This is reflected in increases in the average annual number of watercraft-related manatee mortalities as the period over which the average is taken becomes more recent. For instance, in the Atlantic subpopulation, the mean observed mortality due to watercraft was 25.8 deaths per year for the period 1990-1999, 29.8 deaths per year for the period 1993-2002, and 37 deaths per year for the 5-year period from 1998-2002. This trend is statistically significant in all four subpopulations. The slope of the increase (as fit to the period 1992-2002) does not differ between the Upper St. Johns River and Northwest subpopulations (5.96 percent) nor does it differ between the Atlantic and Southwest subpopulations (9.53 percent). To interpret these mortality rates of increase, however, it is important to compare them to the historic growth rates (1990-1999) in each subpopulation, to account for the increase in manatee mortalities that would be expected due to increases in manatee population size. In the Atlantic and Southwest subpopulations, the rate of increase in watercraft-related manatee mortality over that period exceeded the estimated growth rate of those populations (by 8.5 percent in the Atlantic and 10.6 percent in the Southwest). In the Northwest subpopulation, the rate of increase in mortality (6.0 percent) is somewhat larger than the estimated growth rate (3.7 percent).

The next largest human-related cause of manatee deaths is entrapment or crushing in water control structures and navigational locks, and this accounts for approximately 4 percent of the total mortalities recorded between 1976 and 2002 (Ackerman et al. 1995; FWC unpublished data). These deaths were first recognized in the 1970s (Odell and Reynolds 1979), and steps have been taken to eliminate this source of mortality. Beginning first in the early 1980s, gate-opening procedures were modified. Annual numbers of deaths initially decreased after this modification. However, the number of deaths subsequently increased and, in 1994, a record 16 deaths were documented. Manatee mortality decreased during 2000-2002 with 14 manatee mortalities for the 3-year period. An ad hoc interagency task force was established in the early 1990s and now includes representatives from the South Florida Water Management District, Corps, Service, Miami-Dade Department of Environmental Research Management, FWC and

DEP. This group meets annually to discuss recent manatee deaths and develop measures to protect manatees at water control structures and navigational locks as well as to prevent entrapment in culverts and pipes. The overall goal is to eliminate structure-related manatee deaths.

Other known causes of human-related manatee deaths include poaching and vandalism, entanglement in shrimp nets, monofilament line (and other fishing gear), and ingestion of debris. These account for about 3 percent of the total mortality from 1976 to 2002. Together, deaths attributable to these causes have remained constant and have accounted for a low percentage of total known deaths, *i.e.*, about 4 percent between 1976 and 1980, 3 percent between 1981 and 1985, 2 percent between 1986 and 1991, and 2 percent between 1992 and 2002 (Ackerman et al. 1995; FWC unpublished data). Entrapment in shrimp nets is the largest component of this category. Eleven deaths between 1976 and 1998 (seven in Florida, four in other states) were thought to be related to shrimping activities (Nill 1998). These deaths have become less common since regulations on inshore shrimping, the 1995 Florida Net Ban regulations, and education efforts about protecting manatees were implemented.

These data on causes of manatee mortality, particularly the increasing number of watercraft-related manatee deaths, should be viewed in the context of Florida's growing human population, which increased by 130 percent since 1970, from 6.8 to 15.7 million people (Florida Office of Economic and Demographic Research 2001). The rise in manatee deaths during this period is, at least in part, the result of the increasing numbers of people and watercraft sharing the same waterways.

As Florida's human population increases (the State of Florida is projected to have the third largest human population in the United States by 2030), increased human/manatee interactions are expected to occur. Vessel registrations in Florida are also expected to increase within the next 5 years placing more boats in manatee-inhabited waters. Such increases can adversely affect the health of manatees at the individual and population levels, through sublethal and lethal events. All of the life history parameters of manatees, including movement and foraging patterns, reproduction, and social interactions, will be affected. The frequency and magnitude of watercraft-manatee interactions, such as boat strikes and separation of calves from their mothers, are projected to increase with vessel density.

Human activity has other effects on manatees besides direct mortality. Dredge and fill activities, polluted runoff, and propeller scarring have resulted in the loss of vegetated areas. Quiet backwaters have been made more accessible to human activities, and increasing levels of vessel traffic have made manatees increasingly vulnerable to watercraft collisions in travel corridors. For example, industrial warmwater discharges and deep-dredged areas are now used as wintering sites, stormwater pipes and freshwater discharges in marinas provide manatees with drinking water, and the imported exotic plant, hydrilla (*Hydrilla verticilata*, which has supplanted native aquatic species), has become an important food source at wintering sites.

While some changes substitute for natural biological needs, some activities have an adverse effect on the species. The loss of industrial warmwater discharges can result in the deaths of individuals using these sites. Other activities may also affect manatees, albeit on a much more subtle level. Harassment by watercraft and swimmers may drive animals away from preferred natal areas and winter refugia, and the loss of vegetation in certain areas (*e.g.*, winter foraging areas) may require manatees to travel greater distances to feed. The impact of these kinds of activities on the survival, recovery, and mortality of the species is not fully understood.

As stated previously, natural causes of death include disease, parasitism, reproductive complications, and other nonhuman-related injuries as well as occasional exposure to cold and red tide (O'Shea et al. 1985; Ackerman et al. 1995). These natural causes of death accounted for 13 percent of all deaths between 1976 and 2002 (FWC unpublished data). Perinatal deaths accounted for 20 percent of all deaths in the same period. A prominent natural cause of death in some years is exposure to cold. Following a severe winter cold spell at the end of 1989, at least 46 manatee carcasses were recovered in 1990; cause of death for each was attributed to cold stress. Exposure to cold is believed to have caused many deaths in the winters of 1977, 1981, 1984, 1990, 1996, and 2001; and have been documented as early as the 19th century (Ackerman et al. 1995; O'Shea et al. 1985; FWC unpublished data).

