

**SOUTH BEACHES SMALL AREA PLAN STUDY**

**Adopted by the Brevard County Board of County Commissioners  
May 27, 1992**

Prepared by the Brevard County Comprehensive Planning Division

SOUTH BEACHES SMALL AREA PLAN STUDY

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## SOUTH BEACHES SMALL AREA PLAN STUDY

### Note:

The adoption of this report does NOT amend comprehensive plan. This report gives direction for staff to develop language for comprehensive plan amendments, to be considered by the Board of County Commissioners. Adopted amendments will be the basis for administrative rezonings, should existing zoning classifications be inconsistent with the Comprehensive Plan. Each of these actions, small area plan study formulation, Comprehensive Plan amendment and administrative rezoning, provides opportunity for public comment.

### I. INTRODUCTION

Objective 10 of the Future Land Use element of the Brevard County Comprehensive Plan identifies that the County will eliminate inconsistencies between the official zoning maps and the Comprehensive Plan. Policy 10.3 of the Future Land Use element further establishes that a two step process, including small area plan studies (SAPS) and subsequent administrative rezoning, will be used to address these inconsistencies and to refine the land use designations of the Future Land Use map series. At a minimum, these small area plan studies are to address the issues of public facility and service availability, environmental constraints, hurricane evacuation capabilities, land use compatibility, and the character of each planning area.

#### Description of the Study Area

The study area includes the barrier island from the southern limits of Melbourne Beach south to the county line. This twelve (12) mile reach is unique within Brevard County; the remainder of the barrier island is more intensely developed. For the most part the south beaches consists of single family residential uses, although the northern portion of the study area contains several high-rise multi-family structures, and mobile home and recreational vehicle communities.

The area is an important recreational area, attracting out-of-state visitors as well as local residents. A recent economic analysis conducted by Olsen Associates for Brevard County shows a demand on the County's public beaches for 9.5 million user occasions annually. (Preliminary Beach Management Plan for Brevard County, Florida (Draft), 1990) Sebastian Inlet State Park hosts more visitors than any other state park. It is utilized by fishermen, surfers, boaters, and families drawn by the ocean and the Indian River Lagoon.

Some limited commercial uses do occur within the area. In general these uses are limited to tourist-related facilities, such as small motels, restaurants, bait shops and convenience stores.

### II. NATURAL RESOURCES

#### A. WETLANDS

Map 1 indicates the major wetland areas identified in the south beaches study area. These low-lying, saltwater wetland areas are well within the floodprone areas identified on Map 2. They are also highly vulnerable to hurricane inundation and flooding. Wetlands are important habitats for endangered plant and animal species. Wetlands also provide additional functional values, such as water quality enhancement, and production of fish and wildlife. These factors, in conjunction with the natural ability of these areas

to absorb storm surges and protect adjacent upland systems, provides justification to further protect these areas from alteration and degradation.

Saltwater wetlands, the most common wetlands in the study area, includes sparsely vegetated sandy beaches along the lagoon, the saltmarshes, and the mangrove swamps. During the administrative rezonings which implemented the 1984 South-South Beaches Growth Management Directives, the majority of the water's edge wetlands south of Melbourne Beach were zoned as Environmental Area (EA). Restrictions for EA lands include a limitation of residential uses at a maximum density of one (1) unit per ten (10) acres; total lot coverage by structures of 2000 square feet; and the prohibition of non-structural impervious surfaces except for a single access road no wider than twenty (20) feet. At this time, Environmental Area zoning classification is being re-evaluated by the Office of Natural Resources to include all wetlands and will possibly increase wetland protection in the south beaches.

Historically the greatest impacts to estuarine and saltwater wetlands arose from the construction and maintenance of mosquito impoundments, in addition to the alteration of the shoreline by development. The County's Surface Water Protection Ordinance and the County's Wetlands Protection Ordinance offer some protection for Brevard's valuable wetlands by reducing the amount of permitted alteration of natural wetland areas. These ordinances also contain provisions for additional setbacks from waterbodies, as well as a minimum required mitigation ratio of 2:1 for all altered or disturbed wetland areas.

Most of the additional protection afforded to wetland areas originates on the State and Federal levels. Agencies including the U.S. Army Corps of Engineers (ACOE), the Florida Department of Natural Resources (DNR), the Florida Department of Environmental Regulation (DER), and the St. Johns River Water Management District (SJRWMD) administer permits, and monitor and enforce wetland regulations specific to their jurisdictions. Current initiatives by some regulatory agencies include the re-opening of impoundments to the adjoining waterbodies. Any unimproved impoundments located in this study area may be good candidates for improved management or re-opening. These efforts would need to be coordinated with the Brevard County Mosquito Control District and the affected property owner.

## B. FLOODPLAIN

Floodplains within the study area occur along the Indian River Lagoon (Map 2) and the Atlantic Ocean. According to the National Flood Insurance Rate Maps produced by the Federal Emergency Management Agency (FEMA), the estuarine floodplain is relatively narrow for most of the study area, approximating the boundaries of the water's edge wetlands.

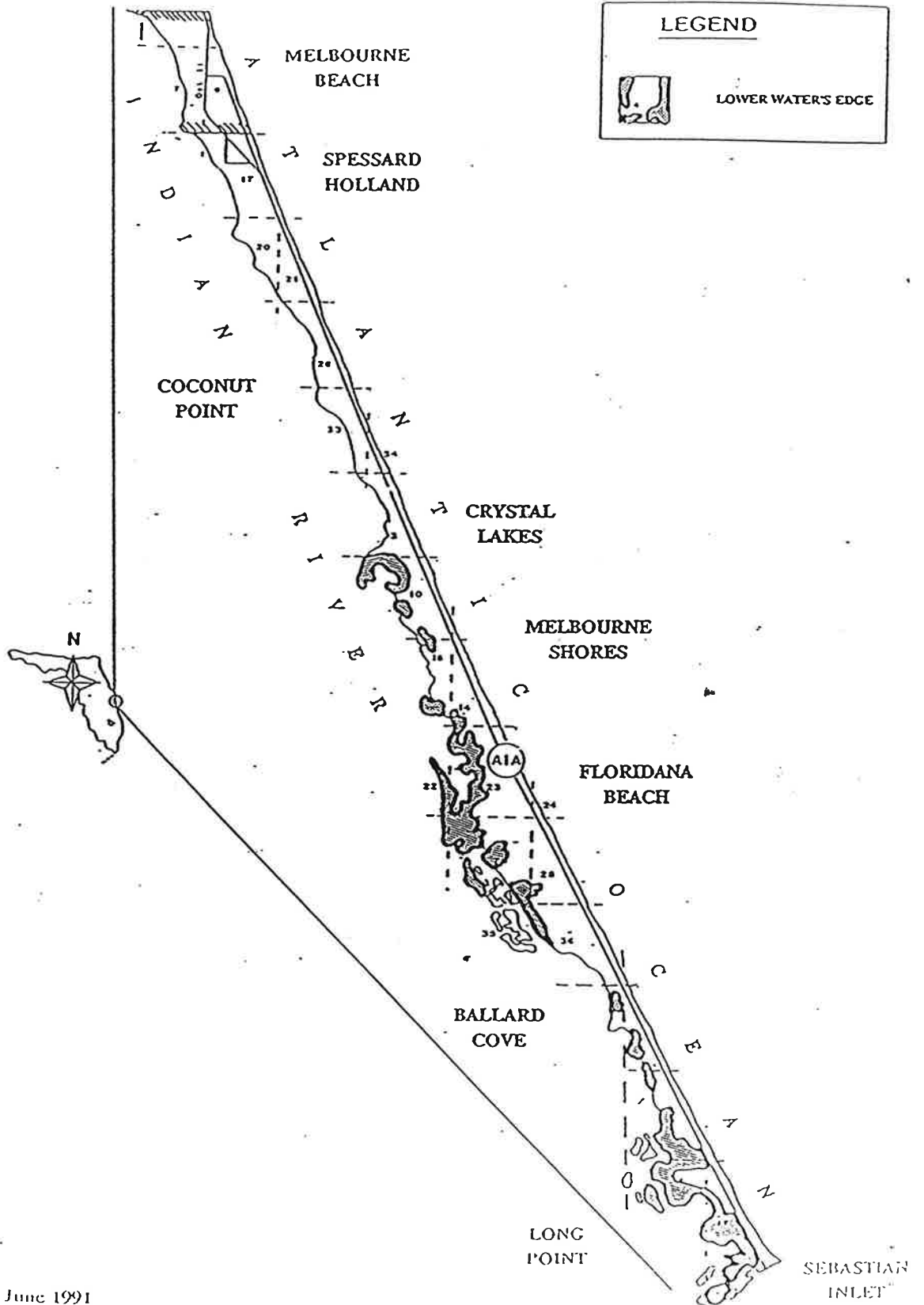
SOUTH BEACHES SMALL AREA PLAN  
WETLANDS

MAP 1

LEGEND



LOWER WATER'S EDGE



June 1991

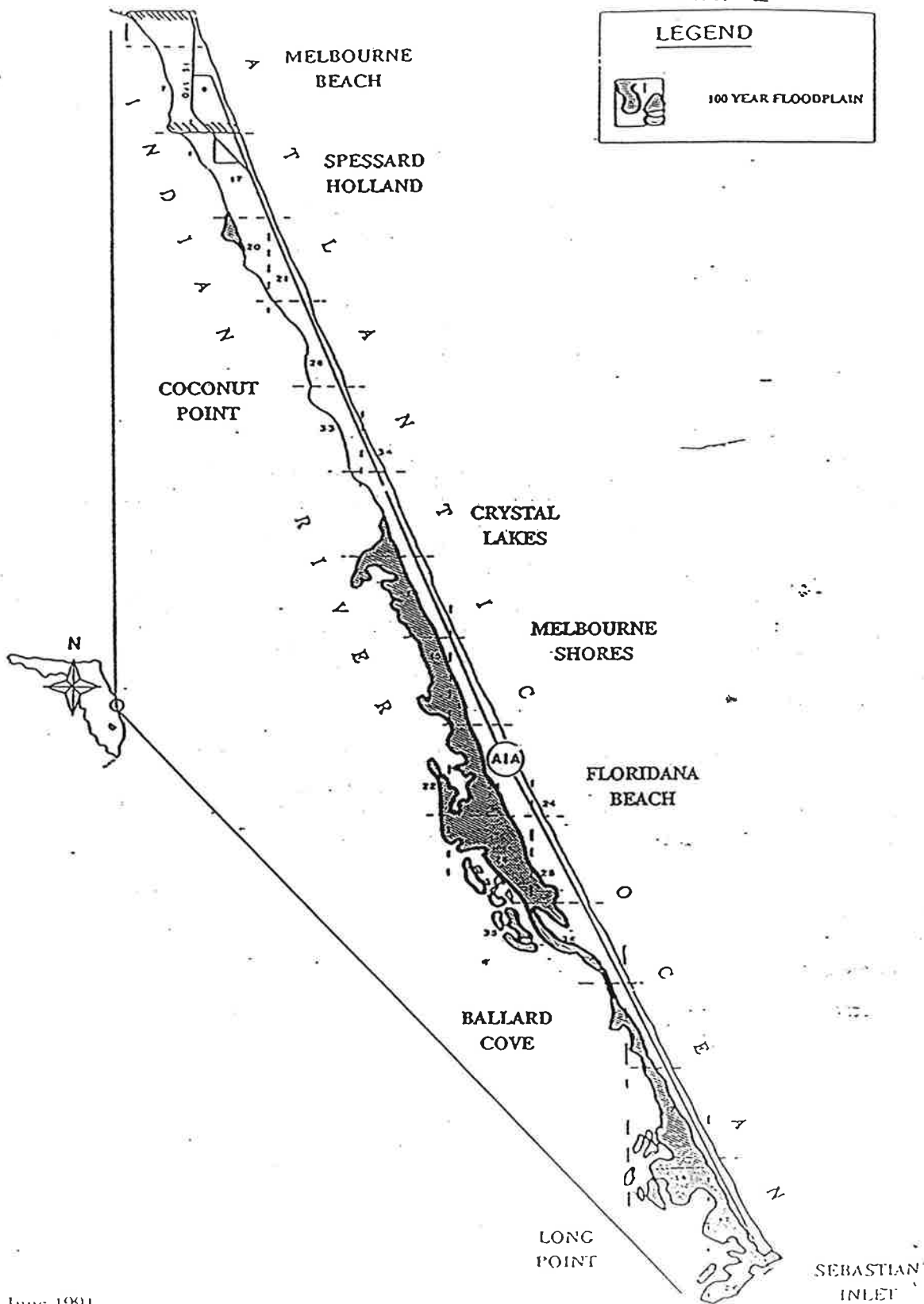
SOUTH BEACHES SMALL AREA PLAN  
FLOOD PRONE AREAS

MAP 2

LEGEND



100 YEAR FLOODPLAIN



June 1991

The 100-year floodplain of the Atlantic Ocean is designated as the V-Zone (Velocity Zone) by FEMA, as this area is expected to be impacted by wave velocity during a storm event. Due to the high dunes along Brevard County, the V-Zone generally lies east of the primary dune line, except for a small area near Sebastian Inlet, where the V-Zone extends to the west side of the barrier island. Permitted development within this zone is very limited due to the need for protection for the fragile dune system, and the high probability of erosion in this area during a storm event.

The relatively narrow area of floodplains in the south beaches study area is indicative of the higher elevations of the barrier island dune system bordered in some areas by low-lying, estuarine floodplains. Although some elevations in these areas may exceed fifteen (14) feet above Mean Sea Level (MSL), the entire barrier island system of Brevard County is expected to be inundated by a Category 3 or greater hurricane event. The inherent vulnerability of the south beaches area, accompanied by increased evacuation time due to transportation constraints, necessitates the need to evacuate the entire area. (Hurricane evacuation is discussed in greater detail later in this report.) These concerns further indicate the need to limit the buildout density of this area due to safety and natural resources constraints.

### C. GROUNDWATER

In general, quality of groundwater varies from north to south for the Floridan aquifer system and from east to west for the surficial aquifer system. Within the northern and central portions of the study area, the Floridan aquifer system has a higher chloride content than 250 parts per million (ppm), which is the threshold for potable water supplies. In the vicinity of the Sebastian Inlet, chlorides are below the 250 ppm threshold. This freshwater reserve, known as the Sebastian Lens, is utilized for potable drinking water supplies and is a locally important resource. In portions of the study area, the Floridan is utilized for irrigation purposes.

The surficial aquifer system is used as a potable water source for private wells south of Melbourne Beach, with recharge areas throughout much of the study area (Map 3). However, chlorides above 250 ppm do occur in three general circumstances: adjacent to the Atlantic Ocean; adjacent to the Indian River Lagoon or canals leading to the lagoon; and in areas with heavy artesian well usage. In general, though, the surficial aquifer system can be utilized for potable water supplies with treatment for iron and chlorination.

Ground infiltration of precipitation is the most important source of water recharge to the aquifer. The 1974 Soil Survey of Brevard County, published by the U.S. Department of Agriculture Soil Conservation Service, indicates the primary classification of soils in the south beaches consists of Palm Beach sand, Canaveral Complex (sand and shell mixture) and Wekiva sand. These soils are good recharge soils, and the Natural Resources Management Division recognizes the majority of the south beaches as a Type III aquifer recharge area.

By protecting recharge characteristics in the study area and maintaining groundwater at historic levels, the surficial aquifer system should be able to meet both potable and nonpotable needs for the foreseeable future. The Floridan aquifer system is not being recharged locally and water is essentially being "mined", i.e. as water is removed, poorer quality water may be moving laterally and/or upwardly into the aquifer. The use of relatively fresh non-potable groundwater from either aquifer for irrigation is preferred over using water from public water supplies, thereby conserving the best quality of water for drinking water needs and minimizing demand on public water supplies.



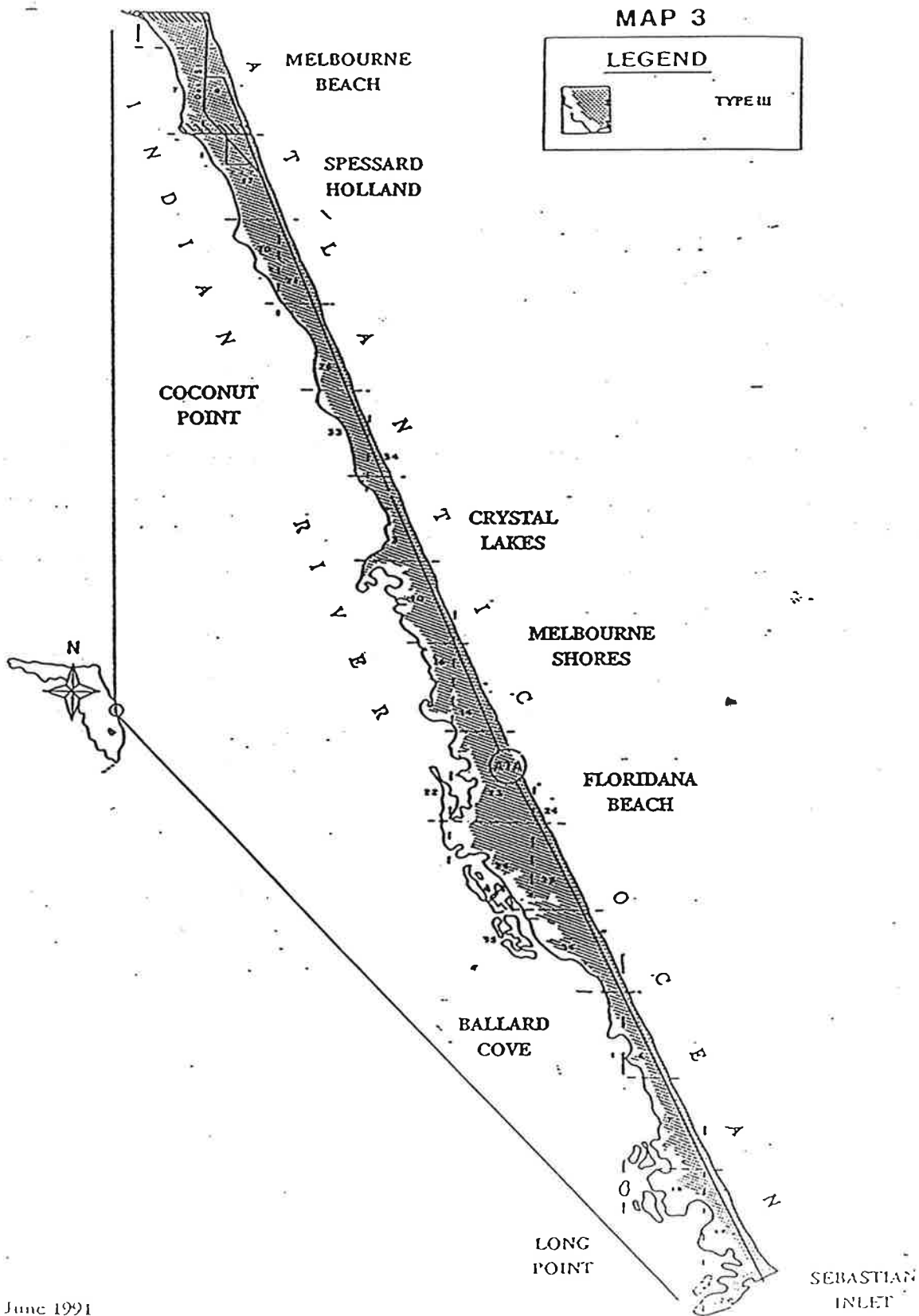
SOUTH BEACHES SMALL AREA PLAN  
AQUIFER RECHARGE AREAS

MAP 3

LEGEND



TYPE III



June 1991

Lower-density development in this area should benefit both ground water quantity and quality. Fewer people equate to lower water demands, both for potable water and for irrigation water. Lower density development usually results in lower total impervious area coverages, allowing for greater potential for localized recharge of the shallow aquifer. In addition, less intense development should reduce the potential for contamination of groundwater resources by reducing the demand for, and thus the storage and utilization of, possible soil contaminants such as fuels, pesticides and herbicides.

#### D. SURFACE WATER

The Indian River Lagoon is classified by Florida Department of Environmental Regulation (DER) as Class III, recreational waters from the northern boundary of the study area south to Cape Malabar. From Cape Malabar south to the county line, the lagoon is classified as Class II waters, utilized for shellfish propagation and harvesting. The Class II waters have also been designated as an aquatic preserve by the Florida Department of Natural Resources (DNR). Pristine or relatively undisturbed aquatic habitats in Florida may be recognized by DNR, and designated as aquatic preserves to afford additional protection to these areas. Upland development standards for lands adjacent to Class III waters, and more stringent standards for development along Class II waters and aquatic preserves, are contained within the County's Surface Water Protection Ordinance.

Stormwater runoff has been identified by the Indian River Lagoon Field Committee as the most significant single cause of pollution within the lagoon system. The primary source of polluted stormwater is older development, which was not required to meet the County's existing stormwater management standards.

At this time the DNR reports 90 existing shellfish leases totaling 766 acres within the Indian River Lagoon in Brevard County, and 15 existing aquaculture leases with nine more proposed totaling 89 acres. As with any growing industry, conflicts with existing uses have arisen. Conflicts include, but are not limited to, aesthetics of lease operations, restriction of navigation, public safety, poaching, and potential environmental impacts from inappropriate harvesting methods and the development of an extensive monoculture in a heretofore natural and diverse ecosystem.

#### E. VEGETATIVE COMMUNITIES

The beach dune, coastal strand, and maritime hammock communities that are still undeveloped south of the Spessard Holland Golf Course are the last remaining examples of these natural communities in the County (with the exception of federal property). The beach dune and coastal strand communities, maritime hammocks and tidal swamp communities are listed by the Florida Natural Areas Inventory (FNAI) as S1; critically imperiled in the state due to extreme rarity or because of extreme vulnerability to extinction due to biological or man-made factors. The tidal swamp community is considered by FNAI as rare and endangered on the global level also. The ranking of these communities by FNAI makes the south beaches one of the heaviest concentration of rare and endangered communities in Brevard.

The beach dune community receives a degree of protection from direct disturbance through state and local coastal construction regulations, discussed below. DNR regulations include maximum shore parallel coverage of structures and the limitation of removal of vegetation within this area. County regulations include additional setbacks from the dune area to afford dune protection and a reduced threat of storm destruction from erosion. Vehicular and pedestrian traffic across unimproved beach access points have also impacted dune vegetation. The County has begun a program to develop dune walkovers, however, dune restoration and revegetation efforts will take time to re-establish damaged dunes.

The coastal strand and maritime hammock communities are not presently targeted for specific protection, although a large number of endangered plant species are found in these communities. The coastal strand community also supports populations of threatened or endangered species such as scrub jays and gopher tortoises. Efforts to manage development in these communities is needed, including acquisition and maintenance of parcels already under county ownership, and protection of threatened and endangered species.

#### F. WILDLIFE HABITAT

The south beaches area beaches provide essential habitat for species of endangered or threatened sea turtles, especially the Loggerhead turtle (*Caretta caretta*). Other species include green turtles (*Chelonia mydas*), Hawksbill sea turtles (*Eretmochelys imbricata*) and Leatherback turtles (*Dermochelys coriacea*). The aggregations of loggerhead turtles nesting on the beaches of the study area has been determined to be second only to those found off the Oman Coast in the northwest Indian Ocean. (Ross, 1982). The average nesting density is estimated to be 449 nests per kilometer.

The Archie Carr National Wildlife Refuge (ACNWR) has been designated south of Melbourne Beach. This refuge is proposed for acquisition in order to preserve habitat critical to the sea turtles which utilize this area. The refuge area is 20.5 miles long and lies south of Melbourne Beach to the county line. The Director of the U.S. Fish and Wildlife Service has approved a preliminary project proposal comprised of 500 acres, or 9.3 miles of beachfront land, to protect local sea turtle nesting habitat. The Board of County Commissioners of Brevard County, Florida recognizes the importance of these nesting beaches to endangered and threatened sea turtles and has taken action to support conservation efforts. On June 5, 1990 the Board passed Resolution 90-212 supporting the immediate federal and state purchase of these segments for the Archie Carr National Sea Turtle Refuge.

The Florida Natural Areas Inventory (FNAI, December 1990) reports sightings of the Florida Scrub Jay in several of the larger expanses of coastal scrub-strand located in the central portion of the study area. Field observations by Brevard County staff have confirmed many of these sightings. FNAI also notes the presence of gopher tortoises in some of the less dense scrub habitat. Both of these species are protected to various degrees by State or Federal agencies. Scrub areas have been substantially reduced over the years due to their desirability for development. Although scrub habitat is generally considered to be threatened itself, Brevard County is fortunate to enjoy some relatively undisturbed areas of coastal strand-scrub and maritime hammock in the south beaches. The unique nature of these areas, the last remaining natural features of the barrier island in Brevard County, should warrant heightened efforts for their preservation.

## G. ATLANTIC BEACHES

The plant and animal beach communities of the south beaches are fairly typical of beach habitats in central Florida. Typical species include the pioneering, salt-tolerant plants found in the unconsolidated beach area including: railroad vine, beach sunflower, sea oats, beach elder, sea purslane and dune grasses.

The Preliminary Beach Management Plan for Brevard County, Florida (Draft) (Brevard County Office of Natural Resources, 1990) sets forth several issues or problems which impact the beach. The report notes that presently there is no coordinated or permanently funded beach clean-up program for the unincorporated beaches, although some municipalities do conduct limited clean-up efforts. Vehicular and pedestrian traffic, and inappropriate development of beachfront property has created negative impacts to the dune system and reduced dune vegetation. Building densities are of concern as increased development results in increased demands for infrastructure and services, loss of native vegetation and habitat, impacts to endangered sea turtles, potential for increased crime and pollution, and disruption of the natural dune system. And, although there are several coastal acquisition programs in place, it does not appear that public acquisition of the remaining undeveloped oceanfront may be either economically feasible or desirable.

## III. HISTORIC RESOURCES

Brevard County has conducted preliminary archaeological investigations in the study area from the center of Whitehouse Cove to the County line at Sebastian Inlet. The report revealed that there are currently 24 archaeological sites in the south beaches area (See Map 4) which are listed on the Florida Master Site File. Of these 24 sites, four are burial mounds, 17 are shell middens, and three are isolated find occurrences. All of these sites are associated with Orange or later cultural periods. The entire area was identified as a high probability archaeology zone due to the occurrence of numerous archaeological sites in many different environmental zones. In addition, new sites are being discovered in this area which are undisturbed and significant. The significance, condition, and wide distribution of archaeological sites on the island warrants defining the entire area as having a high probability for archaeological sites. (Bense and Phillips, 1990)

Any proposed developments within the area are subject to the review and discovery procedures in the Historic Preservation Element Policies 2.3 and 2.4. These policies require review of all development projects for their impact upon designated historic resources, and for all development activities to cease where artifacts of historical or archaeological significance have been found to allow for evaluation. When a discovery is determined to be significant, every effort must be taken to preserve the resource.



