

PINE ISLAND AT THE CROSSROADS

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PREFACE

"Greater Pine Island" is a group of protected islands, separated socially and geographically from Lee County by the devegetated expanse of Cape Coral. A motorist approaches Pine Island along a narrow causeway, across the developed islands of Matlacha, through the wildlife preserve on Little Pine Island, and then reaches Pine Island itself. "Big" Pine Island has the largest land mass of any island on Florida's west coast, yet has missed the building booms that have overtaken most of the others. It lacks the wide, sandy beaches that draw so many people to Florida. But overdeveloped conditions at other coastal locations are causing many people, and consequently many real-estate developers, to focus on Pine Island as the next center of growth.

Can Pine Island handle this population migration? Can local residents and the Lee County government control the island's destiny? Who should pay for the many services needed by even gradual growth? This report addresses these questions and others. Comments and suggestions are welcomed from all interested parties. A broad consensus concerning the area's future is needed to have any hope of managing the problems and opportunities of growth for the long-term benefit of the community.

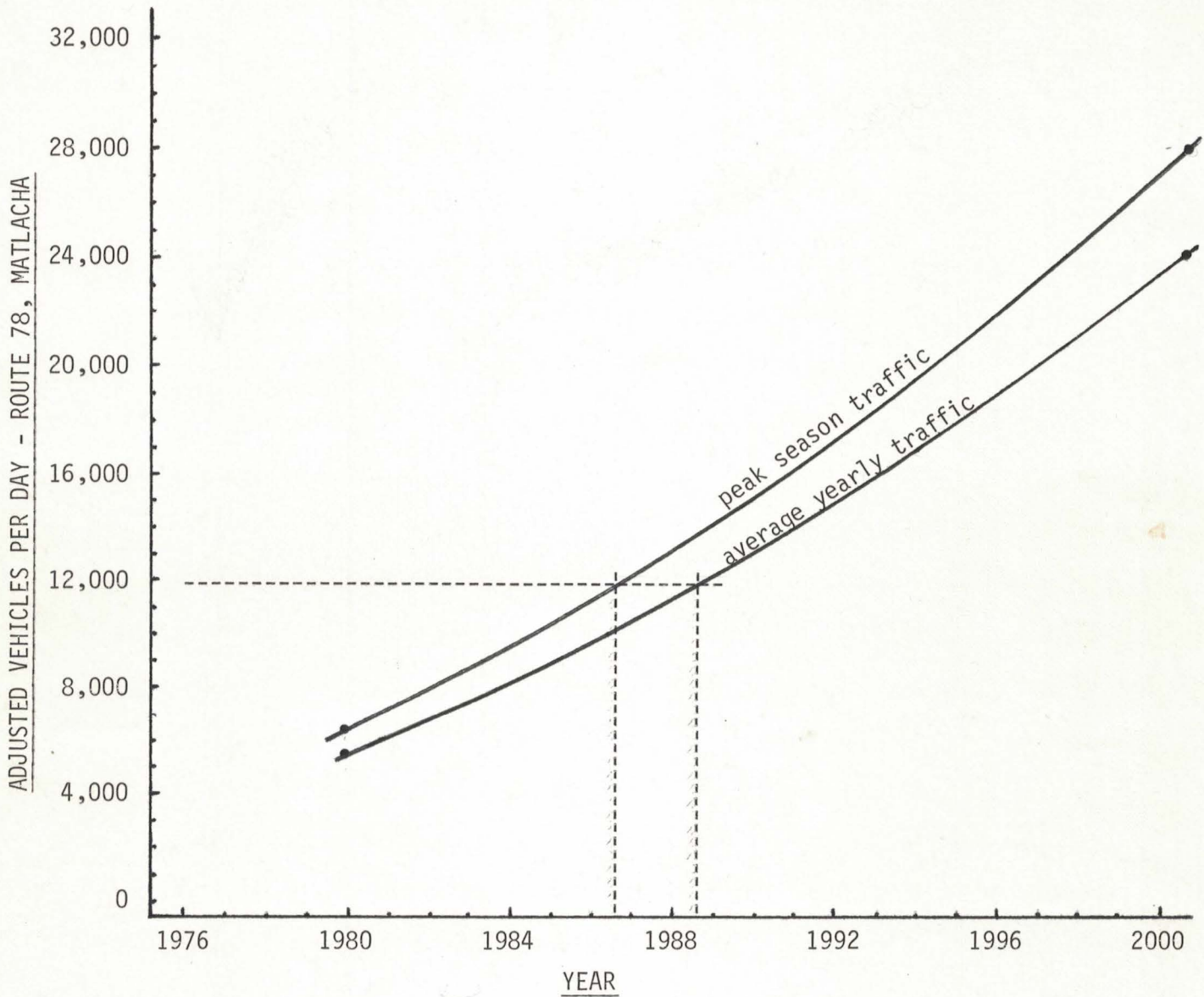
1-A. GROWTH ISSUE: Road Access

An obvious shortcoming in Lee County's current unlimited-growth policy for Greater Pine Island is the area's restricted access by road. Most undeveloped land is on Pine Island itself, about 5 miles from the mainland along Pine Island Road (Route 78). But distance isn't even the main difficulty--these 5 miles pass through the Matlacha Pass Aquatic Preserve, the business heart of Matlacha, and the state-owned preserve on Little Pine Island. Public benefits from road improvements built to serve future growth will have to be weighed against not only the dollar costs, but also against adverse environmental impacts and the social disruption of Matlacha.

Chart A illustrates traffic data collected by Lee County for Route 78 in Matlacha. The upper curve shows the peak season traffic, and the lower curve shows average yearly traffic (in vehicles per day). The most recent projection by the Lee County Transportation Study for anticipated traffic through Matlacha in the year 2000 is also shown. If population growth actually matches this projection, the resulting traffic would surpass the theoretical capacity of Route 78 during the peak season by 1987, and under typical conditions by 1989.

The "Level of Service" concept illustrates the meaning of capacity for the motorist. As the optimal traffic level on a road is exceeded (level C), traffic conditions worsen but are still "acceptable" (level D). Level E traffic volumes approach the theoretical capacity of a road, while level F indicates failure of the facility, characterized by long lines and stop-and-go traffic. Due to the current traffic counts and the many driveways and parking lots opening directly onto Route 78 in Matlacha, it is already rated at level C (optimal) by the Lee County Department of Transportation. During

CHART A
TRAFFIC CONDITIONS IN MATLACHA



SOURCE OF DATA:

- Actual peak season vehicles per day, 1980 ----- 6432 (Lee Co. Dept. of Transp.)
- Actual annual average vehicles per day, 1980 ---- 5564 (Lee Co. Dept. of Transp.)
- Projected peak season vehicles per day, 2000 ---- 28000 (Lee Co. Transp. Study, 1978)
- Projected annual average vehicles per day, 2000 - 24221 (assuming same proportion of $\frac{\text{peak}}{\text{average}}$ as in 1980)
- Curve: Continuous compound growth
- Theoretical capacity of a 2-lane road ----- 12000 vehicles per day (Lee Co. Planning Department)

the busy tourist season, it is rated at level D. (On Stringfellow Boulevard, service is currently rated at level A.)

The Lee County Transportation Study recognized that level F would be reached on Route 78 long before the year 2000, and recommended that it be widened to 4 lanes from U.S. 41 to Pine Island Center. This project was recently put into "stage One" for improvements needed between now and 1990, along with 23 other Lee County road projects. Only 6 of these projects, not including this one, are in the hopeful stage for 1982 to 1986.¹ Funding for the others ranges from uncertain to unlikely.

The four-laning from Burnt Store Road to Pine Island Center alone was estimated to cost \$12,500,000 in 1977; today the cost would be nearer \$22,000,000. This includes expenses for right-of-way acquisition and re-location of structures, which would be very high since the current right-of-way is only 66 feet wide through most of Matlacha, and the preliminary plans propose a 90 foot right-of-way (about the narrowest allowable under current urban standards). Even with this width, over 75 houses and businesses² would have to be moved or removed from the causeway and the 3 islands containing Matlacha. This does not include those homes and businesses that would be left immediately abutting the new right-of-way. Nor does it include the Island Market, the Post Office, or the Loblolly Restaurant, whose parking areas would be virtually eliminated. The funding source for this project would likely be a toll charge, as proposed recently for the twin span across the Caloosahatchee River to Cape Coral.

¹ construction of the Colonial Boulevard extension, Six-Mile Parkway, Route 869, and a new Edison Bridge; and widening of Bayshore Road and Del Prado Parkway.

² 14 on the causeway from the mainland, 10 on Porpoise Point Island, and 52 on West Island and Little Pine Island. This estimate was made from aerial photography in the Matlacha Sewer Project drawings.

An alternative to the widening of Route 78 is an entirely new bridge to the mainland. A logical location would be to follow the power lines from Master's Landing (near Flamingo Bay) and connect up to an extension of Cape Coral Parkway. This 4 mile route would cross 3 miles of open water and wetlands in the Matlacha Pass Aquatic Preserve. If environmental permits could be obtained for this project, they would almost certainly require a continuous bridge on pilings rather than a much less expensive but environmentally-destructive causeway. A causeway would interfere with the tidal flow between it and the existing causeway at Matlacha, permanently reducing that area's biological productivity.

There are several problems to be overcome before a second bridge would be possible. Cape Coral city officials have indicated strong opposition to this alignment because of a severe overload on their present 2-lane bridge from Cape Coral Parkway to Ft. Myers. Also, funding for a new Pine Island bridge would likely require a toll, both on the new bridge and on the existing bridge, to assure potential bond purchasers that the new bridge would be used enough to re-pay the bonds. This arrangement would require the co-operation of the State of Florida, owner of the existing bridges.

But state co-operation could be blocked by a future policy such as that suggested by Florida Attorney General Jim Smith. According to the Ft. Myers News-Press (December 10, 1981), Smith said that Florida should try to induce new residents and developers to locate inland instead of in coastal regions. He suggested a policy of inland highway improvements rather than new coastal roads to help ease the crush of growth on the environmentally-sensitive shores.

The implications of a "no new access" policy, or of a prohibitive cost for additional access, must be carefully examined. If Greater Pine

Island were to grow beyond its present road capacity, and then discover that providing additional access is not a reasonable option, then not only would traffic-clogged roads have destroyed one of Pine Island's main attractions--wide open space--but travel to jobs and shopping would be blocked, and hurricane evacuation might be possible only for some of the residents. Traffic planning must be directly linked to land-use planning, and therefore to zoning. Pine Islanders cannot wait until their roads are further congested to insist on this type of co-ordination. Even a conventional road improvement can take from 5 to 10 years to design and construct; and new bridges cost far more than conventional improvements, and can cause extreme environmental damage if not planned and built properly. Pine Islanders must insure that a new access road is feasible and begin acquisition of the necessary right-of-way, or establish an ultimate limit on construction of new homes; one option or the other must be chosen in the very near future.

The realities of inflation and interest rates that have reached levels far higher than in the past must be considered here. The costs of building and financing new roads and bridges greatly exceed the costs of those already in existence. For example, the Sanibel causeway was built in 1963 and has long since been paid off from the \$3.00 tolls. Recently, the City of Sanibel wanted to purchase that causeway from Lee County for \$26 million, but found that tolls would have to rise to over \$7.00 just to re-pay the bonds at today's rates. Lee County withdrew the offer to sell, since public access to Sanibel's beaches would have been greatly restricted by the new toll. Fortunately for Sanibel, the ownership of their causeway was not essential; but with the growth currently planned for Greater Pine Island, new access would have to be provided, at any cost, just for the basic daily needs of the residents.

1-B. GROWTH ISSUE: Hurricane Evacuation

The preceding discussion dealt only with daily and peak-season road needs for access to Pine Island. This section will address the impact of the major hazard affecting coastal island dwellers: a hurricane. For most residents, the primary defense is to evacuate to higher ground inland, utilizing the regular road network. The rate at which automobile traffic can move across Pine Island Road under pre-storm conditions limits the speed of evacuation and consequently the number of people who can be safely evacuated from Greater Pine Island.

Fortunately, a major quantitative study on hurricane evacuation has just been completed by the Southwest Florida Regional Planning Council.³ This study is one of the first of its kind, and was necessitated by the "tremendous amount of growth that has taken place in the coastal areas, especially since roads and other necessary infrastructure have lagged far behind." The study had this as its goal: "to produce a decision-making guide to prevent or reduce loss of life that would otherwise occur if the Southwest Florida Region experiences a natural disaster such as a major hurricane."

The study described the present situation as "vulnerable" because of the historical probability of a storm, combined with the following four factors:

- 1) The physical characteristics of low-lying islands and coastal areas bordered by the shallow Gulf of Mexico, bays, sounds, rivers, and estuaries
- 2) An ever-increasing coastal population generally inexperienced in hurricane preparedness
- 3) A low-lying and low-capacity transportation system which must eventually serve as the evacuation routes for this coastal population

³ Southwest Florida Regional Hurricane Evacuation Plan, November 1981.

- 4) A significant percentage of the population residing in mobile homes

All four factors apply especially to Greater Pine Island.

