Protecting the Aquatic Preserves from Runoff

The current Pine Island plan requires a buffer area between new developments and aquatic preserves:

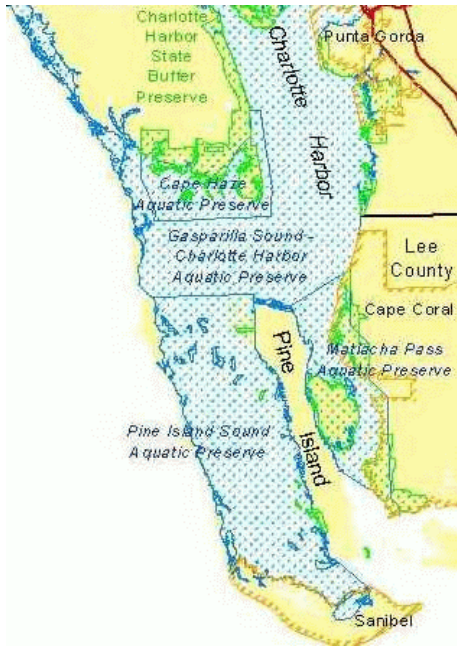
> ***POLICY 14.1.5:*** *New "planned development" rezoning approvals and new subdivisions adjoining state-designated aquatic preserves and associated natural tributaries shall provide a 50-foot-wide vegetated buffer area between the development and the waterbody.*

Buffer areas of this type save a strip of native vegetation along the transitional zone between water (or wetlands) and uplands. With proper design, this strip can prevent erosion and trap sediments and other pollutants running off the land, in addition to its original functions.[8]

Such buffers are especially valuable on Pine Island because the island is surrounded by aquatic preserves. These preserves were designated by the state in the 1970s for their "exceptional biological, aesthetic, and scientific value" and are "set aside forever...for the benefit of future generations."[9]

A major management goal for aquatic preserves is to encourage uses of adjacent uplands that protect and enhance the resources in the aquatic preserves.

Policy 14.1.5 has been incorporated by Lee County into its land development code.[10] However, as currently worded, it has proven ineffective because it does not apply to agriculture, the predominant new land use on Pine Island over the past decade.



[8] "Lands immediately adjacent to an upland or wetland are transition zones between wetlands and uplands. They are zones that are wetland at times and upland at times, exhibiting characteristics of each and vegetated by species that are found in each. They are important to both the wetland and the upland as seed reservoirs, as habitat for aquatic and wetland-dependent wildlife species, as refuges to wildlife species during high-water events, and as buffers to the extreme environmental conditions that result from sharp vegetated edges. When development activities occur in transition zones, wetland-dependent wildlife species that are frequent users of theses areas are excluded, silt laden surface waters are generated and cannot be filtered, and groundwater may be diverted or drained." M.T. Brown and J. Orell, *Tomoka River and Spruce Creek Riparian Habitat Protection Zone*, p. 4 (St. Johns River Water Management District, 1995).

[9] Section 258.36, *Florida Statutes*

[10] This policy has been implemented through Lee County's land development code as shown in these excerpts:

Sec. 34-935(d) Where the proposed planned development is within the Greater Pine Island area and adjoins state-designated aquatic preserves or associated natural tributaries, a 50-foot-wide vegetated buffer area between any structure or building and the mean high-water line of the water body shall be provided. No deviation from this requirement shall be permitted except under extreme circumstances in which the requirement would have the effect of prohibiting all reasonable use of the property.

Sec. 10-414(f) Except where a stricter standard applies for the Greater Pine Island Area (defined in chapter 34 of the land development code), there must be a 25-foot wide buffer landward from the mean high water line of all nonseawalled natural waterways. Where a proposed planned development or subdivision is located in the Greater Pine Island Area adjoining state-designated aquatic preserves and associated natural tributaries, the width of the required buffer will be 50 feet. . . . Existing vegetation within the buffer area must be retained except for the removal or control of exotic plants.