## IV. LAND USE

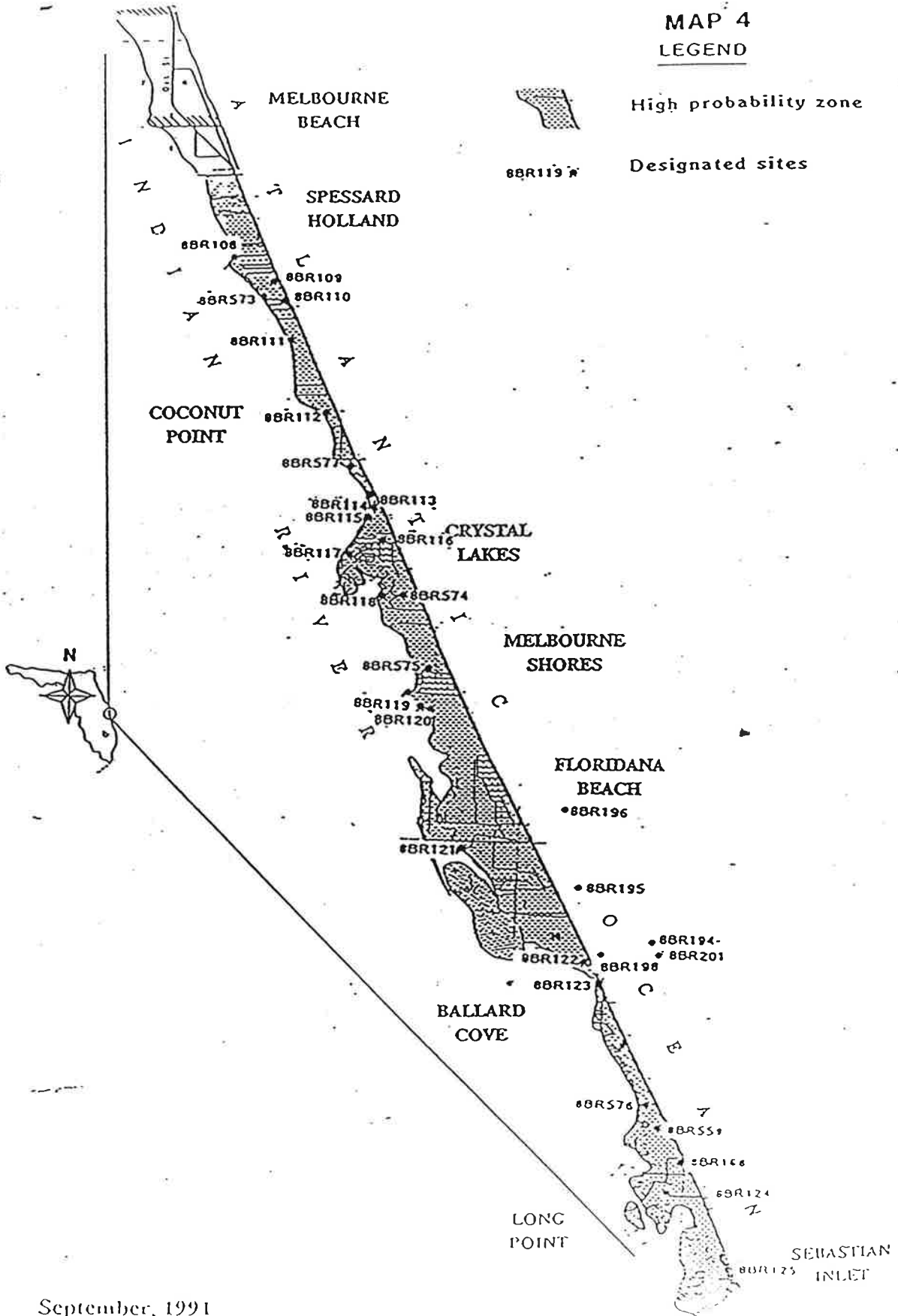
### A. EXISTING LAND USE AND ZONING

The study area covers the 12 mile area south of Melbourne Beach to the Indian River County line, and encompasses a wide variety of land uses. The area is distinguished by Highway A1A which serves as the north-south corridor, and is the only major transportation route in the south beaches.

# SOUTH BEACHES SMALL AREA PLAN ARCHAEOLOGICAL SITES

## MAP 4 LEGEND

-  High probability zone
-  Designated sites



September, 1991

The study area is characterized by the predominant land use of low density residential development, which comprises almost 60% of the developed land. In general densities are highest in the northern portion of the study area, and west of Highway A1A, and decreases south to the county line. The trend reflects the 1984 South-South Beaches Growth Management Directives. Planned Unit Developments (PUD) such as Beachwoods, Wexford, and Aquarina, are currently vested with higher densities. The oceanfront is predominantly low density residential development, although several high rise multi-family structures do exist.

Within one (1) mile south of Spessard Holland Park, there are several recreational vehicle and mobile home parks. The Outdoor Resorts of Melbourne Beach is a recreational vehicle park zoned RVP, with a density of 10 units per acre. Leisure Living Estates, Melbourne Beach Trailer Village, Holiday Haven Mobile Home Park and A1A Park are mobile home parks, zoned TR-3. These mobile home parks are non-conforming by design, or are non-conforming to the residential density guidelines.

Locating recreational vehicles and mobile homes on the barrier island raises several concerns. Recreational vehicles are often utilized for significant periods of time, that is for up to six (6) months of continuous residency. During a hurricane the recreational vehicles at Outdoors Resort will be evacuated, with the possibility of significant delays caused by the difficulty of moving these large vehicles during less than optimal conditions. Mobile homes cannot be relocated prior to or during an evacuation. However, these structures typically sustain heavy damage during storm events. In addition, a percentage of recreational vehicle and mobile home residences will seek public shelter. Thus, location of this vulnerable housing on the barrier island results in establishment of inappropriate structures in a high risk area. Brevard County should consider adopting a policy that no additional mobile homes or recreational vehicle development should be permitted on the barrier island. Should the Board of County Commissioners not adopt such a policy, the Board may wish to consider requiring all new mobile home and recreational vehicle developments on the barrier island to make an impact fee or in-lieu payment to the county for off-site shelter provision.

Limited commercial uses, comprising approximately 7% of the developed land, occur within the study area. These commercial uses include tourist related uses, such as small motels and restaurants, convenience stores, and personal services. Commercial zoning is clustered in a number of areas, including south of Sea Dunes Drive, Melbourne Shores, and north of Long Point Park. There are also commercial tracts approved as part of the Planned Unit Developments (PUDs) in the study area. These tracts are not zoned BU-1 or BU-1-A and are not designated in mixed use districts, so they are not readily discernable from either the zoning or future land use maps. Beachwood PUD has two (2) commercial tracts: the northern tract is 1.903 acres, limited to general retail or neighborhood commercial and the 0.65 acre southern tract which is limited to neighborhood (BU-1-A) commercial uses. Aquarina PUD contains three (3) commercial tracts: Stage 3, Tract I is 6.8 acres and limited to a golf clubhouse, stores, shops and professional offices; Stage 4, Tract IX is 0.9 acres and is delineated for a marina and ship store; State 5, Tract I is 6.0 acres and is planned for a 350 room motel.

The following summary of the existing land use acreage in the unincorporated area of the south beaches was taken from the Brevard County Geographic Research Division as of 1991. Vacant lands, which include undeveloped, recreation and conservation lands, is the largest land use by acreage for a total of 2,486.5 acres (63.5% of the total land area). Residential land uses comprise 861.8 acres (22 % of the total). There are no industrial lands within the study area, and commercial lands comprise 99.5 acres (2.5% of the total land area). Public facilities total 300.9 acres (7.7% of the total), and there are 192.7 acres (4.9% of the total) dedicated to agriculture.

## B. FUTURE LAND USE

The future land uses as designated on the Future Land Use (FLU) Map Series are described below and are shown on Maps 5,6 and 7.

### Residential Land Uses

The south beaches contains a wide range of housing types. Multi-family residential and recreational vehicles are predominant residential land uses in the northern most portion of the study area. Single family subdivisions form the informal communities of Sunnyland Beach, Floridana Beach, Melbourne Shores and Crystal Lakes. Lot sizes in these areas range from approximately one-quarter (1/4) acre to half (1/2) acre. The twenty-five (25) foot wide non-conforming lots in Floridana Beach and Melbourne Shores are aggregated into at least one-quarter (1/4) acre lots to meet the minimum buildable lot size.

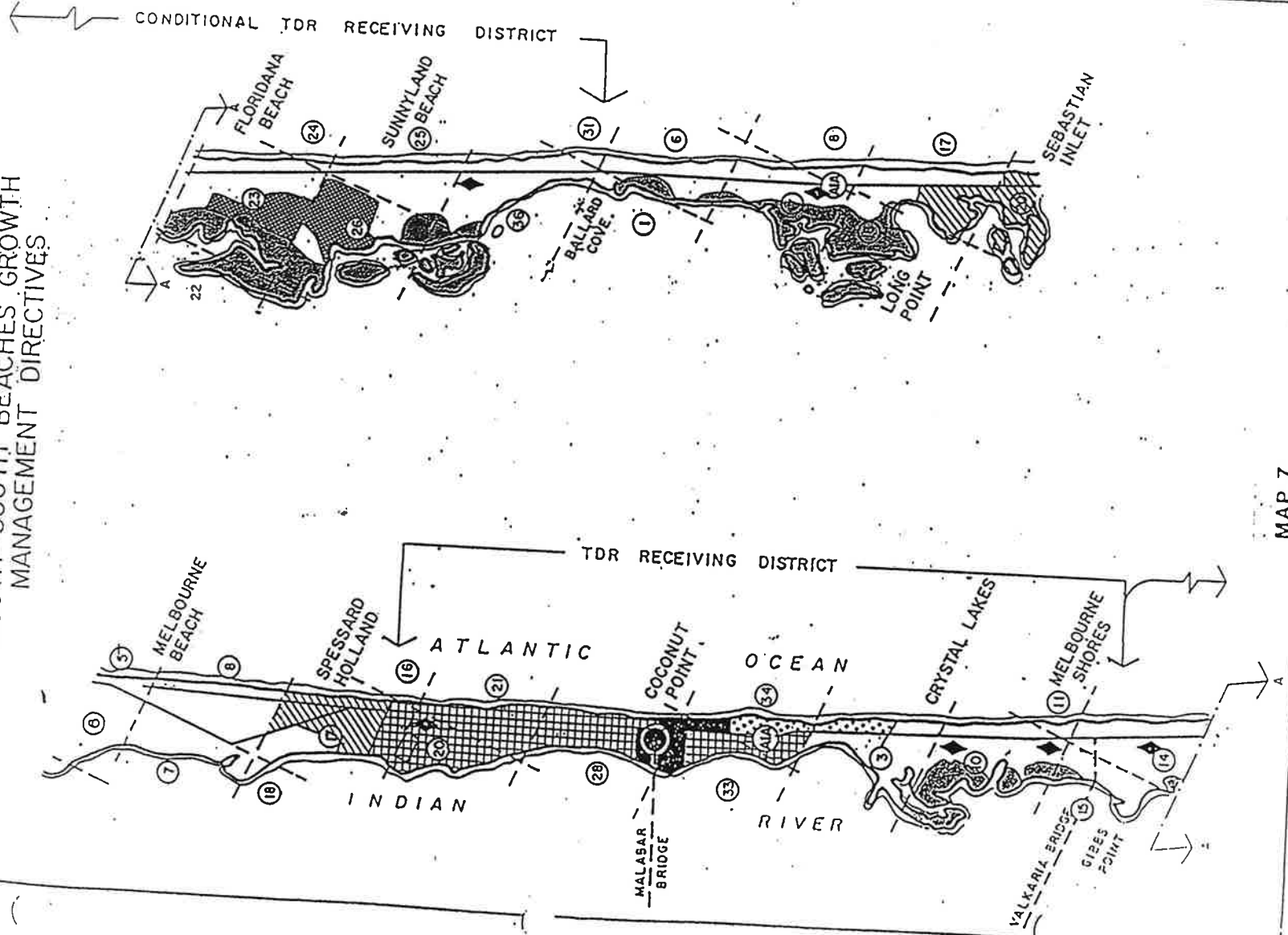
The Residential Density Area Map (Map 6) designates the maximum density which may be considered within residential areas. However, consistent with Coastal Management Policy 6.7, residential densities are limited to those adopted in the 1984 South-South Beaches Growth Management Directives (Map 7). That is, south of Crystal Lakes, the oceanfront densities are four (4) dwelling units per acre, with six (6) dwelling units per acre west of SR A1A. North of Crystal Lakes, the oceanfront densities are 6 dwelling units per acre, with eight (8) to ten (10) dwelling units per acre west of SR A1A.

According to Future Land Use Policy 1.8, Brevard County shall not increase residential densities within the coastal high hazard and high risk vulnerability zones above those programmed due to the addition of infrastructure, including specifically any new bridge or improvements to existing causeways over the Indian River lagoon, needed to meet existing deficiencies.

### Commercial Land Uses/Mixed Use Districts

A mixed use district (MUD) is the land use designation which permits consideration of commercial, professional office and residential zoning categories. The FLU map has designated several areas west of A1A as mixed use districts. The current MUDs within the study area generally follow the existing commercial and tourist use zoning within the area. The northern most MUD (Sections 17, 20 and 21, Township 28, Range 38) is the site of the South Beaches Regional Wastewater Treatment Plant and the recreational vehicle park Outdoor Resorts at Melbourne Beach.

SOUTH-SOUTH BEACHES GROWTH  
MANAGEMENT DIRECTIVES



MAP 7

	PRODUCTIVE AGRICULTURE		PUBLIC RECREATIONAL AREA
	ENVIRONMENTAL AREAS		NEIGHBORHOOD COMMERCIAL
	ENVIRONMENTAL AREA		COMMUNITY COMMERCIAL
	ENVIRONMENTAL AREA		
	ENVIRONMENTAL AREA		
	ENVIRONMENTAL AREA		
	ENVIRONMENTAL AREA		

1/2" = 1 MILE

0 1/2 1 MILE

0 1/2 1 MILE



The second MUD (Section 28, Township 28, Range 38) is intended to be a floating zone which will be specifically located based on the terminus of the proposed Malabar Bridge. This MUD is approximately seventy (70) acres in size, extending from ocean to river, and was sized based upon the policy of permitting tourist uses within one-quarter (1/4) mile of major through county intersections. Based on its size and location at the intersection of major arterials or roadways with a higher classification, this MUD would meet the criteria (contained in Future Land Use Policy 4.5) for a regional commercial center. Regional commercial centers range in size from greater than twenty (20) acres to 100 acres, and could include department stores, specialty shops, general merchandise stores and restaurants, in addition to those appropriate for community commercial complexes. This MUD could support approximately 450,000 square feet of commercial uses. However, the purpose of this MUD is that tourist commercial uses be located at the terminus of the Malabar Bridge and SR A1A. Locating tourist uses such as hotels or motels would reduce the amount of regional commercial land uses which could be accommodated within this MUD. It should be noted the threshold for a retail commercial Development of Regional Impact (DRI) is forty (40) acres or 400,000 square feet of retail commercial, thus the MUD as presently configured could result in a DRI.

MUDs also are designated adjacent to the South Shores Riverside and the Coves of Casseekkee; east of the Melbourne Shores subdivision; adjacent to Pepper Cove; north of Indian River Oaks Subdivision for approximately 4000 feet; and directly adjacent to Campbell's Pocket. All of these MUDs, except the southern most, are relatively shallow. They average approximately 200 feet in depth, with established residential neighborhoods precluding any increase in depth. The shallow depth of these MUDs is likely to result in strip commercial centers, which are generally of concern because of additional side friction along SR A1A, traffic safety and aesthetic reasons. The MUD adjacent to Campbell's Pocket is the site of an existing marina.

There are also ten (10) areas zoned tourist use (TU-1) which are not located within MUDs. Of these, nine (9) contain existing structures including the following small motels and restaurants: Samperton's Restaurant, Sandy Shoes Motel, Sea Grape Manor, Sand Gate Motel, Ocean Pines Village, Sea Dunes Motel, Floridana Beach Motel, Sebastian Beach Inn, and Chuck's Steak House Restaurant.

The existing motels within the area are small, one or two story structures which are well established. The most recent rezoning for developed tourist use is 1978. The most recent tourist rezoning was granted in 1983 for the South Shores site, which has not been completed and construction appears to be abandoned. Thus, many of the residences in the area were constructed subsequent to the tourist uses being established in the area. The existing tourist uses provide motel and restaurant support for a rather narrow segment of the tourist industry, as they are not large enough to support convention or related types of clients. They serve families, fishermen and others who wish to remain close to the natural amenities of the ocean, river and Sebastian Inlet.

In March 1990 the Board of County Commissioners accepted the Comprehensive Planning Division staff report on tourist uses within the south beaches. The recommendations of the report included amending the Future Land Use Map Series to designate the existing tourist uses as mixed use districts to make these uses conforming to the land use map. The report recommendations also included limiting the mixed use district designation to the parcels zoned TU-1, and no motel development of Samperton's Restaurant and Chuck's Steak House.

### Industrial

There are no areas designated for light and heavy industrial uses, or planned industrial park within the study area.

### Agriculture

The only citrus grove within the study area is located west of Floridana Beach Subdivision and north of Sunnyland Beach Subdivision, and is designated as agricultural land use on the Future Land Use Map. Consistent with the Future Land Use Policy 6.1, agricultural lands may be converted to residential land uses consistent with the residential density guidelines and other compatibility factors enumerated in Future Land Use Policy 1.6.

### Recreation

The location of developed parks are discussed in the Recreational Facilities section of this report. The largest recreational area in the south beaches is Sebastian Inlet State Recreation Area, which is visited by the largest number of people of any state park in Florida. Adjacent to the Sebastian Inlet park is the Long Point Park, which provides camping, pavilions and other activities. These two parks combine to make the south beaches a major recreational area in the county.

### Conservation

Conservation lands are those areas which serve an important function in protecting and preserving the functions of environmental resources. In the south beaches, lands zoned Environmental Area (EA) are depicted as Conservation land use. These lands include the Mullet Creek Islands and lagoonal water's edge wetlands located near Hog Point, Snag Harbor, Mullet Cove, Pepper Cover, Mathers Cover and Campbell's Pocket. All of these conservation lands are zoned Environmental Area (EA).

### Public Facilities and Education

These land uses include governmentally-managed facilities and systems not limited to those for transportation, potable water, sanitary sewer, drainage, solid waste, education, fire and police protection, emergency medical, libraries, government administration, and post offices. Each specific facility is described in the Infrastructure Section of this report.

## **V. COASTAL MANAGEMENT**

### **A. COASTAL CONSTRUCTION CONTROL LINE REGULATIONS**

Brevard County Ordinance 85-17 establishes the Brevard County Coastal Setback Line (CSL). The CSL is a line of prohibition precluding development of major habitable structures seaward of the its boundaries. This line is twenty-five feet landward of the State's 1975 Coastal Construction Control Line (CCCL), which lies approximately at the dune line throughout most of the County. Minor structures such as viewing platforms, crossovers, gazebos etc., which are pile supported and elevated to a height sufficient to maintain native vegetation, are permitted seaward of the line. The Board of County Commissioners may provide a variance to the CSL if stringent criteria are met.

This ordinance also established the Brevard County Coastal Construction Control Line as well as construction requirements for those areas seaward of this line. The Brevard County CCCL is collocated with the Florida Department of Natural Resources' 1986 CCCL as established by Chapter 161, F. S. and implemented according to Section 16B-33, F. A. C. Generally the CCCL line lies east of SR A1A, although in some areas, it extends either into or west of SR A1A. Thus, expansion of SR A1A could be problematic as expansion seaward (east) of the CCCL may not be permitted by DNR. Brevard County Coastal Management Policy 6.2 states in part that, "If the widening of SR A1A south of Melbourne Causeway becomes necessary, it should be expanded only to the west where practical due to engineering, safety and cost considerations, and where necessary utilizing existing rights-of-way."

Although this policy does not prohibit the expansion of SR A1A seaward of the CCCL, it does state that expansion to the west is preferable based upon the likelihood for significant erosion to occur during a storm event which would undermine the roadway.

#### **B. COASTAL BARRIER RESOURCES ACT**

The purpose of the Coastal Barrier Resources Act (CBRA), adopted by the Congress in 1982, was to discourage the development of coastal barriers by designating areas in which federal funding for roads, bridges, sewers, water lines, housing and insurance is prohibited. CBRA unit PO9A was established in two sections, one near Coconut Point and the other at Hog Point Cove (Map 8). The intent of the Act was further strengthened by Governor's Executive Order 81-105 which stated that no new development would occur on undeveloped barrier islands using State funds.

The CBRA unit designation has many implications within the study area. CBRA unit PO9A is located approximately nine (9) miles north of the County line, with a more densely populated area south of the unit. Infrastructure such as sewer, water, and roads would have to be extended or improved within the CBRA unit in order to serve this existing population. To date, Brevard County has attempted to determine from federal and state agencies whether these extensions or improvements would be permitted. However, as yet, these issues have not been completely resolved. The extension of water and sewer lines through PO9A can be accomplished without allowing the residents to hook-up to the service. However, SR A1A cannot be four-laned through the unit without allowing residents to utilize the additional lanes. Conversely, four-laning SR A1A south and north of the unit with a two-lane segment within the unit, does not alleviate traffic deficiencies. SR A1A in this area has been identified as a constrained corridor due to the presence of the CBRA unit and permitting requirements of state and federal agencies. At this time, Brevard County is pursuing a definite answer to this question. However, as discussed in the Transportation element, the four-laning of SR A1A from Melbourne Beach to the County line is being supported by the Brevard County Metropolitan Planning Organization (MPO) and is contained in the MPO long range plan.

#### **C. HEIGHT RESTRICTIONS/BREEZEWAY REQUIREMENTS**

The 1984 South-South Beaches Growth Management Directives established height and breezeway requirements for development along the oceanfront in the study area. These requirements have been refined and are now included for all development. The standards permit a maximum height which may be increased if additional breezeway is provided. On oceanfront property, the Florida Department of Natural Resources also limits the maximum amount of shore parallel coverage which may occur.

SOUTH BEACHES SMALL AREA PLAN  
COASTAL BARRIER RESOURCES ACT

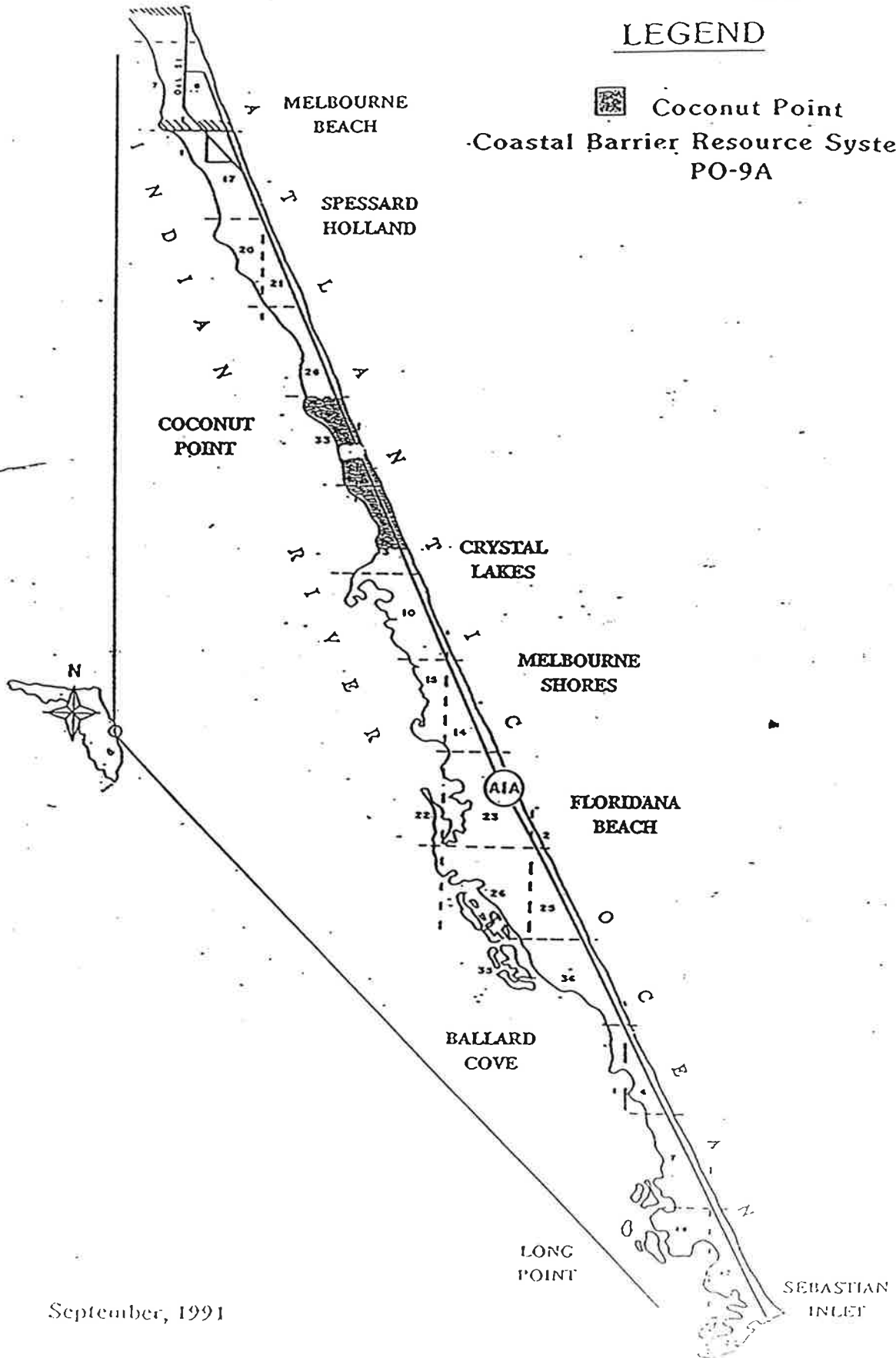
MAP 8

LEGEND



Coconut Point

Coastal Barrier Resource System  
PO-9A



September, 1991

#### D. POST DISASTER REDEVELOPMENT POLICIES

The Brevard County Comprehensive Plan provides some direction in the area of post disaster redevelopment. The guidelines, contained in Coastal Management Policy 10.4, essentially mimic Ordinance 85-17, which limits reconstruction seaward of the Brevard County CCCL. However, these policies do not address the question of reconstruction where significant erosion has reduced land area, or where beach renourishment would be required to reconstruct. Also, the reconstruction or relocation of infrastructure such as roadways and utility lines should be addressed in redevelopment policies. Finally, the question of densities which may be permitted on the barrier island may be faced by Brevard County in the aftermath of a major storm.

Land uses on the south beaches have evolved over a number of years. Based upon current conditions and philosophy several types of land uses may not be as appropriate, as when they were originally approved. These include high density residential uses on the oceanfront, and the mobile homes and recreational vehicles south of Spessard Holland Park.

