



## United States Department of the Interior

FISH AND WILDLIFE SERVICE  
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Colonel Paul L. Grosskruger  
District Commander  
U.S. Army Corps of Engineers  
701 San Marco Boulevard, Room 372  
Jacksonville, Florida 32207-8175

Dear Colonel Grosskruger:

This document is the Fish and Wildlife Service's (Service) biological opinion based on our review of the proposed project known as Plantation Boat Mart and Marina located in Monroe County, Florida, and its potential effects on the West Indian (= Florida) manatee (*Trichechus manatus*) (manatee) in accordance with section 7 of the Endangered Species Act of 1973, as amended (Act) (87 Stat. 884; 16 U.S.C. 1531 *et seq.*) and the Marine Mammal Protection Act of 1972, as amended (MMPA) (16 U.S.C. 1361 *et seq.*), and the provisions of the Fish and Wildlife Coordination Act of 1958, as amended (48 Stat. 401; 16 U.S.C. 661 *et seq.*). No other listed species will be affected by the proposed action. Your request for formal consultation was received on December 1, 2005.

This biological opinion is based on information provided by the Corps, the Corps' Reach Characterization Analysis, 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 the Florida Wildlife Research Institute (FWRI), 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.

### Executive summary

The proposed actions will add 17 new slips to the coastal waters of the upper Florida Keys. 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 that manatees are present year-round from Key Largo to Lower Matecumbe. From January 1, 2001, to December 31, 2006, 15 manatees died from watercraft collisions in Monroe County. The county does not have manatee speed zones posted north of the Seven Mile Bridge nor do they have a State-approved Manatee Protection Plan (MPP). In the absence of manatee protection measures in place (either speed zones with enforcement or a MPP), the proposed actions are subject to a comprehensive site-specific review regarding multi-slip facilities in Monroe County where the proposed number of slips exceeds the single-family dock density threshold of one boat slip per 100 linear feet of shoreline (the 1:100 ratio). Since each of the proposed projects already exceed the 1:100 density threshold with their existing slips, the Service believes the proposed actions are reasonably certain to result in the take of manatees in the form of additional deaths and injuries.



Applicant	Corps Application Number	Service Federal Activity Code	Location	Shoreline	Proposed Slips per 100 feet shoreline
Village of Islamorada	2006-3709 (LP-INS)	41420-2006-FA-1426	Islamorada, Upper Keys	1,445 feet	4.2
John Gilbert	2002-8174 (LP-RK)	41420-2006-FA-0653	Plantation, Upper Keys	100 feet	8
Marine Resources	2005-2628 (LP-MLC)	41420-2006-FA-0103	Plantation, Upper Keys	1435 feet	2.3

The proposed actions are located within Reach 25 of the Corps' Reach Characterization for Florida waters (Corps 2001). Reach 25 encompasses the waters of the Florida Keys and Florida Bay in Monroe County, Florida.

### Consultation History

On February 21, April 27, and August 22, 2006, the Service received public notices from the Corps requesting concurrence on "may affect" determinations for the manatee and initiation of formal consultation for the proposed action.

## FISH AND WILDLIFE RESOURCES

The proposed action is not expected to significantly impact native habitat resources or submerged aquatic vegetation based on the information provided. Therefore, the Service does not object to the proposed action as it relates to fish and wildlife habitat resources. For projects where there is dredging or filling, methodology and turbidity containment should be employed such that any seagrasses or live hardbottom near the project footprint and de-watering area are not impacted by sedimentation during operations. If there are wetlands along the shoreline and/or seagrasses in the project area, the Service recommends the applicant adhere to the *Dock Construction Guidelines for Florida* developed by the Corps and National Marine Fisheries Service (NOAA Fisheries) (Corps and NOAA Fisheries 2001). The Service also recommends in-kind mitigation be provided for any unavoidable impacts and be based on the protocol in the Keys Mitigation Index Guidelines in accordance with the Memorandum of Understanding between the Corps and the Florida Audubon Society, dated May 26, 1998.