In 1982, a large number of manatees also died coincidentally with a red tide dinoflagellate (*Gymnodinium breve*) outbreak between February and March in Lee County, Florida (O'Shea et al. 1991). At least 37 manatees died, perhaps in part, due to incidental ingestion of filter-feeding tunicates that had accumulated the neurotoxin-producing dinoflagellates responsible for causing the red tide. In 1996 from March to May, at least 149 manatees died in a red tide event over a larger region of southwest Florida (Bossart et al. 1998; Landsberg and Steidinger 1998). Although the exact mechanism of manatee exposure to the red tide brevetoxin is unknown in the 1982 and 1996 outbreaks, ingestion, inhalation, or both are suspected (Bossart et al. 1998). Since January 2003, the current red tide outbreak has been responsible for the deaths of 75 manatees (http://www.floridamarine.org). The critical circumstances contributing to red tide-related deaths are concentration and distribution of the red tide, timing and scale of manatee aggregations, salinity, and timing and persistence of the outbreak (Landsberg and Steidinger 1998).

Perinatal deaths include aborted fetuses, stillborn, or those that die of natural causes within a few days of birth. Some may die from disease, reproductive complications, and/or congenital abnormalities. The cause of many perinatal deaths cannot be determined, because these carcasses are generally in an advanced state of decomposition at the time of recovery. Additionally, watercraft-related manatee injuries or disturbance or other human-related factors affecting pregnant and nursing mothers may also be responsible for some of the perinatal deaths. It has been suggested that some may die from harassment by adult males (O'Shea and Hartley 1995). Between 1976 and 2002, perinatal deaths increased at an average of 9.2 percent per year (Ackerman et al. 1995; FWC unpublished data).

Data on manatee deaths in the Southwest subpopulation have been collected since 1974 (O'Shea et al. 1985; Ackerman et al. 1995; FWC unpublished data). Data since 1976 were used in the following summary as carcass collection efforts were more consistent following that year. These data indicate an increase in manatee deaths over the last 26 years. This increase can be attributed to increases in watercraft-related manatee mortality and perinatal deaths (MMC 1993), which also corresponds to an increase in the human population and registered watercraft (Wright et al. 1995).

Between 1976 and 2003, 2,223 manatee deaths were recorded within the Southwest subpopulation. The cause of death categories includes watercraft, flood gate/canal lock, other human causes, perinatal, cold stress, natural, and undetermined. Death category quantities for the period above are as follows:

watercraft	gate/lock	other human	perinatal	cold stress	natural	undetermined
504	32	38	363	89	476	721

Another threat includes the uncertainty in the availability of warmwater refuges as deregulation of the power industry in Florida occurs. We believe that an increasing human population and intensive coastal development are also long-term threats to the manatee. As Florida's human population increases, particularly in coastal counties, threats to submerged aquatic vegetation communities may increase. These submerged aquatic vegetation communities are an important component in the survival and recovery of the manatee. The combined effects of propeller scarring of seagrass beds, water pollution from stormwater discharges, new docks, dredging, and filling may further degrade seagrasses, thereby, reducing foraging opportunities for manatees.

Protection Measures

With more than 960,000 vessels registered in the State of Florida and an estimated 400,000 out-of-state vessels, over 1.3 million watercraft use Florida's waterways annually, and the popularity of watercraft recreation continues to grow. While every new watercraft access facility may not directly equate to a watercraft added to the water, cumulatively, the addition of watercraft access points result in increased watercraft use and, in some cases, changes in watercraft travel patterns and modification of manatee behavior.

Watercraft speed zones were established in some coastal Florida counties with high manatee-watercraft collision rates to slow watercraft to reduce collisions. Anecdotal information indicates that when manatees detect the presence of an oncoming boat, they often but not always dive and/or swim rapidly out of its path. Their ability to effectively elude the oncoming boat is largely determined by the speed of the approaching boat. Given ample time, manatees should be able to avoid lethal and injurious encounters with boats. As such, slow-moving boats are less of a threat to manatees. To control boat speeds and limit boater access to sensitive manatee areas, the State's "Florida Manatee Sanctuary Act" was enacted in 1978. This act designated the State of Florida as a manatee sanctuary and allowed for the regulation of boating activity within State waters. Since its inception, manatee protection zones have been established in 22 counties.

Prior to Shapiro (FWC 2001), there were no definitive studies assessing the effectiveness of the protection zones during the more than 20 years that some of the zones have been in place. Initially, the manatee carcass salvage program was used as a measure to gauge the effectiveness of these zones. The results were very discouraging with watercraft-related deaths continue to occur and increase in excessive numbers in the counties with manatee speed zones.

When gauging the effectiveness of these zones, other factors in addition to the number of watercraft-related deaths must be included in any such evaluation. These factors include, but are not limited to: (1) the types of zones, (2) the volume of vessel traffic, (3) vessel type and size, (4) season/day of week/time of day, and (5) the presence of enforcement [*i.e.*, compliance].