Redevelopment policies should address the appropriateness of rebuilding high density multi-family structures on oceanfront property. Oceanfront structures are at the greatest risk for damage from erosion and permitting high densities within these areas puts a greater number of persons at risk. In addition, flood insurance and disaster assistance are supported by tax revenues. Thus, the general population subsidizes the financial risk which oceanfront dwellers are taking. By increasing the number of persons and amount of property located within the coastal high hazard area, the potential financial liability is being increased for non-oceanfront dwellers as well. If the Future Land Use Map is amended to designate lower residential densities on the south beaches, existing high rise condominiums may not be permitted to be reconstructed to existing densities after a disaster.

As discussed above, recreational vehicles and mobile homes are also of concern on the barrier island. The Board of County Commissioners may wish to consider policies which would limit reconstruction of this type of development, should the existing recreational vehicle and mobile home parks be significantly damaged during a storm event. The existing density of the Outdoor Resort at Melbourne Beach is not consistent with the eight (8) units per acre density limitation adopted by the South South Beaches Growth Management Directives, as consistent with Coastal Management Policy 6.7. The policy states that:

By 1992, Brevard County shall develop individual Small Area Plans for the unincorporated areas of the barrier island. Until this plan(s) is adopted and incorporated within the Comprehensive Plan, land use decisions for the area south of the Melbourne Beach city limits shall be based upon the 1984 South South Beaches Growth Management Directives, regardless of the density area designation of the Future Land Use Map series.

This policy supersedes Future Land Use Policy 4.11 which permits recreational vehicle parks which serve the temporary or seasonal visitor to have densities up to ten (10) units per acre. However, at the adoption of this plan, the density permitted for Outdoor Resort should be clarified. Staff's recommendation is that this recreational vehicle park should become non-conforming so that it could not be reconstructed if significantly damaged during a storm event. One possible mechanism to accomplish this is to remove the mixed use district in which the Outdoors Resort at Melbourne Beach recreational vehicle park is located. And amend the Future Land Use Map to depict the area as residential. A second alternative is to limit residential and recreational vehicle densities within MUDs on the barrier island to the underlying residential density guidelines. This would permit reconstruction not to exceed the present eight (8) units per acre, or less, should density reductions occur.

#### E. TRANSFER OF DEVELOPMENT RIGHTS PROGRAM

Brevard County had adopted a TDR program for the south beaches in 1985. This program was adopted as part of the South- South Beaches Growth Management Directives. Within this program residential density can be transferred from specific "transfer" districts to specific "receiving" districts. However, the voluntary program has never been utilized. The Brevard County Comprehensive Planning Division completed a preliminary analysis of TDRs in 1989. The report concludes that TDRs may be useful within the County, however additional work must be completed before the TDR program should be expanded county-wide.

### VII. INFRASTRUCTURE

#### A. TRAFFIC CIRCULATION

##### Current Conditions

State Road A1A is the only major roadway in the study area. As defined by the Florida Department of Transportation (FDOT), the segment of SR A1A from the Indian River County line to .4 mile south of Mar-Len Drive is a Rural Arterial with an acceptable Level of Service (LOS) of "C" and a Maximum Acceptable Volume (MAV) of 9400 Annual Daily Trips (ADT). Maintaining the LOS on SR A1A is a major component of land use planning in the area, and is fully discussed in the South Beaches Traffic Study section which was prepared by the Traffic Management Division, below.

##### Planned and Programmed Improvements

FDOT has programmed the resurfacing of SR A1A from Oak Street to the Indian River County line in FY 1992 (July 1991 to July 1992). According to FDOT policy, on a major resurfacing project four (4) foot wide shoulders will be added. The Metropolitan Planning Organization (MPO) Year 2010 Long Range Cost Feasible Transportation Plan contains several projects for SR A1A in the south beach area. These are: widening from Melbourne Shores to Oak Street; development of one-way pair from Oak Street/Miramar Avenue to Atlantic Avenue; and widening to four (4) lanes from the junction of Atlantic Avenue and Miramar Avenue north to US 192. To date, no work has begun on the implementation of these projects.

### Malabar Bridge

One or more bridges south of the Melbourne Causeway have been depicted on Brevard County comprehensive plans since the 1970's. The 1981 comprehensive plan depicted two (2) bridges south of US 192 - at Malabar and Micco Roads. Based upon the MPO Year 2010 Long Range Cost Feasible Transportation Plan, which contains the Malabar Bridge as a toll facility, the current Future Land Use Map depicts a bridge at Malabar Road. This rather long history of at least one (1) new bridge south of US 192 has resulted in an equally long period of speculation about such a bridge, but few answers about the documented need or feasibility for it.

In late 1990 FDOT consultants completed the SR 514 (Malabar Corridor) Feasibility Study. State appropriation language limited the study to review of a toll facility within the Malabar corridor, that is extending from Malabar Road on the mainland to several alternative points on the barrier island. The summary of the traffic and preliminary financial feasibility analysis concludes that: 1) analysis of future travel demand in Brevard County indicates the need for a 4-lane bridge over the Indian River; 2) significant capacity relief is expected on the Melbourne Causeway and portions of SR A1A due to the proposed SR 514 (Malabar) bridge; and 3) given a 4-lane facility and a \$2.00 toll, the facility is not financially feasible. The report did determine the approximate cost of a 4-lane toll facility at the Malabar Road location would range from \$61.3 to \$71.7 million, depending upon structural system utilized. Costs for a 2-lane facility, a non-toll facility, or a bridge of a different length would have to be determined.

A staff assessment of the feasibility study noted that the overall study was encumbered with several limitations that restricted the consultant from examining issues that staff believes to be important. These constraints include the limitation of the study to the Malabar corridor, consideration of a toll facility only, and funding which limited the scope of the study. The staff report, presented to the MPO, highlights several aspects of the bridge feasibility issue that remain unresolved. These include hurricane evacuation analysis; soil testing; use of outdated land use data based upon residential densities which have been reduced; alternative locations such as Micco Road, Valkaria Road, Palm Bay Road and Robert Conlan Boulevard; environmental impacts; toll financing; and cost feasibility determination. The analysis report recommends a series of studies to analyze the transportation planning aspects, as well as the issues listed above, of additional bridge crossings. The purpose of such studies would be to provide a progressively more refined analysis to first determine if a bridge should be built and, if so, to define the optimum location. It is estimated this series of studies would delay a decision on the bridge for two (2) to three (3) years, but would allow a decision to be based upon a full range of issues surrounding the construction of a new bridge. The MPO has requested FDOT undertake a South Beaches Bridge Location Study that will address the shortcomings of the Malabar Bridge Feasibility Study. The MPO has requested FDOT analyze several different alternate sites and conduct a cost-benefit analysis as part of this new study. FDOT's decision whether to undertake and fund this study will not be known until late 1991.

The MPO has also requested FDOT complete a Corridor Improvement Study for SR A1A from Pineda Causeway to Spessard Holland Park to identify and implement traffic operations and bicycle and pedestrian improvements. The status of this study is also unknown until FDOT's decision in late 1991.

## South Beaches Traffic Study

### 1. Purpose

Transportation infrastructure is an important constraint on the location, type and intensity of land use. The purpose of this study is to examine in detail SR A1A south of Melbourne Beach and estimate the limitations the roadway imposes on potential new land uses, thereby providing some guidance as to the land use densities appropriate for the south beach area. Specifically, this traffic analysis will (1) evaluate current traffic flow characteristics and conditions on SR A1A in the unincorporated area south of Melbourne Beach; (2) calculate the traffic volumes that correspond to the maximum acceptable levels of service on this section; (3) estimate the traffic generated by various residential land use density scenarios; and (4) assess the ability of SR A1A to accommodate the traffic produced by each density scenario.

This study does not address additional bridge capacity to the south beaches. A thorough analysis of the bridge issue requires consideration of a host of interrelated engineering, environmental, traffic modeling and financial questions far beyond the scope of this study. While the results of this study and any associated policy decisions may provide input to subsequent bridge studies, the intent here is to evaluate the impact of various residential density scenarios on the capacity of SR A1A, not to analyze the need for or the impact of new bridges to the south beaches.

### 2. Existing Traffic Flow Conditions

Traffic counts were conducted at six locations on SR A1A south of US 192 on Monday and Tuesday, September 9 and 10, 1990 as part of the annual Brevard County traffic count program. Three count stations were in Indian River and Melbourne Beach and three were in the unincorporated area. Additional counts were taken north of Long Point Road on Monday and Tuesday, October 14 and 15, 1991. All counts were 48 hours, directional, and tabulated in 15 minute increments. The counts were not seasonally adjusted. Pertinent traffic flow characteristics for each count station are presented in Table 1.

The geography of the south beaches largely dictates the character of traffic flow on SR A1A. The south beaches are accessible only via north-south SR A1A, the area is predominantly residential and employment centers on the Brevard County mainland are significantly closer than those further south in Indian River County. These features produce two notable traffic flow characteristics. First, traffic volume decreases at a steady rate from north to south. This trend is evident when volume is graphed as a function of distance south of US 192. Figures 1, 2 and 3 show the relationship for total daily, total PM peak hour and southbound PM peak hour traffic volumes relative to the distance of each count station from US 192.

Second, traffic flow during the PM peak hour is very directional, reaching almost a 70-30 split at the count station in south Melbourne Beach. This indicates that the evening commute from employment centers on the mainland and further north on SR A1A to the residential areas in the south beach area is very pronounced and dominant. Thus, the southbound peak hour flow largely determines the operational characteristics of SR A1A, while the northbound peak hour flow has a relatively insignificant effect.



TABLE 1

## SOUTH BEACHES TRAFFIC COUNT DATA

COUNT LOCATION (North to South)	MILES SOUTH OF US 192	PEAK HOUR	DIRECTION	MONDAY 9/10/91 (vph)	TUESDAY 9/11/91 (vph)	DIRECTIONAL SPLIT	AVERAGE PEAK HOUR FACTOR	AVG VOL BY DIR (vph)	LEVEL OF SERVICE	AVE TOTAL PK HR VOL (vph)	LEVEL OF SERVICE	AVE DAILY VOL	LEVEL OF SERVICE
1. 50 ft. S of 13th St	0.41	16:45	NB	488	531	0.426	0.939	509.5	---	1195.5	---	15,016	---
			SB	697	675	0.574		686	---				
2. 100 ft. S of Miami Ave	0.93	16:45	NB	442	495	0.426	0.934	468.5	---	1099	---	13,944	---
			SB	630	631	0.574		630.5	---				
3. 150 ft. S of 4th Ave	2.23	17:00	NB	260	277	0.303	0.951	268.5	B	887	D	10,030	D
			SB	617	620	0.697		618.5	D				
4. 300 ft. S of Oak Dr	3.31	17:00	NB	270	298	0.346	0.946	284	B	820	D	9,875	D
			SB	537	535	0.654		536	C				
5. 50 ft. S of Wexford	5.85	17:00	NB	169	192	0.386	0.954	180.5	B	467.5	C	5,591	C
			SB	289	285	0.614		287	B				
6. 100 ft. S of Cardinal Ln	9.94	17:15	NB	140	162	0.436	0.894	151	B	346	C	4,413	B
			SB	205	185	0.564		195	B				
7. 100 ft. N of Long Point Rd *	15.90	17:15	NB	128	113	0.616	0.871	120.5	A	195.5	A	1,212	A
			SB	85	65	0.384		75	A				

\* Counts taken Monday 10/14/91 and Tuesday 10/15/91

# SR A1A Distance vs Daily Volume

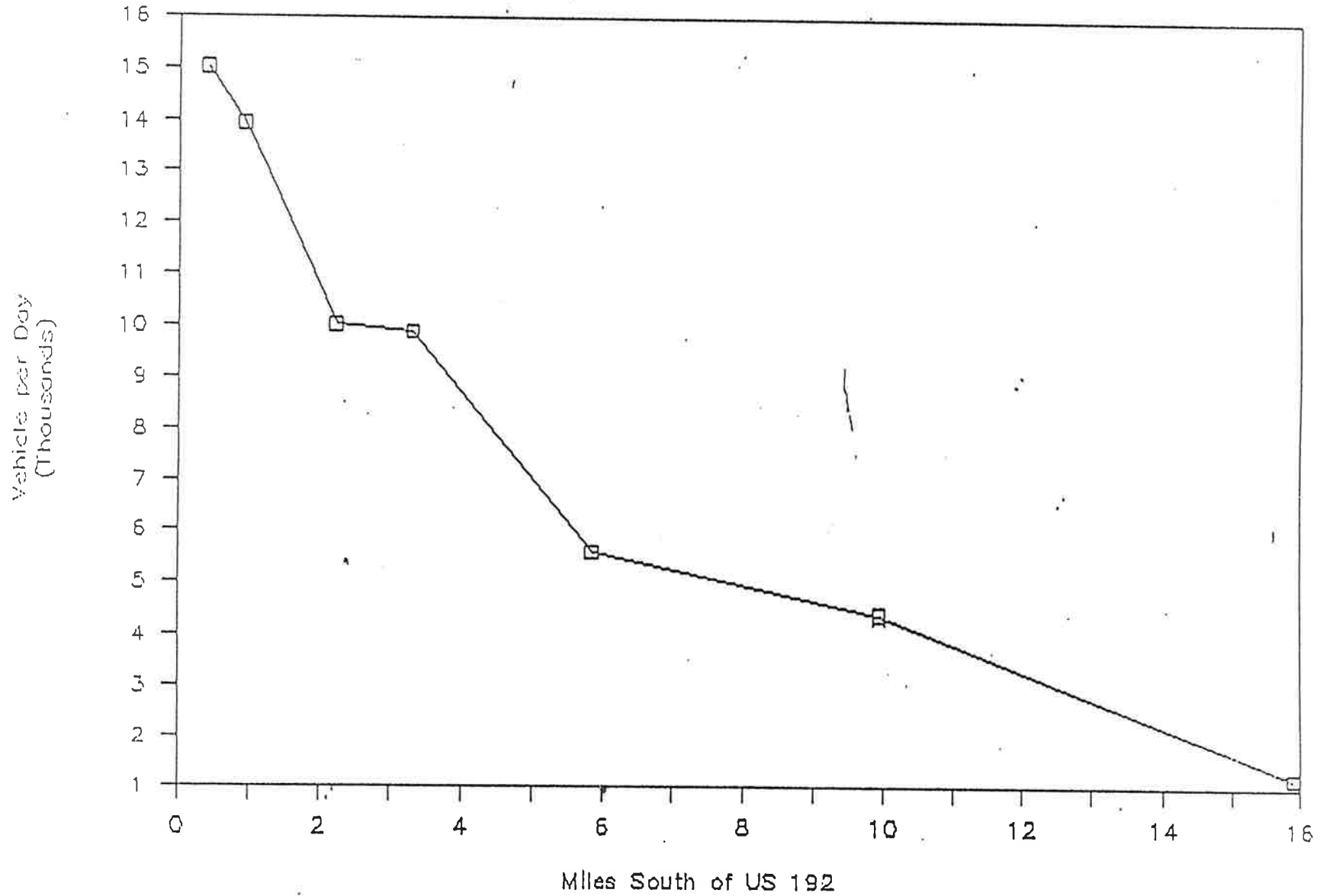


FIGURE 2

# SR A1A Distance vs Peak Hour Volume

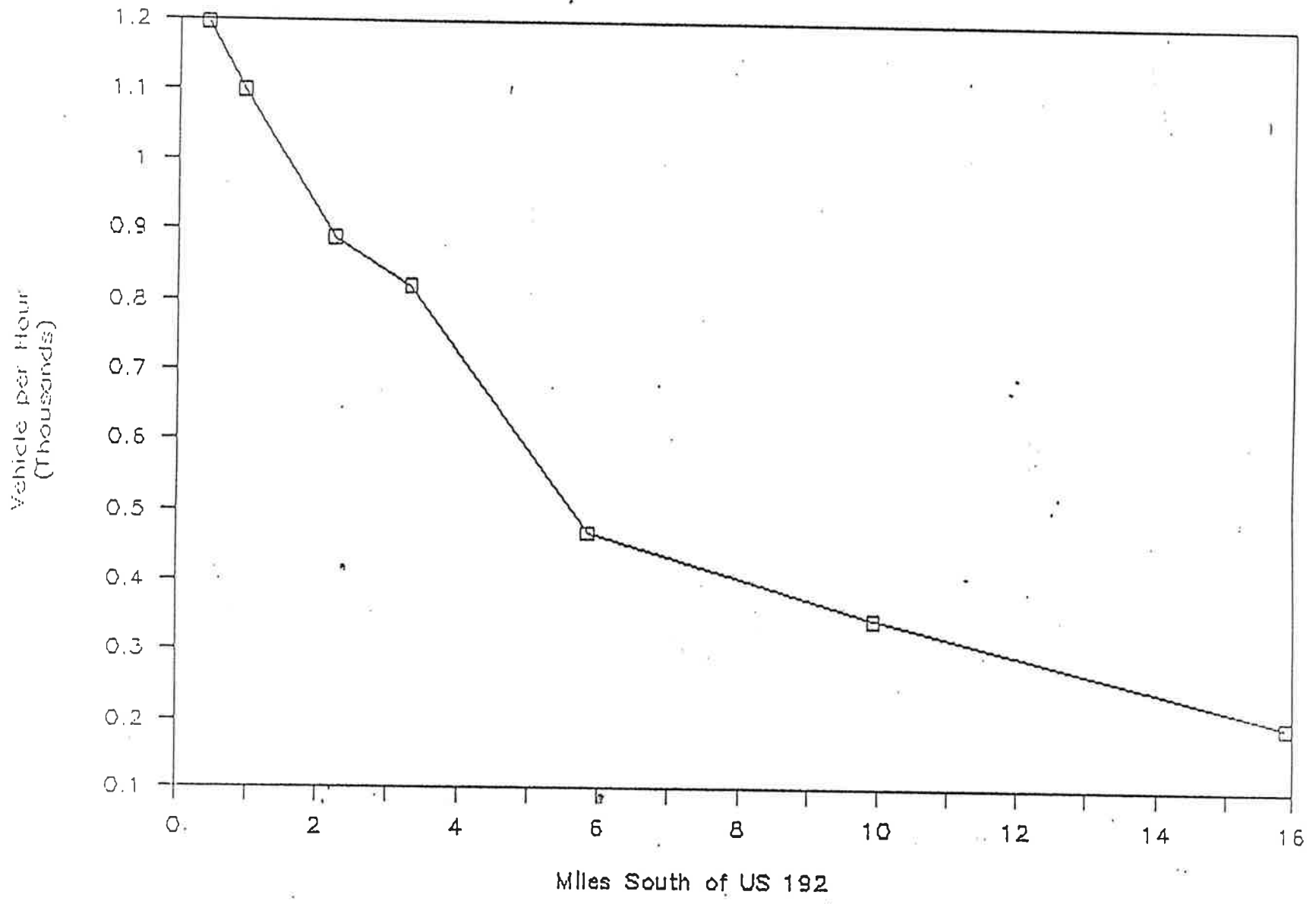
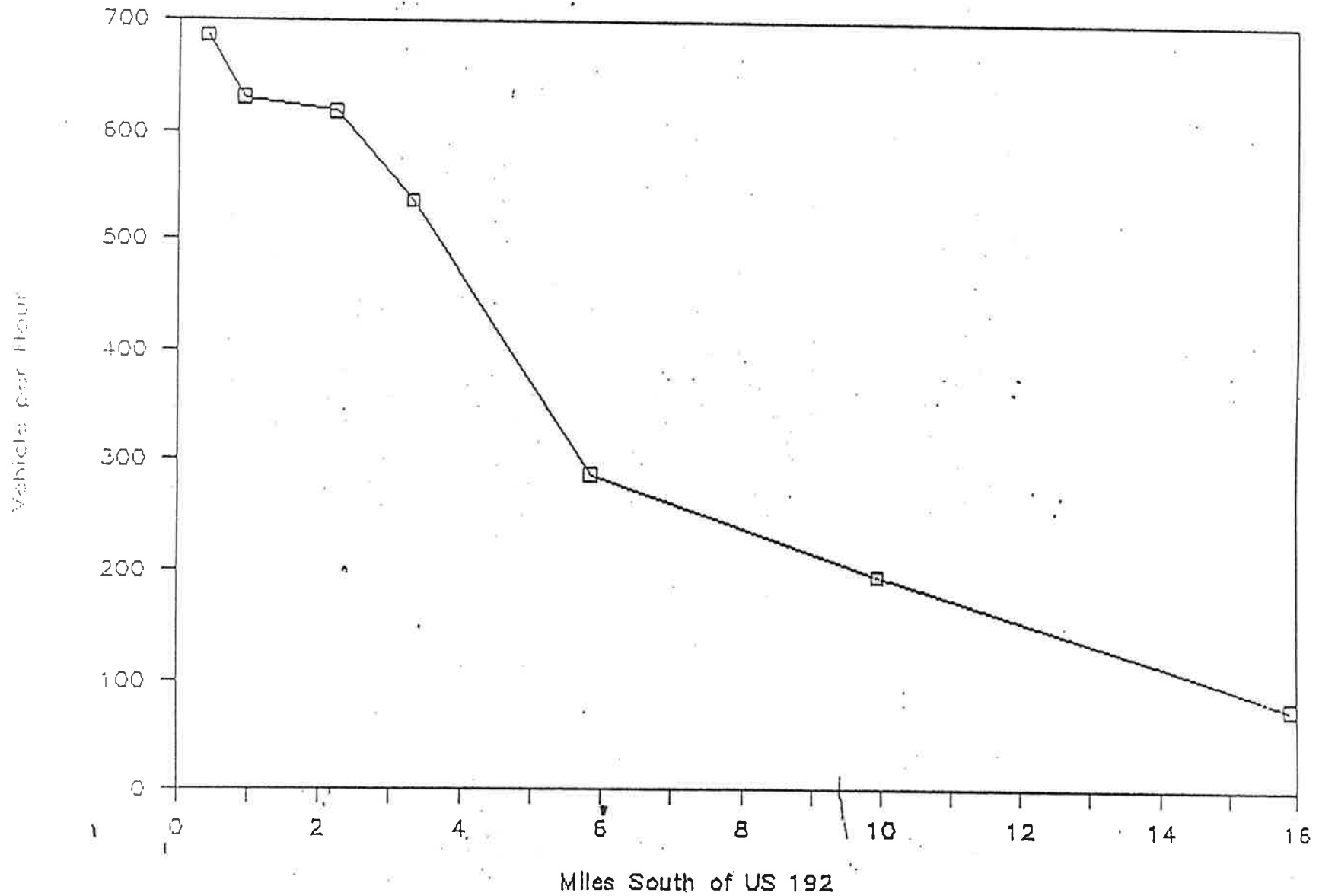


FIGURE 3

# SR A1A Distance vs SB Pk Hr Volume



### 3. Level of Service Analysis

Level of service (LOS) is an indication of the degree of congestion on a road. It is a measure of both the quantity and quality of traffic flow on a specific section of roadway for a specific time period. At LOS A, the best condition, traffic moves freely, slower vehicles are passed without difficulty, operating speeds are high and delays negligible. As traffic density increases, operating conditions deteriorate. The upper limit of LOS E is generally regarded as the highest volume a roadway can carry and still operate with reasonable efficiency. The volume corresponding to the upper level of LOS E is often called the roadway "capacity". At LOS F, traffic flow is very unstable and a small traffic disruption can cause a total breakdown in flow.

The specific traffic volume corresponding to each LOS interval depends upon the physical and traffic flow characteristics of the roadway in question. A key element effecting the level of service of a two-lane road such as SR A1A is the proportion of no-passing zones because they determine the likelihood of the motorist experiencing delay due to an inability to pass slower vehicles. Level of service is usually measured by the average travel speed in the heaviest traveled direction during the weekday peak hour, and is based on the average prevailing conditions of a roadway segment one to three miles in length with relatively homogeneous travel and roadway conditions.

The LOS at two locations on SR A1A is calculated in Tables 2 and 3 using a computer program developed by the Florida Department of Transportation. Table 2 shows the LOS flow rates on SR A1A south of Oak Street. At that location, SR A1A can efficiently and safely carry no more than 1610 vehicles per hour in the peak (southbound) direction during peak hour. The peak hour peak direction LOS levels are converted to total peak hour and daily rates based on the traffic characteristics of SR A1A at that location. Because traffic conditions are somewhat different, the LOS values south of Wexford (Table 3) are lower than those south of Oak.

For policy reasons, many roads are not permitted by their operating entities to carry traffic volumes up to LOS E levels. North of Marlen Drive, SR A1A is defined as an urban minor arterial road by the Florida Department of Transportation, while to the south the road is considered rural. (The area type designation is based on criteria of the U.S. Census Bureau, and the urban-rural boundary will probably move further south following analysis of 1990 Census results.) FDOT policies adopted in 1988 (Table 6) stipulate that the maximum allowable LOS for an urban minor arterial is LOS E and for a rural minor arterial is LOS D. The traffic volume corresponding to this upper threshold level of service is termed the Maximum Acceptable Volume (MAV). Thus, the LOS analysis for SR A1A south of Oak St. in Table 2 indicates the peak hour peak direction MAV for that portion of SR A1A in the urban area is 1610 vph. For the rural area, the LOS analysis for SR A1A south of Wexford in Table 3 indicates the peak hour peak direction MAV is 910 vph.

It must be noted that the LOS values in Tables 2 and 3 do NOT apply to SR A1A north of approximately Ocean Ave. The character of SR A1A is substantially and fundamentally different immediately south of US 192 because of the influence of the traffic signal at Fifth Avenue and the four-way stop at Ocean Ave. A different LOS analysis procedure must be used. This was not done because the segment of SR A1A between US 192 and Ocean Ave. is located in an incorporated area and thus outside the limits of this study.

The LOS on SR A1A can be determined by comparing the traffic volumes in Table 1 with the appropriate LOS values in Tables 2 and 3. Current LOS is shown in Table 1. Traffic generated from future development can be added to current traffic levels to determine the traffic impact from those new developments. According to state growth management laws and policies, the traffic from new development plus current traffic cannot exceed the road's MAV, except for some notable exceptions that will be discussed later. The foregoing procedure is the "concurrency" test all new development proposals must undergo.

#### 4. Estimated Current Traffic Levels at Non-County Locations

Although four traffic counts were taken on SR A1A in the unincorporated area south of Oak St., the detailed nature of this traffic/land use analysis requires a knowledge of the current traffic level at other areas on SR A1A. The traffic volume at intermediate locations can be estimated by a regression analysis. A regression analysis is a statistical procedure to calculate the equation of the line that best connects the known data points. It is evident from the graphs in Figures 1, 2 and 3 that the daily, peak hour and peak hour peak direction traffic volume on SR A1A decreases as the distance south of US 192 increases. The regression analysis will quantify and measure the strength of this relationship. Using the regression equation, traffic volumes at other locations can then be estimated.

The equation of a line is:

$$Y = mX + b$$

where Y is the dependent variable (traffic volume), X is the independent variable (distance south of US 192), m is a coefficient indicating the slope of the line and b is a constant equal to the X-intercept. The values of m and b are calculated in the regression analysis. The degree of correlation between X and Y is measured by the R squared statistic, where perfect correlation is equal to 1.00 and no correlation is 0.00.