## BIOLOGICAL OPINION

### DESCRIPTION OF PROPOSED ACTION

The Village of Islamorada proposes to add 3 new slips to an existing 53-slip facility for a total of 56 boat slips along 1,445 feet of shoreline. Specifically, the applicant proposes to repair and replace existing finger piers, bulkhead, and multi-pier T-dock. John Gilbert proposes to add 4 new slips to an existing 4-slip facility for a total of 8 boat slips along 100 feet of shoreline. Specifically, he proposes to install a concrete and grating dock. The Marine Resource Development Foundation of the Virgin Islands proposes to add 10 new slips to an existing 23-slip facility for a total of 33 boat slips along 1,435 feet of shoreline. Specifically, the applicant proposes to remove some existing docks and install 5090 square feet (588 linear feet) of floating dock. The proposed projects are all located in the Upper Keys, Monroe County, Florida.

The proposed actions resulted in a “may affect” determination after processing through the Corps’ July 2005 Manatee Key. [Note - Service concurrence for the key was provided in letters to the Corps dated July 12, 2005, September 30, 2005, and August 28, 2006 (if applicable)]. 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.

#### Action Area

The action area is defined as all areas affected directly and indirectly by the Federal action and not merely the immediate area involved in the action. The Service has determined that the proposed project is located within Reach 25 of the Corps’ Reach Characterization Analysis. Reach 25 encompasses the waters of the Florida Keys and Florida Bay in Monroe County Florida. Therefore, for the purposes of this consultation, the Service defines the action area for this biological opinion as all waters within Reach 25 in Monroe County, Florida.

#### STATUS OF THE SPECIES/CRITICAL HABITAT

##### Species/Critical Habitat Description

Manatees are large 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 they can hear sounds within a

relatively narrow low frequency range that their hearing is not acute, and they have difficulty in localizing sound (Ketten et al. 1992). However, Gerstein (1995) suggested manatees may have greater low-frequency sensitivity than other marine mammal species that have been tested.

Sea cows (*Protosiren*) first appeared during the Eocene period about 55 million years before the present when flowering plants first evolved. The family Trichechidae appeared in South America in the early Miocene (15 million years before present), about the same time as whales, apes and grazing animals (Domning 1982, Domning *et al.* 1982). During the Pliocene (12 million years before present), the time period when large carnivores evolved, members of Trichechidae first appeared in Atlantic North America (Reinhart 1951, 1959). Pleistocene *Trichechus* fossils have been recovered along the United States' east coast from Florida to Maryland (Simpson 1932).

Critical habitat for the Florida manatee was designated in 1976 (50 CFR 17.95). 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 Act, 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. 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).

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). While critical habitat has been designated for the Caloosahatchee River, there is no critical habitat designating the tributaries, including the Orange River, that connect to the Caloosahatchee River.

Designated 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 and northern Miami-Dade County.

### Life History

Like many large mammals, manatees have a potentially long life span (~60 years), relatively old age at maturity (4 to 7 years), a low reproductive rate (one calf every 3 years, 11-13 month gestation), and a high parental investment (2-year calf dependency). (O'Shea and Hartley 1995, Marmontel 1995, Odell et al. 1995, Rathbun et al. 1995, Reid et al. 1995, Marmontel et al. 1996) For species with this life-history strategy to persist, adult survival rates need to be high and stable. Long-term photo-identification studies show that adult manatees have an annual survival rate of about 96 percent in certain subpopulations that have relatively low human-related mortality (Langtimm et al. 2004). Accordingly, manatee populations are vulnerable to elevated mortality rates. Florida manatees have a low level of genetic diversity, possibly resulting from a

founder effect or a population bottleneck (Garcia-Rodriguez et al. 1998). This means individual manatees are genetically very similar to one another. This similarity can result if the population was started by only a few individual, or if there was a time when the population decreased to only a few individuals. Lack of genetic diversity within a population can result in inbreeding and a decrease in reproductive fitness.