Computerized models were used to predict the extent of an overland tidal surge (flood waters) and of wind levels, from hurricanes of various intensities and directions. The models were developed from all available measurements made during actual hurricane conditions in Lee, Charlotte, Collier, Glades, Hendry, and Sarasota Counties. The models predicted at what time, prior to the passage of the hurricane's eye, that high winds (or water across the roadway) would halt an evacuation.

Chart B summarizes data pertinent to Greater Pine Island. It includes simulations of hurricanes approaching from 3 directions, and of varying levels of strength (category 1 being the mildest hurricane and category 5 the strongest). A hurricane of a given direction and strength will affect coastal areas differently, depending on where the eye actually strikes land. The hurricanes selected here are those which would close the evacuation route earliest, for each type and strength class. (Other hurricanes in each class might cause greater total damage.) All times listed are the number of hours, before the eye passes, that further evacuation along Pine Island Road would be unsafe. This is defined as the time when 1 foot of tidal flooding covers the road, or that sustained winds are at gale force (40 mph). It should be kept in mind that the National Hurricane Center can provide, with fair confidence, only 12 hours' notice that a hurricane may strike a particular area. They can provide 18 hours' notice that a hurricane will strike somewhere along an entire coastline, but this is too vague for local officials to order an evacuation.

CHART B
PRE-EYE LANDFALL HAZARD TIMES - GREATER PINE ISLAND

<u>Hurricane type and intensity</u> (causing earliest end to evacuation)	<u>Hours before eye landfall</u> (flooding exceeds 1 foot)	<u>Hours before eye landfall</u> (sustained 40mph winds)
LANDFALL, CATEGORY 1	4.5 hours	6 hours
(storm coming " 2 from the Gulf of Mexico)	5.5 "	7 "
" 3	6 "	9 "
" 4	6.5 "	10.5 "
" 5	6 "	10 "
PARALLEL, CATEGORY 1	1.5 hours <u>after</u>	4 hours
(storm fol- " 2 lowing coast from the south)	1 " "	5.5 "
" 3	1.5 " "	7 "
" 4	1.5 " "	7.5 "
" 5	3 " "	5.5 "
CROSSING, CATEGORY 1	4.5 hours	6 hours
(storm crossing " 2 Florida from the east)	6.5 "	7.5 "
" 3	5.5 "	6.5 "

SOURCE: APPENDIX E, SOUTHWEST FLORIDA REGIONAL HURRICANE
EVACUATION PLAN, NOVEMBER 1981.

In every case listed, gale force winds will arrive prior to tidal flooding. This suggests that merely elevating the evacuation route would not improve evacuation time. An additional hazard to evacuation, tall trees falling into the roadway, was not analyzed in this study.

Chart C summarizes the worst-case total evacuation time for Greater Pine Island for storms of categories 1, 2, and 3. Evacuation times were not calculated for the more severe storms of categories 4 and 5 because the evacuation would have to extend outside the 6-county area, and this analysis was beyond the scope of the study. Note that the maximum time needed to evacuate Greater Pine Island is the sum of the basic time needed to travel to a designated shelter, plus the additional time needed to evacuate (determined by the number of vehicles trying to evacuate and the present road capacity), plus the "closing time" of the evacuation route (due to high winds).

Chart D contains projections for increases in worst-case evacuation times that would result from growth up to the year 2000, using the population projection (17,700 residents) from the Lee County Transportation Study. (The times in parentheses are adjusted for a 4-lane access road rather than the existing 2 lanes.) Note how near in the future the 12 hour notice period will not allow enough time for all residents who are on Pine Island during the hurricane season to safely evacuate, even in a mild hurricane.

Evacuation times could be shorter than indicated if the same hurricane were to pass over a location other than the one selected, or if the hurricane were directly approaching the area at a slow speed, giving many residents time to evacuate before an actual order was given. Nevertheless, optimal conditions do not always prevail; those who scoff at the implications of these projections and continue to advocate

CHART C
PEAK EVACUATION TIME IN HOURS - GREATER PINE ISLAND

<u>storm category</u>	<u>travel time to shelter at 30 mph</u>	<u>additional evacuation time, with current population and roads</u>	<u>earliest flooding</u>	<u>earliest gale winds</u>	<u>total evacuation time</u>
1	1.0	2.8	4.5	6.0	<u>9.8 hours</u>
2	1.0	2.8	6.5	7.0	<u>10.8 hours</u>
3	1.0	2.8	6.0	9.0	<u>12.8 hours</u>
4 & 5	----- not calculated in this study -----				

SOURCE: APPENDIX F, SOUTHWEST FLORIDA REGIONAL HURRICANE EVACUATION PLAN, NOVEMBER 1981.

CHART D
FUTURE PEAK EVACUATION TIME IN HOURS - GREATER PINE ISLAND

<u>storm category</u>	<u>total evacuation time, for 1981</u>	<u>total evacuation, 1000 additional pop.</u>	<u>total evacuation, 5000 additional pop.</u> 2 lanes (4 lanes)	<u>total evacuation, year 2000 projection</u> 2 lanes (4 lanes)
1	<u>9.8 hours</u>	10.2	12.0 (10.7)	14.8 (11.9)
2	<u>10.8 hours</u>	11.2	13.0 (11.7)	15.8 (12.9)
3	<u>12.8 hours</u>	13.2	15.0 (13.7)	17.8 (14.9)

SOURCE: PREPARED FOR THIS REPORT, USING METHODOLOGY OF SOUTHWEST FLORIDA HURRICANE EVACUATION PLAN. (Each 1000 additional people in Greater Pine Island in November would use 429 additional vehicles to evacuate. The evacuation capacity of Route 78 is 986 vehicles per hour; if widened to 4 lanes, capacity is 2378 vehicles per hour using 3 lanes (figure calculated for Del Prado Bl., 1981). The projected population for the year 2000 is 17700 (Lee County Transportation Study) less 6322 (current population in November) giving 11378 additional people in November by the year 2000.)

unlimited growth, should be left the task of suggesting who should be left behind in an evacuation that cannot be completed.

A major conclusion that can be drawn from this data is that Greater Pine Island can still be safely evacuated at the present time under adverse conditions, except for storms of category 4 or 5 intensity. (This assumes vigorous enforcement of proposed county rules limiting maximum heights of vulnerable trees along the evacuation route.) But population growth in the near future will decrease the slim margin of safety to zero and below. Realistic alternatives to preserve this margin include major road improvements, or the early adoption of growth-management measures by Lee County, as proposed later in this report.

A few words of caution must be added concerning the concept of "vertical evacuation," or the use of stairwells and corridors of high-rise buildings as emergency refuge during a hurricane. Even the proponents of this concept admit that vast legal and engineering questions remain before experimenting with the technique. But more importantly, those proponents stress that this is a refuge of last resort for those prevented from evacuating because of over-building in vulnerable locations. The pilot study urging the vertical-evacuation concept for Dade County (Miami) states:

Essentially, the plan adds vertical relocation in highrise buildings to the present evacuation and shelter procedures. This added measure for the public safety becomes necessary because of the vast increase in population in vulnerable hurricane areas. Persons who should enter American Red Cross shelters, or who have hurricane precaution plans of their own, are encouraged to go there. But with the greater population many will be left behind, perhaps because of blocked or flooded escape routes, and it is primarily for these endangered persons that disaster prevention authorities seek the added safety of vertical relocation in temporary highrise emergency refuges.⁴

⁴ Evacuation of Coastal Residents During Hurricanes: A Pilot Study for Dade County, Florida (Washington: A Report of the Miami Federal Executive Board to the Office of Management and Budget, May 1973), p. 2.

The concept of vertical evacuation is of no relevance to Greater Pine Island, unless a lack of foresight causes the development patterns of Dade County's Atlantic beaches to be repeated here.

1-C. GROWTH ISSUE: Water Supply

The population growth of Cape Coral is of great importance when examining the future supply of drinking water for Greater Pine Island. The previous discussions of road access and hurricane evacuation focused on the unique problems of the area. But it must be recognized at the outset that Pine Island's only unique problem with drinking water is that it exceeded its own resources long ago.

The Greater Pine Island Water Association currently supplies water from its wellfields in Cape Coral, near Burnt Store and Pine Island Roads. About 75% of the water is currently pumped from the mid-Hawthorn aquifer (also known as the upper Hawthorn), and the remaining water is pumped deeper from the lower Hawthorn. The lower Hawthorn water is more plentiful but must be de-salinated before use.

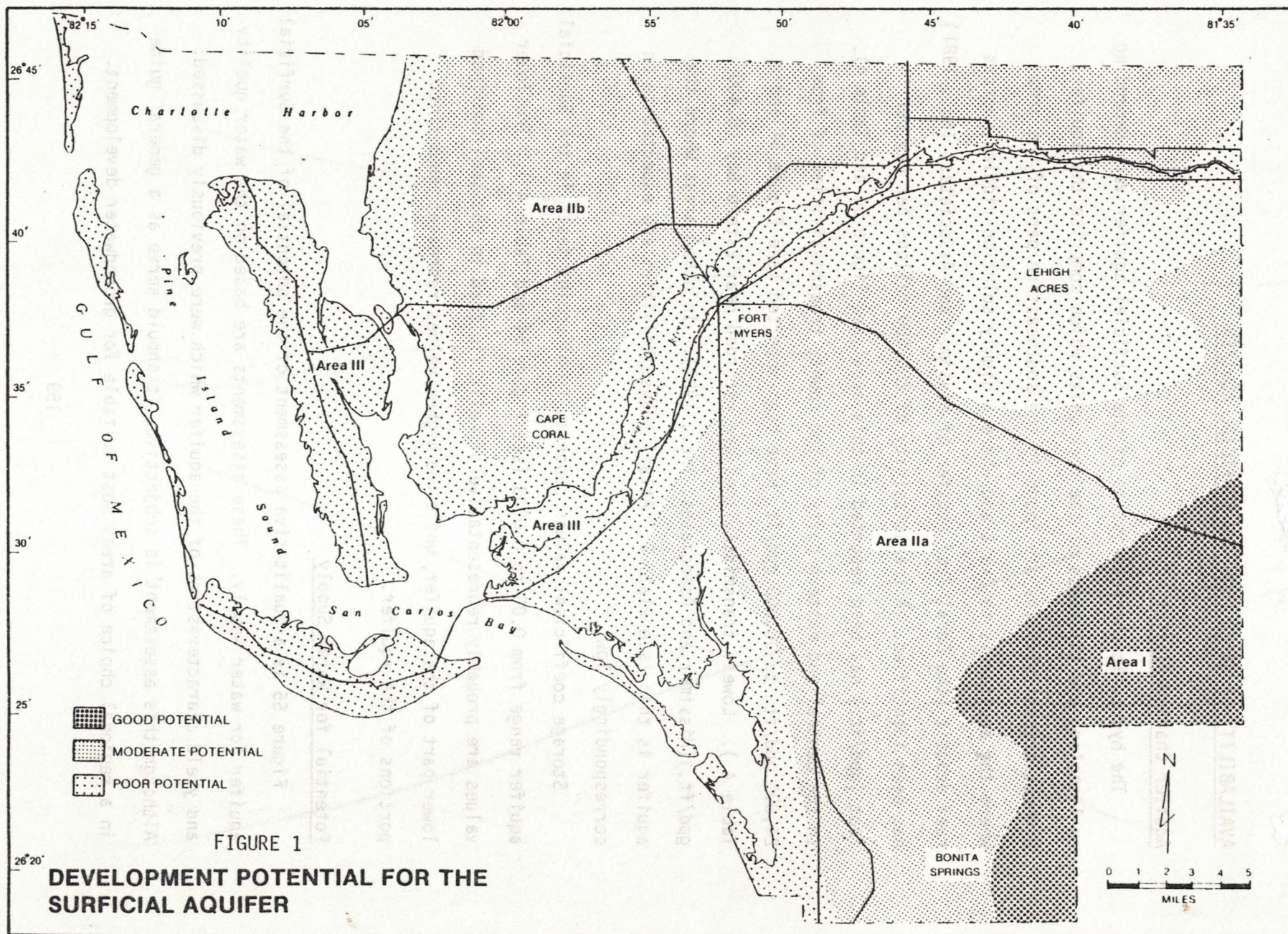
The Water Association is currently allowed to draw almost a million gallons daily from the purer mid-Hawthorn. But Cape Coral, with less than 10% of its already committed population, is allowed to draw about 2 million gallons daily, and another 4 million gallons are drawn by private irrigation and drinking wells in Cape Coral. These combined draws have already heavily strained this valuable aquifer. Water levels have dropped over 30 feet in parts of Cape Coral, and water experts fear that, if over-pumping persists, salty water will continue creeping into the aquifer. Underground water is a renewable resource, this layer replenishing in Polk and Pasco Counties, but salt-water intrusion can cause irreversible damage.