The regression analysis is presented in Table 4. The box at the top shows the distance south of US 192 and the daily, peak hour and southbound peak hour volume data for each of the seven traffic count locations. The first set of regressions (1A, 1B and 1C) evaluates distance in miles versus traffic data for all seven count stations. R squared values range from .88 to over .91 indicating a rather high degree of correlation. Only the constant, X-coefficient and R squared values shown for each regression analysis in Table 4 will be used in this study.

The second set of regressions is based on the observation that the graphs in Figures 1, 2 and 3 are not straight lines, but curves. To perform a regression analysis on curvilinear data requires conversion of one or both of the data sets to logarithms. The logarithmic values are then used in the regression analysis. Natural base e logs, abbreviated LN(e), were chosen, and the LN(e) value for each mileage value is shown in the data box in Table 4. The regression analysis for all seven count stations is shown in 2A, 2B and 2C. R squared values are overall better than in regression series 1, reaching as high as .958. A regression was performed in which both X and Y data sets were converted to logarithms, but the results were weak.

TABLE 2

RURAL TWO-LANE ADJUSTED SERVICE FLOW RATES  
BASED ON 1985 HIGHWAY CAPACITY MANUAL

ROAD = SR A1A South of Oak  
DATE = 10-01-1991

AREA =  
NAME = RSK

Lanes/LOS	DAILY				
	A	B	C	D	E
2	2300	5400	9200	15400	25600
PEAK HOUR					
2	220	520	890	1480	2460
PEAK HOUR PEAK DIRECTION					
2	140	340	580	960	1610

IF VALUE IS N/A THEN LEVEL OF SERVICE IS NOT ACHIEVABLE

TRAFFIC CHARACTERISTICS

K Factor = 0.096

Directional Factor = 0.653

Peak Hour Factor (PHF) = 0.946

ROADWAY CHARACTERISTICS

Posted Speed Limit = 55 mph

Bi-Directional ADJUSTED Saturation Flow Rate = 2600 Veh.

Percent No Passing = 40 %

TWO-LANE LEVEL OF SERVICE CRITERIA

LOS/	v/c
A	0.09
B	0.21
C	0.36
D	0.60
E	1.00

Closer examination of the data graphs shows a noticeable "break" in the smoothness of the curve between the third and fourth data points. The third point corresponds to the count station on Atlantic St. south of Fourth St. in Melbourne Beach, and the fourth point is the count station located 300 feet south of Oak St. The break in the curve indicates that traffic characteristics are somewhat different on SR A1A north of the Oak Street station than further south. This may be due to the fact that, while SR A1A follows Atlantic St., much of the traffic may actually be using Oak St. The two streets join north of the Oak St count station. Thus, the traffic counts at station 3 on Atlantic St. are measuring only part of the traffic that eventually is counted at station #4 south of the Oak Street-Atlantic St. intersection. To avoid this uncertainty and to focus on the unincorporated area, the third regression set, 3A, 3B and 3C, is based on only the four count station locations south of Oak St. The R squared values are particularly good, with all three greater than .95.

Based on the R squared values and a more direct association with the unincorporated area, regression series 3 was chosen for further consideration. Thus, the southbound peak hour traffic volume (Y) can be estimated at any distance south of US 192 (X) according to the formula in equation 3C:

$$\text{LN}(Y) = -283.475 \text{ LN}(X) + 842.206.$$

Table 5 shows the current traffic volumes for other locations on SR A1A in the south beaches as estimated by regression equations 3A, 3B and 3C. In this study, smaller geographic subareas in the south beaches are defined using the section, township and range system. Within each section crossed by SR A1A, the midpoint of the traversal was located and the distance south of US 192 (X) calculated. For sections not bisected by SR A1A, the location on SR A1A closest to the section was measured. The LN(e) value of each distance was calculated and entered into regression equations 3A, 3B and 3C. Taking the antilogarithm of the resulting Y value produced the estimated traffic volumes shown in Table 5.

Finally, sections were grouped together and named according to recognized places. Designation of subareas serves not only to simplify the computations, but also divides SR A1A into the appropriate segments for subsequent roadway impact analysis. Level of service pertains to the prevailing travel conditions of a segment of road and not to specific, discreet points. An average volume for each of the eight subareas was calculated by averaging the distances of the component sections and then entering the subarea average distance into the regression equations.

#### 5. Alternative Land Use Scenarios

Much of the land in the south beach area is undeveloped. While not all is suitable for new construction and a significant area is within public ownership, the acreage that is available for new development is of such size that the resulting traffic could significantly consume the available capacity of SR A1A. The objective is to test the traffic impacts of various land use density options so the effect on SR A1A can be evaluated before making significant land use policy decisions.



TABLE 3

RURAL TWO-LANE ADJUSTED SERVICE FLOW RATES  
 BASED ON 1985 HIGHWAY CAPACITY MANUAL

ROAD = SR A1A s/o Wexford  
 DATE = 08-28-1991

AREA =  
 NAME = RSK

Lanes/LOS	DAILY				
	A	B	C	D	E
2	2200	5100	8800	14600	24300
PEAK HOUR					
2	220	520	890	1490	2480
PEAK HOUR PEAK DIRECTION					
2	140	320	550	910	1520

IF VALUE IS N/A THEN LEVEL OF SERVICE IS NOT ACHIEVABLE

TRAFFIC CHARACTERISTICS

K Factor = 0.102

Directional Factor = 0.614

Peak Hour Factor (PHF) = 0.954

ROADWAY CHARACTERISTICS

Posted Speed Limit = 55 mph

Bi-Directional ADJUSTED Saturation Flow Rate = 2600 Veh.

Percent No Passing = 40 %

TWO-LANE LEVEL OF SERVICE CRITERIA

LOS/	v/c
A	0.09
B	0.21
C	0.36
D	0.60
E	1.00

The land use density options evaluated in this study focus on residential and public land uses. Commercial uses on the south beaches represent a very small proportion of the total developed acreage, and for the sake of simplicity will not be evaluated. The purchase of vacant land for public uses, in this case the Archie Carr National Wildlife Refuge (NWR), reduces the supply of land available for residential dwellings. Intended primarily as a sea turtle nesting sanctuary, land acquisition for the NWR is in the early stages. Two categories of land have been identified for purchase or control by easement: high priority lands generally east of SR A1A and lower priority lands west of SR A1A or outside of the refuge boundaries.

The impact of seven residential density and three public lands alternatives were tested on both a two lane and four lane roadway, for a total of 42 different options. The following system is used to designate the various options:

**\* Roadway Options (Roman Numerals)**

- I. Two lanes on SR A1A
- II. Four lanes on SR A1A

**\* Developable Acreage Options (Letters)**

- A. No land acquisition for the Archie Carr National Wildlife Refuge (NWR)
- B. High priority land acquisition only
- C. High and low priority land acquisition

**\* Residential Density Options (Numerals)**

- 1. Current permissible densities (4 or 8 dwelling units per acre)
- 2. Current density north of and 2 du/ac south of Crystal Lakes
- 3. Current density north of and 2 du/ac south of Coconut Point
- 4. 4 du/ac north of and 2 du/ac south of Crystal Lakes
- 5. Compatible density north of and 1 du/ac south of Coconut Point
- 6. 2 du/ac north of and 1 du/ac south of Coconut Point
- 7. 1 dwelling unit per current vacant lot or parcel

Thus, Option I-A-7 will evaluate the effect of one dwelling per vacant lot and no land purchased for the wildlife refuge on the current capacity of two-lane SR A1A. In option 5, "compatible density" refers to the fact that a parcel of vacant, developable land may lie between two already developed tracts, and the density permitted on the vacant tract would be generally similar to that of the developed area. "Current density" refers to the residential densities adopted in the 1985 South South Beaches Growth Management Directives.

For each section in the south beaches, the amount of developable land was determined. In options B and C, the acreage to be purchased under the two NWR acquisition plans was calculated and subtracted from the total developable acreage. The developable acreage in each section was multiplied by the appropriate residential density applicable under each of the seven land use options. The result is the number of new dwelling units in each section at buildout. This study has no specific time horizon, and no assumption was made about the rate at which these units may be constructed or the date by which buildout may occur. For option 7, rather than acreage, the number of lots or parcels in each section was tabulated. Similarly, the number of lots or parcels removed by NWR purchase was counted. Although all subsequent calculations for option 7 depend only on the number of lots, for comparison purposes the number of lots was divided by the acreage to determine the residential density. The number of new single family detached dwelling units allowable in each section under all 21 density/acreage options are shown in the tables in the Appendix.

## 6. Trip Generation

For many years, traffic engineers and planners have been measuring the amount of traffic produced by various types of land uses. The data is submitted voluntarily to the Institute of Transportation Engineers (ITE), who tabulates, compiles and publishes the results in Trip Generation, 5th Edition. Because specific, statistically accurate local trip generation data is usually not available, the national data prepared by ITE is commonly used to estimate the volume of traffic to be created by proposed development.

Figure 4 presents the trip generation characteristics of single-family detached housing for the weekday PM peak hour as derived from 357 studies across the United States. It is important to note that a "trip" is defined as one-way. The daily commute to the work place, for example, constitutes two trips. From Table 4, each single-family detached dwelling unit produces on average 1.02 trips during the PM peak hour, and 65% of those trips are directed toward the dwelling while 35% are exiting. A more precise estimate of trip generation is obtained by using the regression equation shown at the bottom of Table 4 and graphed as the solid line in the data plot. A subdivision with 800 dwelling units would produce an estimated 816 peak hour trips based on the average rate, but only 700 trips based on the regression equation. The line that best fits the data points is a curve, and the regression, therefore, is expressed in terms of natural logarithms, LN(e), with dwelling units as the independent variable (X) and trips as the dependent variable (T).

Trip generation data is available for other residential dwelling types, including multi-family, condominiums and mobile homes, and for other time periods, such as daily weekday, AM peak hour and weekend days. No specific assumptions are made in this study about the residential unit mix that may develop in the south beach area. All new dwellings are assumed to be single family, detached dwellings. Given the relatively low densities contained in the land use options, it is clear that high density residential development would be limited and that single-family detached dwellings will predominate. As stated above, the weekday southbound peak hour traffic volume is the most critical element effecting the level of service on SR A1A in the south beaches. Thus, only the PM peak hour trip generation rate will be used.

REGRESSION ANALYSIS -- SR A1A TRAFFIC VOLUME VS. DISTANCE SOUTH OF US 192

LOCATION		DISTANCE SOUTH OF US 192 (X)			VOLUME (Y)		
Count Station	Street	Feet	Miles	LN(e) of Miles	Average Daily	Total Pk Hr	SB Pk Hr
					1	13th Av	2150
2	Miami Av	4900	0.93	-0.0747	13944	1099	630.5
3	4th Av	11750	2.23	0.7999	10020	887	618.5
4	Oak Dr	17500	3.31	1.1983	9875	820	536
5	Waxford Dr	30900	5.85	1.7668	5591	467.5	287
6	Cardinal Ln	52500	9.94	2.2969	4413	346	195
7	Long Point Rd	83950	15.90	2.7663	1212	195.5	75

2B. DISTANCE VS DAILY VOLUME

Regression Output:  
 Constant 13242.96  
 Std Err of Y Est 1912.777  
 R Squared 0.881618  
 No. of Observations 7  
 Degrees of Freedom 5  
 X Coefficient(s) +845.986  
 Std Err of Coef. 138.6372

2A. LN(e) OF DISTANCE VS. DAILY VOLUME

Regression Output:  
 Constant 12874.10  
 Std Err of Y Est 1130.754  
 R Squared 0.958629  
 No. of Observations 7  
 Degrees of Freedom 5  
 X Coefficient(s) -3825.27  
 Std Err of Coef. 355.3838

3A. LN(e) OF DISTANCE VS. DAILY VOLUME SOUTH OF OAK

Regression Output:  
 Constant 15702.30  
 Std Err of Y Est 853.1346  
 R Squared 0.962200  
 No. of Observations 4  
 Degrees of Freedom 2  
 X Coefficient(s) -5196.40  
 Std Err of Coef. 728.2758

2B. DISTANCE VS TOTAL PEAK HOUR VOLUME

Regression Output:  
 Constant 1066.747  
 Std Err of Y Est 150.9598  
 R Squared 0.871429  
 No. of Observations 7  
 Degrees of Freedom 5  
 X Coefficient(s) -63.6952  
 Std Err of Coef. 10.94150

2B. LN(e) OF DISTANCE VS. PEAK HOUR VOLUME

Regression Output:  
 Constant 1040.013  
 Std Err of Y Est 90.64484  
 R Squared 0.953644  
 No. of Observations 7  
 Degrees of Freedom 5  
 X Coefficient(s) -288.933  
 Std Err of Coef. 28.48869

3B. LN(e) OF DISTANCE VS. PEAK HOUR VOLUME SOUTH OF OAK

Regression Output:  
 Constant 1227.769  
 Std Err of Y Est 71.88155  
 R Squared 0.951388  
 No. of Observations 4  
 Degrees of Freedom 2  
 X Coefficient(s) -383.902  
 Std Err of Coef. 61.36147

2C. DISTANCE VERSUS SB PEAK HOUR VOLUME

Regression Output:  
 Constant 659.9671  
 Std Err of Y Est 77.38968  
 R Squared 0.915444  
 No. of Observations 7  
 Degrees of Freedom 5  
 X Coefficient(s) -41.2695  
 Std Err of Coef. 5.609171

3B. LN(e) OF DISTANCE VS. SB PEAK HOUR VOLUME

Regression Output:  
 Constant 627.8597  
 Std Err of Y Est 97.51371  
 R Squared 0.865752  
 No. of Observations 7  
 Degrees of Freedom 5  
 X Coefficient(s) -174.030  
 Std Err of Coef. 30.64750

3C. LN(e) OF DISTANCE VS. SB PEAK HOUR VOLUME SOUTH OF OAK

Regression Output:  
 Constant 842.2064  
 Std Err of Y Est 46.78738  
 R Squared 0.961814  
 No. of Observations 4  
 Degrees of Freedom 2  
 X Coefficient(s) -283.475  
 Std Err of Coef. 39.93991

The estimated PM peak hour trips to be produced by the new residential units in each section under the different land use options are tabulated in the Appendix. The number of dwelling units forecast for each section, as calculated by the procedure in Section V above, was entered in the trip generation equation shown in Figure 4. The resulting number of total peak hour trips was multiplied by .65 and .35 to calculate the respective volume of inbound and outbound trips. The inbound and outbound trips were summed for the entire study area. The procedure was repeated for each option.

#### 7. Future Traffic Volume

On the mainland, residential, commercial and employment centers are distributed over a wide area and many travel paths are available, which normally causes an almost equal balance in the direction of peak hour traffic flow. With little commercial development and few employment centers actually located in the south beaches, and only one roadway, the PM peak hour trips will be composed largely of motorists driving from north to south on the return leg of the weekday commute from a work place on the mainland or further north on SR A1A. Outbound trips leaving a residential dwelling will largely travel to the north because there are few commercial or employment attractions in the southern direction. Compared to the proportionally large inbound (ie, southbound) movement, the volume of northbound traffic during the peak hour will be relatively small, which is borne out by the traffic data discussed in Section II. Because of the overriding importance of the southbound traffic flow during the PM peak hour in determining the capacity and, hence, the level of service on SR A1A in the south beaches, the traffic analysis will focus exclusively on the new inbound/southbound trips.

The southbound PM peak hour traffic destined for the residential areas in the unincorporated south beaches must all pass through the section of SR A1A just south of the Oak St./Atlantic St. intersection. At that location, the southbound traffic volume will be equal to the sum of the inbound trips generated by all development further south. Moving south from the Oak St./Atlantic St. intersection, traffic will decrease in proportion to the amount of development adjacent to SR A1A. The specific number of new southbound trips and the rate at which the traffic volume decreases will depend upon the number of new residential units permitted under each land use scenario.

For example, as shown in the tables in the Appendix, the 5315 new residential units that could be developed under option I-1-A (two lane road, the current allowable density and no land acquisition for the NWR) would generate an estimated total 3294 inbound, that is southbound, peak hour trips. All of these 3294 new southbound trips would have to use SR A1A at the north end by Averill Farms. Moving south, the volume of new trips declines as the southbound motorists reach their destination until only 20 new peak hour trips would remain in Sebastian, the product of the 24 new residences allowed in that area.

An identical procedure was applied to each of the density/acreage options. For simplicity, the decrease in southbound peak hour trips is shown only at the subarea level rather than for each section. Adding the projected volume generated by new development to the current traffic level (in Table 5) results in the approximate total southbound peak hour volume for various points along SR A1A at buildout under each land use option. The results are presented in the Appendix.



TABLE 5 ESTIMATED CURRENT TRAFFIC VOLUMES  
 Calculated From Regression Equations 3A, 3B, 3C

AREA	S/T/R	Mi. S of US 192	LN(e) of Dist	DAILY VOLUME	PEAK HR VOLUME	SB PK HR VOLUME
Averill Farms	172838	3.3	1.19	9498	769	504
	202838	4.4	1.48	8003	659	422
	212838	4.4	1.48	8003	659	422
AVG		4.0	1.39	8502	696	449
Coconut Point	282838	5.3	1.67	7036	588	369
	332838	6.3	1.84	6138	521	320
	342838	6.8	1.92	5741	492	299
AVG		6.1	1.81	6305	534	330
Crystal Lakes	32938	7.7	2.04	5095	444	264
	102938	8.7	2.16	4461	397	229
AVG		8.2	2.10	4778	421	246
Melb Shores	142938	9.9	2.29	3789	348	192
	152938	9.9	2.29	3789	348	192
AVG		9.9	2.29	3789	348	192
Floridana	222938	11.1	2.41	3195	304	160
	232938	11.1	2.41	3195	304	160
	242938	11.6	2.45	2966	287	147
AVG		11.4	2.42	3119	298	156
Sunnyland	252938	12.2	2.50	2704	267	133
	262938	12.2	2.50	2704	267	133
	352938	13.2	2.58	2294	237	111
	362938	13.2	2.58	2294	237	111
AVG		13.2	2.55	2431	247	118
Mathers Cove	13038	14.5	2.67	1806	201	84
	63039	14.5	2.67	1806	201	84
	73039	15.5	2.74	1460	176	65
AVG		15.0	2.70	1691	193	78
Sebastian	173039	16.7	2.82	1072	147	44
	183039	15.9	2.77	1327	166	58
	203039	17.5	2.86	829	129	31
AVG		16.7	2.81	1076	147	44

## 8. Future Roadway Conditions

As stated in Section III above, operating agencies place a limit on the amount of traffic major roads may carry, and this limit is expressed as a minimum allowable level of service. In the case of SR A1A, current FDOT policies set the minimum level of service permitted on SR A1A at LOS E in the urban area and LOS D in the rural area (Table 6). The traffic volume corresponding to each threshold, called the Maximum Acceptable Volume (MAV) is based on the operating and physical conditions of the roadway. To evaluate the impact of different land use options on the operating conditions of SR A1A requires comparing future traffic volumes with the appropriate MAV figure. The estimated future southbound peak hour volume is subtracted from the MAV value. If the difference between the MAV and future total volume is a positive number, capacity will remain at buildout and the land use option will meet FDOT level of service criteria. A negative number indicates future traffic will exceed the MAV as more traffic will be produced than the laneage on SR A1A can carry.

For two-lane SR A1A (option I), the peak hour peak direction MAV values are 1610 vehicles per hour in the urban area and 910 vehicles per hour in the rural. The urban-rural boundary is presently in the vicinity of Marlen Dr. north of Coconut Point. Therefore, the combined current plus future southbound peak hour volume is subtracted from 1610 vph for the area north of Coconut Point and from 910 vph for the area south of Coconut Point. The traffic impact of each land use/acreage option relative to current MAV values for two-lane SR A1A is presented in the Appendix tables under options I-1-A through I-7-C.

The MAV values for a four-lane facility (option II) are shown in Tables 7 and 8. The current peak hour peak direction MAV values for a four-lane SR A1A are 3500 vph in the urban area and 2820 vph in the rural. The four-lane capacity analysis uses the current traffic characteristics identical to those in the two-lane analysis. A 60 mph design speed was assumed. The existing right-of-way on SR A1A is generally 100 feet wide. Given the sensitive environmental nature of the south beaches and the expense of beach-front property, it is assumed that little additional right-of-way would be purchased. Thus, a four-lane facility will probably be built with a narrow median and minimal side clearance, all of which dictate a lower design speed. The Brevard Metropolitan Planning Organization Year 2010 Long Range Transportation Plan, adopted in 1988 as the officially recognized highway development plan for Brevard County, includes a project to widen SR A1A to four lanes as far south as Melbourne Shores. This analysis follows those limits and assumes that south of Melbourne Shores SR A1A will remain two lanes. The impact of the density/acreage options on a four lane road are presented in the Appendix as options II-1-A through II-7-C.

A summary is presented in Table 10 to show the comparative difference between each density, developable acreage and laneage option. The summary presents the estimated available southbound peak hour capacity for SR A1A at the point south of Oak Street at buildout. As stated above, all southbound PM peak hour traffic must cross this location to access the unincorporated sections of the south beaches. It must be noted, however, that a positive value in Table 10 may not always indicate the option is acceptable. The screenline is located in the urban area where MAV values are higher than for rural sections. Other segments of SR A1A may show unacceptable negative values as indicated in the complete impact analysis tables in the Appendix.



FIGURE 4

# Single-Family Detached Housing (210)

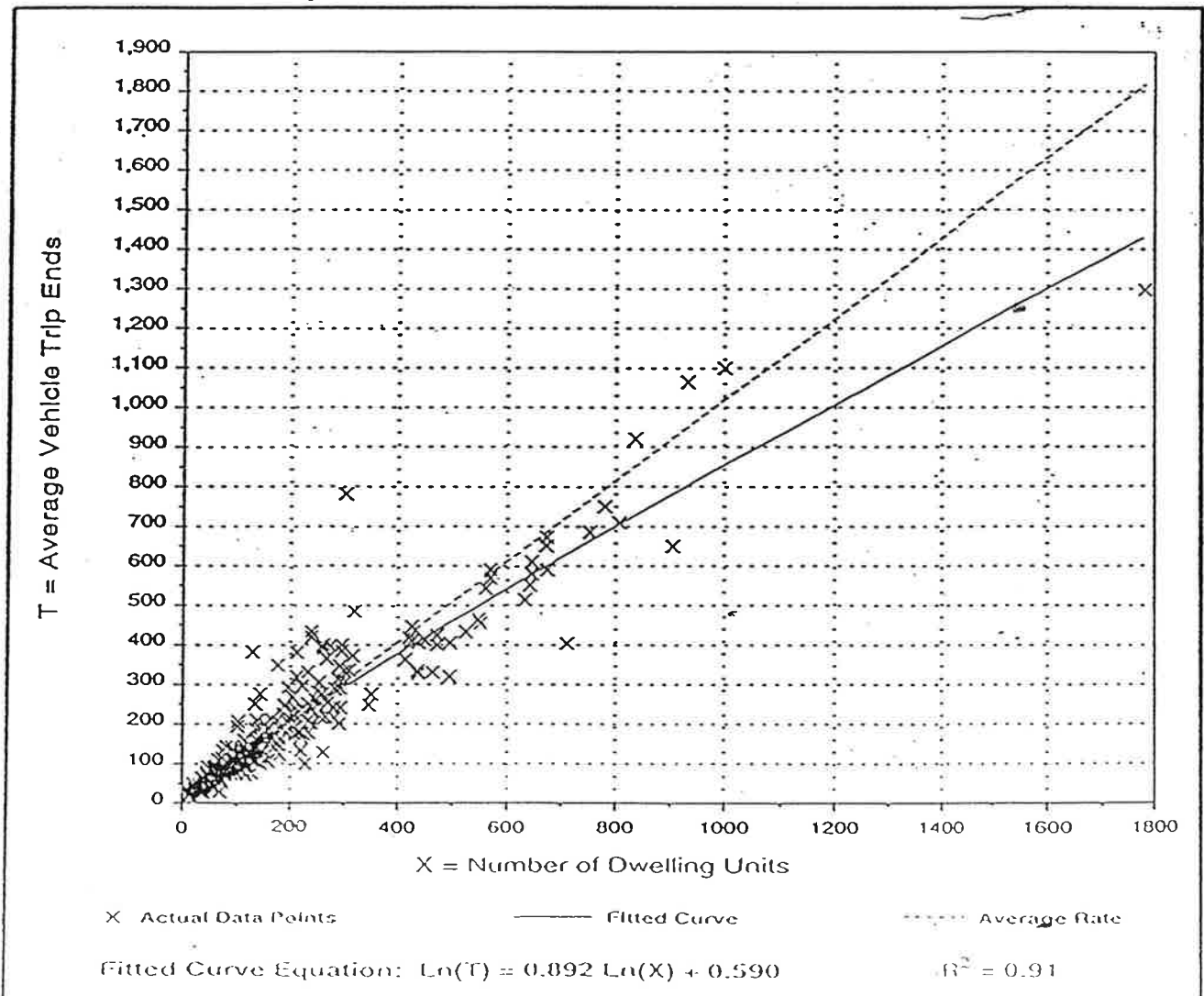
Average Vehicle Trip Ends vs: Dwelling Units  
On a: Weekday,  
P.M. Peak Hour of Generator

Number of Studies: 357  
Average Number of Dwelling Units: 183  
Directional Distribution: 65% entering, 35% exiting

## Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
1.02	0.42 - 2.98	1.05

## Data Plot and Equation



STATEWIDE MINIMUM ACCEPTABLE OPERATING LEVEL OF SERVICE STANDARDS FOR THE STATE HIGHWAY SYSTEM<sup>1</sup>

Roadway Type <sup>2</sup>	Existing Urbanized Areas <sup>3</sup>	Other Existing Cities <sup>4</sup>	Transitioning Urbanized or Incorporated Areas <sup>5</sup>	Rural Areas <sup>6</sup>
Freeways	D	C	C	C
Principal Arterials	D	C	C	C
Minor Arterials & Others	E	D	D	D
SPECIAL CONSIDERATIONS				
	Special Transportation Areas <sup>7</sup>	Parallel to Exclusive Transit Facility <sup>8</sup>	Constrained Facility <sup>9</sup>	Backlogged Facility <sup>10</sup>
Freeways	D	D	Maintain <sup>11</sup>	Maintain & Improve <sup>12</sup>
Principal Arterials	E	E	Maintain	Maintain & Improve
Minor Arterials & Others	E	E	Maintain	Maintain & Improve

1 - The operating levels of service designate lowest quality design hour (30th highest hour) operating conditions from the present through a 20-year planning horizon. These standards are to be used for general planning applications and should not be used for detailed design or traffic operation analyses. For corresponding traffic volumes for each level of service, consult the Department's level of service maximum volumes tables.