Normally a new setback or buffer requirement is easy to adopt and administer. In this case it would be more difficult because Lee County has chosen to exempt agriculture from nearly all of the requirements that apply to developers.

One exception is that Lee County requires new agriculture operations to obtain a "notice of clearing" from the county before clearing any land. A change could be made to the requirements for a "notice of clearing" to require the retention of at least the 50-foot-wide native buffer that is required for all other land uses and to encourage it to be used with a filter strip to cleanse stormwater runoff before it reaches the mangrove wetlands and tidal waters.

The U.S. Department of Agriculture is strongly promoting riparian forest buffers[11] of at least 50 feet and filter strips[12] of at least 20 additional feet around farm fields through their National Conservation Buffer Initiative. The USDA calls them "common-sense conservation" and promotes these buffers as an important supplement to conventional stormwater retention strategies, to serve as a second line of defense in protecting natural resources from avoidable side-effects of agriculture.[13] The USDA even helps pay for riparian buffers on private property through its Conservation Reserve Program.

SETTING THE COURSE

Wholesale land clearing up to the edge of the mangrove forest is now allowed for agriculture. All other new development must maintain a 50-foot native buffer strip between cleared land and natural water bodies. New rules should require agriculture to maintain at least the same 50-foot separation and use it to filter stormwater runoff.

GETTING THERE

Modify comprehensive plan Policy 14.1.5 as follows:

POLICY 14.1.5: All new development, including ~~New~~ "planned development" rezoning approvals, ~~and~~ new subdivisions, and agriculture, that adjoin~~ing~~ state-designated aquatic preserves and associated wetlands and natural tributaries shall preserve or create ~~provide~~ a 50-foot-wide native vegetated buffer area between the development and the waterbody~~.~~ or associated wetlands. This requirement shall not apply to existing subdivided lots. For agriculture, this requirement:

- shall be implemented through the notice-of-clearing process in chapter 14 of the land development code;
- shall include a requirement to use this area as a riparian forest buffer with an adjoining filter strip wherever farmland abuts wetlands; and
- if native vegetation does not currently exist, native tree cover shall be established within three years of issuance of the notice of clearing.

[11] Riparian Forest Buffer (Natural Conservation Service Conservation Practice Standard 391), available from ftp://ftp.ftw.nrcs.usda.gov/pub/nhcp/pdf/391.pdf

[12] Filter Strip (Natural Conservation Service Conservation Practice Standard 393), available from ftp://ftp.ftw.nrcs.usda.gov/pub/nhcp/pdf/393.pdf

[13] For details on the National Conservation Buffer Initiative, consult USDA's Natural resources Conservation Service at http://www.nhq.nrcs.usda.gov/CCS/Buffers.html

Septic Tanks Along Canals

Water quality in Pine Island's canals and bays can be degraded by many factors, some of which cannot be controlled easily (such as polluted water coming down the Caloosahatchee).

Other factors can be corrected if the public is aware of the problem and is willing to pay to solve it. An example of the latter is bacterial or viral pollution caused by improperly installed or malfunctioning septic tank drainfields. Contaminated canal water can pose health risks from exposure while swimming or boating or from eating contaminated seafood.

Used under proper conditions, septic tanks are a cost-effective method of sewage disposal for individual households. Ideal conditions include porous soils, large lots, the absence of nearby shallow wells or water bodies, and proper maintenance.

However, under some conditions septic tanks function poorly. During normal operation, excess wastewater is routed from each septic tank to an underground drainfield, which is a series of pipes that spread the water over a porous layer of gravel and then into the ground. Because septic tanks alone provide very limited treatment, proper soil conditions are essential so that movement through the soil can provide another level of treatment to capture viruses and other pathogens before wastewater comes in contact with humans or natural systems.[14]

Riskier conditions for septic tanks include a high water table, small lot, nearby well or waterway, installation too low in the ground, and lack of maintenance. When not installed or functioning properly, septic tank drainfields can provide a direct path for the pollutants in domestic wastewater to reach the canals and then the bays.