To date, seven compliance studies have been conducted to measure the extent to which boaters comply with manatee protection zones. These studies were conducted in Brevard, Lee, and Sarasota Counties as well as several sites throughout peninsular Florida and demonstrated compliance rates ranging from a low of 26 percent compliance within study areas to a high of 78.6 percent compliance within study areas for the duration of the various monitoring periods. Four of the studies concluded that the presence of law enforcement officers on the water during their sampling period increased levels of compliance. Furthermore, one researcher concluded that "consistent law enforcement presence will ensure consistent compliance." Another researcher concluded that low levels of enforcement, few citations, and poor signage were responsible for poor compliance.

- Kinnaird (1983) reviewed protection strategies for manatees by examining the number of watercraft-related deaths that had occurred in certain areas before and after they were designated as protection zones. Because the number of deaths was relatively unchanged, she was not able to conclude that they were an effective means to reduce these collisions. However, she believed that the zones "are of critical importance in the reduction of manatee harassment and injury and the prevention of habitat degradation." Furthermore, she believed that the zones "may be the most effective short-term strategy for reducing [harassment] and the number of manatee/boat collisions." She encouraged an increase in funding for enforcement and sign maintenance and recommended measures for enhancing the effectiveness of law enforcement activities.

- Morris (1994) conducted the first boater compliance survey to assess boater compliance with manatee protection zones. The surveys were conducted in Brevard County from April 1993 to April 1994. Morris believed that, based on the low number of observations of law enforcement vessels in certain areas and the fact that few citations had been issued in these same areas, boater compliance with these protection zones was poor. He further attributed poor compliance with unclear and confusing signage in manatee protection zones.

- Gorzelany (1996) monitored boater compliance with manatee protection zones in Sarasota County during January-December 1995. Conclusions reached as a result of this study include: (1) areas with a frequent law enforcement presence have the highest level of boater compliance and (2) observed levels of compliance were higher (74 percent vs. 61 percent) and levels of blatant noncompliance lower (8 percent vs. 18 percent) in the presence of

enforcement vessels. A "cautious" interpretation of other data appears to demonstrate that, when a law enforcement vessel was present in a protection zone, average boat speeds were lower, suggesting an overall slow down in aggregate boat speeds. Gorzelany concludes that "a larger allocation of funds, personnel, and resources toward enhancing marine enforcement in Florida" are necessary to promote "effective coastal waterway management."

- Gorzelany (1998) monitored boater compliance in Lee County during 1997-1998. General trends and problem areas were identified in the report. Statistically significant comparisons between compliance levels and the presence and absence of law enforcement activities were determined. Specifically, Gorzelany demonstrated that "the presence of a law enforcement vessel influenced the speed and compliance of vessels."

- Tyson and Combs (1999) conducted a 6-month assessment of boater compliance in Brevard County during May-October 1997 and concluded that (1) compliance was best when law enforcement officers were on the water and (2) consistent law enforcement presence will result in consistent compliance. Tyson and Combs urged the Service to continue its task force initiatives to supplement local law enforcement activities and, thereby, reduce the threat of speeding vessels to manatees.

- Shapiro (2001) focused on boater compliance in evaluating the effectiveness of speed zones at several sites throughout Florida from July 2000 to June 2001. This approach was designed to provide a synoptic view of statewide vessel traffic and boater compliance data. The study consisted of two components: (1) a baseline evaluation that assessed the number of vessels in compliance with posted speed zones, including the size and types of vessels, the season, and time of day; and (2) an enforcement evaluation that assessed how the presence of law enforcement affects boater behavior and compliance. Shapiro reported that (1) compliance increased with increasing vessel size; (2) sailboats were the most compliant, whereas, personal watercraft were the least compliant; (3) compliance was lower when vessel traffic was greater in the afternoon, on weekdays, and during the fall [for those sites along the Atlantic Intracoastal Waterway]; and (4) compliance increased significantly (as high as 89 percent at one location) when law enforcement was present.

- Gorzelany (2002) evaluated boater compliance with two new speed zones in Lee County between February and August 2002 and, similar to Shapiro (2001), observed that (1) compliance increased with increasing boat size and (2) levels of compliance varied with boat types [*i.e.*, personal watercraft the least compliant]. Gorzelany also found that while compliance was 66 percent with one newly established speed zone, compliance was only 26 percent at the second new speed zone and concluded the absence of law enforcement was the reason for the high level of non-compliance.

Manatee Protection Plans

Concerned with an increased number of manatee mortalities and boating accidents, the Governor and Cabinet directed the Florida Department of Natural Resources (DNR) in June 1989 to make recommendations for specific actions to protect the manatee and its habitat and to make the

State's waterways safer for the boating public. DNR's final report, *Recommendations to Improve Boating Safety and Manatee Protection on Florida Waterways*, found that over 80 percent of all watercraft-related manatee mortality occurred in 10 counties: Brevard, Broward, Citrus, Collier, Dade (now Miami-Dade), Duval, Lee, Martin, Palm Beach, and Volusia. Though watercraft-related mortality was not high for St. Lucie, Indian River, and Sarasota, these three counties were considered important areas as travel corridors as well as foraging and resting areas for manatees.

Subsequent to this report, the Governor and Cabinet directed each of these 13 coastal (= key) counties to develop an MPP. The purpose of an MPP is to present a summary of existing information about manatee use and watercraft use within the county and to develop strategies to balance manatee protection, resource protection, waterway uses, boating facility siting, speed zones and signage, boating safety, and to educate the boating public. The final report recommended new or expanded boating facilities in these key counties should be limited to one powerboat slip per 100 linear feet of shoreline (the 1:100 ratio) until the county implements its State-approved MPP, including a boating facility siting component. Watercraft access projects that are consistent with a county's MPP provide a level of boater access and activity that is within the capacity of the manatee protection measures provided. Projects that are not consistent with an MPP may exceed the capacity of the protective measures and, therefore, may result in incidental take of manatees. Countywide MPPs are identified in the *Florida Manatee Recovery Plan* (Service 2001) as a method for protecting manatees and manatee habitat.