The following table gives the general relationship between the level of service letters (A,B,C,D,E, and F) and the average travel speed during the peak hour on typical sections of freeways and arterial highways in Florida.<sup>13</sup>

AVERAGE TRAVEL SPEED DURING THE PEAK HOUR

LEVEL OF SERVICE	FREEWAYS/INTERSTATE HIGHWAYS (IN MILES PER HOUR)	ARTERIAL HIGHWAYS (IN MILES PER HOUR)
A	greater than 59	greater than 34
B	from 57 to 59	from 28 to 34
C	from 54 to 56	from 22 to 27
D	from 46 to 53	from 17 to 21
E	from 30 to 45	from 13 to 16
F	less than 30	less than 13

TABLE 7

RURAL MULTI-LANE ADJUSTED SERVICE FLOW RATES  
BASED ON 1985 HIGHWAY CAPACITY MANUAL

ROAD = SR A1A South of Oak  
DATE = 10-23-1991

AREA = Urban  
NAME = RSK

Lanes/LOS	DAILY				
	A	B	C	D	E
4	18400	26800	36300	44700	55800
6	27600	40200	54400	67000	83800
PEAK HOUR					
4	1770	2570	3480	4290	5360
6	2650	3860	5230	6430	8040
PEAK HOUR PEAK DIRECTION					
2	1160	1680	2280	2800	3500
3	1730	2520	3410	4200	5250

IF VALUE IS N/A THEN LEVEL OF SERVICE IS NOT ACHIEVABLE

TRAFFIC CHARACTERISTICS

K Factor = 0.096

Directional Factor = 0.653

Peak Hour Factor (PHF) = 0.946

ROADWAY CHARACTERISTICS

Design Speed = 60 MPH

ADJUSTED Saturation Flow Rate = 1850 Veh.

MULTI-LANE LEVEL OF SERVICE CRITERIA

LOS/MULTI-LANE DESIGN SPEED	70	60	50
A	<=.36	<=.33	0
B	<=.54	<=.50	<=.45
C	<=.71	<=.65	<=.60
D	<=.87	<=.80	<=.76
E	<=1.0	<=1.0	<=1.0
F	>1	>1	>1

(volume to capacity ratio (v/c))

TABLE 8

RURAL MULTI-LANE ADJUSTED SERVICE FLOW RATES  
BASED ON 1985 HIGHWAY CAPACITY MANUALROAD = SR A1A s/o Wexford  
DATE = 10-23-1991AREA = Rural  
NAME = RSK

Lanes/LOS	DAILY				
	A	B	C	D	E
4	18600	27100	36600	45100	56400
6	27900	40600	55000	67600	84500
PEAK HOUR					
4	1900	2760	3740	4600	5750
6	2850	4140	5610	6900	8620
PEAK HOUR PEAK DIRECTION					
2	1160	1690	2290	2820	3530
3	1750	2540	3440	4240	5290

IF VALUE IS N/A THEN LEVEL OF SERVICE IS NOT ACHIEVABLE

## TRAFFIC CHARACTERISTICS

K Factor = 0.102

Directional Factor = 0.614

Peak Hour Factor (PHF) = 0.954

## ROADWAY CHARACTERISTICS

Design Speed = 60 MPH

ADJUSTED Saturation Flow Rate = 1850 Veh.

## MULTI-LANE LEVEL OF SERVICE CRITERIA

LOS/MULTI-LANE	DESIGN SPEED 70	60	50
A	<=.36	<=.33	0
B	<=.54	<=.50	<=.45
C	<=.71	<=.65	<=.60
D	<=.87	<=.80	<=.76
E	<=1.0	<=1.0	<=1.0
F	>1	>1	>1

(volume to capacity ratio (v/c))

TABLE 9

STATEWIDE MINIMUM LEVEL OF SERVICE STANDARDS FOR THE STATE HIGHWAY SYSTEM

	Rural Areas	Transitional Urbanized Areas, Urban Areas, or Communities	Urbanized Areas Under 500,000	Urbanized Areas Over 500,000	Roadways Parallel to Exclusive Transit Facilities	Inside Transportation Concurrency Management Areas	Constrained and Backlogged Roadways
INTRASTATE							
Limited Access Highway (Freeway)	B	C	C(D)	D(E)	D(E)	D(E)	Maintain
Controlled Access Highway	B	C	C	D	E	E	Maintain
OTHER STATE ROADS							
Other Multilane	B	C	D	D	E	*	Maintain
Two-Lane	C	C	D	D	E	*	Maintain

Level of service standards inside of parentheses apply to general use lanes only when exclusive through lanes exist.  
 \* means the level of service standard will be set in an urban mobility element that meets the requirements of Rule 9J-5.0057.

DRAFT

TABLE 10 SUMMARY OF LAND USE/TRAFFIC ANALYSIS OPTIONS: Current FDOT Level of Service Standards

ESTIMATED AVAILABLE SOUTHBOUND PEAK HOUR CAPACITY SOUTH OF OAK STREET AT BUILDOUT (vph)

LAND USE OPTION	I. TWO LANE ROAD			II. FOUR LANE ROAD		
	NWR Land Acquisition			NWR Land Acquisition		
	A. None	B. High Priority	C. High and Low Priority	A. None	B. High Priority	C. High and Low Priority
1. Current South South Beaches Growth Management Directives	-2133	-1445	-961	-243	445	929
2. Current Density North of and 2 du/ac South of Crystal Lakes	-1299	-741	-418	591	1149	1472
3. Current Density North of and 2 du/ac South of Coconut Point	-937	-511	-202	953	1379	1688
4. 4 du/ac North of and 2 du/ac South of Crystal Lakes	-713	-319	-55	1177	1571	1835
5. Compatible Density North of and 1 du/ac South of Coconut Point	61	272	457	1951	2162	2329
6. 2 du/ac North of and 1 du/ac South of Coconut Point	252	432	589	2142	2322	2460
7. 1 du per current vacant lot	144	223	300	2034	2105	2190

Drawn NA

ESTIMATED AVAILABLE SOUTHBOUND PEAK HOUR CAPACITY SOUTH OF OAK STREET AT BUILDOUT (vph)

LAND USE OPTION	I. TWO LANE ROAD			II. FOUR LANE ROAD		
	NWR Land Acquisition			NWR Land Acquisition		
	A. None	B. High Priority	C. High and Low Priority	A. None	B. High Priority	C. High and Low Priority
1. Current South South Beaches Growth Management Directives	-2783	-2095	-1611	-943	-255	229
2. Current Density North of and 2 du/ac South of Crystal Lakes	-1949	-1391	-1068	-109	449	772
3. Current Density North of and 2 du/ac South of Coconut Point	-1587	-1161	-852	253	679	988
4. 4 du/ac North of and 2 du/ac South of Crystal Lakes	-1363	-969	-705	477	871	1135
5. Compatible Density North of and 1 du/ac South of Coconut Point	-589	-378	-193	1251	1462	1629
6. 2 du/ac North of and 1 du/ac South of Coconut Point	-398	-218	-61	1442	1622	1760
7. 1 du per current vacant lot	-506	-427	-350	1334	1405	1490

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## 9. Proposed Minimum Level of Service Standards

The Florida Department of Transportation promulgated the current minimum level of service standards in 1988. As part of a multi-year evaluation of the LOS standards, growth management objectives and related technical issues, FDOT is proposing to alter the standards to those shown in Table 9. The proposed LOS standards are generally one letter grade higher than the present standards in Table 6. The new standards will be adopted by rule, and are scheduled to become effective in early 1992. Current standards will continue in effect at the local level until a local government chooses to revise its Traffic Circulation Element or the Comprehensive Plan undergoes its mandatory five-year update.

A major objective in revising the LOS standards is to further implement a principle goal of Florida's growth management program, the reduction of urban sprawl. Low LOS standards, particularly in rural areas, are viewed as encouraging sprawl and detracting from the objective of compact urban growth. FDOT believes the traffic volumes permitted on the state highway system under current LOS criteria allow development to proliferate, thereby raising traffic to unacceptable levels. High traffic volumes create delay, which conflicts with the FDOT view that the primary role of state highways is to move regional and not local traffic. FDOT and the Florida Department of Community Affairs (DCA) have indicated a willingness to consider case-by-case deviations from the new LOS standards for roads that do not carry significant levels of interregional traffic where such deviations further important local land use, environmental or transportation system objectives and reasonable mobility can be maintained.

Because Brevard County will have to eventually abide by what will clearly be more stringent LOS standards for state highways, this study analyzed the various land use and laneage options for the south beaches under the proposed FDOT criteria. The results are shown in the right-hand columns of the Appendix tables. Table 11 summarizes the results in a manner identical to and with the same cautions described above for Table 10. The section of SR A1A in the south beaches is not proposed for inclusion on the Florida Intrastate Highway System, so the applicable LOS criteria are those on the bottom two lines of Table 9. For this study, it was assumed that the area north of Coconut Point will remain classified as "urban". The area between Coconut Point and Floridana was considered as a "transitioning urbanized area" where population density will approach urban levels over the next twenty years. The region south of Floridana would remain rural. Four-lane SR A1A (option II) will be evaluated under the "Other Multilane" category. The MAV value corresponding to each LOS was taken from the capacity studies in Tables 2, 3, 7 and 8. Due to associated technical revisions now under discussion but not yet adopted by FDOT, the actual MAV calculated under the new LOS standards may be actually somewhat higher than those shown here.

## 10. Discussion

Only two of the 21 different density and developable acreage options do not exceed the current maximum acceptable volume of two-lane SR A1A (options I-5-C and I-6-C). Four others (options I-5-A, I-6-A, I-5-B and I-6-B) exceed the MAV of only one segment. However, given the number of assumptions and estimates employed in this study, the level of accuracy of the results should be recognized and some allowance made for this inherent imprecision. Thus, density options 5 and 6, regardless of the amount of land acquired for the Archie Carr NWR, would likely allow SR A1A to remain at two lanes without causing significant capacity restrictions. The distinction between options 5 and 6 is that option 5 calls for "compatible" densities north of Coconut Point. In that a primary objective of land use planning is to promote compatible land uses, option 5 may be somewhat more desirable than option 6.



It should be recognized that under options 5 or 6 traffic volumes will approach capacity. LOS E conditions on a two-lane road can result in significant delay due to an inability to pass slower vehicles. Impatient or inattentive drivers and frequent left and right turning vehicles can constitute important safety hazards on a congested two-lane road. Therefore, as traffic volumes increase on SR A1A, it will be desirable to modify the two-lane roadway to enhance safety and maintain capacity. Where right-of-way or other factors permit, passing lanes, left and right turn lanes, and some street lighting should be installed, the speed limit reduced and an access management program instituted to reduce the number of new driveways.

If a reduction in density to one dwelling per acre south of Coconut Point is not feasible, then widening SR A1A to four lanes may be required. All but three of the 21 options tested could be accommodated by four lanes. Of the three that produced excessive volumes, the deficiency in two (options II-1-B and II-1-C) would be on the two-lane section of SR A1A south of Melbourne Shores. This could be rectified by extending the widening project further south. Only the presently approved densities (option II-1-A) generate traffic sufficient to exceed the current four-lane MAV.

Widening SR A1A to four lanes will be a relatively difficult and expensive project because of the general lack of sufficient existing right-of-way, environmental limitations such as the Coastal Construction Control Line and the Coastal Barrier Resources Protection Act, and the higher cost of beach property. Furthermore, widening SR A1A in the unincorporated area is impractical if those sections of the road further north in Indialantic and Melbourne Beach are not also improved. At present, although traffic volumes are high on SR A1A in the incorporated area, the Brevard MPO has not received any indication that local governments in that area desire to improve the road. Given that there is only 66 feet of right-of-way through Indialantic, some smaller scale improvements could be implemented in the incorporated area, such as turn lanes at intersections or possibly a continuous center turn lane, rather than four lanes or a one-way pair. However, any benefits brought about by such improvements would be eventually negated by the higher traffic volume permitted by four lanes on SR A1A in the south beaches. A long-term solution to the constraint posed by the US 192/SR A1A intersection and the four-lanes on Fifth Ave. would be particularly difficult to address without significant neighborhood disruption.

Although too complex to be resolved in this study, perhaps another bridge to the south beaches would redirect traffic and reduce the demand on SR A1A in the incorporated area. This important question should be systematically studied by the appropriate experts over the next several years. However, the following two points should be made. First, a considerable portion of the traffic on SR A1A, particularly on weekends, is destined for Sebastian Inlet State Park. It can be argued that park traffic is "consuming" capacity of SR A1A and indirectly effecting allowable residential density levels. Park visitors, however, do not particularly need or want to be on SR A1A. A separate bridge more directly aligned with the park, originating on the mainland near Micco Road and connected to the already approved Micco Road/I-95 interchange could perhaps redirect sufficient traffic to alleviate future congestion on SR A1A. Second, if higher densities are permitted for the south beaches in the anticipation of an eventual bridge and a bridge is then later found infeasible, the traffic volume generated in the meantime by the higher density development may be at such levels that four lanes will be mandatory, even though the initial intent was to keep SR A1A at two lanes.

The effect of more stringent FDOT level of service standards is dramatic. Under the proposed standards, none of the 21 land use and acreage options result in traffic volumes compatible with two lanes on SR A1A. Even under the most restrictive density and acreage option (I-6-C), three segments of SR A1A exceed the proposed two-lane MAV. The impact is less severe for the four-lane choices as the majority of options are compatible with the stricter traffic volume limits. This produces a dilemma where state policy standards would seem to be forcing the widening of a road even though such a project would be very expensive, create other transportation and environmental difficulties and perhaps actually encourage sprawl, contrary to a fundamental intent of the standards.

Additional density reductions or public land purchases to further reduce future traffic beyond those considered in option I-6-C seems impractical at this point because of budgetary and legal limitations. For the reasons outlined above, widening SR A1A appears to be an unattractive option. The benefits or feasibility of a new bridge will not be definitively known for some years. Thus, the only apparent policy option appropriate for the south beaches is the continuation of the current FDOT level of service standards.

A variance from the new FDOT standards will require concurrence from FDOT and DCA. Since SR A1A is not included on the Florida Intrastate Highway System because interregional movement is a minor function, FDOT and DCA do have the latitude to grant a deviation from the LOS standards in this case. The request should be predicated on a desire to retain SR A1A at two lanes in order to further community environmental, transportation, financial, and growth management objectives. Density reductions to a level compatible with the capacity of the two lanes on SR A1A would display a serious attempt by local government to limit urban sprawl. Local governments may also have to indicate a willingness to share the cost of some of the improvements to SR A1A discussed above to assure FDOT and DCA of the continuation of mobility in the SR A1A corridor. While bicycle and pedestrian needs are currently being addressed, the proposed lower densities on the south beaches would seem to largely work against the effectiveness of other non-automobile mobility options. Since the suggested variance would in effect continue the current standards, timing is not particularly critical. If appropriate, a formal request to FDOT and DCA for a variance to the proposed minimum acceptable level of service on SR A1A could be incorporated in the 1993/94 update of the Traffic Circulation Element.

An urban mobility program for the south beaches would be predicated on a desire to retain SR A1A at two lanes for environmental, financial and growth management reasons. Density reductions to a level compatible with the capacity of the two lanes on SR A1A would indicate a serious attempt by local government to limit urban sprawl. Local governments may also have to indicate a willingness to share the cost of some of the improvements to SR A1A discussed above. While bicycle and pedestrian needs are now being addressed, additional attention in the urban mobility plan to non-automobile travel modes, such transit, and to increased vehicle occupancy via ridesharing may also be required by FDOT and DCA.

## B. HURRICANE EVACUATION

### Vulnerability and Inundation Analysis

The National Oceanic and Atmospheric Administration, National Weather Service developed a model to estimate hurricane storm surge inundation. The SLOSH (Sea, Lake and Overland Surges from Hurricanes) model was recently completed for Brevard County, and can be utilized to estimate a worst case scenario of hurricane storm surge inundation.

The SLOSH model predicts that most of the study area, with the exception of portions of SR A1A will be inundated during a category 5 hurricane. From Melbourne Beach to Hog Point, the western shore of the island will be expected to be inundated during a category 3 storm. And south of Hog Point, the lagoonal water's edge wetlands will be inundated during a category 1 hurricane. The SLOSH model also predicts the barrier island from Florida Beach south to Sebastian Inlet will be completely inundated by a category 5 storm, with portion of SR A1A inundated during a category 3 storm event.

The Brevard County Office of Emergency Management completed an analysis of possible roadway inundation based on the SLOSH model. The results of this comparison revealed that portions of all major roadway links and causeways will be affected in even a Category 1 storm. Additionally, it was noted that the most vulnerable segment of the evacuation network were the approaches to the causeways.

The Florida Department of Natural Resources has also completed an analysis of areas which are vulnerable to coastal erosion. DNR has designated the coastal construction control line the western boundary of this area, which has been designated by Brevard County as the high risk vulnerability zone. It is projected the storm surge caused by a 100-year storm could result in sufficient erosion in this area to undermine structures which are not constructed on pilings, or portions of SR A1A which lie within this area.

Although storm surge is not expected to occur until immediately preceding hurricane landfall, tropical storm force winds are expected to arrive approximately eleven (11) to twelve (12) hours prior to landfall. Blowing debris and water can impede flow on causeways. And high winds can make high rise bridges impassible. Thus, safe evacuation should be completed prior to the arrival of these storm effects.

A study by the East Central Florida Regional Planning Council using the best available data on evacuation responses and storm characteristics reveals that most people would evacuate. However, this evacuation would be distributed across a behavioral response curve, with the largest percentage of the population evacuating during the fifth hour after the order is given.

When this seven (7) hour behavioral response is added to the eleven and one-half (11.5) hours needed for evacuation prior to landfall of the tropical storm force winds in a category 3-5 storm, a total of eighteen and one-half (18.5) hours is needed to allow for a safe evacuation. Thus the above assumption that surge-induced blockage will not significantly affect evacuation holds true only if the residents can be evacuated within eighteen and one-half (18.5) hours in the worst case scenario. However, evacuation should be completed approximately eleven and one-half (11.5) hours prior to landfall in order to escape the developing hazards associated with tropical storm force winds.

### Hurricane Evacuation Zones

*(A portion of the following analysis was taken from a report prepared by the Traffic Management Division.)*

The Brevard County Peacetime Emergency Plan depicts two hurricane evacuation zones for the south beaches.

Evacuation zone E includes the area from the north limits of Indian River south to unincorporated Floridana Beach. The evacuation route for the zone is north or south on Riverside Drive, north or south on SR A1A to US 192 and then west on the Melbourne Causeway to US 1.

The intersection of US 192 and US 1 in downtown Melbourne is one of the busiest in the county. In evacuation conditions, while the priority will be to move vehicles westbound from the beaches, north-south travel on US 1 will have to be maintained at some reasonable level. For this analysis, a green time split (amount of time the traffic signal is green) of .60 for US 192, .40 for US 1 and .05 for lost time (time needed to accelerate from stop after the light turns green) will be assumed. Based on these assumptions, the evacuation capacity on US 192 will be 1760 passenger cars per hour. The total evacuation volume proceeding westbound on US 192 from the beach area cannot substantially exceed this capacity value before queues form at the intersection, which is the critical element in the evacuation route.

A second important component of the evacuation system for this zone is SR A1A. The character of SR A1A differs within the zone. From Oak Street north, SR A1A is an interrupted flow facility. South of Oak Street, SR A1A is an uninterrupted rural two lane arterial. This means there will be two different evacuation capacity values for SR A1A. The evacuation capacity of SR A1A south of Oak Street is 1540 passenger cars per hour, and is more restrictive than the portion of SR A1A north of Oak Street.

Zone F is that portion of the county from Floridana Beach south to the Brevard County line. The evacuation route will be south on SR A1A into Indian River County and west to the mainland on SR 510 at Wabasso for some storm scenarios, and north on A1A to SR 192 for others.

The 1990 population estimates within these zones are 10,741 persons who would utilize 5653 vehicles to evacuate. This number of vehicles can be evacuated in approximately eight (8) hours, given the optimum roadway capacities and most favorable behavioral assumptions. Projected populations and hurricane evacuation times for evacuation of the study area, and persons remaining to be evacuated after eight (8) hours is shown as follows.

**Table 12**  
**Projected Populations and Hurricane Evacuation Times for Evacuation of the South Beaches Area**

Year	Projected Population	Projected Vehicles	*Hours to Evacuate
1990	10,741	5,653	7
1995	13,508	7,109	7
2000	15,999	8,421	7
2005	18,291	9,627	8

\*Assuming worst case scenario, both Zones E and F utilizing US 192 as evacuation route.

Source: Brevard County Comprehensive Planning Division, 1991.

The evacuation calculations for 1990, 1995, and 2000 show that in each case, times for evacuation prior to the estimated arrival of tropical storm force winds and conditions are not exceeded. These findings are different than those calculated for, and included within, the 1988 Comprehensive Plan. There are two reasons for the apparent reduction in evacuation times. The first is the 1990 population estimates used are significantly lower than those projected from the 1980 census. The second is the capacity of US 192 is assumed to be greater than was utilized during the previous analysis due to improvements on the road network over the last several years.

Evacuation from the south beaches cannot be accomplished within the preferred seven (7) hours in 2005, assuming no additional improvements to the evacuation network. This evacuation will take approximately eight (8) hours, with 1446 people remaining after seven (7) hours.

As the south beach area continues to develop, the evacuation hazards will be intensified unless alternatives are found. There are several alternatives for reducing evacuation times. These are discussed below.

1) Issue evacuation order earlier

While issuing an evacuation order prior to 18.5 hours before anticipated land fall of the hurricane is an adoption, there are disadvantages to this alternative. If hurricane evacuation orders are given too early, there is a chance the evacuation will not be necessary as the storm may change direction. Not only are these unnecessary evacuations costly, they also can result in fewer people evacuating the next time an order is given.

2) Roadway improvements to increase the capacity for evacuating vehicles

Roadways improvements, such as widening roadways, or improving intersections, can increase clearance times. These improvements may include the widening of SR A1A or improvement to the SR A1A/Miramar Road intersection, as well as other components of the evacuation network. For example, it is possible to improve Riverside Drive to increase capacity. However, the cost in right-of-way acquisition and disruption of the residences along Riverside Drive would probably make this alternative prohibitive.

3) Identification and/or construction of additional evacuation routes.

Brevard County has long anticipated the need for additional access to the south beaches. As early as 1975 the County's Comprehensive Plan depicted another bridge south of Melbourne Causeway to the mainland. The 1981 plan included bridges at Malabar and Valkaria Roads. The current plan shows a bridge located at Malabar Road connecting the mainland and the barrier island. The study being conducted to determine the feasibility of the Malabar Bridge has been discussed elsewhere in this report.

4) Land use controls

Land use controls are another mechanism for reducing projected clearance times from the barrier island. Implementation of the 1984 South-South Beaches Growth Management Directives resulted in administrative downzonings in the study area. In the southern portion of the area, residential densities were reduced to four (4) units per acre on undeveloped properties. However, the currently permitted densities still appear to be too high to be supported by the current hurricane evacuation network. The SLOSH model has shown that most of the study area will be inundated in a category 5 storm event. Thus, land use controls will not only reduce impacts on the roadway network, but will also result in fewer people at risk from the hazards of storm events.

The geomorphology of the study area is such that a portion of the population is located over fifteen (15) miles from the Melbourne Causeway resulting in travel time from hurricane evacuation Zone F to the Melbourne Causeway is in excess of one-half hour during normal weather conditions. During inclement weather conditions expected for a hurricane evacuation, travel times will be increased. Thus, evacuation times are increased in this area due to the distance from the causeway. Based strictly on hurricane evacuation concerns, it is advisable to reduce densities farther south on the barrier island to limit the number of people who must travel long distances to evacuate during a storm event.

Hurricane planning concerns do not occur in a vacuum. With the exception of Zone F, the land within each hurricane evacuation zone in the county is under the jurisdiction of a number of local governments. Thus intergovernmental coordination will play an important role in reducing and maintaining acceptable hurricane evacuation times. In Zone E, the evacuation clearance time criteria is currently exceeded due in large part to development within the beach municipalities. Therefore a cooperative approach to reducing excessive hurricane evacuation times should be developed. Funding of road improvements, programs aimed at changing behavioral responses to evacuation orders, and land use strategies should be included within this program. The program should be developed cooperatively by the County, municipal, and state agencies.

Federal and state land use controls are also in place. The Federal government has designated two areas within the South-South Beaches as undeveloped barrier island under the definition in the Coastal Barrier Resources Act (CBRA). This precludes any federal monies, including federal flood insurance, from being utilized in this area. Also, the Governor's Executive Order 81-105 states that Florida will also limit funding for development within the area.

Of all the hypothetical tracks generated from the model, the worst case scenario for the south beaches area is a category 5 storm moving on a slightly south of due west heading. This combination of factors would create consistent storm surge values of 14-15 ft above mean tide along the coast. The most alarming finding of this particular model scenario was the identification of a dramatic surge build up in the interlagoonal system marked by a high water value of 16 ft above mean sea level in the Banana River just south of Patrick Air Force Base. These values combined with a possible landfall at high tide coupled with the wave action could conceivably create total high water values of 30 plus feet in some areas of the south beaches for this storm scenario. This worst case scenario suggests the potential for total inundation of much of the south beaches area during this type of storm threat and dramatically emphasizes the need for evacuation, and consequently the need for adequate hurricane evacuation routes.

### C. RECREATIONAL FACILITIES

The study area lies within the south beaches recreational planning area, which includes land from south of Patrick Air Force Base to Indian River county. Although the south beaches has several water based parks, it is deficient in all categories for fully equipped mainland type parks, such as ballfields and tennis courts. This deficiency is somewhat offset by the number of beach and riverfront access points as well as two large special use parks, Spessard Holland Golf Course and Long Point Park. In addition, Sebastian Inlet State Recreational Area is located within the study area.

The existing recreational level of service in the planning area, which is based on neighborhood, community and urban district developed park acreage, is 20.46 acres per 1,000 persons. This exceeds Brevard County's adopted acceptable level of service of 1.20 acres per 1,000 persons. However, as noted above, the calculated level of service includes the large water based parks and does not accurately reflect the lack of mainland type parks. Levels of service are the driving force behind the recreational and open space service delivery system.

Brevard County's level of service is set at 1.2 acres per 1,000 people for all three types of parks (neighborhood, community, and district). School board sites were deliberately omitted from these calculations. Although they do contribute significantly to the parks and recreation system, entrance to the parks is at times limited and joint use agreements can be terminated. Parks located in the incorporated area of South Brevard beaches were also not included because population in these municipalities were not used in the projected population statistics. The large acreage of developed water based parks will permit additional development within the study area without reducing the level of service below that adopted by Brevard County. The projected population for 2005 will result in a level of service of 11.44 acres per 1,000 persons, without additional park acreage being developed.

An inventory of active parks, recreational facilities, and active beach and riverfront access points owned by the County are presented in Table 13 below.

**Table 13**  
**List of County Parks in the South Beaches**

Long Point Park	85.5 acres
Spessard Holland Park	67.0 acres
N. Geilgrange Park	8.0 acres
S. Geilgrange Park	7.0 acres
Coconut Point Park	36.9 acres
Bonsteel Park	2.17 acres
	-----
<b>TOTAL</b>	<b>206.57 acres</b>

**\*NOTE\*** Sebastian Inlet is a state park and is not included in the calculations above.

Source: Brevard County Parks and Recreation Division

Even though the south beaches area exceeds the minimum LOS standards, there are still future acquisitions and improvements of park property that will still be added.