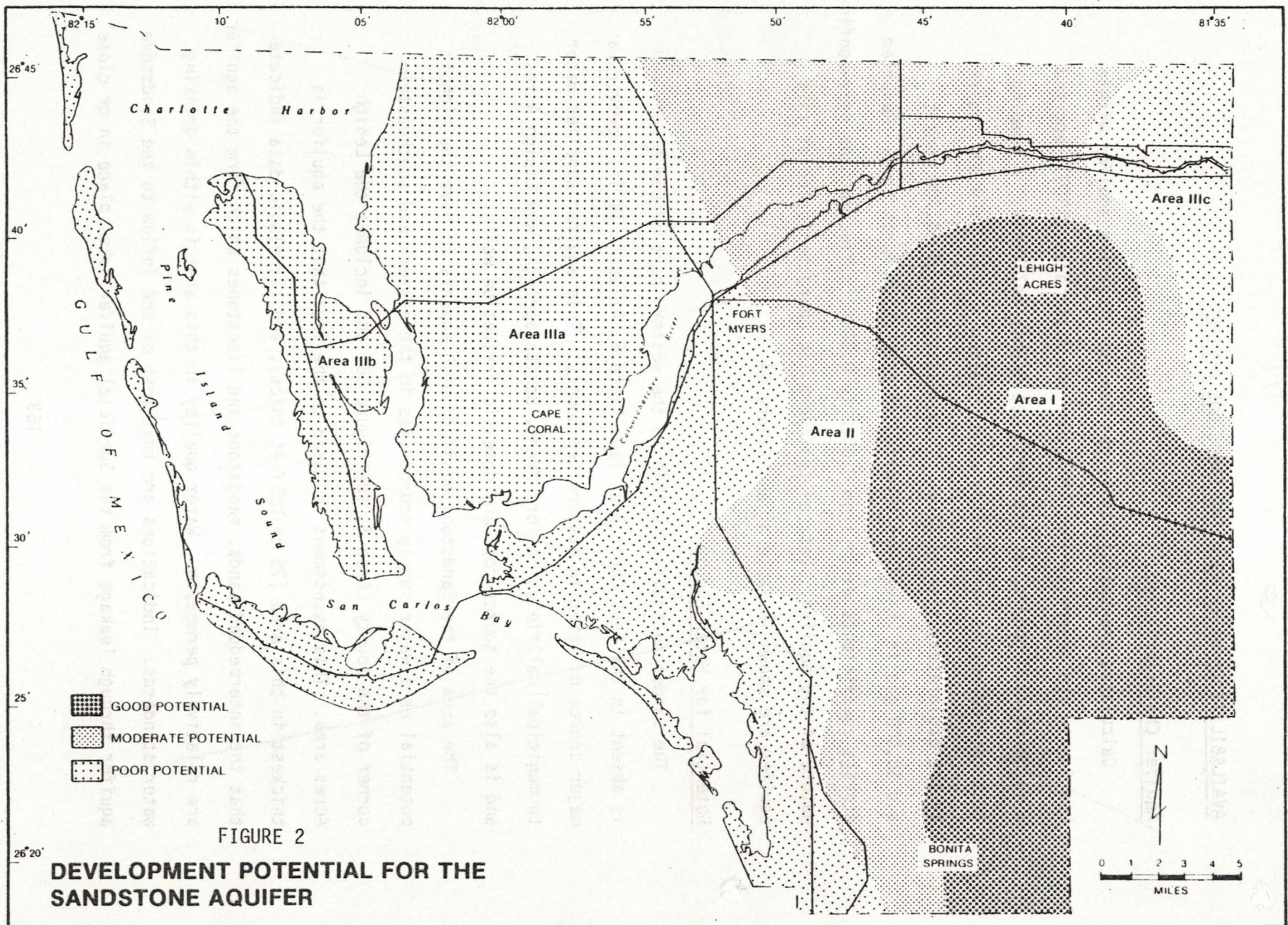
A comprehensive survey of underground water sources in Lee County has just been completed by the South Florida Water Management District. The study estimated the potential for developing additional water supplies from the four major aquifers found in Lee County (see Figures 1, 2, 3, and 4).⁵ The Pine Island area is rated "Poor" in all except the deepest "Floridan Aquifer System," which includes the lower Hawthorn. Thus, the long-term water outlook involves either bargaining with other water suppliers in eastern Lee County for their more plentiful supplies, or investing in expanded de-salination facilities to increase the use of the more abundant and locally available "Floridan" water.

The "Floridan" alternative is the more likely, given the high cost of pumping water long distances and the burgeoning growth elsewhere in the county. But the major drawback of de-salination is also high operating costs. In the reverse-osmosis process, water is forced through special membranes at extremely high pressure by electric pumps. Each increase in the cost of electricity, which is produced largely by burning oil, will increase the cost of water. (This increase cannot be covered by hook-up fees, which are for plant expansion only.)

Thus it does not appear that the lack of water will be an early factor impeding growth on Pine Island. But the unchanging monthly water rates, a source of pride on Pine Island, cannot continue for long. Lush lawns, exotic landscaping, car washing, and inefficient plumbing fixtures would have to be eliminated or greatly curtailed in case of vastly increased water rates; and this would require a significant shift of habits and attitudes, particularly for retirees on fixed incomes.

⁵ Leslie A. Wedderburn et al., Hydrogeologic Reconnaissance of Lee County, Florida (West Palm Beach: South Florida Water Management District, Technical Publication 82-1, January 1982), pp. 160, 164, 168, and 171.





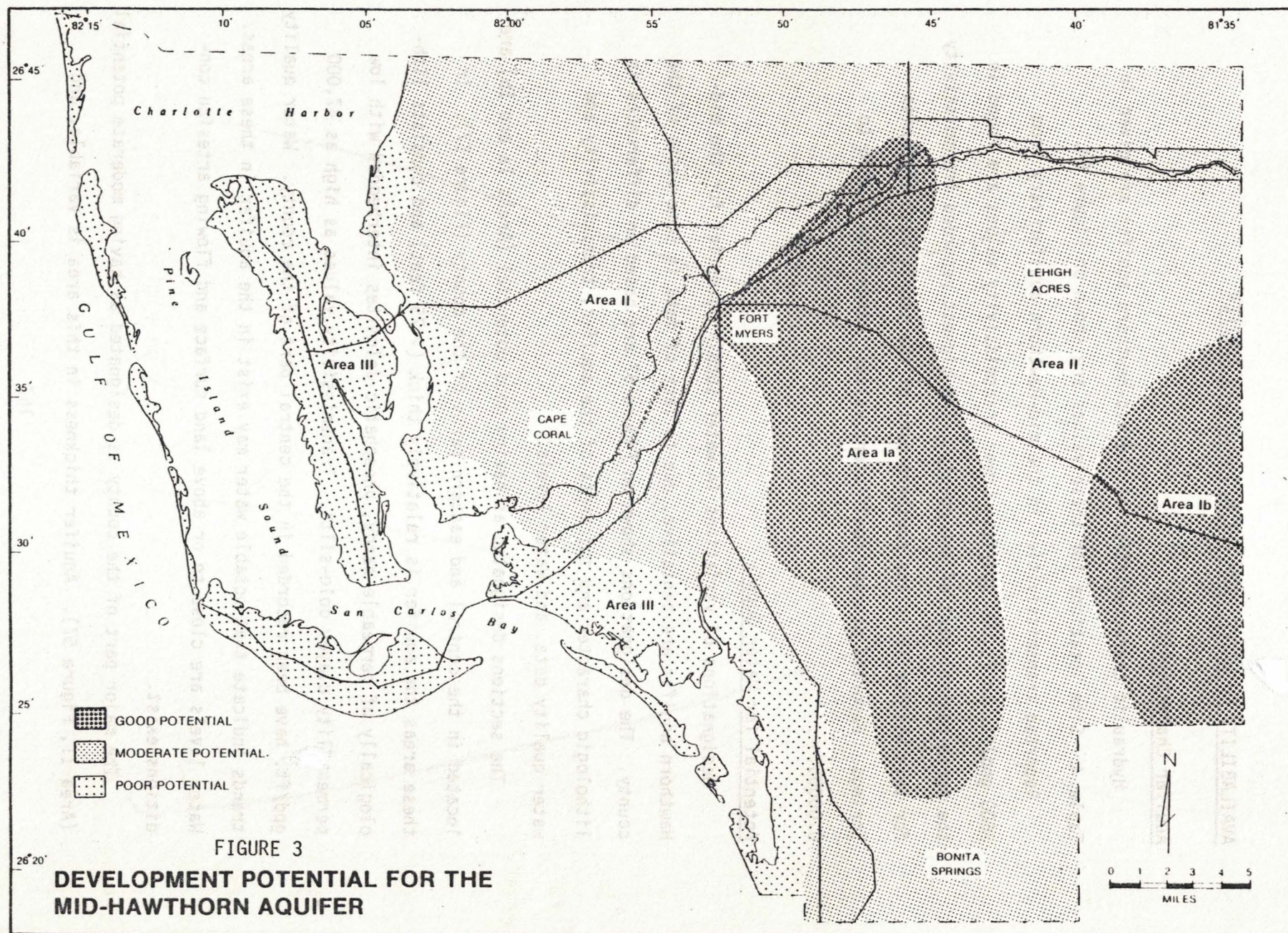


FIGURE 3

**DEVELOPMENT POTENTIAL FOR THE
MID-HAWTHORN AQUIFER**

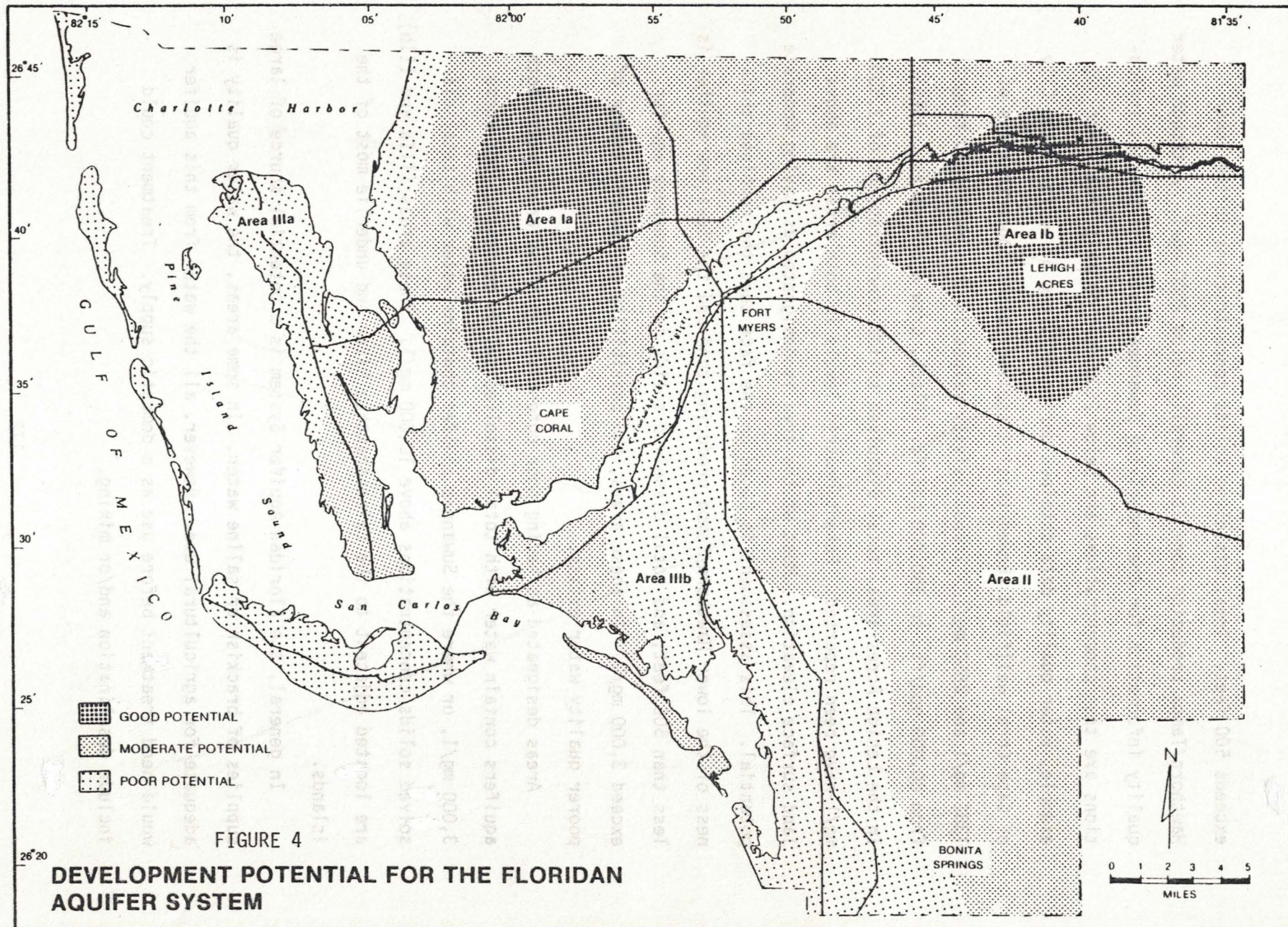


FIGURE 4

**DEVELOPMENT POTENTIAL FOR THE FLORIDAN
AQUIFER SYSTEM**

1-D. GROWTH ISSUE: Island Character

"Island character" is a term much used but rarely defined; when describing Pine Island in particular, though, several distinct threads converge. The most apparent is the proximity to open water. Some people love to fish, others swim; some care only to be on a boat, others rarely even see the water but just want to know that it is there. But on Pine Island, the waterfront is subtle. Most of the shoreline is covered by nearly impenetrable mangrove forests. The mangroves provide nourishment and shelter for all manner of aquatic creatures, which attract the abundant bird life. Actual beaches occur in only a few locations.