Citrus County was the first county to have a State-approved MPP in 1991. The county's MPP identified actions that address manatee mortality and included a boating facility siting plan. The MPP also discussed conservation measures to protect manatee habitat. Subsequent to its approval, the State established regulatory speed zones for watercraft. The State of Florida subsequently approved MPPs for Collier County in May 1995 followed by Miami-Dade County in December 1995; Duval County in June 1999; Indian River County in August 2000 which was amended in February 2002; St. Lucie County in March 2002; Martin County in June 2002; Brevard County in February 2003; Sarasota County in February 2004, and Lee County in August 2004.

The Florida Legislature recognized the importance of site planning for marinas in passing Chapter 296-2002, Laws of Florida, which became effective on May 31, 2002. This law amended Section 380.06(24), Florida Statutes, to establish a process for exempting marinas from the Development of Regional Impact (DRI) review process, provided that certain planning requirements are met. Specifically, marinas are exempt if the local government comprehensive plan includes a boating facility siting plan that incorporates appropriate siting criteria as referenced in the statute. A boating facility siting plan allows local governments to direct marinas, boat ramps and other boating facilities to suitable locations that minimize impacts to marine resources. Rather than addressing the impacts of a proposed marina through the DRI process, the new law establishes a process for adopting criteria to ensure marinas are sited in a manner that minimizes regional impacts to marine resources. Through a boating facility siting plan, local governments can encourage marinas at appropriate locations, while directing marinas away from sites that would adversely impact important resources.

The Service believes that county MPPs are one of the best vehicles to address such issues as boating facilities (marinas, docks, boat ramps, and dry storage areas); boating activity patterns; manatee information; a boat facility siting plan; manatee protection measures; and an education and awareness program for the boating public. They are valuable planning tools and provide an excellent venue for local manatee protection efforts. In addition, it is our view that an effective MPP must contain components that address manatee protection areas (*e.g.*, manatee refuges), speed zone enforcement, funding for manatee protection efforts, and a reporting/monitoring element. Implementation of a State-approved MPP will have met State standards and addressed our concerns in maximizing benefits to the manatee while providing regulatory certainty to the public. The Service is currently working with Lee County regarding the development of their MPP to address appropriate protection measures for manatees within the county.

Analysis of the Species/Critical Habitat Likely to be Affected

Due to the increase in the number of new boat slips and new boat access resulting from the proposed action, the Corps has determined that the proposed project "may affect" the manatee. We concur with the Corps' determination and have performed a more comprehensive analysis of the effects of the proposed action in order to determine whether or not the proposed activities are likely to jeopardize the continued existence of the Southwest subpopulation of manatees.

The construction of this multi-slip dock project resulting in 18 slips may affect the manatee and its critical habitat by increasing watercraft and human presence in the action area, and increasing the potential to adversely affect submerged aquatic resources (*i.e.*, seagrasses). This action may disrupt, disturb, or delay manatee migration to warmwater refugia, freshwater drinking sources, and cause additional stress to manatees and calves present in the action area. An analysis of these project-related effects and impacts to seagrasses will be considered further in the remaining sections of this document.

ENVIRONMENTAL BASELINE

This section analyzes all past and ongoing human and natural factors leading to the current status of the manatee and its critical habitat in the action area. In the previous discussion of the threats to the species, the Service identified specific human-related actions that combined have both negative and positive benefits to the manatee, and the Service believes that the best method to address these threats is through a comprehensive Reach analysis.

In 2000, the Save the Manatee Club, other environmental groups, and several individuals filed suit in the District of Columbia against the Corps and the Service. Plaintiffs alleged violations of the ESA, the National Environmental Policy Act, the MMPA, and the Administrative Procedure Act, with regard to the manatee, and alleged that the Clean Water Act Section 404 permitting of Florida boating facilities was responsible for watercraft-related manatee mortality in Florida's coastal counties.

A settlement agreement was signed by all parties of the lawsuit on January 5, 2001, containing the following elements to which the Service agreed to complete and/or implement: (1) revision of the manatee recovery plan; (2) designation of manatee refuges and sanctuaries as manatee protection areas in peninsular Florida; (3) promulgation of a rule for incidental take of manatees under the MMPA; and (4) development of an interim guidance document to be used in section 7 consultations pending completion of the MMPA rule. The designation of refuges and sanctuaries as well as the interim strategy were short-term measures intended to address recent levels of mortality and that a long-term solution to address historic levels of mortality depended on the development of small take regulations under the MMPA.

Within the Southwest subpopulation, the Service, based on an analysis of manatee mortality data, identified four prerequisites necessary to ensure that incidental take would be unlikely to occur. These four prerequisites are: (1) appropriate speed zones; (2) appropriate signage; (3) speed zone enforcement to prevent watercraft collisions with manatees from occurring as a result of the proposed project; and (4) placement of these measures prior to project implementation. If these prerequisites are not met, the Service believes that a new watercraft facility in this area would result in the take of manatees and identified the area as an "area of inadequate protection."