Beach and Riverfront Program

Brevard County has an active beach and riverfront acquisition program, utilizing both county and state monies. Of the total revenue available through the county's original bond sale, state programs, grants, and local matches, the county has spent over \$57.95 million to finance property acquisition, appraisals, and surveys throughout the County. To date, \$11,266,380.20 of the above amount was spent for the acquisition of twenty-one (21) tracts of land for a total of 122.799 acres, comprising seven (7) park sites and three (3) beach access sites within the study area.

In light of the acquisitions, the south beach area is still deficient in beach and riverfront access based on county recreational standards. The addition of 13 more sites made up of 100 foot wide tracts of land is currently being planned. The acquisitions will take place south of Indialantic to Sebastian Inlet. The property has been identified and is currently being appraised. The acquisition of these 13 sites will correct the deficiency in the study area identified in the Beach and Riverfront Program.

It should be noted that these acquisitions are made by the state and that the cost of developing and maintaining the sites are the county's responsibility. As of August 30, 1990, \$1,017,545 is left from the original bond allocation. This amount will fall short of developing and maintaining the proposed acquisitions. Until additional revenue is allocated, the proposed sites will remain in their present state.

**D. SANITARY SEWER**

The portion of planning north of the CBRA unit, is currently served by sanitary sewer, although some isolated septic tank usage does occur. Sewer service in and south of the CBRA unit is provided by on-site sewage disposal (OSSD) systems, developer operated package plants and P.S.C. regulated wastewater utilities. Septic tanks is the typical OSSD system used in rural areas and in some unsewered suburban residential areas. The septic tanks will serve the home satisfactorily if it is properly designed, installed, and adequately maintained. When these procedures are not performed properly, the septic tank can contribute to groundwater contamination.



The failure rates for OSSD systems are hard to determine as they are underground and may never be known due to the complexity and magnitude of such a study. However, satellite photography of the central-south beaches area has led to the theory that the failure rate is high due to rapid and lush growth of vegetation on or near septic tank areas. The problem is compounded by the fact that septic tank use is increasing due to the prohibition of sewer service within the CBRA unit.

The Brevard County Comprehensive Plan identifies the entire study area as future sewer service area, with the lands south of the CBRA area within the 6-20 year service area. Sewage lift station and force main facilities have been installed as far south as 6th Street, (Section. 28, Township 28, Range 38) and have been designed to accommodate all of the projected flow in the service area. Since the South Beaches Regional Wastewater Treatment Plant is receiving Federal funding, the County is prohibited from providing wastewater service within the CBRA area, although Brevard County has received verification that the installation of a force main through the CBRA area (without providing service) would be acceptable.

Treatment capacity is currently provided by the 9.0 million gallons per day (MGD) South Beaches Regional wastewater treatment plant (WWTP), which was recently expanded from 3.0 MGD. As part of the expansion, the South Patrick WWTP was abandoned, leaving only a pump station. The Indian Harbour Beach WWTP will remain as a work center for maintenance crews. All sewage treatment will be provided at the South Beaches WWTP, which is expected to have adequate capacity for the next 10-15 years. The average actual flows and committed flows of the plant is 6.777 MGD, with 2.333 MGD remaining capacity. The effluent from the South Beaches plant receives tertiary treatment, high level disinfection and is used for public access irrigation of the Spessard Holland Golf Course and Doug Flutie Park. Effluent is also available for irrigation purposes south along A1A to the north edge of the CBRA area. The effluent from the South Beaches Regional WWTP is disposed of via reuse and the deep well located at the plant. Brevard County is presently exploring options to decrease dependence on the use of deep well injection of treated effluent. The County's consultant, CDM, is proceeding with a study to determine the public support, cost and disposal potential for urban reuse, especially in the area from the plant north to US 192.

#### E. POTABLE WATER

Potable water for the south beaches area is provided by the City of Melbourne. Currently the water line extends to the approximate terminus of sanitary sewer service. However, a 20" water main extension that will extend water service to just north of Crystal Lakes is currently in the design phase. Further extensions south of that point will require additional work by the City as the existing line is only 10" in diameter. In the southern most portion of the study area, package water plants and individual wells provide water service.

#### F. SOLID WASTE

All residential and commercial solid waste generated in Brevard County is received at the Central Processing and Disposal Facility located on Adamson Road in West Cocoa which shreds and disposes of the solid waste. Brevard County is also working to acquire land for a south county landfill which will assure the solid waste level of service will continue to be met.

#### G. FIRE PROTECTION

Fire protection services for the south beaches area are provided primarily by Station #63, located at 2540 South A1A, Melbourne Beach. An additional county station is located at 2602 North A1A, Indialantic, and a new station (#64) has been opened at 7400 South A1A. The County also has reciprocal agreements with the municipal fire stations in the area, which are in Indialantic and Melbourne Beach. Fire and Rescue personnel in these stations, and countywide, strive for a maximum six minute response time. Assuming a traveling speed of 30 miles per hour, the response time generally defines a service area within a three-mile radius of each station.

The lack of a public water supply within much of the study area is an issue of concern for fire protection. Currently, development in the area is approved subject to the provision of artesian wells for fire fighting. Poor well maintenance and increased salt water intrusion are two reasons these wells are less than an ideal source of water for fire protection. Brevard County has begun to address these problems through the establishment of a Municipal Services Benefit Unit (MSBU) to extend a water line to a portion of the south beaches area. The MSBU authorizes the construction of watermains, water laterals, and fire hydrants in the area generally described as beginning just north of Coconut Point and running south to Crystal Lake.

Even with this MSBU in place, a significant portion of the barrier island south of Crystal Lakes remains without an assured source of water for fire protection. Potential measures to address this problem include adopting requirements for maintaining existing and future artesian wells, setting up an inspection program to identify wells which have been inadequately maintained and requiring improvements to substandard wells. Alternatively, Brevard County could explore the possibility of setting up additional MSBUs for water line extensions.

#### H. POLICE PROTECTION

The Brevard County Sheriff's Office provides 24-hour law enforcement protection for the unincorporated area of the south beaches. The study area is a single patrol zone (Zone #63), primarily patrolled by one uniformed deputy. Although the linear geography and limited access of the study area present logistical patrol problems, Sheriff's deputies maintain an average response time of 11.6 minutes. This average is consistent with the other patrol zones in south Brevard. One potential for service delay occurs during shift change, when deputies must drive over twenty (20) miles from the Brevard County Government Center to Zone #63. In response to this situation, the Sheriff has located a small substation in the Aquarina Fire Station (#64).

#### I. SCHOOLS

Gemini Elementary, Hoover Junior High and Melbourne High School serve the study area. There are no current plans for locating a new school site in the study area.

## VIII. RECOMMENDATIONS

The data and analysis provided in the preceding sections of this report indicate a number of areas in which the Comprehensive Plan does not adequately address established development patterns, infrastructure limitations, environmental conditions, or the projected service needs of the population. Residential density limits established by the Comprehensive Plan were examined based upon the residential character of the south beaches, as well as the linear nature of the area and the limited transportation network. Moreover the type and location of mixed use districts were reviewed consistent with the character of the area, as well as the need for commercial services to serve the resident and tourist populations of the south beaches.

The following recommendations will address the above issues. The locations of the areas affected by each recommendation are shown on maps which follow each recommendation.

### RECOMMENDATION #1:

Amend Future Land Use Policy 4.4, Criterion A to permit consideration of community commercial complexes within the south beaches at locations along SR A1A which do not meet the minor/major arterial or collector/arterial intersection criterion. The proposed amendment is shown below.

#### Future Land Use Policy 4.4

Appropriate locations for community commercial land uses, which serve more than one residential area in the community, shall be based upon the following minimum criteria:

##### Criteria:

A. Community commercial clusters should be located at minor/major arterial intersections (except as established in Criterion B). Collector/arterial intersections are acceptable, however, the collector roadways must serve multiple residential areas. Intrusion of these land uses into surrounding residential areas shall be limited.

B. Due to the linear nature and lack of intersections along SR A1A south of Melbourne Beach, a community commercial center should be limited to properties located in Section 28, Township 28, Range 38 which were existing as BU-1 zoning as of April 20, 1992.

C B. The types of commercial uses appropriate for community commercial complexes would include retail, personal and professional uses such as grocery, drug or variety stores, restaurants, beauty salons, branch banks, or branch medical centers.

D G. Sites for community commercial complexes should not exceed 20 acres.

E D. Access points for community commercial complexes shall be provided as directed in the Traffic Circulation element of this Comprehensive Plan.

F E. A sidewalk or bicycle facility shall be required where appropriate, as directed in the Traffic Circulation element, to provide convenient access to surrounding residents and to reduce traffic volumes on the roadways.

G F. Community commercial clusters should be spaced at least 2 miles apart.

H G. The gross floor areas of community commercial complexes should not exceed 150,000 square feet.

**Rationale:**

Future Land Use Policy 4.4 states that community commercial complexes should be located at the intersection of major/minor arterials or collector/arterials. The use of the word "should" permits some flexibility in the application of this policy, based upon the definition of should. However, along SR A1A south of Melbourne Beach it is essentially impossible to meet this requirement due to the lack of intersections in this area. With a present population in excess of 10,000 and an estimated 2005 population approximately 18,000, the need for community commercial land uses may exist in the future, as discussed under recommendation #2. To provide flexibility in the location of community commercial uses within the south beaches, Future Land Use Policy 4.3 may be considered for amendment as shown.

An analysis of the existing general retail commercial (BU-1) zoning within the south beaches is presented below. The separation distances shown in Table 13 are approximate mileage between the parcels described above and below each distance.

**Table 13  
General Retail Commercial (BU-1) Zoning in the South Beaches**

<u>Location</u>	<u>Name</u>	<u>Separation Distance</u>
S17,T28,R38	South of Fire Station	1/4 mile
S21/22,T28,R38	7-11, E. of Sewer Plant	1 3/4 mile
S28,T28,R38	Wexford	2 miles
S10/11,T29,R38	Vacant cluster, South Shores	3/4 mile
S14,T29,R38	Vacant, S. of Melbourne Shores	200 feet
S14,T29,R38	Exotica	4 miles
S6,T30,R39	Vacant, S. of Pepper Cove	1/2 mile
S7,T30,R39	Whitey's Marine	

Source: Comprehensive Planning Division, 1992

This recommendation is consistent with the following provision of the Comprehensive Plan:

**Future Land Use Objective 4**

Requires Brevard County provide for adequate and appropriate lands for the location of commercial land uses, through land development regulations, to serve needs of residents and visitors.

**RECOMMENDATION #2:**

Amend the Future Land Use Map Series to remove the mixed use district (MUD) in Section 28, Township 28, Range 38 on all parcels except those currently zoned BU-1. This area should be designated residential. The parcels currently zoned BU-1 should remain designated as mixed use district, with no administrative expansion of the mixed use district boundaries permitted.

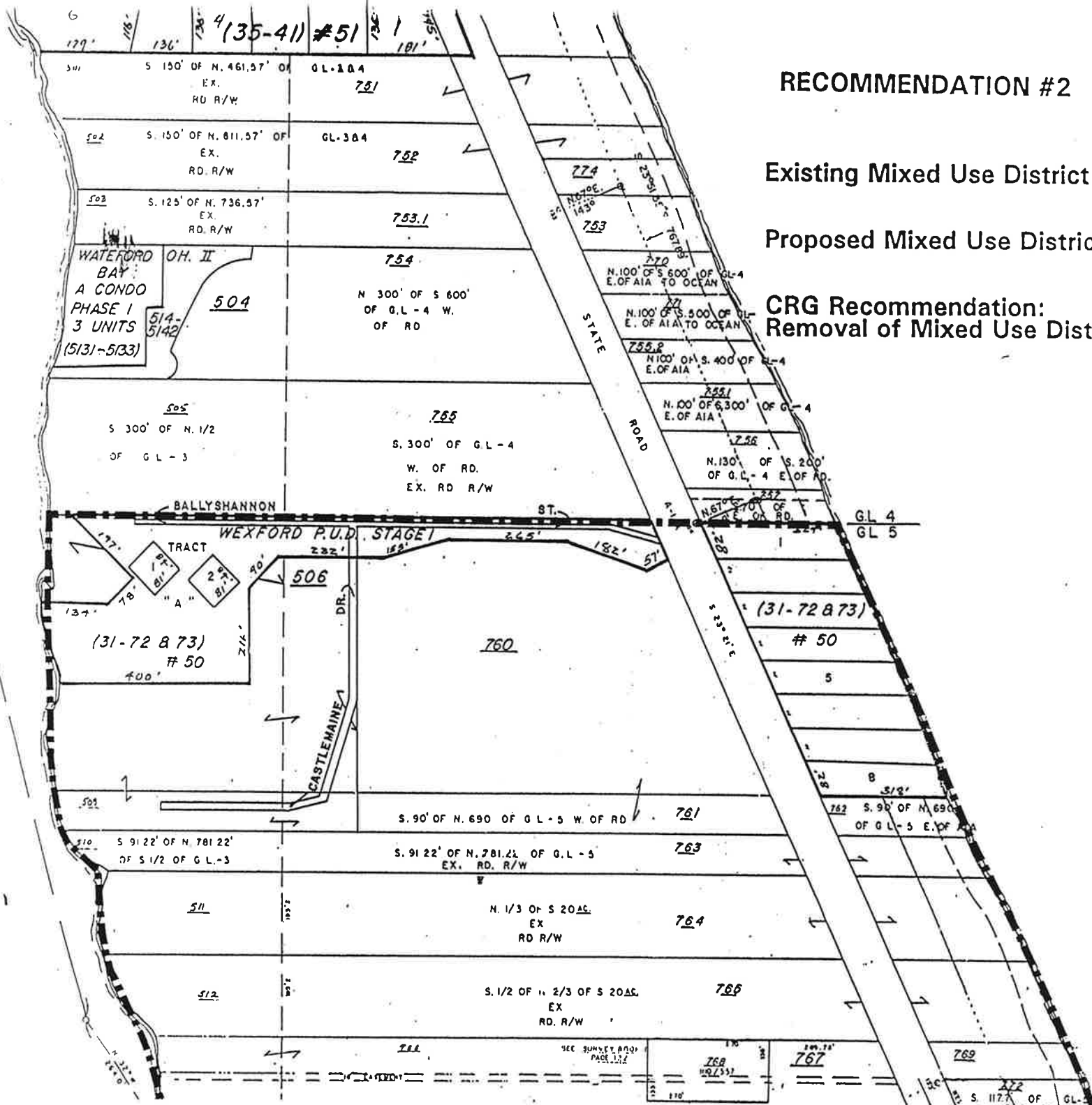
**Rationale:**

The existing commercial (BU-1) zoned property within this mixed use district can serve the community commercial needs of the south beaches area. This tourist commercial (TU-1) zoning within the MUD is intended to be specifically located at the terminus of the proposed Malabar Bridge. The MUD is approximately seventy (70) acres in size, extending from ocean to river, and was sized based upon the policy of permitting tourist uses within one-quarter (1/4) mile of major through county intersections.

The MUD should be removed from the tourist commercial and residential parcels for several reasons. First, the location of the Malabar Bridge at this location is in question. As discussed in the text, FDOT has conducted a feasibility study that shows a 4-lane toll facility is not financially feasible at this location. Second, the district is located in an area where no existing commercial land uses have been established. Based on its size, this MUD could meet the criteria (contained in Future Land Use Policy 4.5) for a regional commercial center. Regional commercial centers range in size from greater than twenty (20) acres to 100 acres, and could include department stores, specialty shops, general merchandise stores and restaurants, in addition to those appropriate for community commercial complexes. This MUD could support approximately 450,000 square feet of commercial uses, which is above the Development of Regional Impact (DRI) threshold for a retail commercial project.

Based upon the population of the south beaches, and the need for commercial uses within the study area, a community commercial center would be more appropriate than the existing regional commercial center which could be located within the seventy (70) acre site. The staff recommendation would result in a MUD consistent in size and location with a community commercial center.

Recommendation #2 would permit a community commercial shopping area to be located adjacent to Wexford. Staff believes a community commercial center will be required to serve a conservatively estimated buildout population of the south beaches of 19,627. The conservative buildout population was calculated based upon the CRG recommended densities of two (2) dwelling units per acre north of Coconut Point and one (1) dwelling unit per acre south of Coconut Point, taking into account the platted lots already established in the study area, plus conversion of agricultural lands to two (2) dwelling units per acre.

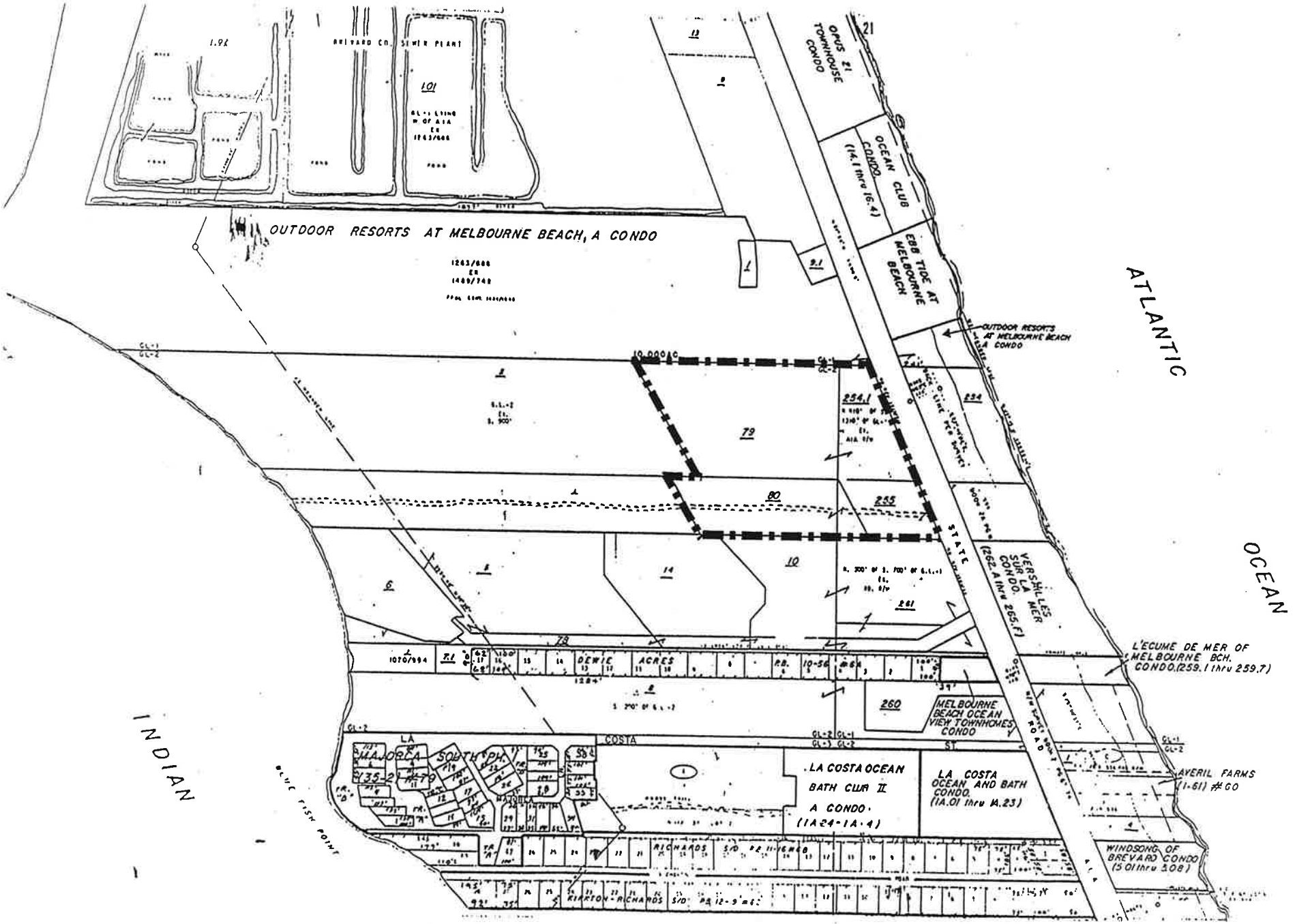


**RECOMMENDATION #2**

Existing Mixed Use District

Proposed Mixed Use District

**CRG Recommendation:  
Removal of Mixed Use District**



**ALTERNATIVE RECOMMENDATION #2**  
 Location of Proposed Mixed Use District

Based upon population standards for commercial land uses (DeChiara and Koppelman, 1982), the recommended minimum population to support a community commercial center is approximately 35,000. Although the full time resident population is not expected to equal 35,000 at buildout (under the restrictive scenario outlined above), the transient population should be sufficient to support a community commercial center. In addition, a community commercial center within the study area will also reduce the impacts to the road system north of the study area.

Tourist commercial uses would be consistent with policies contained within the Future Land Use Element, if they are located at the intersection of major arterials or roadways with a higher classification. However, until a new bridge location is determined, this portion of the MUD is premature. As described in recommendation #12 below, staff should evaluate locating a MUD at the terminus of a new bridge when, and if, a location for a mainland bridge is determined.

This recommendation is consistent with the following provisions of the Comprehensive Plan:

**Future Land Use Policy 4.4**

Criterion B - Uses appropriate for community commercial complexes include retail, personal and professional uses such as grocery, drug or variety stores, branch banks, or branch medical centers.

Criterion C - Limits sites for community commercial centers to twenty (20) acres.

Criterion F - Community commercial centers should be spaced at least two (2) miles apart.

Criterion G - Limits gross floor areas for community commercial complexes to 150,000 square feet.

**RECOMMENDATION #3:**

Amend Future Land Use Policy 4.3, Criterion A to permit consideration of neighborhood commercial (BU-1-A) zoning along SR A1A south of Melbourne Beach at locations other than the intersection of collector/collector or collector/arterial roadways.

**Policy 4.3**

Appropriate locations for neighborhood commercial land uses to serve the needs of the immediate residential areas for commercial services shall be based upon the following minimum criteria:

**Criteria:**

A. Neighborhood commercial clusters should be located at collector/collector or collector/arterial intersections (except as established in Criterion B) and may be located outside the mixed-use district boundaries. Intrusion of these land uses into the surrounding residential areas shall be limited.

B. Due to the linear nature and lack of intersections along SR A1A south of Melbourne Beach, neighborhood commercial uses may be considered along those roadways only if it can be demonstrated additional commercial uses are necessary to meet the needs of an existing residential population, or the future needs of a projected population; if there is sufficient infrastructure to support commercial development; if the area has an established commercial character; and if they are consistent with the other applicable policies of this Comprehensive Plan. In



addition, all existing BU-1-A uses, which were in operation as of April 20, 1992 shall be considered consistent with this policy.

C B. Appropriate commercial uses would include those of a low-nuisance nature such as convenience stores and personal service establishments.

D G. Sites for neighborhood commercial land uses should incorporate no more than four acres.

E D. Access points for neighborhood commercial complexes shall be provided as directed in the Traffic Circulation element of this Comprehensive Plan.

F E. A sidewalk or a bicycle facility shall be required where appropriate, as directed in the Traffic Circulation element, to provide convenient access to surrounding residents and to reduce traffic volumes on the roadways.

G F. Neighborhood commercial clusters should be spaced at least one (1) 1/2 mile apart in the urban areas and at least ~~one (1) mile~~ three (3) miles in the rural areas.

H G. The gross floor areas of neighborhood commercial complexes should not exceed 35,000 square feet.

**Rationale:**

BU-1-A zoning may be considered outside of a mixed use district pursuant to Future Land Use Policy 4.3, Criterion A which states that neighborhood commercial clusters should be located at collector/collector or collector/arterial intersections. The use of the word "should" permits some flexibility in the application of this policy based upon the definition of should. However, along SR A1A south of Melbourne Beach it is essentially impossible to meet this requirement due to the lack of intersections in this area. To provide flexibility in the location of neighborhood commercial uses, Future Land Use Policy 4.3 may be considered for amendment as shown.

An analysis of the existing neighborhood commercial (BU-1-A) zoning within the south beaches is presented below. The separation distances shown in Table 14 are approximate mileage between the parcels described above and below each distance.

**Table 14**  
**Neighborhood Commercial (BU-1-A) Zoning in the South Beaches**

<u>Location</u>	<u>Name</u>	<u>Separation Distance</u>
S33/34,T28,R38	Coconut Cove Restaurant	2 1/2 miles
S10/11,T29,R38	Vacant, S. of Rusty Anchor	1/4 mile
S14,T29,R38	BU-1-A Cluster, Melbourne Shores	1 1/4 miles
S23/24,T29,R38	Town Star	1 3/4 miles
S36,T29,R38	Vacant, Bayshore Drive	1 1/2 miles
S7,T30,R39	BU-1-A Cluster, North of Inlet	

Source: Comprehensive Planning Division, 1992

This recommendation is consistent with the following provision of the Comprehensive Plan:

**Future Land Use Objective 4**

Requires Brevard County provide for adequate and appropriate lands for the location of commercial land uses, through land development regulations, to serve needs of residents and visitors.

**RECOMMENDATION #4:**

Amend the Future Land Use Map Series to remove the mixed use district (MUD) on the west side of SR A1A, north of Melbourne Shores (Section 10, Township 29, Range 38, from Sea Dunes Drive south to the south section line), excluding parcel 770 which is the site of the Rusty Anchor Restaurant. This area is recommended for designation as residential land use.

**Rationale:**

The recommendation to remove this mixed use district is based upon compatibility with surrounding uses, character of the area, and impacts to local traffic conditions on SR A1A. The established character of the area is largely residential, with the exception of the Rusty Anchor Restaurant. The MUD ranges in depth from approximately 250 feet to 500 feet. This narrow width would not permit large setbacks or transitional uses within the boundaries of the MUD to protect surrounding residential areas. Existing zoning within this mixed use district includes commercial (BU-1) and tourist uses (TU-1) on vacant land, with the exception of the partial construction of South Shore resort and the Rusty Anchor Restaurant.

This mixed use district was established in 1988 consistent with the South-South Beaches Growth Management Directives, which designated this as an area appropriate for neighborhood commercial uses. Neighborhood commercial uses (BU-1-A zoning), and professional office uses (RP zoning) may be considered within the residential land use category, if the property has direct access to a major transportation corridor. Thus, amending the Future Land Use Map to residential in this area, will allow consideration of



neighborhood commercial, professional office, and residential land uses while maintaining the existing residential character of the area.

The mixed use district designation should remain on parcel 770 to allow the Rusty Anchor Restaurant to continue in operation as a use conforming to the comprehensive plan.

This recommendation is consistent with the following provisions of the Comprehensive Plan:

**Future Land Use Policy 4.4**

Criterion A - Community commercial clusters should be located at minor/minor arterial intersections or collector/arterial intersections if the collector roadways serve multiple residential areas.