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 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).

### Population Dynamics

The total population size of manatees in Florida is unknown. Annual synoptic surveys suggest a minimum population in excess of 3,000 animals statewide. Adult manatee survival rates are considered to be the most important indicator of maintaining a stable and secure manatee population (Langtimm et al. 2004). Given the low reproductive rate described in the previous section, manatees would be slow to recover from extensive depletions of their numbers.

Long-term studies suggest four regional subpopulations of manatees in Florida: (a) the Northwest subpopulation encompasses the counties along the Gulf of Mexico from Escambia County east and south to Pasco County; (b) the Upper St. Johns River subpopulation occurs in the river from Palatka south; (c) the Atlantic subpopulation extends along the entire east coast from Nassau County south to Florida Bay and the Florida Keys in Monroe County and includes the St. Johns River north of Palatka; and (d) the Southwest subpopulation encompasses counties along the Gulf of Mexico from Pasco County south to Whitewater Bay in Monroe County. These regional units are based primarily on documented manatee use of wintering sites and from radio-tracking studies of individuals' movements (Bengston 1981, Marine Mammal Commission 1988, Rathbun et al. 1990, Reid et al. 1991, Beck and Reid 1995, Rathbun et al. 1995, Reid et al. 1995, Deutsch et al. 1998, Service 2001, Weigle et al. 2001, Deutsch et al. 2003).

### Status and Distribution

According to the Manatee Population Status Working Group's 2004 assessment of the biological population of the Florida manatee, the distribution of manatees among these four regions is 11 percent in the Northwest, 4 percent in the Upper St. Johns, 44 percent in the Atlantic, and 41 percent in the Southwest. The Northwest and Upper St. Johns subpopulations exhibit similar dynamics: mortality is low, adult survival and reproduction rates are high, and growth rate is positive. The Atlantic subpopulation is less clear with higher mortality, moderate rates of adult survival and reproduction, and a growth rate that is inconclusive. The Southwest subpopulation appears to be the most vulnerable to decline with high mortality, adult survival rate is low and the growth rate estimates indicate the subpopulation appears to be declining. However, the data series for this subpopulation is limited which means the survival and reproductive estimates are less precise than for the other subpopulations.

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; Marine Mammal Commission 1984, 1986; Lefebvre et al. 1989; Ackerman 1995; Lefebvre et al. 1995). 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 warm water from industrial discharges and natural springs for warmth. In warmer months, they expand their range and occasionally are seen as far north as Rhode Island on the Atlantic Coast and as far west as Texas on the Gulf Coast (Powell and Rathbun 1984, Schwartz 1995, Fertl et al. 2005).

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 1986, 1988). Manatees frequent coastal, estuarine, and riverine habitats and are capable of extensive north-south migrations. These north-south migrations are largely determined by water temperatures 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. Many 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.

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 east coast. 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.

### 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 Act in 1973. However, since the manatee was designated as an endangered species prior to enactment of the Act, there was no formal listing package identifying threats to the species, as required by section 4(a)(1) of the Act. 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 such taking would have a

negligible impact on the species or subpopulation. Since the manatee, which is comprised of the Florida and Antillean manatee subpopulations, is currently listed as “endangered” under the Act, they are considered “depleted” under the MMPA.

Section 11 5(b) of the MMPA requires that conservation plans be developed for marine mammals considered “depleted.” In the case of the Florida 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 two most significant threats to the Florida manatee population statewide are collisions with watercraft and the loss of warm water habitat. All other threats are relatively minor in comparison. Mortality from watercraft collisions accounts for 25 percent of all manatee mortalities statewide (Ackerman et al. 1995). Warm water habitat is essential for manatee survival during cold weather. Prolonged exposure to cold water temperatures can result in debilitation and/or death due to “cold stress syndrome” (Bossart et al. 2002). However, when compared to all other threats, including the loss of warm water habitat, watercraft-related mortality poses the most serious long-term risk to the growth and resilience of the manatee population.