Within the range of the Southwest subpopulation, the Service designated in 2001 several locations as areas with "inadequate protection" including a portion of Lemon Bay and Peace River in Charlotte County; a portion of Chokoloskee Bay in Collier County; and the Caloosahatchee River, the Mullock Creek/Ten Mile Canal waterway, and the western and northern waters of Pine Island Sound (known as Bokeelia) in Lee County. In particular, the Mullock Creek/Ten Mile Canal waterway was categorized as an "area of inadequate protection" because of inconsistent and incorrect signage associated with the existing speed zones established in the waterway as well as the absence of enforcement. Since designating these waterways as "areas of inadequate protection" for the manatee, the Service has been working with the State and county entities to ameliorate the watercraft collision threats specific to these regions.

Status of the Species within the Action Area

All waters within Reach 37 are designated as critical habitat for the manatee. The critical habitat designation does not include specific primary or secondary constituent elements. However, important components of manatee critical habitat include areas of submerged vegetation for foraging, shallow areas for resting and calving, channels for travel and migration, warmwater refugia for cold weather events, and fresh water for drinking.

The Southwest subpopulation of manatees migrates through the waters of Charlotte County. Manatee distribution and dispersal patterns as well as numbers of individuals within an area can vary considerably from year-to-year and season-to-season. This variability in dispersal patterns is dependent on a variety of biotic and abiotic factors, such as warmwater discharges, freshwater sources, foraging areas, and mating season.

Manatee abundance in Charlotte County has been documented repeatedly through aerial surveys conducted from 1995 to 2002; however, the survey data do not indicate the number of manatees observed in Reaches 34, 35, 36, 37, and 38. During January 2003, there were three synoptic aerial surveys covering Florida. Each survey counted 1,166; 1,299; and 1,324 manatees on the west coast of Florida. These surveys did not delineate how many manatees were seen within Charlotte County.

Results of aerial surveys and anecdotal evidence indicate that manatees exhibit seasonal movements within Charlotte County. Manatees respond to cool ambient temperatures during the winter by aggregating within deeper water such manmade canals adjoining Reach 37. However, during mild winters (> 68 degrees Fahrenheit ambient temperature), manatees may remain in the action area. Throughout the warm season, manatees are widely dispersed within the action area and known to use the large beds of seagrasses located throughout Charlotte County's waterways.

Warmwater refugia do not occur within the action area. Many of the artificial waterways (*i.e.,* manmade canals) in the action area are known to be used by manatees for resting and calving.

Factors Affecting Species Environment within the Action Area

Watercraft

Commercial and recreational boat use in the action area is increasing. According to information provided by the State of Florida, the total number of registered vessels in Charlotte County since 2000 is as follows:

Year	2000	2001	2002	2003
Registered vessels	18,015	18,416	21,666	21,764

New watercraft resulting from the proposed project will likely travel within the waters of Turtle Bay, Gasparilla Sound, Placida Harbor, Lemon Bay, and Gasparilla Sound, Myakka River, Peace River, and Charlotte Harbor in Charlotte County Florida. The most likely effects to manatees caused by increased watercraft traffic are deaths or injuries from collisions with watercraft and alteration of seagrass beds used as feeding or resting areas.

Mortality

Through an analysis of threats to the manatee, the Service designated waterways in the vicinity of Southern Lemon Bay, in Charlotte County, as an "area of inadequate protection" for manatees in February 2002. In accordance with the final interim strategy implemented on August 21, 2001 (66 FR 43885), the Service assessed the effectiveness of the State's law enforcement efforts by comparing watercraft-related manatee mortality data for 2001 with mortality data for 2000.

From December 31, 2000, to December 31, 2001, manatee mortality decreased from 5 to 2 individuals in Charlotte County. From January 1, 1999 through December 23, 2004, 22 manatees died as a result of a watercraft collision in Charlotte County.

Year	1999	2000	2001	2002	2003	2004
Charlotte County	5	5	2	4	3	3

Speed Zones

In December 2002, Florida Administrative Code 68C-22.015 established manatee speed zones on Charlotte County waterways. The zones were established for the purpose of regulating the speed and operation of motorboats within Charlotte County, including all associated and navigable tributaries, lakes, creeks, coves, bends, backwaters, canals, channels and boat basins, unless otherwise designated or excluded.

Watercraft speed zones have been designated within Charlotte County. The Peace River has been designated as "Slow Speed," "Slow Speed, Channel Excluded," or "25 mph." Turtle Bay has been designated as "25 mph," except for waters located near Cape Haze and Gallagher Keys which are designated as "Idle Speed." Waters of Gasparilla Sound, Placida Harbor, and Lemon Bay are designated as "25 mph" within the marked navigation channel and "Slow Speed" for all other waters. These zones were established by the DEP in Rule 62N-22.010. Zone types and locations were based on manatee congregation data, manatee death data, watercraft usage data, and other manatee natural resource needs. The DEP and the West Coast Inland Navigation District install and maintain speed zone signs in Charlotte County waters.

For a speed zone to be enforced the zone must be correctly signed and the signs must be in compliance with State-approved design parameters (68D-23 Florida Administrative Code). Portions of Reaches 38 and 35 in Charlotte County contain designated manatee speed zones that had not been marked with manatee speed zone warning signs. The area of inadequately posted waters included Lemon Bay from the Don Pedro Island State Recreation Area to the Lee County Line (Reach 35). Based on the lack of signage, the Service designated these waters as an "area of inadequate protection" for manatees in August 2001 (Lemon Bay AIP). Since designating these waterways as "areas of inadequate protection" for the manatee, the Service has been working with the State and county entities to ameliorate the watercraft collision threats specific to these regions. Charlotte County corrected the signage problems for the Lemon Bay AIP in April 2004.