**Future Land Use Policy 4.6**

Criterion C - Residential office uses may be located outside of mixed use districts with direct access to arterial roadways.

Criterion D - Office land uses should be utilized to buffer residential land uses from the traffic impacts of transportation corridors.

**RECOMMENDATION #5:**

Amend the Future Land Use Map Series to remove the mixed use district (MUD) on the west side of SR A1A in Melbourne Shores (Section 14, Township 29, Range 38, from Heron Drive to Pelican Drive). This area is recommended for designation as residential.

**Rationale:**

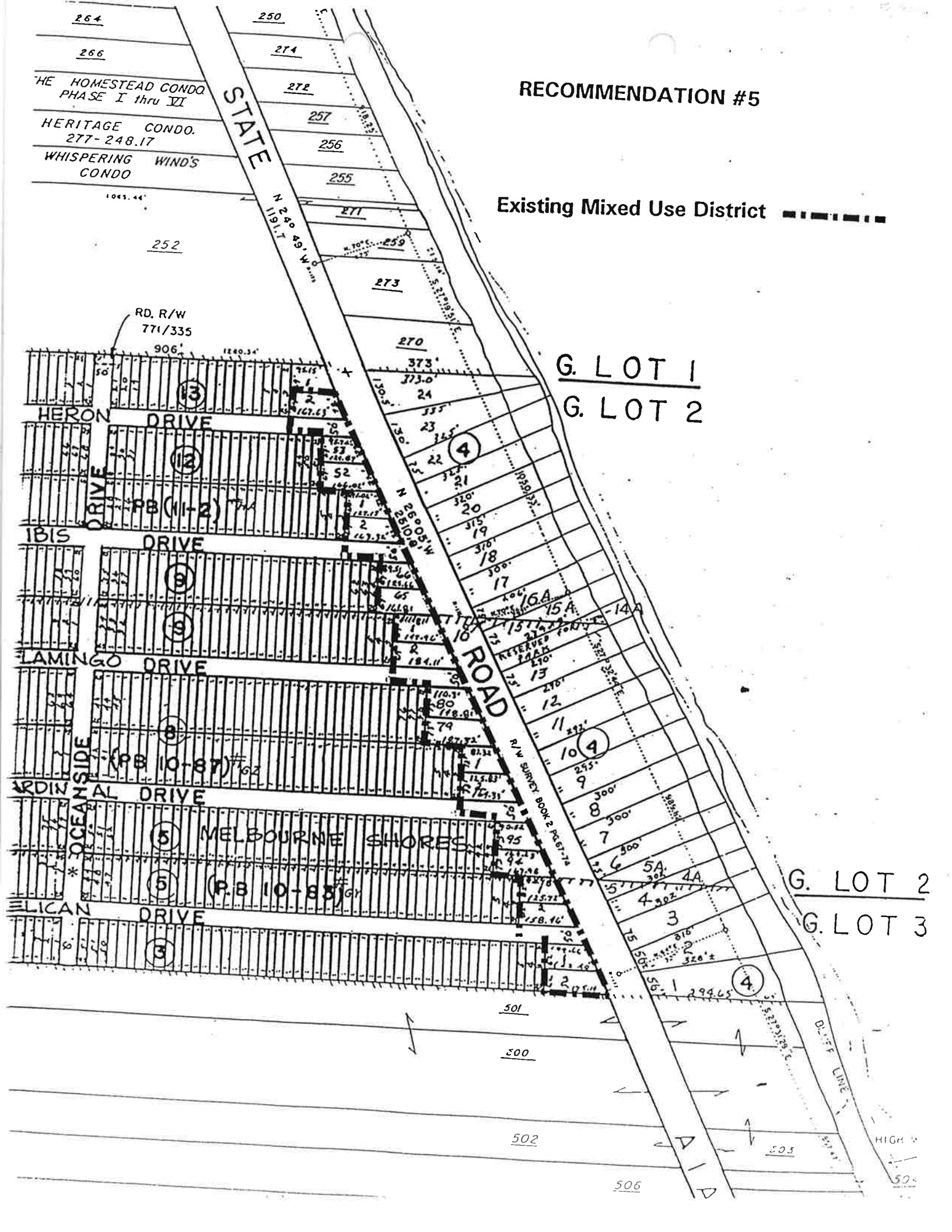
The recommendation to remove this mixed use district is based upon compatibility with surrounding uses, character of the area, and impacts to local traffic conditions on SR A1A. The established character of the area is residential, with single family residences immediately to the west of the MUD boundaries. The narrow width (approximately 200 feet) of the mixed use district would not permit large setbacks or transitional uses within the boundaries of the MUD. In addition, the narrow width of the MUD is conducive to the strip commercial development pattern, which could change the character of the area and increase traffic congestion.

This mixed use district was established in 1988 consistent with the South-South Beaches Growth Management Directives, which designated this as an area appropriate for neighborhood commercial uses. Professional office uses (RP zoning) may be considered within the residential land use category, if the property has direct access to a major transportation corridor. Thus, amending the Future Land Use Map to the residential land use designation in this area will allow consideration of professional office and residential land uses while protecting the existing residential character of the area.

The existing zoning in the area is BU-1-A (neighborhood commercial), which may be considered outside of a mixed use district pursuant to Future Land Use Policy 4.3, Criterion A which states that neighborhood commercial clusters should be located at collector/collector or collector/arterial intersections. However, this area does not meet the locational requirements as they are presently written.

# RECOMMENDATION #5

Existing Mixed Use District 



G. LOT 1

G. LOT 2

G. LOT 2

G. LOT 3

501

500

502

506

503

505

504

This recommendation is consistent with the following provisions of the Comprehensive Plan:

**Future Land Use Policy 4.6**

Criterion C - Residential office uses may be located outside of mixed use districts with direct access to arterial roadways.

Criterion D - Office land uses should also be utilized to buffer residential land uses from the traffic impacts of transportation corridors.

**RECOMMENDATION #6:**

Amend the Future Land Use Map Series to remove the mixed use district (MUD) on the west side of SR A1A north of Sebastian Inlet State Recreation Area (Section 7, Township 30, Range 39, Mathers Cove to Long Point Road). This area is recommended for designation as residential.

**Rationale:**

This recommendation to remove the mixed use district was agreed to unanimously by the CRG. (For: Nancy Higgs, Pat Richardson, Steve Tatoul, Pat Richardson, Bill Vernon, Wendy Murray, and Resa Marks) The recommendation is based upon compatibility with surrounding uses, character of the area, and impacts to local traffic conditions on SR A1A. Existing uses within the area includes single family residential, Whitey's Bait and Tackle, and a convenience store which serve largely the visitors to Long Point Park and the Sebastian Inlet State Recreation Area. The narrow (300 foot) width of the mixed use district would not permit large setbacks or transitional uses within the boundaries of the MUD. In addition, the narrow width of the MUD is conducive to strip commercial, which could change the character of the area and increase traffic congestion.

The existing zoning in the area is BU-1 (Whitey's Bait and Tackle) and BU-1-A (neighborhood commercial), which may be considered outside of a mixed use district pursuant to Future Land Use Policy 4.3, Criterion A which states that neighborhood commercial clusters should be located at collector/collector or collector/arterial intersections. However, this area does not meet these locational requirements due to the lack of east-west roadways within the study area. Staff recommendation #8 (below) addresses this concern. Whitey's Bait and Tackle, which is presently zoned BU-1, could be permitted within BU-1-A with a conditional use permit for a bait and tackle shop. Thus, the removal of this mixed use district would not impact the existing uses in the area.

This recommendation is consistent with the following provisions of the Comprehensive Plan:

**Future Land Use Policy 4.6**

Criterion C - Residential office uses may be located outside of mixed use districts with direct access to arterial roadways.

Criterion D - Office land uses should also be utilized to buffer residential land uses from the traffic impacts of transportation corridors.

#### **RECOMMENDATION #7:**

Develop Established Use criteria, to be included within the zoning code, which will address the existing non-conforming tourist uses, multi-family residential uses, commercial uses and recreational vehicle uses in the south beaches. At a minimum, the criteria should address rebuilding of non-conforming structures and improvements to permit the Established Use to come into better conformance with existing codes.

#### **Rationale:**

As discussed in the body of this report, the existing motels and restaurants within the study area are well established uses. None of the tourist uses south of Melbourne Beach are part of a hotel/motel chain and all could be described as "family run" businesses. These facilities do not support convention clients, due to their small size; but rather serve families and fishermen who wish to remain close to the natural amenities of the ocean, river and Sebastian Inlet. To date no tourist facilities have been constructed within the mixed use district designated at the node where the proposed Malabar Bridge intersection with SR A1A is being considered. It is anticipated such facilities will not be constructed until the Malabar Bridge (or other new bridge, as it may later be named) is sited, funded and possibly under construction. Thus, the existing motels and restaurants provide the only tourist uses which serve the south beaches.

At present these uses are non-conforming to the Future Land Use Map and may not be expanded or repaired greater than fifty (50) percent. Thus, because these uses are consistent with the character of the area and are long standing businesses, the staff recommends the Future Land Use Map be amended to allow these uses to become conforming. However, no additional tourist or commercial uses are recommended by the Staff at this time.

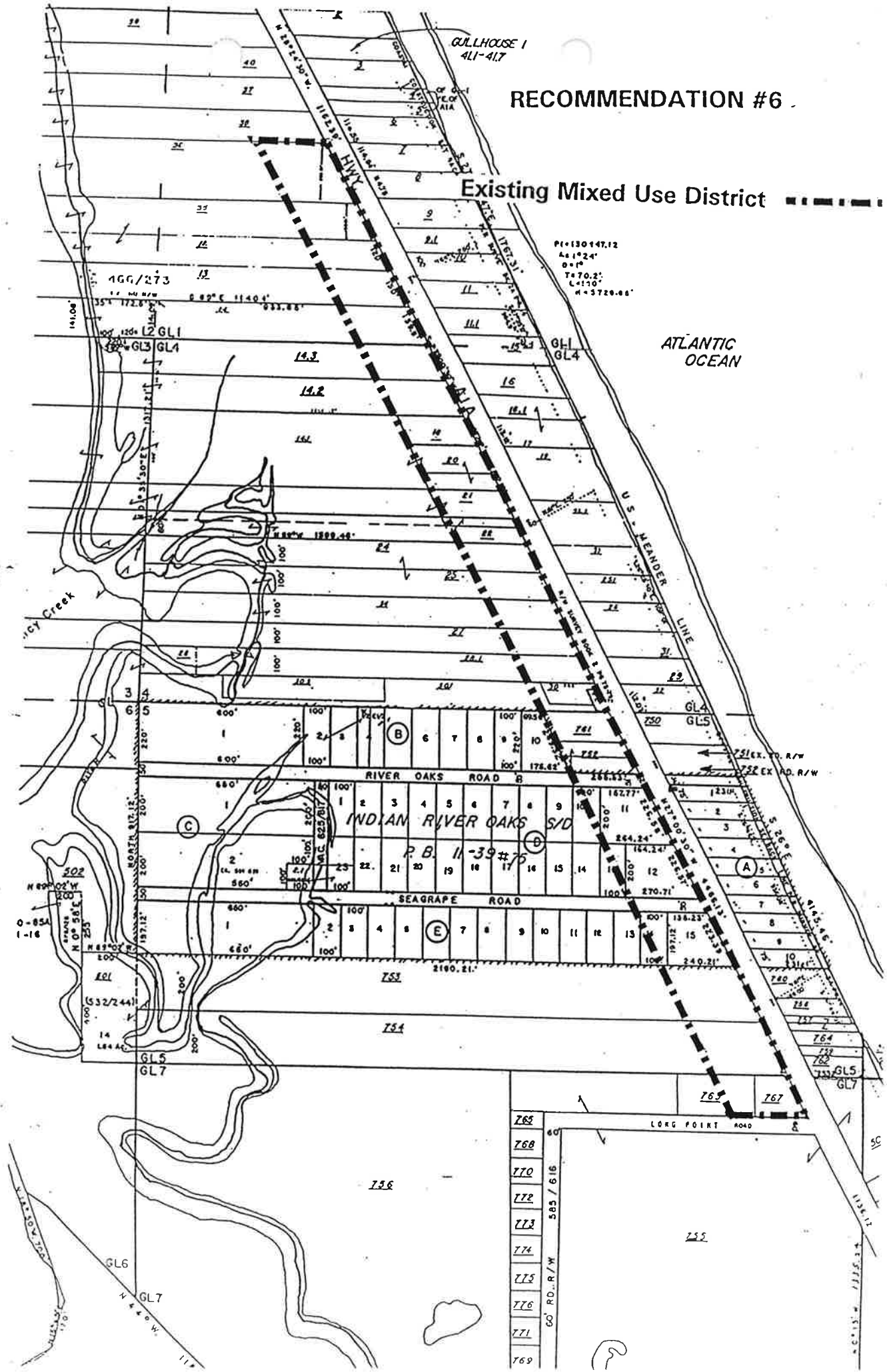
There are five (5) existing businesses which are not zoned for tourist use. These are Turtle Run, Sandy Brook, Tiara By The Sea Apartments/Motel, Sea View Resort Motel and the Jolly Roger Resort. These businesses are zoned multi-family, consistent with the zoning code which does not regulate time of stay for residential development.

The initial staff recommendation was to designate those uses currently zoned TU-1 as mixed use districts to permit the existing TU-1 zoning to become consistent with the future land use designation. This recommendation was supported by the CRG and Future Land Use Map amendments were included within the 92A amendment cycle for Samperton's Restaurant, Sandy Shoes Motel, Sea Grape Motel, Sand Gate Motel, Ocean Pines Village, Sea Dunes Motel, Floridana Beach Motel, Sebastian Beach Inn (including the existing parking lots), and Chuck's Steak House Restaurant. However, during the public hearing process several concerns about expansion and change of use were expressed, and the amendments were not approved for transmittal by the Board of County Commissioners.

The policy above was developed to address many of the concerns raised during the SAPS process. The rationale for developing new language for the treatment of Established Uses rests with the determination that mixed use districts provide the opportunity for a variety of uses and zonings. The feeling of many south beach residents is that the existing uses are generally compatible with the character of the south beaches. However, more intensive tourist uses, or other commercial land uses, may not be compatible. Thus, the Established Use permits existing uses to continue to function in the study area, without the question of expanding or greatly intensifying the commercial development.

# RECOMMENDATION #6

Existing Mixed Use District **-----**



PI=130447.12  
A=1°24'  
D=10'  
T=70.2'  
L=110'  
d=5720.66'

ATLANTIC OCEAN

U.S. MEANDER LINE

INDIAN RIVER OAKS S/D

P.B. 11-39 #75

765	LONG POINT ROAD
768	
770	585 / 616
772	
773	
774	
775	
776	
771	60' RD. R/W
769	



This recommendation is consistent with the following provision of the Comprehensive Plan:

**Future Land Use Objective 4**

Requires Brevard County provide for adequate and appropriate lands for the location of commercial land uses, through land development regulations, to serve needs of residents and visitors.

**Future Land Use Policy 4.10**

Criterion A - Tourist commercial land uses should provided convenient access to the natural amenities of the county, and adverse impacts upon the residential community and natural resources should be minimized.

Criterion G - Tourist uses should be limited to areas where such uses are established.

**RECOMMENDATION #8:**

Amend the Future Land Use Map to designate the property which is the site of the Surfcaater Motel from mixed use district to residential.

**Rationale:**

The Local Planning Agency developed this recommendation based upon concern that all existing tourist uses within the south beaches would be treated equally. The Surfcaater Motel is the only motel in the south beaches within a mixed use district. The LPA recommends that this use be treated the same as all the other existing tourist uses, and be designated as Inconsistent Uses, as proposed under Recommendation #9 above.

This recommendation is consistent with the following provision of the Comprehensive Plan:

**Future Land Use Objective 4**

Requires Brevard County provide for adequate and appropriate lands for the location of commercial land uses, through land development regulations, to serve needs of residents and visitors.

**Future Land Use Policy 4.10**

Criterion A - Tourist commercial land uses should provided convenient access to the natural amenities of the county, and adverse impacts upon the residential community and natural resources should be minimized.

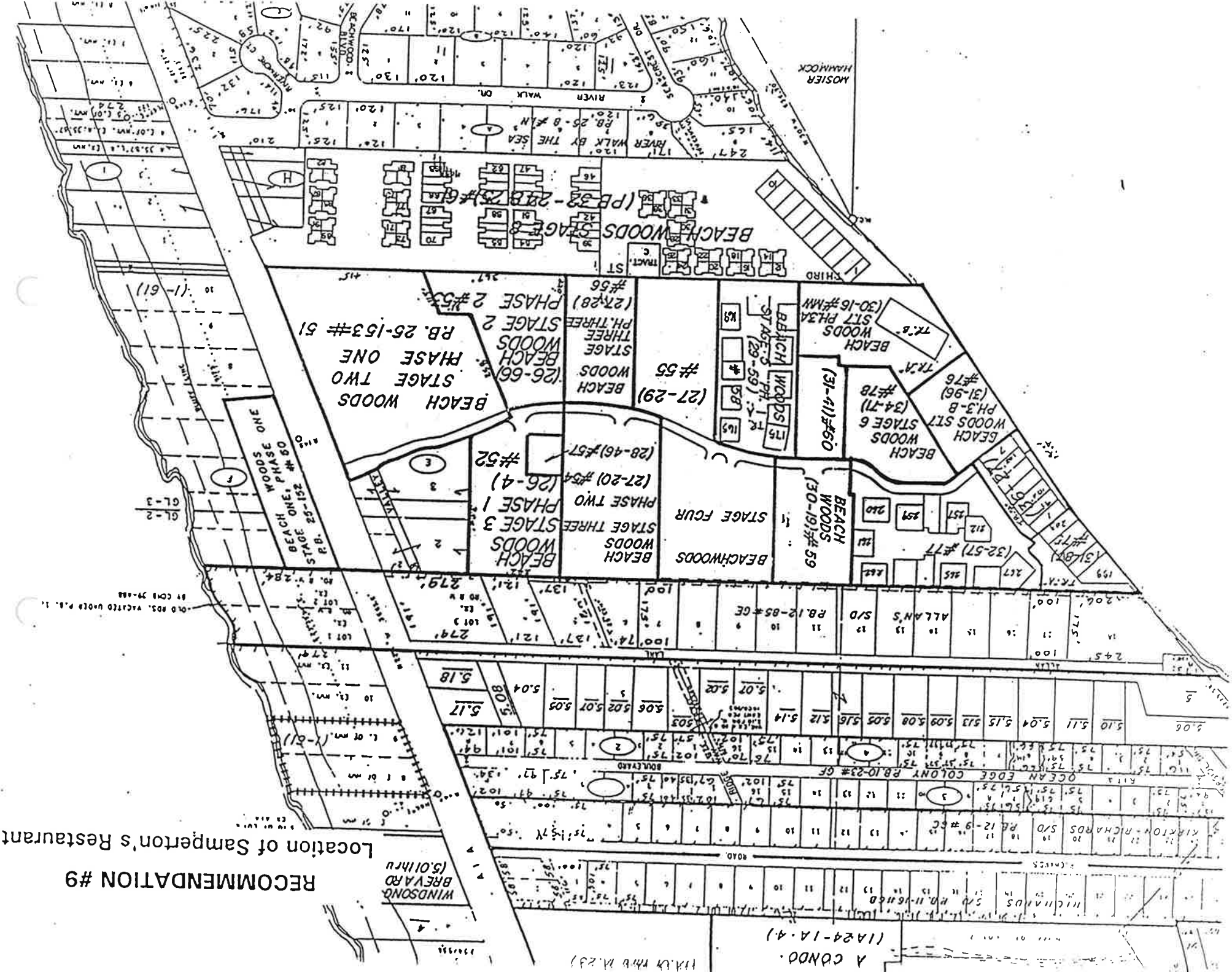
Criterion G - Tourist uses should be limited to areas where such uses are established.

**RECOMMENDATION #9:**

Amend the Future Land Use Map to reduce the mixed use district on Parcel 259, Section 17, Township 30, Range 39 to the westerly 2.6 acres of that parcel; the remainder of the parcel is to be designated as residential with the potential to go to BU-1-A.

**Rationale:**

The Local Planning Agency developed this recommendation while reviewing the SAPS. This recommendation was developed based upon the concern that all existing tourist



A CONDO.  
(1A24-1A.4)

WALK THE M.23

**RECOMMENDATION #9**

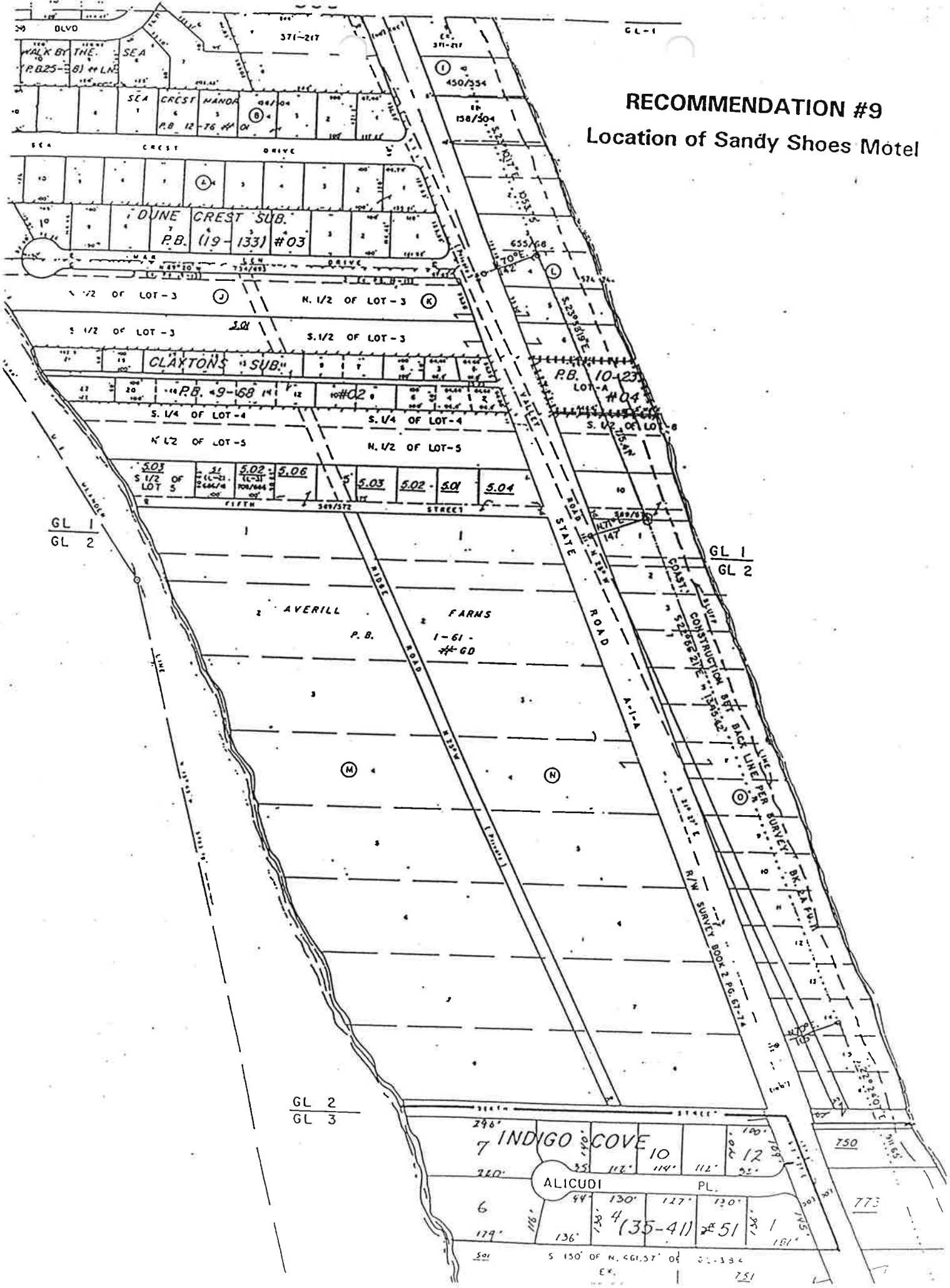
Location of Samperton's Restaurant

WINDSONG  
BREVARD  
(S. OLIN) RD

GL-1

# RECOMMENDATION #9

## Location of Sandy Shoes Motel



GL 1  
GL 2

GL 1  
GL 2

GL 2  
GL 3

INDIGO COVE

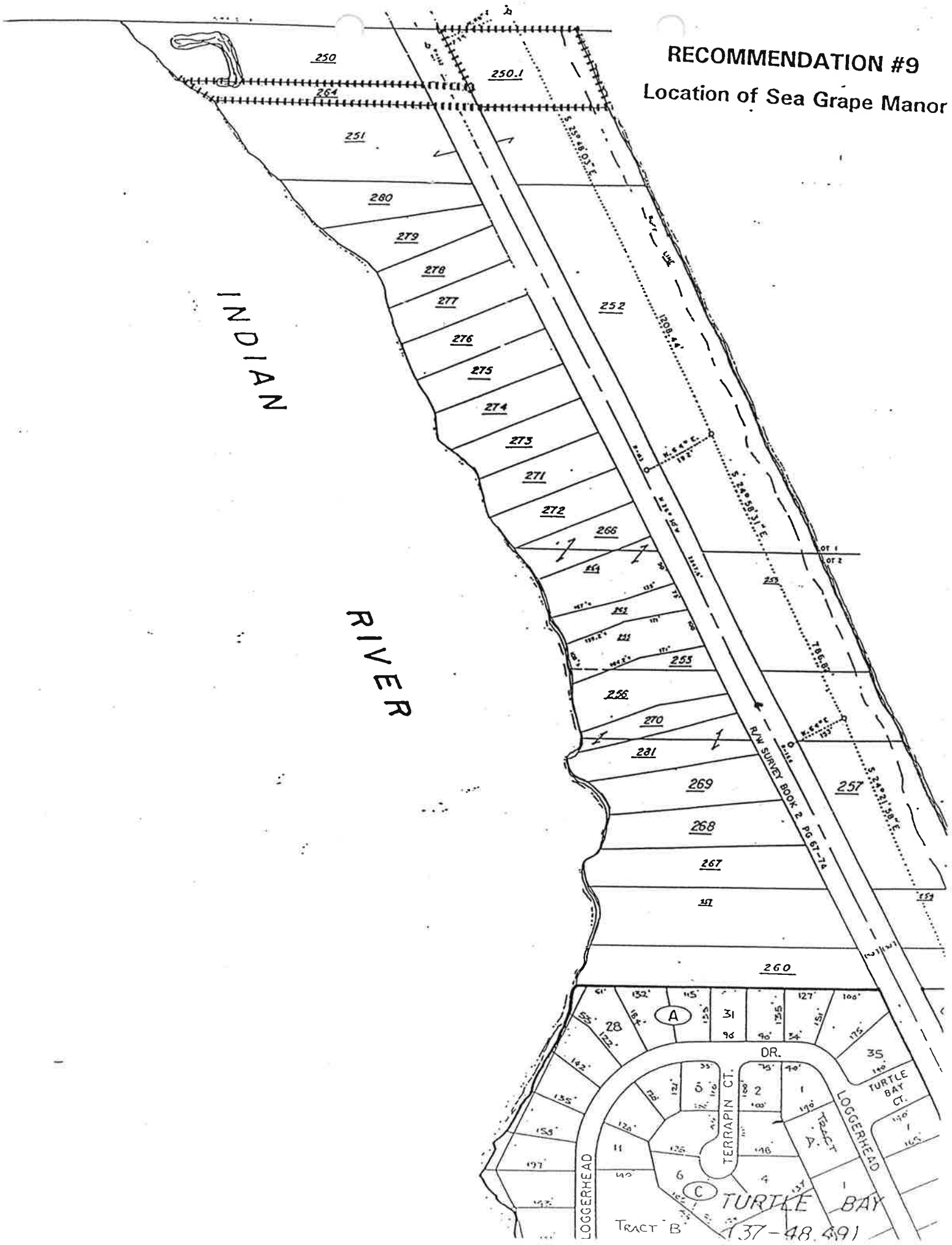
ALICUDI PL.