This subtlety, and Pine Island's almost 20 square miles of high land, combine to attract water-lovers who prefer wide-open spaces, rather than glamour resorts or downtown action. These wide-open spaces, by definition, cannot provide a full range of urban services; the population is too dispersed to make them affordable. When the concentration of people is sufficient to offer the services, the ambience that was originally sought in moving to the country has disappeared altogether. At present, Greater Pine Island is a pleasant mix of small-town and country, and there is no toll on the bridge. The urbanization of this area would mean the loss of one more special place, and a gain of what?

2. LEE COUNTY'S PLAN FOR GREATER PINE ISLAND

In 1977 the Lee County Commission recognized Greater Pine Island as "unique in scenic beauty and geography" and adopted a special ordinance limiting the height of buildings and the number of apartments on an acre of land. A group of Pine Island residents proposed this idea to prevent some of the excesses prevalent in other coastal areas. Lee County also banned off-site billboards from the area in 1981 after the first signs of an advertising war between local real-estate brokers.

Similar concerns for the future of all Lee County led to the drafting of proposed county-wide land-use regulations. This "Land Development Code" is a combination of revised zoning classes, stricter rules governing the subdivision of land, and new regulations protecting sensitive lands such as marshes, historic sites, and flood-plains, as mandated by the Lee County Comprehensive Plan. But the new Code does not attempt to constrain ultimate growth on the islands to levels that can be serviced by road networks and other public services.

A concise evaluation of past county policy toward Greater Pine Island can be made by analyzing the zoning patterns and densities currently in force. Figures 5, 6, 7, and 8 show current zoning for one- and two-family homes, multi-family dwellings, mobile homes and recreational vehicles, and commercial uses, respectively. A tabulation of approximate acreages in each group appears in Chart E. Chart F summarizes the ultimate population that could live in Greater Pine Island, as authorized by current zoning.

Assuming a permanent zoning-change freeze, the population on Greater Pine Island could reach 84,524 under the current special ordinances, or