Enforcement

Enforcement of posted speed zones in Charlotte County is conducted by the FWC, and the Charlotte County Sheriff's Office (CCSO). The FWC had 7 law enforcement officers stationed in Charlotte County to enforce boating laws in January 2001. Due to the State's law enforcement initiative, the number of officers available for manatee speed zone enforcement has increased to 10 officers. The CCSO has five vessels assigned to patrol county waters.

Designated manatee speed zones are enforced by members of all duly authorized law enforcement agencies within the county. The U.S. Coast Guard and the Service also provide speed zone enforcement through special task force events. The FWC had 7 law enforcement officers stationed in Charlotte County to enforce boating laws in January 2001. Due to the State's law enforcement initiative, the number of officers available for manatee speed zone enforcement has increased to 10 officers.

Gorzelany (1998) monitored boater compliance in Lee County during 1997-1998. General trends and problem areas were identified in the report. Statistically significant comparisons between compliance levels and the presence and absence of law enforcement activities were determined. Specifically, Gorzelany demonstrated that "the presence of a law enforcement vessel influenced the speed and compliance of vessels."

Education

The Service believes that county MPPs are one of the best vehicles to address such issues as boating facilities (*e.g.*, marinas, docks, boat ramps, dry storage areas); boating activity patterns; manatee information; a boat facility siting plan; manatee protection measures; and an education and awareness program for the boating public. They are valuable planning tools and provide an excellent venue for local manatee protection efforts. In addition, it is our view that an effective MPP must contain components that address manatee protection areas (*e.g.*, manatee refuges), speed zone enforcement, funding for manatee protection efforts, and a reporting/monitoring element. Implementation of a State-approved MPP will have met State standards and addressed our concerns in maximizing benefits to the manatee while providing regulatory certainty to the public.

Charlotte County was not one of the 13 counties that the State of Florida directed to prepare an MPP. However, in order to provide additional protection for manatees, Charlotte County is currently preparing an MPP.

In reviewing the baseline and to determine if speed zones or levels of enforcement were sufficient to minimize the likelihood of adverse effects to manatees, we looked at existing speed zones, levels of enforcement, manatee aggregation areas, warmwater refugia, freshwater sources, seagrass beds, and mortality data, as well as other biological factors. Based on this review, we focused on manatee mortality because this is the only form of take for which quantitative data are available. For Charlotte County, the result of all these factors (*i.e.*, zones in the right place with the appropriate signage for officers to enforce) is that between 1992 and 2004, 34 watercraft-related manatee deaths were recorded within Charlotte County, including 5 in 1999, 5 in 2000, 2 in 2001, 4 in 2002, 3 in 2003, and 0 in 2004.

We know that sublethal forms of take (such as injury and harassment) occur, but some of these forms are immeasurable. Sublethal injury to manatees due to boat interactions is a significant factor. On a continued basis, this type of injury could have an impact on maintaining a healthy and viable population. In that regard, most manatee carcasses examined bear scars from previous strikes with watercraft (Wright et al. 1995), and a significant number of living, but

scarred, manatees exist. A photo-identification system and database of scarred manatees currently maintained by the Sirenia Project (Beck and Reid 1995) contain only individuals with distinct scars, the vast majority of which appear to have been inflicted by propeller blades or keels. This database now documents 1,184 living individuals scarred from collisions with boats. Most of these manatees (1,153, or 97 percent) have more than one scar pattern, indicating multiple strikes with boats. Carcasses examined at necropsy also bear healed scars of multiple past strikes by boats; one extreme case, recently noted by the FMRI, had evidence of more than 50 past boat collisions (O'Shea et al. 2001). The severity of these boat strikes, including completely severed tails, major tail mutilations, and multiple disfiguring dorsal lacerations, is thought by some manatee researchers to impact population processes by reducing calf production (and survival) in wounded females, although there are no reliable data to establish this cause and effect relationship. Overall, the full effects of harm to manatee population dynamics resulting from boat strikes remain largely unknown.

In addition to direct injury due to boat strikes, harassment by boats and swimmers may drive animals away from preferred sites thus altering manatee behavior and movement patterns. Significant and/or long-term harassment may require manatees to travel greater distances to feed or to reach warmwater refugia. Furthermore, some researchers are concerned that manatee calves can be separated from their mothers and some individuals may be driven from preferred warmwater refuges due to harassment.

Summary

Designated manatee critical habitat is present within the action area and important components of manatee critical habitat are also present. These components, although not identified as primary or secondary constituent elements of critical habitat, include seagrasses for foraging, shallow areas for resting and calving, channels for travel and migration, and refugia for cold weather events. Manatees forage in the extensive seagrass beds present throughout Charlotte County's waterways. Between 1999 and 2004, 19 watercraft-related manatee deaths were recorded in Charlotte County.

EFFECTS OF THE ACTION

This section includes an analysis of the direct and indirect effects of the proposed action on the manatee and its interrelated and interdependent activities.

Factors to be Considered

The proposed action is in an area that is occupied by the manatee. The timing of construction for this project (when it will be constructed) as it relates to sensitive periods of the manatee's life cycle is unknown. Manatees may be found adjacent to the proposed construction footprints during any time of the year. However, due to cooler water temperatures generally present during mid-winter, there is a lower likelihood that manatees will be adjacent to the construction

footprints during this time. Each dock project will be constructed in a single, disruptive event, which depending on the design of the structure can take from 1-2 days to 4-5 days for single-family docks and several weeks for the multi-slip facilities. Once construction is completed, perpetual activities certain to follow include maintenance of the dock structure and watercraft entering and leaving the dock. According to the marine industry, the decking on docks (single-family and multi-slip) lasts from 10-15 years whereas the undercarriage of a dock (the pilings and framework) lasts 20-30 years.