Other threats to manatees include crushing or entrapment in gates and locks, entanglement in ropes, lines, and nets, ingestion of fishing gear or debris, vandalism, poaching, and exposure to red tide brevetoxin (Bossart et al. 1998). Red tide represents a major natural source of mortality for manatees in the Southwest region.

#### Protection Measures

Through 2005 with more than 1,000,000 vessels registered in the State of Florida and an estimated 400,000 out-of-state vessels, over 1.4 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 26 counties.

Prior to Shapiro (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, ten compliance studies have been conducted to measure the extent to which boaters comply with manatee protection zones. These studies were conducted in several 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 79 percent compliance within study areas for the duration of the various monitoring periods. Four of the studies concluded the presence of law enforcement officers, on-the-water during their sampling period, increased levels of compliance. Furthermore, one researcher concluded "consistent law enforcement presence will ensure consistent compliance." Another researcher concluded 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 as well as 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, 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 “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 or absence of law enforcement activities were determined. Specifically, Gorzelany demonstrated “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.

- Gorzelany (2004) evaluated a series of boater compliance studies performed in 1995 and in 1998 in order to assess the effectiveness of existing speed zones designed to protect manatees in Sarasota and Lee counties. Overall boater compliance was 63 percent in Sarasota County (1995) and 58 percent in Lee County (1998). Compliance varied significantly with vessel type and size. Compliance increased as vessel size increased in both counties. Differences in compliance among survey sites were also significant and were related to travel patterns, traffic volume, vessel composition, sign placement, level of speed restriction, and law enforcement presence.
- Gorzelany (2005) conducted a study to assess boating recreational activity and boater compliance on three waterways in Broward County. All three survey sites were located within manatee speed zones. Overall compliance ranged from 52 to 59 to 78 percent, respectively. Though compliance was moderate for two of the three sites, blatant non-compliance was very low (3 and 2 percent, respectively). For all three survey sites, the operators of smaller boats (less than 26 feet) tended to be less compliant than operators of larger vessels (26 feet and greater).
- Viera-Alwell and McDonald (2006) evaluated boat traffic and boater compliance in the St. Sebastian River, Indian River County. Over 90 percent of the boats observed in the study were less than 26 feet in length. Boater compliance increased more than 10 percent over a similar study conducted 5 years earlier in the same location (Shapiro 2001). Yachts in the 26- to 40-foot length category were 100 percent compliant with the posted speed limits. Higher compliance rates and increasing trends in compliance rates in the St. Sebastian River may be linked to community environmental stewardship and social pressures.

#### 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 over 80 percent of all watercraft-related manatee mortality occurred in 10 counties: Brevard, Broward, Citrus, Collier, 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 consistent with a county's MPP provides levels of boater access and activities within the capacity of the manatee protection measures established. Projects not consistent with a MPP may exceed the capacity of these 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; Lee County in August 2004; and Volusia County in October 2005.

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 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 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. Monroe County has no MPP and currently has no plans to adopt one (Rich Jones, Monroe County, personal communication 2003).

## 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 actions, the Corps has determined that the proposed projects “may affect” the manatee. We concur with the Corps’ determinations and have performed a more comprehensive analysis of the effects of the proposed action in order to determine whether or not the proposed projects are likely to jeopardize the continued existence of the Atlantic subpopulation of manatees.

The construction of these multi-slip facilities resulting in 17 new slips may affect the manatee 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 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 Act, 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.

Based on an analysis of manatee mortality data, the Service identified four prerequisites necessary to ensure 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 a new watercraft facility in this area would result in the take of manatees and identified the area as an “area of inadequate protection” or AIP.