FIGURE 5

Current Zoning
One- and Two-Family Homes

RS-1, RS-2, RS-3, RS-4, and RM-1

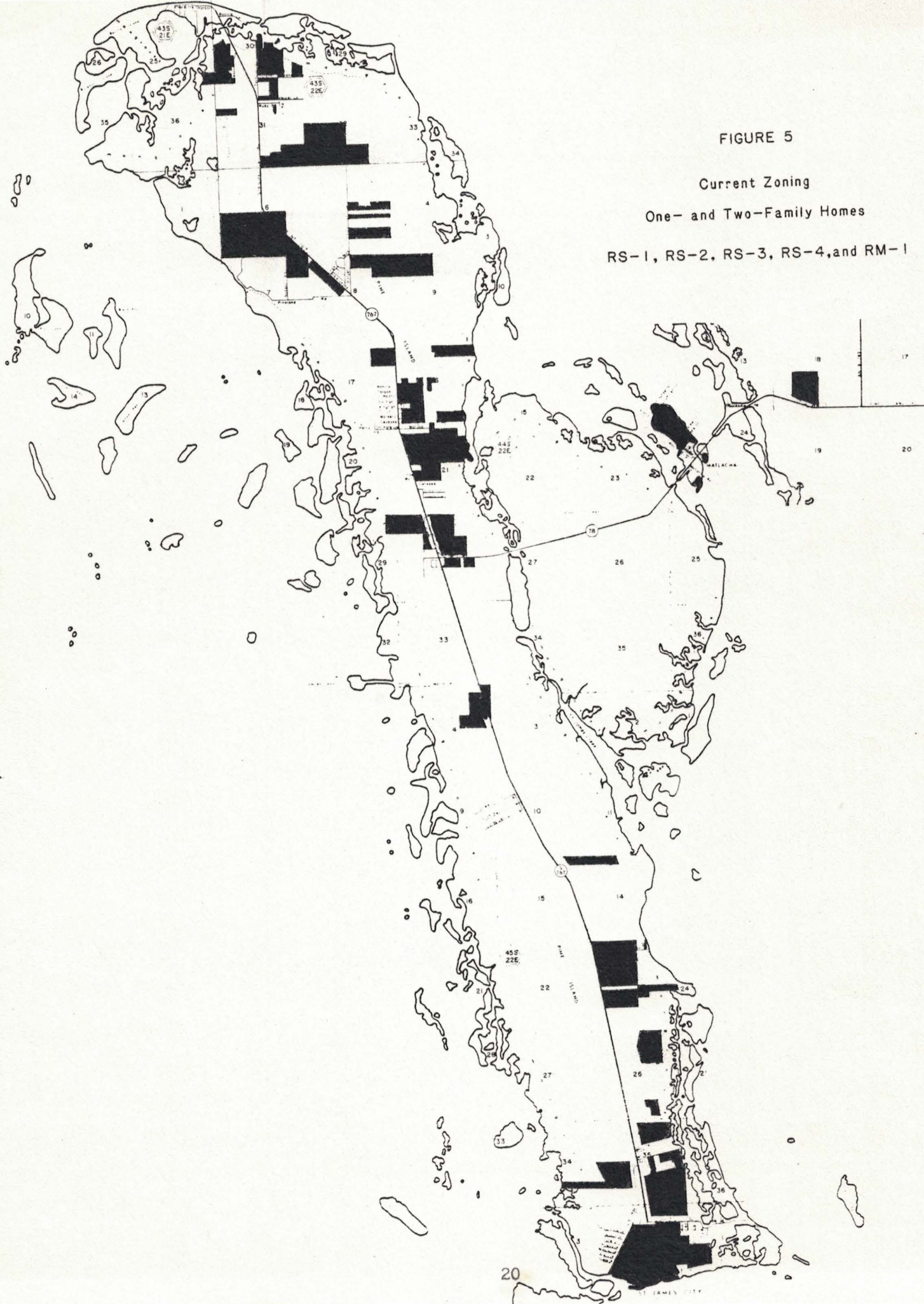


FIGURE 6
 Current Zoning
 Multi-Family Dwellings

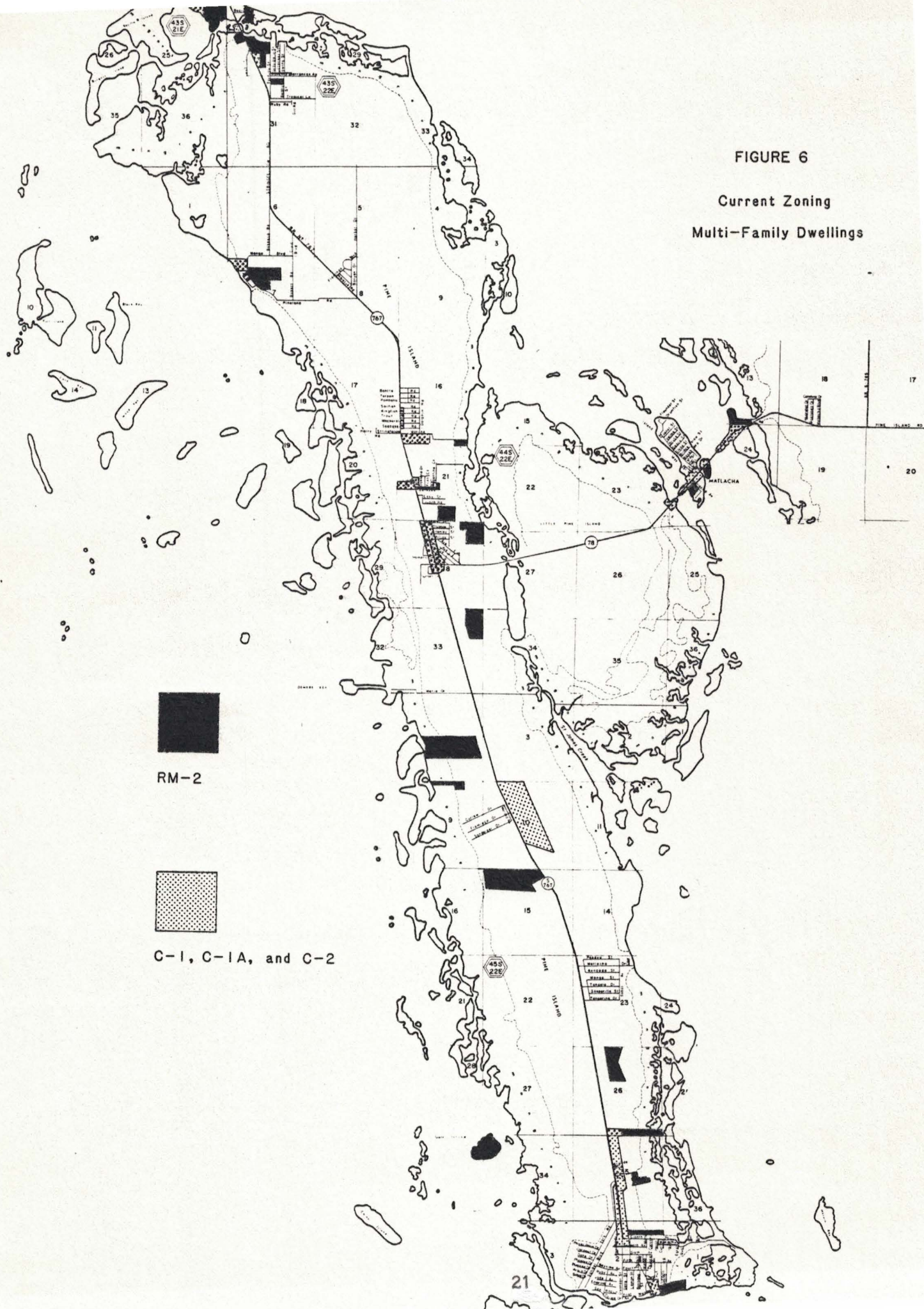


FIGURE 7

Current Zoning

Mobile Homes and Recreational Vehicles

MH-1, MH-2, and RV

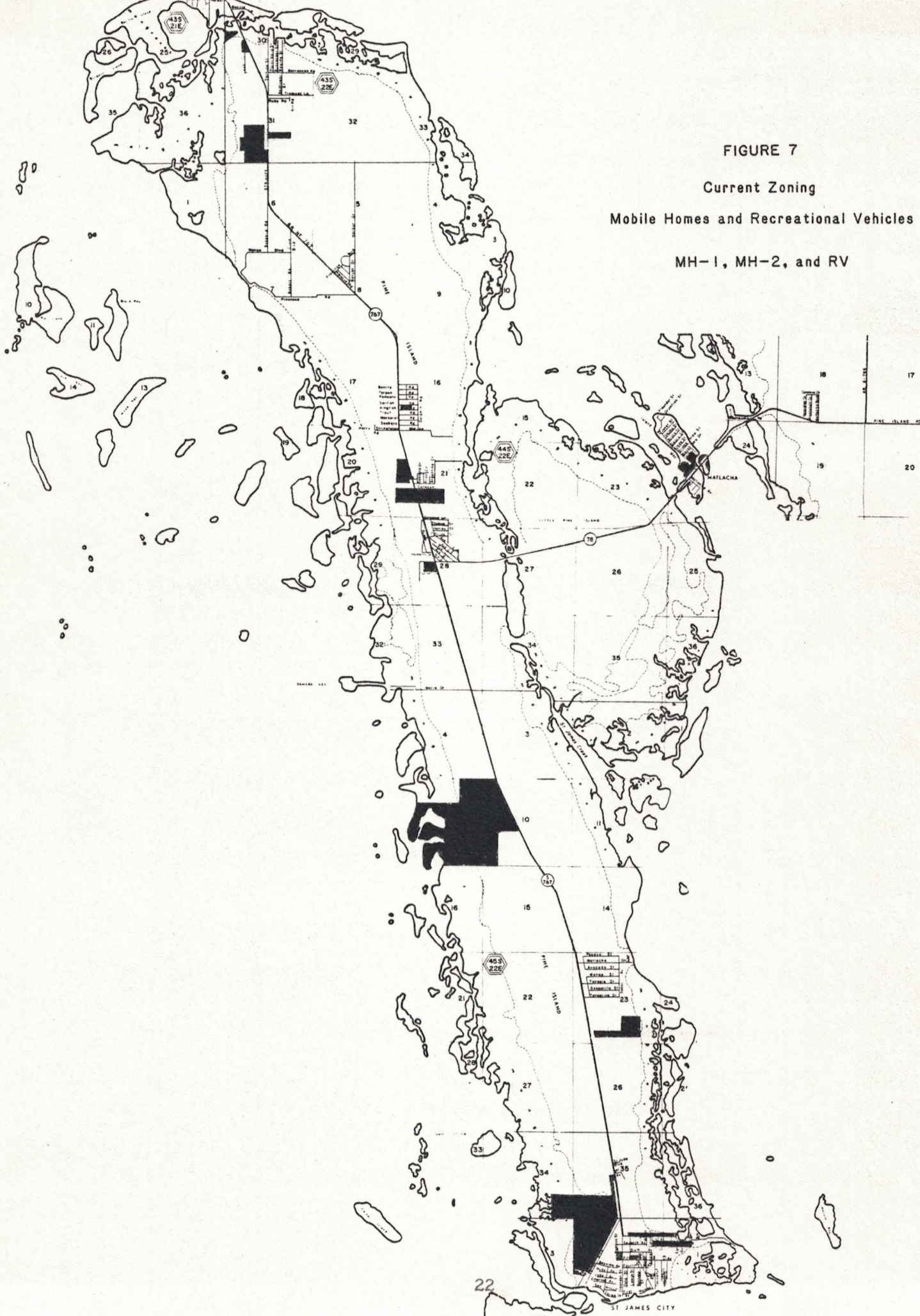


FIGURE 8

Current Zoning
Commercial Uses

CN, CC, CG, CS, CT, CM-1,
CM-2, C-1, C-1A, and C-2

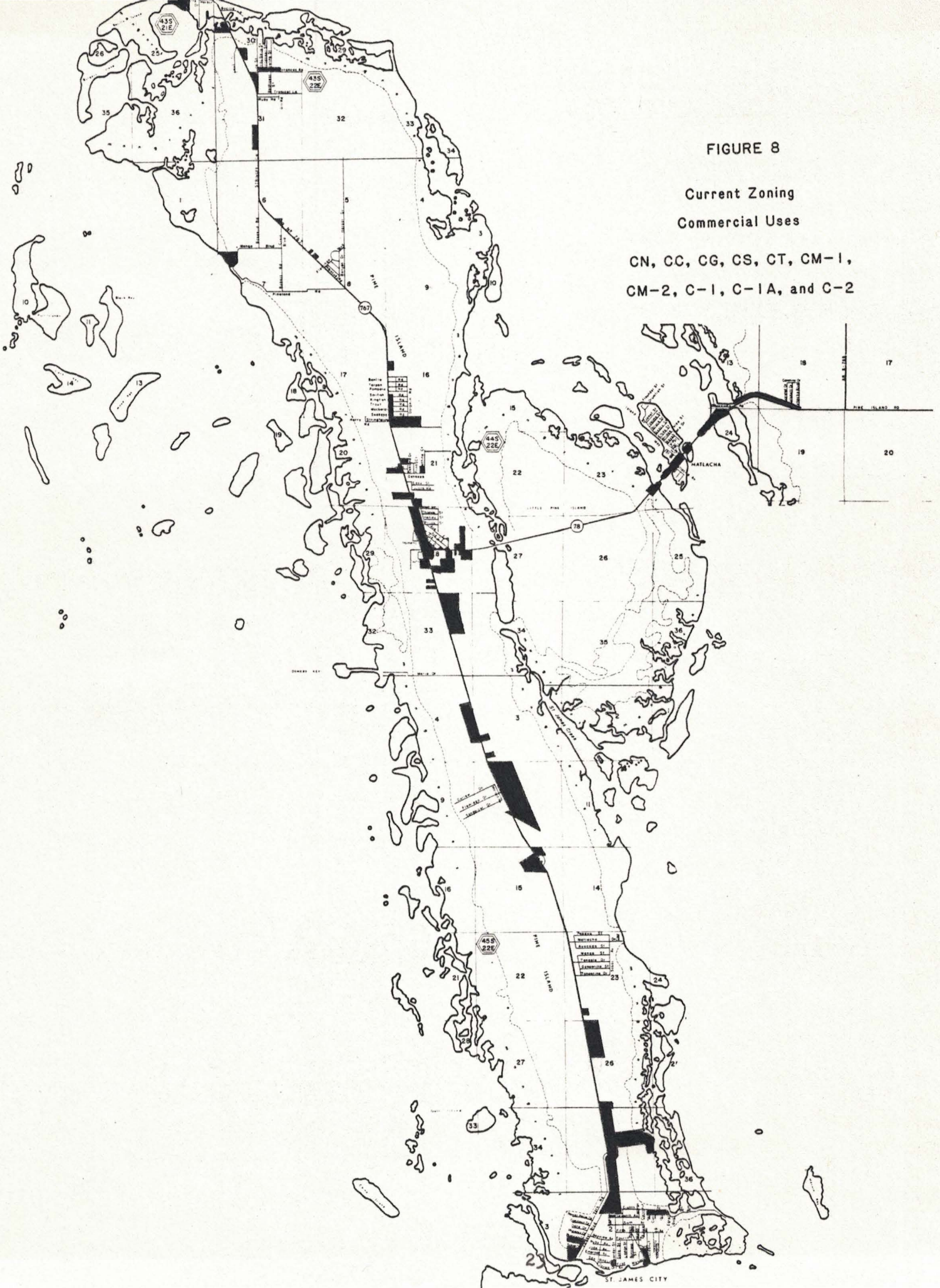


CHART E

APPROXIMATE ACREAGES, BY ZONING CLASS - GREATER PINE ISLAND

TWP-RGE-SEC	mob.home	single	multi-	commercial-----				hiway
	rec.veh.	family	family	C1	C1A	C2	CT+CN	
	MH+RV	RS+RM1	RM2				CS+CM	front.
43-22-29	-	-	-	-	-	-	-	-
30	10	140	55	4	-	18	-	1400
31	75	115	5	-	10	-	3	2750
32	-	195	-	-	-	-	-	-
33	-	-	-	-	-	-	-	-
43-21-25	-	5	50	-	-	17	-	1500
26	-	-	-	-	-	-	-	-
35	-	-	-	-	-	-	-	-
36	-	5	-	-	-	-	-	-
44-22- 4	-	-	-	-	-	-	-	-
5	-	80	-	-	-	-	-	-
6	-	260	-	-	-	-	1	300
7	-	40	50	-	-	12	3	-
8	-	100	-	-	-	-	1	250
9	-	75	-	-	-	-	-	-
16	5	140	-	5	-	-	2	1750
17	-	35	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-
21	90	180	40	42	6	-	16	4000
27	-	-	-	-	-	-	-	-
28	10	160	35	27	25	1	10	11750
29	-	15	-	-	-	-	-	-
33	-	-	45	-	13	-	26	2625
34	-	-	-	-	-	-	-	-
Matlacha	20	105	10	53	-	-	-	12000
45-22- 3	-	-	-	-	1	-	8	2000
4	-	80	100	-	-	-	7	400
9	340	-	10	-	-	-	-	-
10	150	-	-	-	80	-	-	4000
11	-	-	-	-	-	-	-	-
14	-	25	-	-	-	-	-	-
15	-	15	95	-	26	-	-	2000
16	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-
23	45	225	-	-	2	-	-	250
26	-	75	60	3	18	-	-	2500
27	-	-	-	-	-	-	-	-
33	-	-	10	-	-	-	-	-
34	45	20	25	-	-	-	-	-
35	80	250	15	66	-	-	1	7625
46-22- 1	20	40	20	3	-	-	-	-
2	160	350	15	30	1	7	-	2750
	<u>1050</u>	<u>2730</u>	<u>640</u>	<u>233</u>	<u>+182</u>	<u>+55</u>	<u>+78</u>	<u>59850</u> ft.
				= 548 acres total commercial				

CHART F
 POPULATION POTENTIAL, UNDER 1981 ZONING - GREATER PINE ISLAND

<u>ZONING CLASSES</u>	<u>ACRES</u>	<u>AVERAGE DWELLINGS PER ACRE</u>	<u>POTENTIAL DWELLING UNITS</u>
MH + RV	1050	X 7	= 7350
RS + RM1	2730	X 5	= 13650
RM2	640	X 8	= 5120
C1 + C1A + C2	470	X10	= 4700
AG (approx.)	7600	X 1	= <u>7600</u>
			38420

38420 (potential dwelling units)

X 2.2 (average persons per dwelling unit)

84524 (population potential, under 1981 zoning)

COMPARE TO:

4697--PERMANENT POPULATION (1980 U.S. CENSUS)

8118--SEASONAL POPULATION PEAK (1980 LEE COUNTY PLANNING DEPT.)

97,108 under general Lee County standards.⁶ This should be compared with the current permanent population of 4,697 (1980 U.S. Census) and a seasonal peak population of about 8,100 (Lee County Planning Department).

The impact of a ten-fold increase in population challenges the imagination. 20 lanes of traffic crossing Matlacha Pass instead of 2? 10 community shopping centers instead of 1? A request to withdraw 10 times the water from stressed aquifers that are shared with Cape Coral, a city with enough lots already platted and sold to house 400,000 people?

Rather than strain the point any further, it seems obvious that there exist limits to the capacity of Greater Pine Island. The question that must be faced is not whether growth should be limited, but to what level? What level of growth could be sustained without exceeding the capacity of the natural and man-made support systems? And what means can be used to end, with minimum financial loss, the current deception of investors and potential residents as to the actual capacity of the area?

Sanibel Islanders faced the same question when they discovered in 1974 that Lee County had zoned them for 30,000 dwelling units, compared with 38,420 conservatively estimated for Pine Island in this report. Teams of nationally-renowned consultants were hired to study every aspect of nature and man on Sanibel, and they discovered:

critical benchmarks of urbanization and population growth that might be accommodated--but if these levels were surpassed, economic sacrifices and other compromises would be necessary. One such constraint . . . was the capacity of the causeway to

⁶ This analysis is necessarily somewhat crude. All the land in each parcel is not likely to be used. But at the same time, there are many parcels so situated between intense uses that their current agricultural zoning would not be defensible. This report assumes that these two factors would balance. Also, these figures allow no density to wetland areas, except in a few cases where they are currently zoned for a specific use. County consultants are now preparing recommendations on this subject which could greatly increase these estimates.

accommodate evacuation of residents to the mainland in the event of a hurricane. Also the quality and quantity of potable water from the Lower Hawthorn aquifer was uncertain, and the capacity of the island road system for substantially greater volumes was limited.⁷

Sanibel has perhaps a larger percentage of environmentally-sensitive land, and is smaller in size than Pine Island, but its problems with road access and water supply are almost identical. The final "Comprehensive Land Use Plan" adopted by the new Sanibel city government established a ceiling of 7800 dwelling units, which could mean a peak population around 17,000. Pending further study of Greater Pine Island, this could be used as a general upper limit for preliminary planning purposes. However, these estimates may be unrealistic for Pine Island and Sanibel, given the congested traffic conditions which already exist. Careful study is needed to estimate the peak traffic capable of passing through Matlacha with the existing road, or with feasible improvements.

A different approach to managing growth is being studied by Lee County for possible inclusion in the Development Code. An "impact fee" would be charged to each new resident to cover his fair share of costs for capital improvements provided by the public: roads, schools, water supply, sewage disposal, etc. This plan takes the burden of constructing additional facilities off of existing residents and property owners. (Impact fees are currently charged to new customers of the Greater Pine Island Water Association, and monthly rates have not had to increase since 1973.) These fees are long overdue in Lee County, but they alone will not solve the problems addressed in this report. For example, would Lee County want to run 20 lanes of traffic to Pine Island, even if the costs were paid from impact fees?

⁷ John Clark, The Sanibel Report: Formulation of a Comprehensive Plan Based on Natural Systems (Washington: The Conservation Foundation, 1976), p. 86.

Simple fairness to current residents is the basis of the impact fee concept: the expenses of growth should be paid by those it benefits. This rising cost to newcomers is an inevitable consequence of over-burdening systems which have finite capabilities.

Establishing a maximum number of dwelling units for Greater Pine Island would likely cause newcomers a similar consequence: rising costs, in this case for land rather than physical improvements. A community which can reasonably expect to retain its beauty, charm, and spaciousness will become more desirable, thereby driving up prices. The question is not whether increasing costs might discourage some people from moving to Pine Island in the future; this is unavoidable. The choice to be made through the political process is this: given the rapidly approaching capacity of the single access road, will Pine Islanders choose to live within this capacity, or will they choose to tax the residents (or newcomers) for the cost of an additional bridge and approach roads to increase the capacity of the islands? Both alternatives are reasonable, both will raise prices, and both are legally defensible. But this report strongly recommends that a public policy be adopted to limit construction so as not to exceed the capacity of the present road network, thereby also avoiding excessive strain on the hurricane evacuation routes, the fresh water supply, the productive coastal waters, and the overall style of living found in Greater Pine Island today.

3. PROPOSED PLAN FOR GREATER PINE ISLAND

This section depicts a future Greater Pine Island community that is an extension of current growth patterns, both social and physical, but also is compatible with the limiting factors previously described.