Analyses for Effects of the Action

The Corps has determined that the proposed dock project is located within Reach 37 as defined by the Corps' Reach Characterization. Manatees are found in the waters surrounding the project site. Designated manatee critical habitat is present within the action area and important components of manatee critical habitat are also present. These components, although not identified as primary or secondary constituent elements of critical habitat, include seagrasses for foraging, shallow areas for resting and calving, channels for travel and migration, warmwater refugia for cold weather events, and fresh water for drinking. Seagrasses are distributed throughout the action area.

Beneficial Effects - There are no known beneficial effects to manatees from the proposed action.

Direct Effects - Direct effects are those effects that are caused by implementation of the proposed action at the time of construction. The direct effects of watercraft access facilities on manatees and essential features of manatee habitat (such as seagrasses), include those arising from the location, design, and construction of watercraft access facilities, and associated dredging and filling for the construction of those facilities. In examining such effects, including those on seagrasses and other important features of manatee habitat, the Service analyzes the extent to which such effects are addressed by local MPP, State review, and other protective conservation measures, such as standard precautions to protect manatees during construction. The *Standard Manatee Construction Conditions* have been used throughout the range of the manatee for more than a decade and have proven to reduce the direct effects to manatees and their habitat within the facility footprint. The direct effects that this project will have on the manatee and critical habitat within the action area include noise from barge operation and construction equipment; in-water movement of construction equipment and work watercraft; placing and securing dock support structures and mooring piles; and barge ingress and egress to the construction sites. The proposed project will not directly affect seagrasses.

To reduce potential construction-related effects to the manatee and critical habitat, the Corps has agreed to include as a condition of the permit, if approved, and the applicants have agreed to implement as part of their construction, the *Standard Manatee Construction Conditions*, which are as follows:

The permittee shall comply with the following manatee protection construction conditions:

a. The permittee shall instruct all personnel associated with the project of the potential presence of manatees and the need to avoid collisions with manatees. All construction personnel are responsible for observing water-related activities for the presence of manatee(s).

b. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the MMPA of 1972, the ESA of 1973, and the Florida Manatee Sanctuary Act.

c. Siltation barriers shall be made of material in which manatees cannot become entangled, are properly secured, and are regularly monitored to avoid manatee entrapment. Barriers must not block manatee entry to or exit from essential habitat.

d. All vessels associated with the construction project shall operate at "no wake/idle" speeds at all times while in the construction area and while in water where the draft of the vessel provides less than a 4-foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.

e. If manatee(s) are seen within 100 yards of the active daily construction/dredging operation or vessel movement, all appropriate precautions shall be implemented to ensure protection of the manatee. These precautions shall include the operation of all moving equipment no closer than 50 feet to a manatee. Operation of any equipment closer than 50 feet to a manatee shall necessitate immediate shutdown of that equipment. Activities will not resume until the manatee(s) has departed the project area of its own volition.

f. Any collision with and/or injury to a manatee shall be reported immediately to the FWC Hotline at 1-888-404-FWCC. Collision and/or injury should also be reported to the U.S. Fish and Wildlife Service in Jacksonville (1-904-232-2580) for north Florida or Vero Beach (1-772-562-3909) in south Florida.

g. Temporary signs concerning manatees shall be posted prior to and during all construction/dredging activities. All signs are to be removed by the permittee upon completion of the project. A sign measuring at least 3 feet by 4 feet which reads *Caution: Manatee Area* will be posted in a location prominently visible to water-related construction crews. A second sign should be posted if vessels are associated with the construction and should be placed visible to the vessel operator. The second sign should be at least 8-1/2" by 11" which reads *Caution: Manatee Habitat. Idle speed is required if operating a vessel in the construction area. All equipment must be shutdown if a manatee comes within 50 feet of operation. Any collision with and/or injury to a manatee shall be reported immediately to the FWC Hotline at 1-888-404-FWCC. The U.S. Fish and Wildlife Service should also be contacted in Jacksonville (1-904-232-2580) for north Florida or in Vero Beach (1-772-562-3909) for south Florida.*

With the incorporation of the above *Standard Manatee Construction Conditions* into the project permit, if approved by the Corps, the Service believes that the construction of the proposed multi-slip dock project will not directly affect the manatee.

Interrelated and Interdependent Actions - There are no interdependent or interrelated actions associated with the proposed activity that is expected to impact manatees.

Indirect Effects - Indirect effects are those long-term effects that are caused by or result from the proposed action, are later in time, and are reasonably certain to occur. Authorizing a dock or marina or boat ramp in some manatee-inhabited areas indirectly affects manatees by increasing the likelihood of manatee mortality and injury resulting from collisions with new vessels associated with the permitted facility. The placement of watercraft access points has the potential to concentrate boating activities to a particular vicinity. If this area is frequented by manatees, the likelihood of watercraft collisions with manatees is increased proportional to the number of watercraft using the area, given that the boats operate at a speed that could result in collisions with manatees. Also, take in the form of harassment from watercraft could increase in certain areas with the addition of more sublethal watercraft-manatee interactions. However, the likelihood of take is reduced if the adequate and appropriate regulatory measures (*i.e.*, designated manatee speed zones with the appropriate signage coupled with the necessary speed zone enforcement to prevent watercraft collisions with manatees from occurring as a result of the proposed project) are in place.

