

organic sediments on the bottom of local waterways. Consequently, St. Johns County could work with SJRWMD and others to explore methods (e.g., mechanical harvesting, biological controls) for removing floating vegetation from its waterways.

- d) Because non-point source pollutants are the most difficult to identify and address, St. Johns County could develop, distribute and/or make available brochures which identify practices for 'how to be a good neighbor' for waterfront property owners.

### **6. Resting, Loafing and Calving Areas**

Because St. Johns County was not one of the 13 'key counties' where human-related manatee mortality was the highest, research and/or monitoring to document resting, loafing and calving areas has not been a priority in St. Johns County. In other areas of Florida, however, data have suggested that the narrow, comparatively quiet upstream waters of tidal and freshwater creeks provide important refuges for manatees, particularly during calving. It is possible that such sites exist in St. Johns County, but that there has been no research that would result in these locations being identified.

Manatees have been documented to be present in various canals creeks and waterways within the County, and the County could set up a program to document the specifics of manatee use at particular sites. If specific locations where manatees gather are identified, investigations could be made to help identify the factors (e.g., water flow (or lack thereof), thermal stratification, salinity variations...) which make the sites attractive. By recording the type of activity, frequency of use and travel patterns, the County would be in a more informed position to determine if any additional manatee protection initiatives are warranted. The County could consult with FWC to develop protocols for monitoring/observations to ensure that data collection practices are consistent with other programs and to prevent unnecessary disturbance of manatees. It is recommended that fieldwork could be conducted/organized by Florida Sea Grant staff and make use of volunteers who would likely be interested in becoming involved with such a project.

### **B. Manatee/ Human Interaction**

In over 30 years of monitoring, there have been no instances in St. Johns County where there have been any manatee deaths as a result of any human-related cause other than watercraft. As the County's population increases, though, there is the likelihood of increased interaction between man and manatees. Two potential opportunities are suggested as methods that St. Johns County could implement to reduce the possibility that a human-related manatee death would occur:

- 1) As described more fully in the Section on Education, the County could advance the awareness of the public about the presence of manatees in local waters. Public Service announcements on radio, TV 'infomercials', including the County's television station and inserts into vessel registration mailers are examples of proactive initiatives that the County could consider as ways of trying to keep human-related manatee mortality non-existent.
- 2) In other areas of the state, manatees have become trapped in storm drains and culverts, and FWC has recommended that counties consider retrofitting these structures with grates to prevent manatee entrapment. Based on research performed during development of this Plan, it appears that this problem has only occurred in one instance

in St. Johns County, and because that incident did not result in a manatee death, no retrofitting has been performed. To be proactive, the county could seek guidance from FWC, FWS, SJRWMD and/or SFWMD as to design specifications for 'manatee-safe' culverts and water control structures, and then:

- a. Ensure that manatee-safe structures are used as the standard for new installations and for repair/replacement of existing structures that are in manatee habitat areas; and
- b. Retrofit existing structures that may be 'accidents waiting to happen'.

### **1. Port Facilities and Power Plants**

In St. Johns County there are presently no ports, power plants or other industrial facilities that produce warm water that attract manatees.

In this age of deregulation of the power industry and high rates of human population increase, however, attempts are being made to site, license and construct power-generating stations at a variety of locations throughout the state. If St. Johns County is approached by an industrial facility or power producer concerning siting of a new facility, it is recommended that questions be posed regarding methods of dissipation of waste heat, and consideration given as to the extent to which heated effluent could serve as an attractant to manatees. Part of the reason that human-related manatee mortality in St. Johns County is so low is the fact that there are presently no warm water attractants. The introduction of a new source could result in increased manatee populations at locations outside of their normal range, which could present future challenges for manatee protection.

### **2. Site Specific Vessel Speed Restrictions**

Compilation, review and analysis of data concerning human-related manatee mortality suggest that the development and implementation of the single site-specific vessel speed restriction zone has been effective in reducing watercraft mortality in St. Johns County waterways. No watercraft-related manatee mortalities have been recorded in Julington Creek since the adoption of speed zones in that area in December 1992.

Because investigation of the watercraft-related manatee mortalities in St. Johns County has not revealed any notable trends or repeated problems at *individual* sites, no additional speed restriction zones appear warranted at this time.

There have, however, been eight watercraft-related manatee deaths in a  $\pm$  9.5 mile stretch of the Tolomato River in northern St. Johns County and an additional five watercraft-related manatee mortalities in Duval County in the contiguous  $\pm$  4 miles of AICW immediately north of the county line (Figure 8). Because the majority of these manatee deaths have occurred within the last six years, this area appears to be an area of increasing concern. This is a narrow portion of the AICW and it is recommended that staff from St. Johns County meet with other governmental entities (i.e., FWC, FWS, Duval County and FIND) to discuss issues pertinent to the protection of manatees in this area. The goal of such a meeting would be to develop countermeasures (e.g., posting of 'caution' signs, increased boater awareness...), in an effort to prevent additional watercraft-related manatee mortalities, which could then result in the need to designate another speed restriction zone.