3-A. Independent Community

The Pine Island area should continue to develop as an independent community, with a large degree of self-sufficiency. Although many island residents currently work in Ft. Myers and Cape Coral, this option will become more difficult in the coming years as increasing traffic congests Route 78 through Matlacha and north Cape Coral. The vast subdivisions in Cape Coral will be increasingly attractive as homesites to the daily commuters who now can live on Pine Island.

Pine Island is not geographically suited for manufacturing or business uses, beyond service to the local population. The local economy today is largely made up of independent entrepreneurs, rather than franchises and chain stores. This independence keeps wealth generated in the local community in the hands of that community, and should be encouraged whenever possible, as should small home-based businesses such as nurseries, small workshops, nature tours, and apiaries which will provide additional employment as commuting becomes more difficult. The commercial fishing industry should continue to support the island's economy as it has in the past. Zoning policies which discourage these indigenous industries should be modified.

Pine Island is ideally situated to cater to recreational users of the surrounding waters, and also to continue as a small-town retirement community for older people who do not like the pace of city life. It should also continue to function as a vacation spot, not only for seasonal tourists, but as a weekend destination for other Lee Countians. The plentiful wildlife

can be seen on foot or by small boat; the narrow mosquito control canals and shallow bays are a delight for canoeing and observing birds, as well as for fishing, and a mangrove park with boardwalks, a bird tower, and exhibits would educate the public about the functions of the mangrove system.

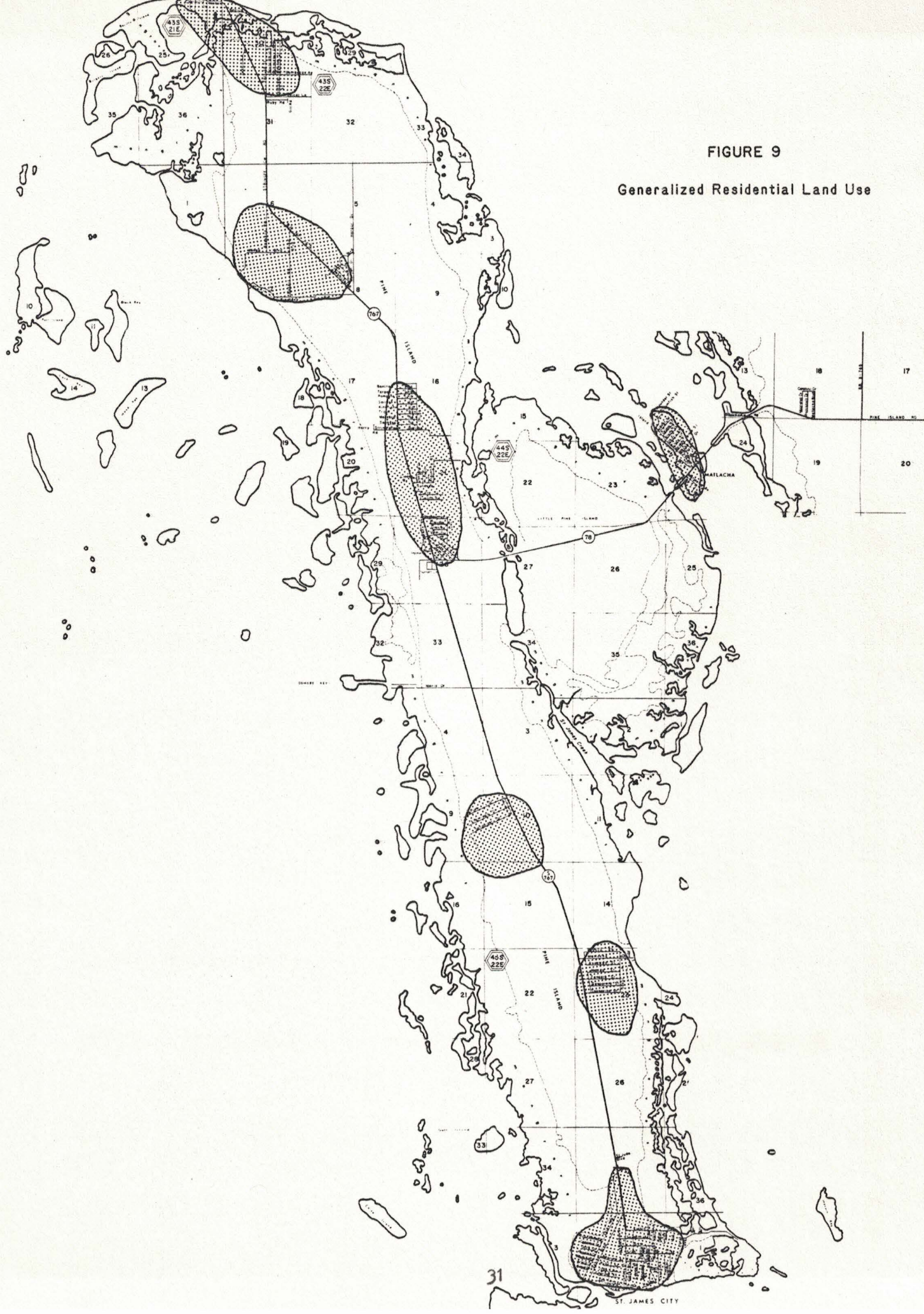
3-B. Residential Neighborhoods

Figure 9 outlines the residential land-use patterns on Pine Island at present. It shows 7 distinct concentrations of homes and lots at Bokeelia, Pineland, Pine Island Center, Flamingo Bay, Tropical Homesites, St. James City, and Matlacha. This pattern has developed without any master plan, and reflects both the cost savings from short roads and utility lines, and also the desire of even country-dwellers to cluster themselves into identifiable neighborhoods. This pattern is in sharp contrast to the homogeneous layout of neighboring Cape Coral--130,000 nearly identical single-family lots. That repetitious pattern is easy to lay out on a drawing board but is not what most people freely choose, given a full range of options.

People need different kinds of houses, different kinds of outdoor environments, and different levels of community services. Pine Island should strive to maintain its diversity of population, its varied housing types, and its alternating natural and more urban landscapes. Public policy should be to concentrate new growth into, or adjacent to, the existing developed areas, as shown on Figure 9. Residential zoning on parcels outside these areas would not be continued, except where bona-fide development effort is currently in progress.

FIGURE 9

Generalized Residential Land Use



3-C. Commercial Districts

The location of businesses is a major factor in the convenience and appearance of a community; much has been written about the ugliness of a strip of stores behind a sea of asphalt. Yet a massive amount of commercially-zoned land has been staked out, largely by speculators rather than businessmen, as indicated on Figure 8. This map shows commercially-zoned sprawling nearly everywhere on Pine Island with little regard for shopping convenience, aesthetics, or adjacent land-use patterns. Pine Island and Matlacha currently have about 545 acres of land zoned for commercial use, including over 11 miles of highway frontage (see Chart E).

Studies of commercial development and future needs for Sanibel Island were conducted in 1979 and 1981.^{8,9} They estimated that the island's legally-adopted cap of 7800 dwelling units (about 17,000 people) would not require more than 100 acres of land for commercial use, with about half of this primarily for the needs of day visitors using the beaches. In 1977, engineer William Adams projected that 100 acres of land would be needed for commercial use in Greater Pine Island when the total population reached 34,500.¹⁰ Both of these estimates suggest that about 50 acres might be needed per 17,000 residents. This contrasts greatly with the present commercial zoning on 545 acres.

Several problems are created by this mismatch. The suitability of these zoned parcels for any non-commercial use, such as homesites or agriculture, is seriously impaired by the lack of zoning protection from

⁸ Preliminary Study of Commercial Needs and Inventory of Existing Conditions (Sanibel Planning Department, November 1979).

⁹ Commercial Market, Economic and Land Use Analysis, Sanibel, Florida (Evanston: Barton Aschman Associates, Inc. with planning consultants Stewart-Richmond Architects, July 1981).

¹⁰ William E. Adams, Pine Island 2000 A.D., unpublished.

a future commercial neighbor. And many commercial parcels are located too far from eventual population centers to serve residents' needs as well as a more central location. Further, new businesses have little incentive to locate in clusters. If they did, traffic movement onto the highway would be better controlled, improving travel speed and reducing accidents. Commercial sprawl also ruins the scenic beauty of the island.

A public policy is needed to reduce commercial zoning to a realistic quantity and to appropriate locations: within, or adjacent to, the settled areas. Resistance to such a policy by land-owners may decrease when re-assessment notices are mailed in 1982. All of Greater Pine Island is being re-assessed according to its fair market value by the Lee County Property Appraiser this year. Commercially-zoned land will suffer a major increase in taxable value, in some cases by factors as high as 10 or 15 over last year. Owners without imminent development plans can be expected to reconsider the zoning on their property on their own initiative.

There are several ways for Lee County to reduce the acreage of commercial land while furthering good planning. Obsolete zoning classes, still containing 85% of Greater Pine Island's commercial land, allow total residential use as well, at the owner's discretion. These classes should be abolished and such land re-classified to conform with its actual or likely use, on a case-by-case basis. Also, much of this commercial land lies far from the centers of population, as shown on Figure 8 (compare to Figure 9). Except for the well-located Winn-Dixie and industrial park area just south of Pine Island Center, this zoning should be changed.

Lee County should give preference to commercial developments in small groupings served by a single entrance from the highway. Parking

areas in the rear of the buildings should be encouraged, and landscaping should be mandatory. In those cases where clustered shopping areas are not possible, frontage roads should be built parallel to the highway at the time building permits are issued. Each nearby commercial use should be required to secure easements and connect its frontage road to the existing section at its expense. This would provide an economic incentive to build as close as possible to existing businesses, and would minimize traffic problems on the highway itself.

Under this proposal, the current plan for a pair of continuous frontage roads along the entire length of Stringfellow Boulevard could be dropped. These continuous frontage roads would be unsightly, costly, and a spur to commercial sprawl; they should be removed from the Thoroughfare Policy Plan of the Lee County Department of Transportation, except where specifically needed. Also, Stringfellow should be downgraded from its tentative classification as an "arterial" road. This classification earmarks a road corridor as suitable for the most intense commercial, industrial and high-density residential developments. The proposed Development Code defines an arterial road as "any road primarily providing for passage of thru traffic and which collects and distributes traffic from two or more collector or arterial roads," thereby actually excluding Stringfellow.

Residential developments along the highway should have their individual lots face inward, rather than allowing driveways to intersect Stringfellow directly. Likewise, individual streets should join internally and meet Stringfellow at a single location whenever possible. Numerous intersections along a high-speed road are unsafe and reduce traffic speed.

Off-site signs should be severely restricted to preserve the beauty of

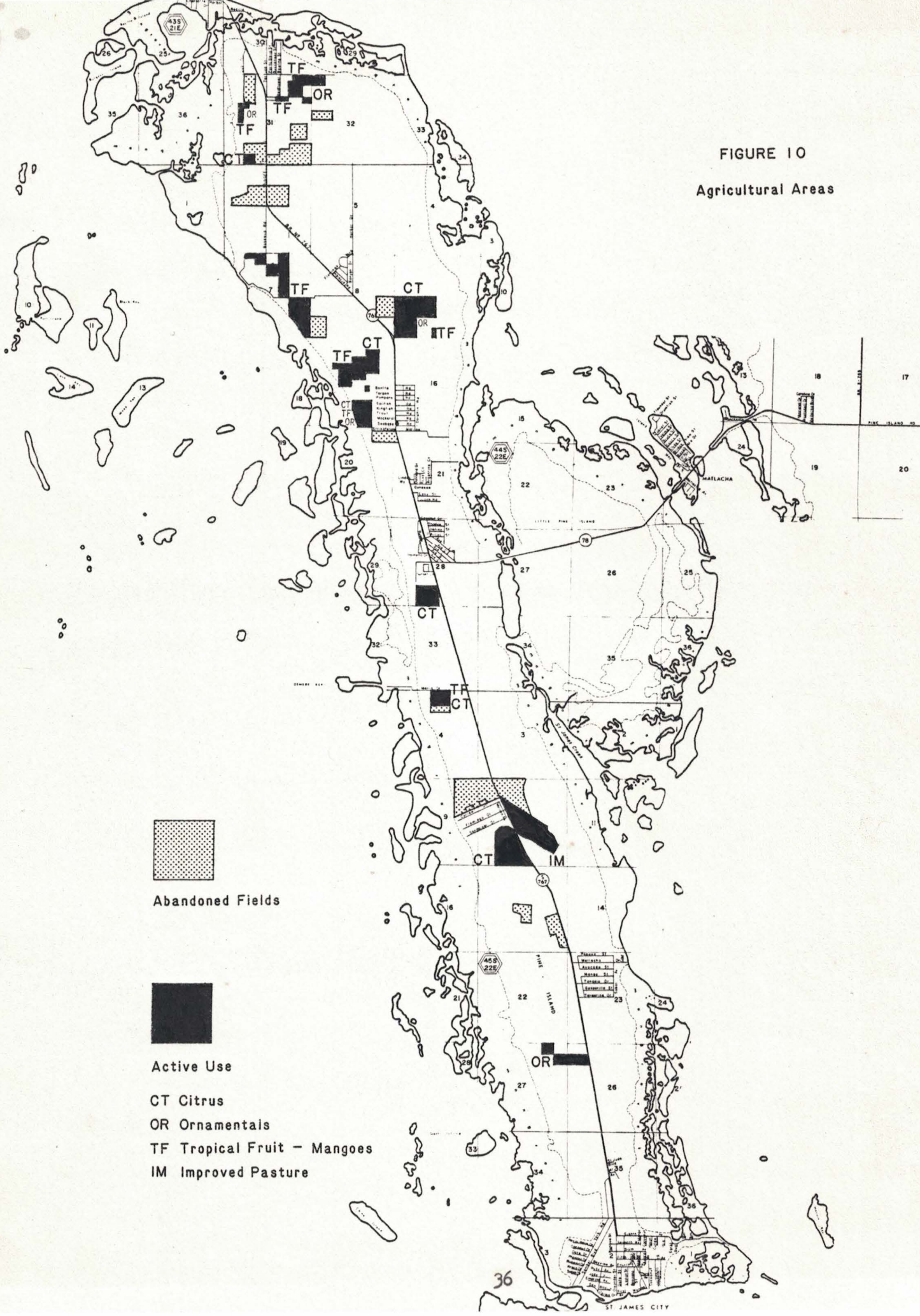
the natural landscape. Exceptions could be made at key intersections for small directional signs, erected co-operatively and providing space for numerous merchants.