Pine Island's 66 miles of canal banks are potential routes for pollution to enter sensitive waters. Because most of these canals are deep and dead-ended, they are not easily cleansed by tidal flow. Also, daily tidal fluctuations can raise and lower groundwater levels near canals, creating a pumping effect that can speed the flow of pollutants from the soil into canals.

In the 1980s Lee County installed central sewer service throughout Fort Myers Beach and Matlacha after too many poorly functioning septic tanks along canals caused pollution levels to reach dangerous levels. No agencies currently have a regular program to monitor canals for signs of degradation due to older or malfunctioning septic systems.

In 1988, state rules allowed Lee County to insist that drainfields for new homes be elevated at least 24 inches above saturated soils, sometimes requiring above-ground mounds. These newer systems are much more likely to function properly without polluting nearby waterbodies. However, it is often impractical or even impossible for older homes to upgrade to the new standard.

Decisions to upgrade wastewater disposal systems are often caused by outside factors. This is what happened to the temporary sewage plant that Lee County had installed in the early 1980s on state-owned land on Little Pine Island to replace the septic tanks in Matlacha. This plant itself had become a source of pollution and the state insisted that it be removed. Instead of connecting Matlacha's sewers to the advanced treatment plan in Cape Coral for conversion into irrigation water, Lee County decided to build a new sewage treatment plant on Pine Island.

The decision to build a new regional sewer plant on Pine Island was probably ill-advised, given local soil conditions and flooding risks and the excess capacity available at the Cape Coral plant.

[14] "Human viruses in the coastal waters of Florida," Coastlines, issue 10.6, December 2000, available at http://www.epa.gov/owow/estuaries/coastlines/dec00/humanviruses.html

However, there are some benefits to Pine Islanders. Many of Pine Island's small freestanding sewer plants can now be easily connected to the new plant, and if septic tanks in sensitive areas are causing pollution, they can be connected also.

The most likely areas for septic tank damage would be populated areas with older septic systems on small lots abutting saltwater canals. These conditions may exist in parts of St. James City, Bokeelia, and Flamingo Bay. A coordinated effort should be mounted to determine whether existing drainfields in those areas are polluting Pine Island's canals.

Simple tests of canal water for fecal coliform bacteria is not sufficient because bacteria levels can be high for other reasons as well. More sophisticated methods are now available for determining whether septic tanks are actually polluting the water. These include dyes and viral tracers that can be flushed into septic tanks to detect whether wastewater is moving slowly enough through the ground to provide a reasonable level of treatment. Two recent studies of this nature in Citrus County and the Florida Keys have found contamination of waterways caused by septic tanks.[15, 16] Similar studies have also been conducted in New Port Richey and Sarasota.

If such tests demonstrate that serious problems exist, the county could establish an inspection program to identify and require replacement of failing or older septic systems, or could require upgrading when a home is sold. Other actions could include providing full sewer service for those neighborhoods, or a hybrid which might keep the septic tanks but route the effluent into sewers instead of on-site drainfields.

Central sewer service is fairly expensive to install and involves regular monthly charges for operation. However, septic-tank replacement is also expensive and disruptive to yards, especially when mounded drainfields are required. If there is clear evidence that septic tanks are causing pollution, Pine Islanders would support reasonable alternatives because clean and bountiful waters are an expected part of Pine Island life.

SETTING THE COURSE

Water quality in the canals and bays is very important to Pine Islanders. Lee County should initiate a program to determine whether older or failing septic tanks along canals are polluting the water, and if so, the county should analyze steps to solve the problem, including extending central sewer service if warranted.