The Service assumes that the proposed multi-slip dock project will increase the number of watercraft in the action area. The project will provide new moorings for potentially 18 vessels. Watercraft in the action area are typically used for fishing, sight-seeing, and recreation by local and seasonal residents. Manatee presence has been documented in the action area through aerial surveys, photo-identification studies, telemetry studies, and a carcass salvage program (FWC 2000). Per these studies, it is apparent the entire action area is used throughout the year by manatees.

As stated earlier, an MPP is one means of providing adequate planning to address effects of watercraft access projects on manatees and manatee habitat. Such plans provide a level of manatee protection commensurate with a certain level of boater access. Projects that are consistent with a county's MPP provide a level of boater access and activity that is within the capacity of the manatee protection measures provided. Projects that are not consistent with an MPP may exceed the capacity of the protective measures and, therefore, may result in incidental take of manatees.

Species Response to the Proposed Action

New watercraft resulting from the proposed project will likely travel within the waters of the Peace River and Charlotte Harbor, in Charlotte County, Florida. The most likely effects to manatees caused by increased watercraft traffic are deaths or injuries from collisions with watercraft and alteration of seagrass beds used as feeding or resting areas.

The Service believes that the disruption of behavioral patterns on the manatee population from the multi-slip dock resulting in 18 slips will be insignificant because the waters in and around these dock facilities are within the Peace River Federal Manatee Refuge and are designated as "Slow Speed/25 MPH in Channel" zone, no seagrasses are present in the project footprint, speed zones and signs are in place and enforcement is provided by a combination of Federal, State and local law enforcement personnel.

The Service believes that the addition of this multi-slip dock will not result in adverse modification of critical habitat. Although critical habitat is present in the action area, the Service believes that the addition of 18 slips will not result in adverse modification of critical habitat because of the absence of and/or the minimization of risk to important components of manatee critical habitat, which are present in the action area.

The FWC has recommended manatee education signage and the *Standard Manatee Construction Conditions* as components of the project's design. The Corps has agreed to include as a condition of the permit, if approved, manatee education signage and the *Standard Manatee Construction Conditions*.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, Tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

In August 1999, the Service conducted a workshop to: (1) review what is known about the manatees' winter use of natural and industrial warmwater sites, (2) discuss the status and future of these sites, and (3) discuss information and management needs necessary to ensure the availability of warm water for wintering manatees (Service 2000). Well over half of the manatee population relies on industrial warmwater discharges for warmth during the winter. While these discharges are reliable sources of warmth, they are ephemeral in nature, restricted by the life span of generating facilities, operational limitations, fluctuating demand for power, and pending deregulation of the power generation industry. This, in combination with the fact that some industrial discharges have attracted manatees outside of their traditional wintering habitat, has put this species at risk.

One of the presentations at the workshop reported the results of a study on the manatees' response to the elimination of a warmwater refuge in north Florida. Of the 15 animals that were radio-tagged and tracked in this study, six manatees died and two were rescued between October 1997 and March 1998. A couple of the preliminary conclusions are that five of the six manatee deaths were due to prolonged exposure to colder temperatures and not all manatees migrate south to warmwater aggregation sites once their current source of warm water is eliminated.

CONCLUSION

After reviewing the current status of the manatee, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the manatee and is not likely to adversely modify designated critical habitat. This conclusion is based on the existing speed zones and associated signage, the level of enforcement provided by State and local law enforcement officers, and that these protective measures are currently in place. These manatee-protective measures all have had a positive effect on manatee conservation and will have a continued positive effect on the species and its habitat. Therefore, each of these measures will contribute to a reduced likelihood of take and taken together the Service is not reasonably certain that take will occur as a result of the proposed dock in Reach 37. However, to confirm this conclusion, we will continue to closely monitor Reach 37 because of historic watercraft-related mortalities and the year-round utilization of the area by manatees. The proposed action represents less than a 0.08 percent potential increase in the total number of registered watercraft in Charlotte County. If the current trend in manatee mortality changes, we will need to re-evaluate and implement an adaptive management approach to improving manatee protection in the future and reinitiate consultation with the Corps, when warranted. Furthermore, the existing speed zones and associated signage, the level of enforcement provided by Federal, State and local law enforcement officers, and that these protective measures are currently in place, we believe that the proposed action may affect, but is not likely to adversely affect the manatee in Reach 37. In addition, manatee educational signs and the *Standard Manatee Construction Conditions* will be implemented during the construction of this dock.

INCIDENTAL TAKE STATEMENT

The Service does not anticipate that the proposed action will result in the incidental take of manatees. Furthermore, the Service is not including an incidental take authorization for marine mammals at this time because the incidental take of marine mammals has not been authorized under section 101(a)(5) of the MMPA and/or its 1994 Amendments. Following issuance of such regulations or authorizations, the Service may amend this biological opinion to include an incidental take statement for marine mammals, as appropriate.

REINITIATION NOTICE

As provided in 50 CFR 402.15, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained and if: (1) the amount or extent of incidental take is exceeded, (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion, (3) the agency action is subsequently modified in a manner that causes an effect to listed species or critical habitat that was not considered in this opinion, or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

Thank you for your cooperation and effort in protecting fish and wildlife resources. If you have any questions regarding this project, please contact Chuck Kelso at 772-562-3909, extension 241.

Sincerely yours,

James J. Slack
Field Supervisor
South Florida Ecological Services Office

cc:
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