3-D. Country Homes and Agriculture

This report recommends a continuation of the current residential pattern, as shown on Figure 9, with a commercial area near each neighborhood along the adjacent highway. Allowing a concentration of homes at these locations, while still limiting ultimate growth to a level that can be handled by the islands, requires that the areas between these concentrations be used much less intensely. This is also the current pattern, with uses including groves, nurseries, rangeland, country homesites, and vacant woodland. These areas should be permanently reserved as rural areas by a zoning class which would allow agriculture, or a home on 5 acres of land. Existing homes, lots in separate ownership, and platted subdivisions of greater intensity should be allowed to remain indefinitely.

Figure 10 shows agricultural areas on Pine Island, primarily used for growing mangoes, citrus, and ornamental plants. The availability of adequate well-water is a significant limiting factor for such activities; and the dispersed character of these fields is important to avoid over-pumping the wells. Abandoned fields are easily visible from the ground or on aerial photographs--after a short period, they are invaded by Australian Pine or Brazilian Pepper trees. These trees form dense stands which prevent native vegetation from being re-established. Serious agricultural pursuits should be encouraged where adequate water is available and where abandoned fields can be re-used.

FIGURE 10
Agricultural Areas



 Abandoned Fields

 Active Use

CT Citrus
OR Ornamentals
TF Tropical Fruit - Mangoes
IM Improved Pasture

3-E. Protection of the Waterfront

Pine Island's greatest attraction is its waterfront; yet this is precisely where real-estate development can cause the most harm to the surrounding estuary. Large paved or roofed areas pollute the rainfall with oil and debris and then restrict its purification by blocking the soil's natural filtering action. As the shallow water-table rises and falls with the tides, a pumping action is created. This pulls polluted run-off, or nutrient-rich sewage effluent, too rapidly through the soil and into the surrounding waters, causing a reduction in oxygen which harms marine life. Thus, excessive construction on the waterfront degrades it for all of the public.

The Lee County Comprehensive Plan defines a "secondary coastal zone" as that area extending from the primary coastal zone (wetlands) landward to an elevation of 5 feet above sea level.¹¹ (The coastal zones of Greater Pine Island are delineated on Figure 11, and summarized in Chart G.) This secondary zone should be a buffer between the more intense upland uses and the delicate and productive coastal waters. Until more accurate guidelines can be developed, residential uses in the secondary coastal zone should not exceed 5 living units per acre in the developed areas, and total lot coverage, including roofed and paved areas, should not exceed 40% of the parcel in any zoning class.

With this moderate density limit, there is no justification for high-rise construction. A green area will still be left for the residents' use. Only the desire for a better view of the natural surroundings would prompt builders to go higher--but that better view for the upper-floor residents automatically blights that same view for everyone else. The flat 38 foot height limitation currently in force should be modified to allow two full stories over parking, with a third story only if it is partially enclosed

¹¹ Lee County Comprehensive Plan (1979), p. 44.

FIGURE 11

Coastal Zones

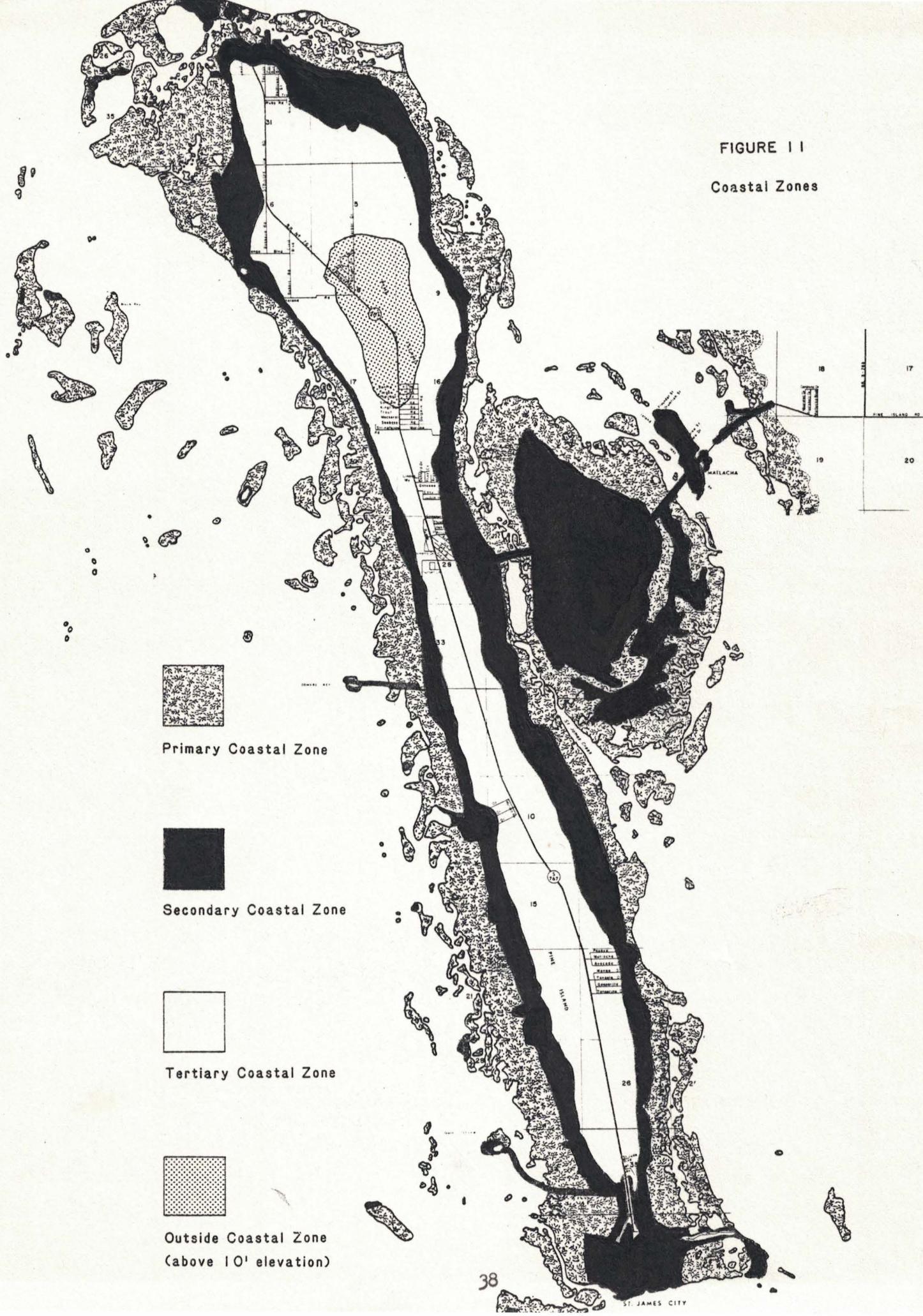


CHART G

APPROXIMATE UPLAND ACREAGES, BY COASTAL ZONE - GREATER PINE ISLAND

<u>TWP-RGE-SEC</u>	<u>SECONDARY</u> (below 5' MSL)	<u>TERTIARY</u> (5' to 10' MSL)	<u>OUTSIDE COASTAL ZONE</u> (above 10' MSL)
43-22-29	20	-	-
30	190	40	-
31	145	435	-
32	340	240	-
33	120	5	-
43-21-25	75	-	-
26	10	-	-
35	20	-	-
36	-	-	-
44-22- 4	120	125	10
5	-	520	80
6	210	380	-
7	90	185	-
8	-	190	370
9	95	220	120
16	125	240	95
17	45	210	160
20	60	85	-
21	160	280	-
27	90	-	-
28	270	250	-
29	5	-	-
33	140	315	-
34	180	15	-
Matlacha	190	-	-
45-22- 3	235	205	-
4	120	190	-
9	120	30	-
10	155	460	-
11	120	-	-
14	220	80	-
15	180	450	-
16	10	-	-
22	190	260	-
23	135	300	-
26	105	300	-
27	170	60	-
33	10	-	-
34	60	5	-
35	20	195	-
46-22- 1	140	20	-
2	490	10	-
	<u>5180</u> acres	<u>6300</u> acres	<u>835</u> acres

= 12315 total upland acres, excluding Little Pine Island

within a sloped roof.

Zoning for intense uses should be removed from all wetlands, and from land with transitional wetland vegetation. A previous rationalization for this practice was a hope for increased taxes for the county, but the current re-assessment will rate all "unusable land" at a uniform valuation per acre, regardless of zoning class.

Lee County should attempt to purchase any available beachfront on Pine Island for public access. Prices for this scarce property will only rise, further limiting use by the majority of Pine Islanders who live inland.

Present and potential marina sites and commercial fish-houses should be protected by a limited zoning classification. These facilities provide access to the coastal waters for the general public, and will become more scarce in the future as demand increases. Because they often require at least some harmful dredging to construct and maintain, their benefits should remain available to the public. Vacant sites along deeper waterways that are well-flushed by tidal action should be identified as potential marina sites and zoned against inconsistent uses.

3-F. Bicycle Paths

Lee County adopted a "Comprehensive Bicycle Facilities Plan" in August 1981. This plan would construct bike paths throughout the county in 4 phases over a 10 year period, paid partly from county revenues and partly by local citizen's groups. Paths would be built in phase 3 within Matlacha, in St. James City from the bridge south, and from Cubles Drive to Flamingo Bay, at an estimated cost of \$318,400. In phase 4, Matlacha would be linked to Pine Island Center at a cost of \$128,500.

Due to the low priority given to the Pine Island bike route,

a smaller-scale plan is needed now to serve critical areas of high usage and to reduce the dangerous conditions for both bicyclists and motorists.

One important segment is in St. James City from York Road to Eighth Avenue, a distance of 3300 feet. A six-foot wide, two-way paved path there would cost about \$35,000, as would the alternative of a four-foot path adjacent to each side of the highway. Another critical segment would be in Bokeelia from the Post Office to Barrancas Street, a distance of 4800 feet. This segment could cost \$55,000 at current construction costs. Fundraising for these paths would have to be initiated by local citizen's groups. They could also seek assistance from adjacent land owners and businesses, as well as possible grants from local and state government.

3-G. Historic Preservation

Many people are unaware of the historic background of Greater Pine Island, but evidence is everywhere: Calusa Indian shell mounds, Spanish names, the fishing village of Bokeelia, and "old-Florida" homes of heart pine dating to the turn of the century.

Pine Island was originally surveyed by the United States government for homesteading in 1879. 40 years later, there were almost a hundred permanent settlers, mostly at St. James, Pineland, and Bokeelia. (See Figure 12 and Chart H for the location and description of the early settlements.) By 1927, Pine Islanders had road access to the mainland across 3 bridges and a causeway (now known as Matlacha); and electric lines were installed in 1941 to deliver central power. According to early settlers, Pine Island was so named because of the huge long-leaf pine trees that covered it. But those were cut and logged off the island by the 1920's and 1930's, being replaced by the less-productive slash pines visible today.