Within the range of the Atlantic subpopulation, the Service designated a portion of the Indian River Lagoon in Brevard County and the Tomoka River in Volusia County as areas with “inadequate protection” in 2001. Since designating these waterways as “areas of inadequate protection” for the manatee, the Service has worked with the State and county entities to ameliorate the watercraft collision threats specific to these regions. With the implementation of State-approved MPPs for Brevard and Volusia counties as well as the establishment of Federal manatee refuges in both counties, the areas of inadequate protection designations were removed.

#### Status of the species within the action area

The Atlantic subpopulation of manatees migrates through the waters of Monroe 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 Monroe County has been documented repeatedly through aerial surveys conducted during 1989-1994, 1995-1996, and 1996-2000. The surveys indicate manatees occur year-round in Monroe County. The enclosed table contains aerial survey data during the last 10 years. Specifically, the table lists the number of manatees counted during aerial surveys between two winter periods (list survey dates) periods countywide and within a 1-mile radius of the project site.

Though some areas of Reach 25 are designated as manatee critical habitat, the 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.

In the action area, manatee aggregation areas and travel corridors are not well defined. Manatees generally use the Florida Bay side of the Keys due to the presence of expansive shallow seagrass areas, but will occasionally travel through Hawk Channel, which is located on the Atlantic Ocean side of the Florida Keys. However, manatees will also use harbors, marinas, enclosed embayments, residential and commercial canals, boat basins, and natural creeks and channels for travel and feeding. Currently, Monroe County has the largest concentration of seagrass beds in the world (R. Jones, Monroe County, personal communication 2003), totaling approximately 1.5 million acres (Jones 1998). Of that total, approximately 30,000 acres are lightly, moderately, or severely scarred from boat propellers (Jones 1998).

#### 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 Monroe County from 2001 to 2005 is as follows:



Year	2001	2002	2003	2004	2005
Registered vessels	29,204	29,607	29,734	29,500	29,990

New watercraft, resulting from the proposed project, will likely travel within the waters of the Florida Keys and Florida Bay in Monroe 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

From January 1, 2001, to December 31, 2005, 13 manatees died as a result of a watercraft collision in the Monroe County with 6 dead manatees in the waters around Plantation and Upper Matecumbe Key.

Year	2001	2002	2003	2004	2005
Monroe County	2	5	2	1	3
Plantation and Upper Matecumbe Key	2	1	0	1	2

### Speed Zones

Although speed zones are not specifically designated for manatee protection in Monroe County, many areas are designated as “Idle/No Wake,” “Minimal Wake,” or “Slow Speed” zones for boater safety and protection of developed shorelines. Also, areas within 300 feet of residential shorelines and in residential canals are designated as “No Wake” zones. To date, the State of Florida does not anticipate or propose to place additional speed zones for the protection of the manatee in Monroe County.

All posted speed zone signs in Monroe County are in compliance with both the State-approved design parameters and Chapter 68D-23 “Uniform Waterway Markers in Florida Waters.” The intent of Chapter 68D-23 is to provide for uniformity in design, construction, and coloring of markers so that all vessel operators may readily recognize, identify, and distinguish between authorized markers and unlawfully placed markers, and to provide a means by which the FWC law enforcement officers and all other law enforcement officers charged with the enforcement of this chapter may determine with reasonable certainty which boating areas are lawfully established and marked.

### Enforcement

In the Lower Keys, the FWC has nine FWC officers and two lieutenants performing on-the-water enforcement, allocated to patrol the waters within the Lower Keys from Marathon to Key West. Their enforcement actions are centered in high traffic areas and focused on enforcing the speed zones. The speed zones are enforced by members of all duly authorized law enforcement



agencies within the county. Additionally, the Florida Keys National Marine Sanctuary also provides speed zone enforcement, with four officers in the Lower Keys. The Florida Keys National Wildlife Refuge has two officers who occasionally patrol the Refuge waters in the Lower Keys. Also, the Monroe County Sheriff's Department has seven deputies available for marine enforcement activities, which include both crime prevention and speed zone enforcement.