GETTING THERE

Modify comprehensive plan Policy 14.1.7 as follows:

POLICY 14.1.7: ~~The county shall continue to investigate the need for central sewer service for Bokeelia, St. James City, and Pine Island Center. This shall include, for any area having a strong need for such service, an analysis of available facility sites, alternative types of service, and financial feasibility.~~ Lee County shall design a program within one year to assess the condition of septic tank drainfields along saltwater canals in St. James City, Bokeelia, and Flamingo Bay. This program would analyze whether current soil conditions or the density, age, or condition of drainfields are likely to be degrading tidal water in the canals. If serious degradation is taking place, Lee County shall assess the feasibility of various corrective measures.

[15] "Bacteriological and pathogenic water quality assessment of the upper reaches of the Chassahowitzka Watershed" by Michael R. Callahan, Joan B. Rose, Ph.D., and John H. Paul, Ph.D. 2001, prepared for the Utility Division of the Citrus County Department of Public Works.

[16] "Viral tracer studies indicate contamination of marine waters by sewage disposal practices in Key Largo, Florida" by Paul, J.H., Rose, J.B., Brown, J., Shinn, E.A., Miller, S., and Farrah, S.R., in *Applied and Environmental Microbiology*, 1995, vol. 61, No. 6, p. 2230-2234; available at http://aem.asm.org/cgi/reprint/61/6/2230.pdf

Jet-skis and Air Boats

It is no surprise that conflicts often arise over the use of local waterways in a boating community like Pine Island. County government has a limited role in resolving these conflicts, with most authority being retained by the state and federal government.

Counties do exercise some authority over boating. For instance, power boats can be restricted from interfering with popular bathing beaches, and certain boating activities can be regulated under land-use authority (such as the rental of boats). These activities can affect or be affected by shoreline land uses, thus giving counties a clear role in balancing competing uses.

In public meetings on Pine Island, there are two frequent complaints about the effects of boating on land use that might be addressed at the county level. One is the increased popularity of jet-skis (a trade name for what has become known generically as personal watercraft) and the other is the noise from air boats.

Personal watercraft use an inboard engine to drive a water jet pump that propels the boat by exhausting a large stream of water. Personal watercraft are noisy because they are built and marketed as high-speed "thrill craft" that are very powerful and maneuverable. The operators of personal watercraft ride them while standing, kneeling, or sitting *on* them, rather than sitting inside them like conventional boats. For all of these reasons, accident rates for personal watercraft are very high.

Lee County now regulates mainly the *rental* of personal watercraft; state law controls their *operation*. New county regulations over the operation of personal watercraft would now be very difficult due to a new state law that effectively bans local regulation of personal watercraft. While this state law remains in effect, local governments must ignore even legitimate distinctions between personal watercraft and other boats.[17]

Lee County's current regulations keep personal watercraft rentals away from the bays and sounds by limiting rental locations to the barrier islands.[18] However, those renting personal watercraft, or owning them, can operate them in the aquatic preserves around Pine Island. Unless state law is changed, counties have no authority to adopt restrictions.

Air boats can traverse very shallow water because of their unconventional system of propulsion: their engines spin an *above-water* propeller. Thus there are two sources of noise. First in the engine itself, which is often run without a muffler. But most of the noise comes from the propeller, which at high speeds greatly amplifies the engine noise. Air boats are very noisy and affect waterfront landowners and some wildlife, especially birds. State limitations on air boat noise are rarely enforced.

Local efforts to control air boat noise could involve local enforcement of state noise limits, or a ban on nighttime use, or a ban against operations outside marked channels (or within a fixed distance of the shoreline, except near boat ramps). In 1999 Fort Myers Beach banned all air boats in the portions of Estero Bay within the town because of noise and wildlife impacts.

Problems caused by air boats occur throughout Lee County's waters. Rather than addressing air boat problems just around Pine Island, Lee County should consider countywide regulatory measures that would preclude the greatest problems caused by careless use of air boats without adding to the patchwork of boating regulations that are already difficult to enforce.

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[17] "Any ordinance or local law which has been adopted pursuant to this section or to any other state law may not discriminate against personal watercraft as defined in s. 327.02." (Chapter 2000-362, section 20)

[18] Lee County Ordinance No. 95-13, section 9