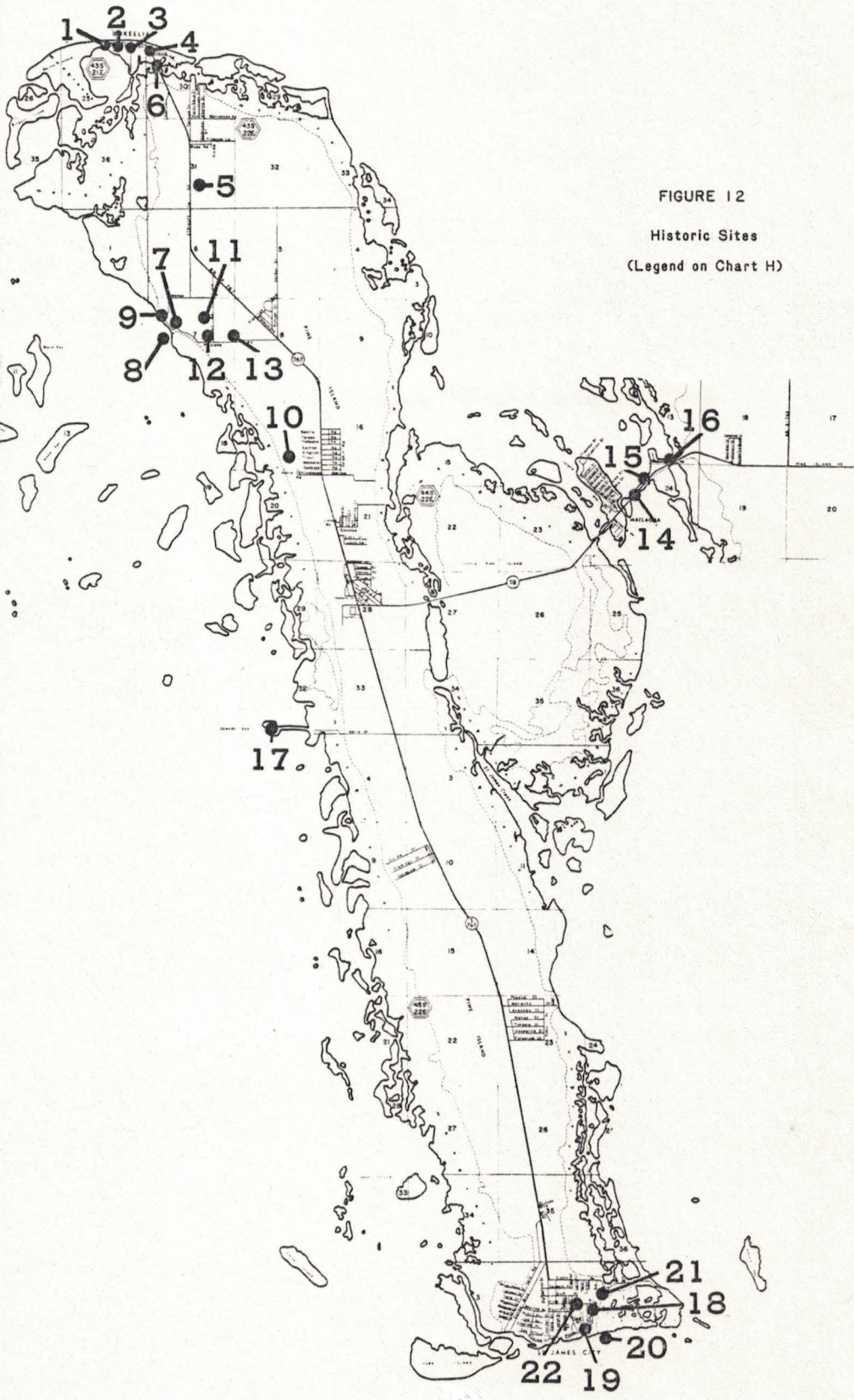


FIGURE 12
 Historic Sites
 (Legend on Chart H)

CHART H - HISTORIC SITES IN GREATER PINE ISLAND

BOKEELIA

- 1 1904 H. W. Martin built the first house where the Crab Shack Restaurant is today. Inside was Bokeelia's first post office and store, and his wife ran a boarding house for passengers off the boats.
- 2 1912 Harry Poe Johnson built the house with the white columns. Poe, along with Martin, Captain Smith from St. James, Vince Honc Sr., and Frank Daniels made Pine Island mangoes famous.
- 3 1900s "Captain's house" (with widow's walk) was built by Peter Haines, who had shot his wife's "friend" up north and escaped here with his sons.
- 4 ? Early school was located where the present post office stands.
- 5 1926 School was held in the present Church of God of Prophecy parsonage.
- 6 1930s The bridge over Jug Creek was built with WPA helpers.

PINELAND (BATTY'S LANDING)

- 7 1870s The first house on the island was built here on the mounds; original owner is unknown. It was demolished in 1926 or 1927 after housing the first post office.
- 8 1895 J. H. Foster hauled the first mail to land from a bulkhead, a wooden house on pilings in deep water where mail and supply boats dropped their deliveries.
- 9 1902 Post office was located near the gate to The Cloisters; it was later destroyed by a hurricane.
- 10 1909 Harry Stringfellow arrives and plants orchards. He was later a Lee County Commissioner for 29 years and helped to get the old wooden bridges built at Matlacha to ease his travel to meetings.
- 11 1911 Frank Adams built his house high atop an Indian mound off Roberts Road. It is still standing today.
- 12 1920s Captain John Smith and Frank Adams built and ran a sawmill at the corner of Pineland and Roberts Roads.
- 13 1923 A Methodist Church is built just east of Roberts Road. Today it is a private residence.
- 9 1925-6 Meat-packing magnate Graham Wilson built a house and guest cottages. A Dr. Heckle bought it during the Depression and ran it as a vacation lodge for many years. In 1942 the ABC Bible College was established there. Dr. Guy Hyatt called it "Pala Mar" (Big house by the sea). Today it is The Cloisters, a drug and alcohol rehabilitation center.

MATLACHA

- 1880s It was known as "Harrisonville" after Harro P. Harrison, who lived on an Indian mound and carried mail to and from St. James City.
- 14 1926 Fill was pumped in from Matlacha Pass for a causeway. The old wooden bridge was built, destroyed by a hurricane, and rebuilt.
- 15 1930 Squatters had built shacks along both sides of the causeway, establishing homestead rights to the land.
- 16 1930s L. K. Piner from North Carolina discovered the oyster beds around Matlacha and set up a seafood plant, employing many local people.
- 14 1940s Army and government families from Page Field and Buckingham came to fish off the old wooden bridge; it was often so crowded that some were pushed off into the water. It became known as the "Fishingest bridge in the world" at this time.

(continued next page)

CHART H - CONTINUED

DEMERE KEY (DEMOREY'S KEY)

17 1955 Phil DeGraff began construction of the Sea Grape Lodge on an island with impressive temple mounds and terraces.

ST. JAMES CITY

18 1880s First settled by Captain John Smith.

19 1885 Rich New Englanders built the 50-room San Carlos Hotel at "St. James On-The-Gulf." It catered to the rich and famous until it declined when a railroad was extended to Palm Beach.

20 1886 The steamer Alice Howard ran three times weekly between Punta Gorda and Ft. Myers. It stopped at Pine Island and Sanibel to drop mail, supplies, and passengers.

21 1895 Indian shell mounds were leveled for use as fill for roadbeds nearby.

19 1905 The San Carlos Hotel burned after a careless workman left a smudgepot burning overnight. The hotel was being renovated by members of the Koreshan Unity who had recently purchased it.

19 1911 The Sisel Hemp and Development Company bought the run-down resort and planted hundreds of acres of hemp.

19 1915 The Sisel Hemp Co. went bankrupt after learning hemp could be manufactured with cheaper labor in the Yucatan. The buildings were later destroyed by a hurricane.

20 ? An early post office building still stands at the end of Palm Avenue, off 4th Street.

22 1920s An early school was built on 5th Street. The building was later moved to the end of Route 767 and became the Sea Belle Fish Camp in 1949. An additional room was added and now houses a restaurant and bar, the Rum Pointe Inn.

SOURCE: The historical information in this report was compiled by Elaine Blohm Jordan for a forthcoming book on the history of Pine Island. A copyright has been applied for and no part may be used without her permission.

Galt Island, with its Indian burial mound, has received considerable attention following a 1978 zoning hearing, but it is only one of the several important ceremonial sites of the Calusa Indians in the Pine Island area (others are at Pineland, Demere Key, and Josslyn Island). If the archaeological importance of Galt had been known earlier, it might not have been purchased by developers at condominium prices. Likewise, proper identification of historic buildings can help preserve them for their greater value: their beauty and rarity, and the continuity they provide between the past and the present.

Special protection would be granted to historic and archaeological sites by the proposed Development Code. Designated buildings could not be demolished prior to a public hearing, where alternative uses for the building would be examined. Further, new homes would apparently not be permitted on abandoned Indian settlements, but this total protection of archaeological sites is unlikely to succeed. Most of these sites comprise all of the high land within mangrove swamps, as on Galt Island. With mangroves also protected, this rule would allow no use whatever of the property and would force Lee County to purchase the sites outright. Unless money is available for purchase, Lee County should adopt stringent rules which would still allow homes on shell middens (but not burial mounds): for example, no changes allowed in the surface contours, no shell moved off-site, construction on pilings only, and a maximum of one home per acre regardless of zoning class. These rules would effectively preserve the sites for posterity, at almost no cost to the taxpayers.

The remnants of earlier days on Pine Island, be they mounds, buildings, or artifacts, are testimony both to a pioneering spirit and to an excellent example of man's adaptation to his environment, and should be

maintained for future Pine Island residents and visitors.¹² The establishment of a small museum, as recently proposed, would focus attention on Pine Island's history and serve as a depository for relics, photos, oral history tapes, and historic documents while they are still available.

¹² Carron Day Correia, A Land Use Plan for Greater Pine Island, Florida (unpublished, 1977), p. 38.

4. PLAN IMPLEMENTATION

A land-use plan for Greater Pine Island, such as the one outlined above, could be put into effect in a variety of ways. This section will examine several alternatives.

Several portions, such as beach acquisition and bicycle paths, have been addressed through previous comprehensive planning for all of Lee County. However, the wide scope of these plans generally did not permit detailed study of the Pine Island area. For example, the Lee County Comprehensive Plan, adopted in 1978, consists solely of verbal goals, objectives, policies, and implementing actions, and never examines specific areas or contains land-use maps. The Lee County Comprehensive Bicycle Facilities Plan did propose a specific county-wide network of bike paths, but declared much of Stringfellow Boulevard to be a "suitable rural route" for on-street bicycle use, even though the narrow pavement and high speed of traffic make bicycling dangerous there. The scheduled updates of these plans, however, will provide an avenue for recommending local refinements.

Certain suggestions made in this report, such as a reduction of density in the secondary coastal zone, have merit county-wide and could be included in the forthcoming Development Code. A conversion to new zoning classes will be required under the Code, and this process could be used to correct many of the mismatches between zoning and actual land use. A Historic and Scenic Preservation Commission would be established, according to the latest draft of this Code, and could identify and protect valuable historic sites.

The continuation of the special height restrictions and the billboard ban is more difficult: they are currently contained in special ordinances that will be repealed under the Development Code. But the Code contains a

category of "Overlay Districts" which modify the regular zoning classifications within that District only. An Airport Hazard Zone is the only Overlay District currently proposed, and forbids certain uses near the Regional Jetport. The same mechanism could establish a Greater Pine Island District and detail the special height and billboard regulations.

But the most important recommendations in this report concern the great disparity between current zoning and the actual ability of Greater Pine Island to absorb massive growth. None of the methods described above can confront this overall problem. Lee County needs to adopt a formal amendment to the Land-Use element of their Comprehensive Plan, specifically for Greater Pine Island. The land-use plan would begin with a review of the natural and human characteristics of Pine Island, possibly updated from Carron Day Correia's "A Land Use Plan for Greater Pine Island, Florida" (1977).¹³ It would analyze the land-use inventory just completed by the Lee County Planning Department to determine the amount of future growth which is already fully committed, and the amount that can still be allocated to additional developments. The plan would then analyze more thoroughly the growth issues discussed in this report, and propose a management plan with clear standards to bring current zoning into conformance with the capacity of the islands.

The Florida legislature specifically encourages this type of planning:

Through the process of comprehensive planning, it is intended that units of local government can preserve, promote, protect, and improve the public health, safety, comfort, good order, appearance, convenience, law enforcement and fire prevention, and general welfare; prevent the overcrowding of land and avoid the undue concentration of population; facilitate the adequate and efficient provision of transportation, water, sewerage, schools, parks, recreational facilities, housing, and other requirements and services; and conserve, develop, utilize, and protect natural resources within their jurisdiction.¹⁴

¹³ Ibid.

¹⁴ Florida Statutes 163.3161

Following the adoption of any comprehensive plan, Florida law requires that "no public or private development shall be permitted except in conformity with comprehensive plans or elements or portions thereof."¹⁵

The adoption of a Greater Pine Island amendment to the Lee County plan would eliminate the need for the complications of municipal incorporation, chosen by Sanibel Islanders when faced with similar circumstances in 1974. Pine Island already has a local water system, and a fire and ambulance service. The Lee County Sheriff provides police protection and the schools are run by the county-wide school district. The major reason for Pine Islanders to incorporate would be to gain control of land-use planning--but given the co-operation of the Board of County Commissioners, the Lee County Planning Department, and the residents of Greater Pine Island, this can be accomplished under the current government. And if the adopted plan addresses the important growth issues, and has strong support from local residents, it could be the vital step in preserving the beauty of the Pine Island area for the enjoyment of many future generations.

¹⁵ Ibid.