In the Upper Keys, the FWC has 13 officers and 2 lieutenants that perform on-the-water enforcement, allocated to patrol the waters from Lower Matecumbe to Key Largo. Their enforcement actions are centered in high traffic areas and focused on enforcing the speed zones. The speed zones are enforced by members of all duly authorized law enforcement agencies within the county. The Florida Keys National Marine Sanctuary also provides speed zone enforcement, with three officers in the Upper Keys. In addition, the Monroe County Sheriff's Department has two personnel available for marine enforcement activities, which include both crime prevention and speed zone enforcement.

## Summary

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.

We know 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 in 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.

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 Monroe County's waterways. While there are boating safety speed zones established throughout Monroe County, there are no manatee speed zones posted in the county. Between 2001 and 2005, 13 watercraft-related manatee deaths were recorded countywide with 6 dead manatees in the waters around Plantation and Upper Matecumbe Key.

## 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

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* (FWC 2005). Anticipated direct impacts to habitat, such as the presence of seagrasses within the project footprint may be minimized through modifications in the project design during the permit review process and/or the application of *Dock Construction Guidelines for Florida* (Corps and NOAA Fisheries 2001). These two minimization efforts are routinely included as conditions for the 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 project. 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.

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 footprint during any time of the year. This project will be constructed in a single, disruptive event, which depending on the design of the structure can take several weeks for the multi-slip facility. 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 the proposed boat multi-slip dock project is located within Reach 25, as defined by the Corps' Reach Characterization Analysis. Manatees are found in the waters surrounding the project site. According to FWRI, 12 manatees were observed in the waters around Plantation Key in 2003. Designated manatee critical habitat is present within the action area. The action area contains seagrasses for foraging, shallow areas for resting and calving, and channels for travel and migration.

In 2005, the Service and FWC developed and implemented Interim II, a collaborative review process that addresses Federal and State permit issues as they relate to manatees. According to the Interim II guidance, the evaluation procedure specifies the necessity for a comprehensive site-specific review regarding multi-slip facilities in Monroe County where the proposed number of slips exceeds the single-family dock density threshold of one boat slip per 100 linear feet of shoreline (the 1:100 ratio). Since the proposed facilities exceed the 1:100 density threshold, the Service conducted a comprehensive review of the information (manatee abundance and distribution, vessel activities, manatee mortality, speed zones and enforcement) to determine the likelihood of take of manatees in the waters around Plantation and Upper Matecumbe Key.

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* (FWC 2005) 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 will have on the manatee 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 site.

The permittee shall comply with the following conditions intended to protect manatees from direct project effects:

- a. All personnel associated with the project shall be instructed about the presence of manatees and manatee speed zones, and the need to avoid collisions with and injury to manatees. 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, the Act, and the Florida Manatee Sanctuary Act.

- b. All vessels associated with the construction project shall operate at "Idle Speed/No Wake" at all times while in the immediate 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.
- c. Siltation or turbidity barriers shall be made of material in which manatees cannot become entangled, shall be properly secured, and shall be regularly monitored to avoid manatee entanglement or entrapment. Barriers must not impede manatee movement.
- d. All on-site project personnel are responsible for observing water-related activities for the presence of manatee(s). All in-water operations, including vessels, must be shutdown if a manatee(s) comes within 50 feet of the operation. Activities will not resume until the manatee(s) has moved beyond the 50-foot radius of the project operation, or until 30 minutes elapses if the manatee(s) has not reappeared within 50 feet of the operation. Animals must not be herded away or harassed into leaving.
- e. Any collision with or injury to a manatee shall be reported immediately to the FWC Hotline at 888-404-FWCC. Collision and/or injury should also be reported to the U.S. Fish and Wildlife Service in Jacksonville (904-232-2580) for north Florida or Vero Beach (772-562-3909) for south Florida.
- f. Temporary signs concerning manatees shall be posted prior to and during all in-water project activities. All signs are to be removed by the permittee upon completion of the project. Awareness signs that have already been approved for this use by FWC must be used. One sign measuring at least 3 feet by 4 feet which reads *Caution: Manatee Area* must be posted. A second sign measuring at least 8 1/2" by 11" explaining the requirements for "Idle Speed/No Wake" and the shut down of in-water operations must be posted in a location prominently visible to all personnel engaged in water-related activities.