### **3. Speed Zone Signage**

Throughout Florida, there is an inherent conflict between the need to post an adequate number of speed zone signs to make zone boundaries clear and understandable, and the recognition that too many signs could pose a hazard to navigation. Feedback on the adequacy and effectiveness of current speed zone signage has been received through comments from the enforcement entities that stop, warn and/or ticket speed zone violators. These responses suggest that existing signage is adequate to keep boaters informed of existing speed restriction zones, and therefore no additional signs appear to be warranted at the Julington Creek site.

The frequency of watercraft-related manatee mortalities in the northerly portion of the Tolomato River, however, suggests that some corrective action may be warranted at that location. In lieu of creating a new speed restriction zone, it is recommended that the County consider having manatee awareness signs posted in that area. On a statewide basis, there are problems with the variety of manatee-related signs that are used for differing purposes at different locations. In the interagency meeting recommended immediately above, it is suggested that the concept of sign posting be discussed as one possible method to increase awareness by boaters in the area of watercraft-related manatee mortality in the northern Tolomato. New signs should not be posted by the County. Decisions regarding the need, placement and wording of signs need to be the result of multi-agency discussion.

In addition to manatee-related vessel speed zones, St. Johns County has established water safety zones at six locations (e.g., near bridges) where reduced vessel speed is thought to enhance human safety. There appears to be some confusion regarding the presence and posting of such a zone in the Trout Creek area of the St. Johns River. The County should continue to work with FWC to rectify this problem area.

Regarding the physical placement of signs, FIND has established interlocal agreements through which they agree to install and maintain these waterway signs, even if the signs are not on waterways where FIND has other responsibilities. Although the primary purpose of posting these signs is not for manatee protection, the signs would likely have this effect by slowing vessel speeds and thereby reducing the risk of collisions with manatees. Having FIND post and maintain these signs (rather than each individual waterfront county or municipality) allows the signs to be placed and maintained in a more cost-effective and consistent manner than would otherwise be possible. Therefore, if a decision is made to add any new signs, it is recommended that St. Johns County work cooperatively with FIND to develop an interlocal agreement through which FIND will be responsible for installing and maintaining non-manatee-related vessel warning signs in County waterways. If situations arise in which a manatee-related speed zone overlaps with a non-manatee related speed zone, signs identifying the most restrictive limit will be installed and maintained. There has been some discussion that sign-posting responsibilities may be transferred to FWC, but this has not been verified.

### **4. Increased Law Enforcement Presence**

Section B.4 in the Inventory of Existing Conditions Section identified and described the federal, state and local law enforcement agencies that contribute to enforcement of marine laws in St. Johns County. With only one existing boat speed restriction zone in the County, it appears that current levels of enforcement are adequate.

However, instances of repeat violations by the same individuals suggest that existing penalties may not be enough of a deterrent to prevent continued violations. It is recommended; therefore

that County staff meets with FWC law enforcement, FWS enforcement personnel and St. Johns County Sheriff's Office staff to discuss methods to increase compliance within the County's one speed restriction zone (i.e., Julington Creek). A two-fold approach of: 1) increasing public awareness efforts; and 2) prosecution using FWC's authority to enforce federal, state *and* County regulations could serve as the inducement to increase compliance. The County could consider adopting by ordinance county-specific speed zone restrictions and amend, as necessary from time to time, the penalties for violation of applicable speed zones. This ordinance could include penalties for repeat offenders that are more stringent than state standards, and FWC officers could be given authority to prosecute offenders under County regulations.

Although there are no manatee-related boat speed restriction zones in eastern St. Johns County, the St. Johns County Sheriff's Office has indicated on-going problems with unsafe vessel operation. Because fiscal constraints often limit the amount of on-the-water enforcement, St. Johns County might want to consider replicating at the local level the federal program through which marinas provide slip space for enforcement vessels at no charge. Through the development review and approval process, St. Johns County might want to consider requesting or requiring that such slip space be provided at new or expanding marina(s) if there is a need for such space. If adequate docking has been dedicated for marine law enforcement watercraft, the County could also consider funding offers that would provide additional enforcement on County waterways as mitigation for marina projects.

#### **5. Sanctuary Designation by FWS and/or FWC**

Both the state and the federal government have agreed that vessel speed restrictions are necessary to protect manatees in the Julington Creek area. Unfortunately, the widths and boundaries of the state and federal protection areas are not identical (See Figures in Appendix C). This inconsistency appears to present difficulties for vessel operators *and* enforcement personnel. It is suggested that County staff coordinate meetings with FWS and FWC personnel and the St. John County Sheriff's Office to seek modifications that would bring together the boundaries of the state and federal zones.

No new sanctuaries, refuges and/or manatee protection areas appear to be warranted at this time, but the results of the monitoring recommended previously may result in the need to evaluate new protection zones if specific areas are identified as being important for calving, resting or feeding.

### **C. Land Development**

Section C in the Inventory of Existing Conditions summarized the existing manatee protection mechanisms in effect in St. Johns County. This section provides descriptions of mechanisms through which St. Johns County could consider making improvements to local development standards to reduce the potential for negative impacts on manatees.

#### **1. Shoreline Development Standards**

In general, St. Johns County and the municipalities in the County rely on state and federal regulations and permitting criteria to protect the natural resources of the shoreline. State and/or federal regulations provide protection for mangroves, seagrasses and other shoreline vegetation, and permits must be obtained for projects that involve water management systems