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 the proposed multi-slip boat dock projects will increase the number of watercraft in the action area. The projects will provide new access for 17 vessels. Watercraft in the action area are typically used for fishing, sight-seeing, and recreation by local and seasonal residents. The multi-slip docking facilities will allow 17 additional vessels to access the Atlantic Ocean and Florida Bay. Monroe County does not have manatee speed zones in place north of the Seven Mile Bridge.

The Interim II review procedure specifies the necessity for a comprehensive site-specific review regarding multi-slip dock projects in Monroe County where the proposed number of slips exceeds the single-family dock density of one powerboat slip per 100 linear feet of shoreline (the 1:100 ratio). The proposed action will add 17 slips to the existing facility, exceeding the density threshold of one slip per 100 feet of shoreline. 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. According to FWRI, 12 manatees were observed in the waters around Plantation Key in 2003.

#### Species response to the proposed action

New watercraft, resulting from the proposed project, will likely travel within the waters of Florida Bay and the Atlantic Ocean. 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.

#### 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 Act.

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 radio-

tagged and tracked in this study, 6 manatees died and 2 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 opinion that the action, as proposed, is not likely to jeopardize the continued existence of the manatee. However, the Service believes the proposed action may result in incidental take of manatees. The Interim II process recommends a formal comprehensive site-specific review regarding multi-slip facilities in Monroe County where the proposed number of slips exceeds the dock density ratio of one powerboat slip per 100 linear feet of shoreline (the 1:100 ratio). The proposed action will add 17 slips to the existing facility, exceeding the density threshold of one slip per 100 feet of shoreline. Studies indicate manatees are present year-round in the Florida Keys, including the waters around Plantation Key and Upper Matecumbe Key. Monroe County does not have manatee speed zones posted north of the Seven Mile Bridge. Therefore, the Service believes the facilities as proposed are not consistent with the Service's recommended 1:100 ratio for new watercraft access projects in Monroe County north of the Seven Mile Bridge and, therefore, may have an adverse effect on the manatee. The Service believes the proposed action is reasonably certain to result in the take of manatees in the form of additional deaths and injuries.

## INCIDENTAL TAKE STATEMENT

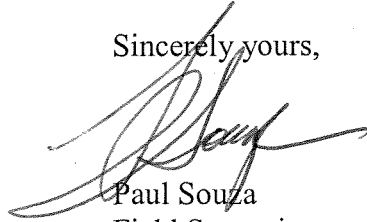
The Service anticipates the proposed action is reasonably certain to result in the take of manatees. However, the Service is not including an incidental take authorization for marine mammals at this time because the incidental take of marine mammals has not been authorized under section 101(a)(5) of 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,

A handwritten signature in dark ink, appearing to read 'Paul Souza', with a stylized, flowing script.

Paul Souza  
Field Supervisor  
South Florida Ecological Services Office

cc:

Corps, Miami, Florida (Robert Kirby)  
FWC (ISM), Tallahassee, Florida (Carol Knox)  
FWC, Vero Beach, Florida  
NOAA Fisheries, Miami, Florida  
Regional Solicitor, DOI, Atlanta, Georgia (Delores Young)  
Service, ARD-ES, Atlanta, Georgia (Joe Johnston) electronic copy  
Service, Jacksonville, Florida (Dave Hankla) electronic copy

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