(35-41) #51

S 130' OF N. 461.57' OF 31.334

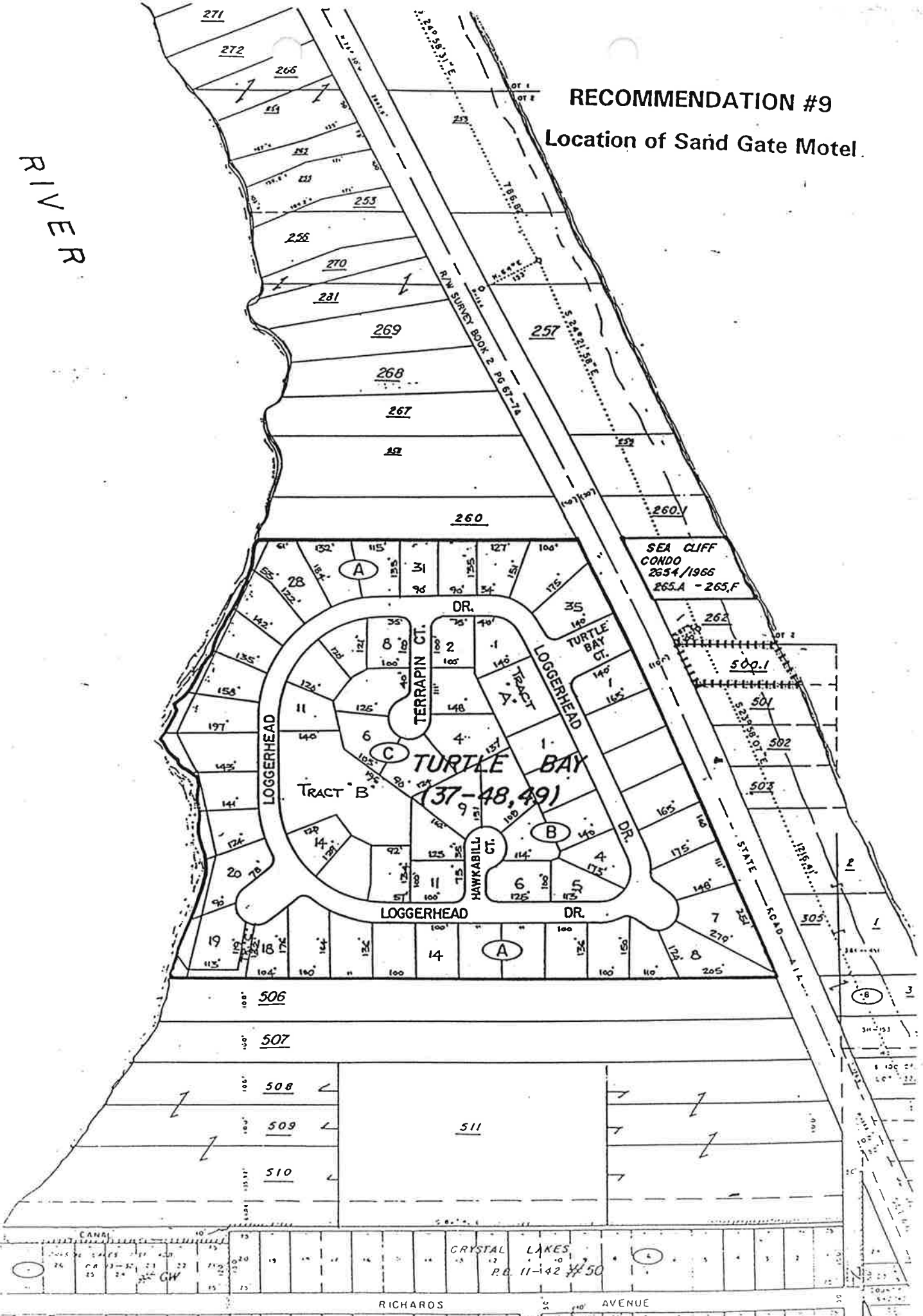
**RECOMMENDATION #9**  
**Location of Sea Grape Manor**

INDIAN  
RIVER



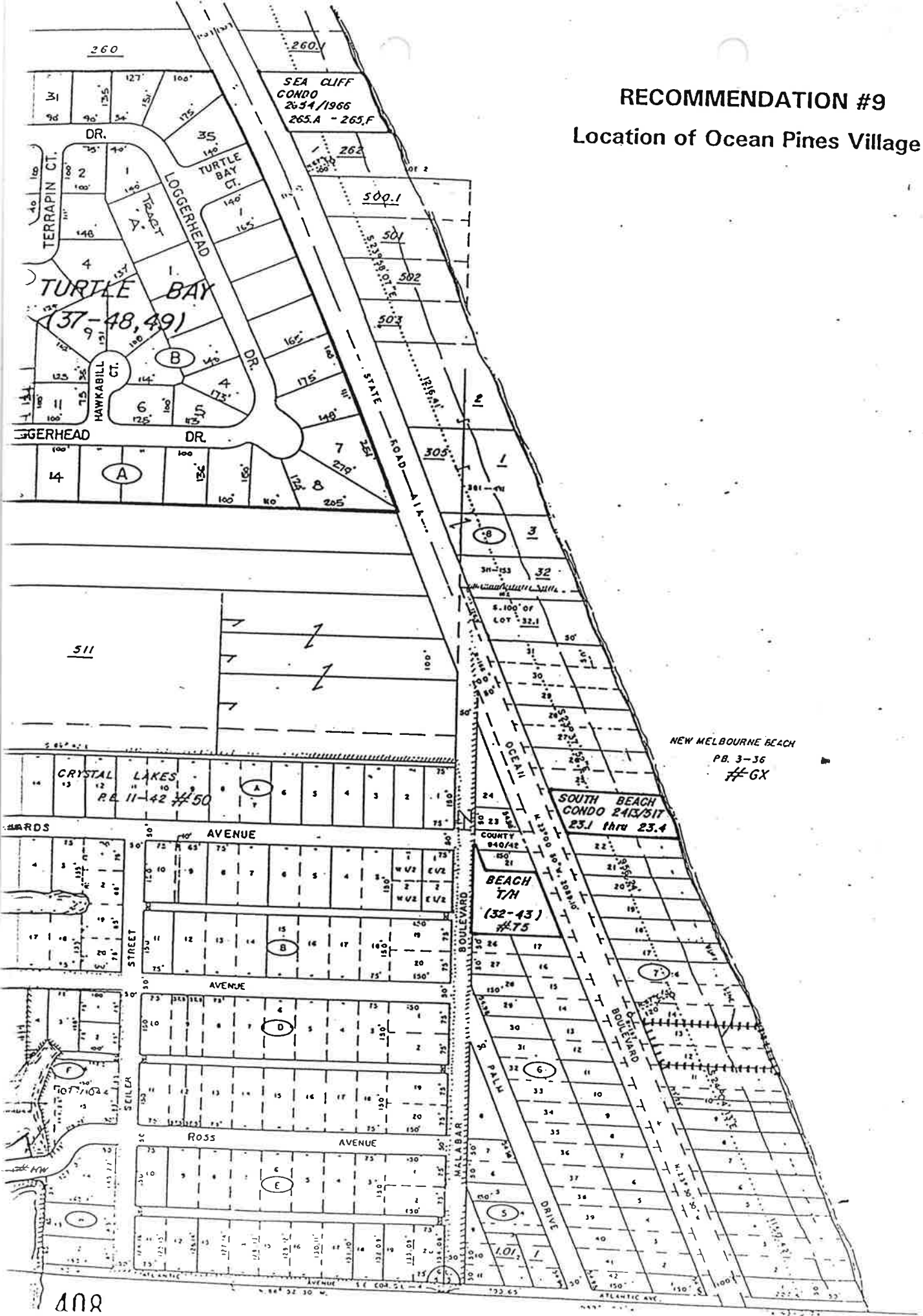
RIVER

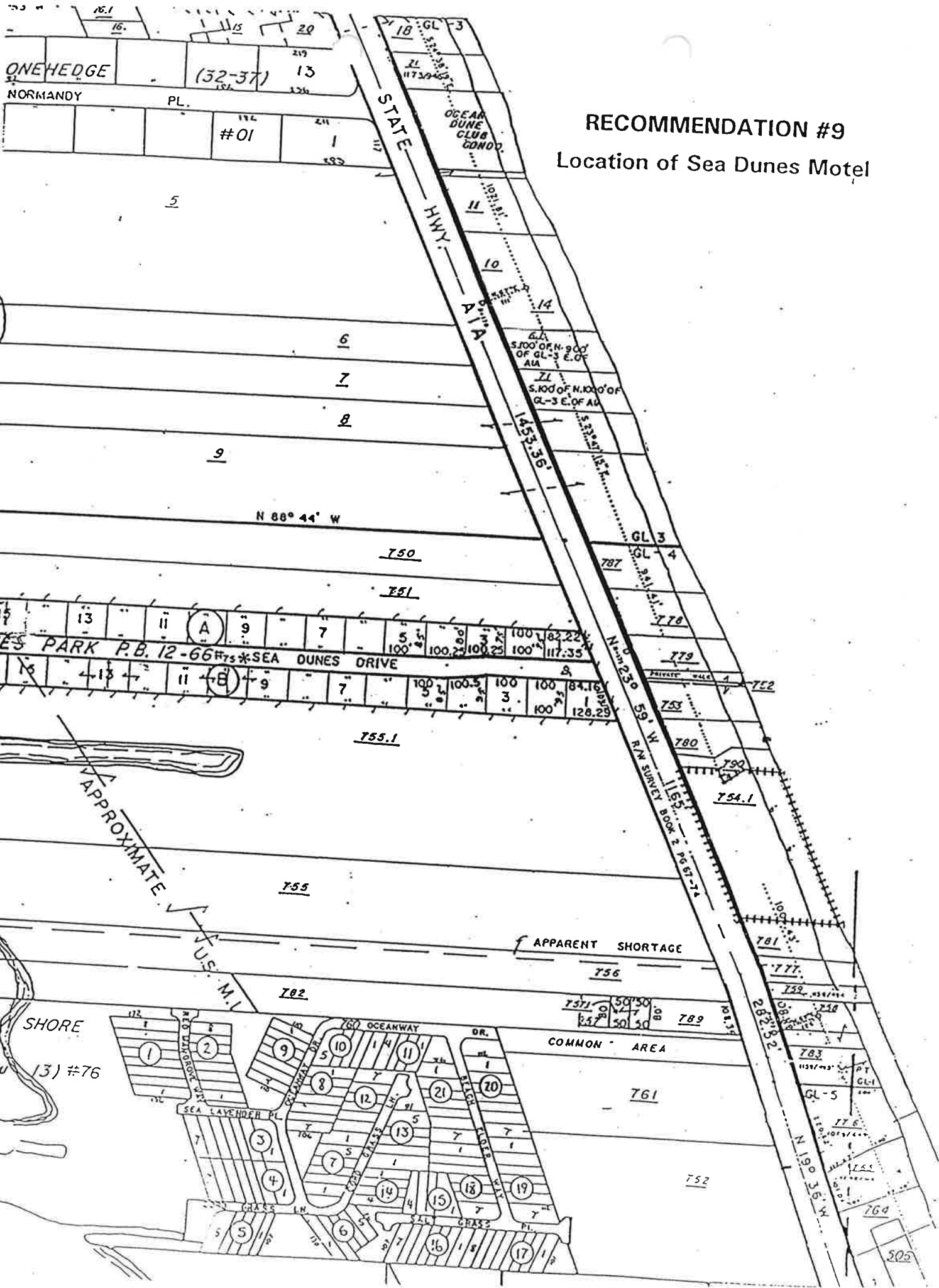
# RECOMMENDATION #9 Location of Sand Gate Motel



# RECOMMENDATION #9

## Location of Ocean Pines Village





**RECOMMENDATION #9**  
 Location of Sea Dunes Motel

ONE HEDGE (32-37) 13  
 NORMANDY PL. #01 1

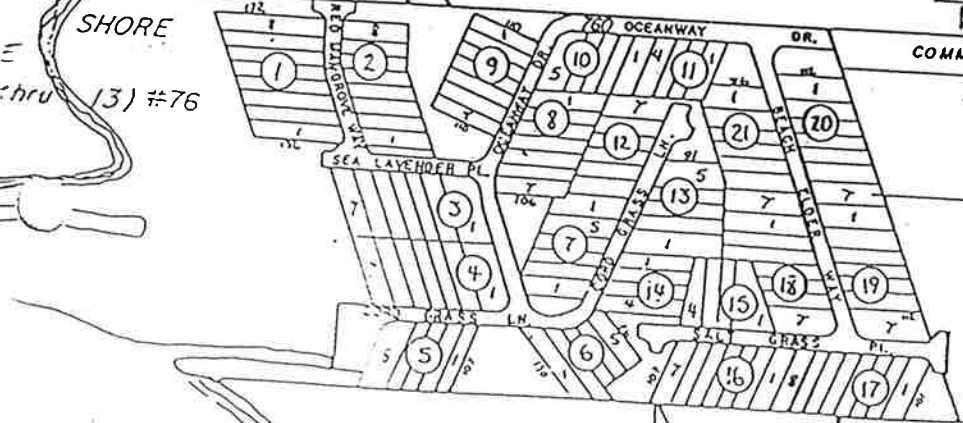
STATE HWY. 11  
 OCEAN DUNE CLUB CONDO.

SEA DUNES DRIVE  
 WEST PARK P.B. 12-66 #75

APPROXIMATE U.S. M.I.  
 SHORE

APPARENT SHORTAGE

COMMON AREA

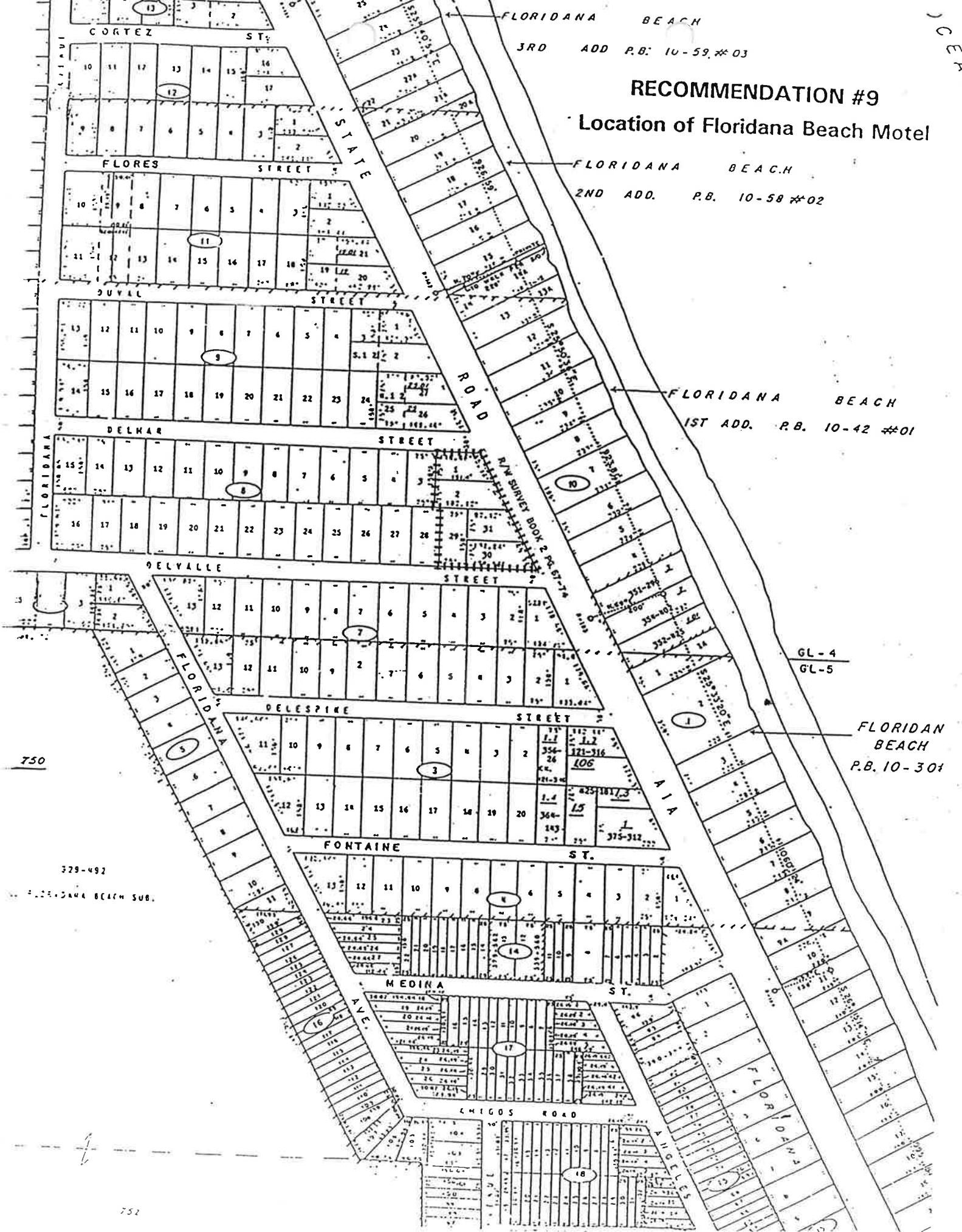


thru 13) #76

CEA

# RECOMMENDATION #9

## Location of Floridana Beach Motel



FLORIDANA BEACH  
3RD ADD. P.B. 10-59 #03

FLORIDANA BEACH  
2ND ADD. P.B. 10-58 #02

FLORIDANA BEACH  
1ST ADD. P.B. 10-42 #01

FLORIDANA BEACH  
P.B. 10-301

GL-4  
GL-5

750

329-492

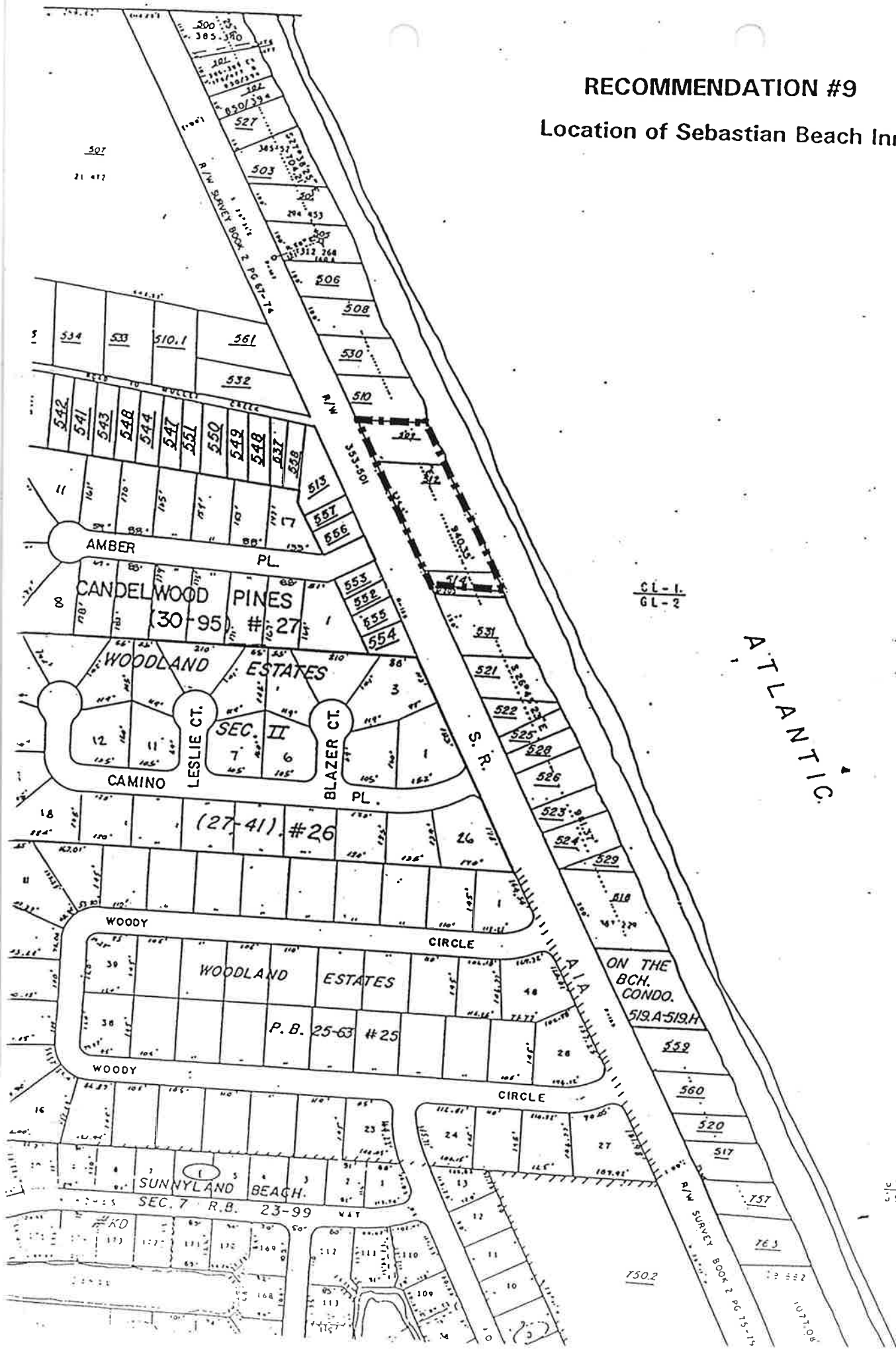
FLORIDANA BEACH SUB.

752

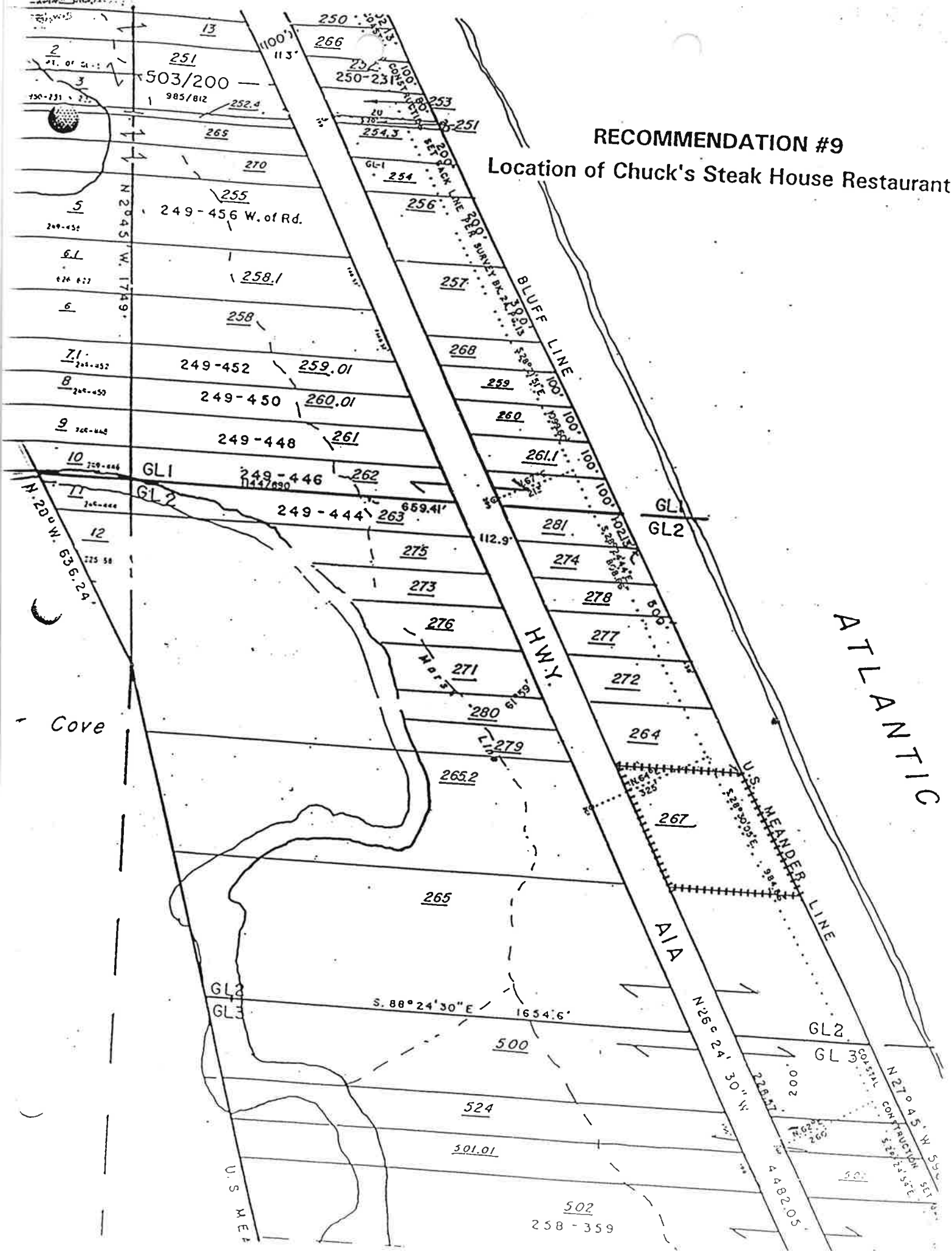


# RECOMMENDATION #9

## Location of Sebastian Beach Inn



# RECOMMENDATION #9 Location of Chuck's Steak House Restaurant



290' EX. RD. R/W  
S. 140' EX. RD. R/W  
OF GL-2  
S. 100' OF N. 160' OF GL-2 EX. RD. R/W

# RECOMMENDATION #9

## Location of Sea View Resort Motel

OCEAN

N. 514.2' OF S. 1071.78'  
EX. RD. R/W

12 381-419  
EX. RD. R/W

12.1 980/207  
13.2

14 16

15.1 355-465 EX. RD. R/W

THE COVE  
AT SOUTH BEACHES  
CONDO

PHASE III (1.25-1.32)  
PHASE IV (1.33-1.40)  
PHASE I (1.01-1.12)  
PHASE II (1.13-1.24)

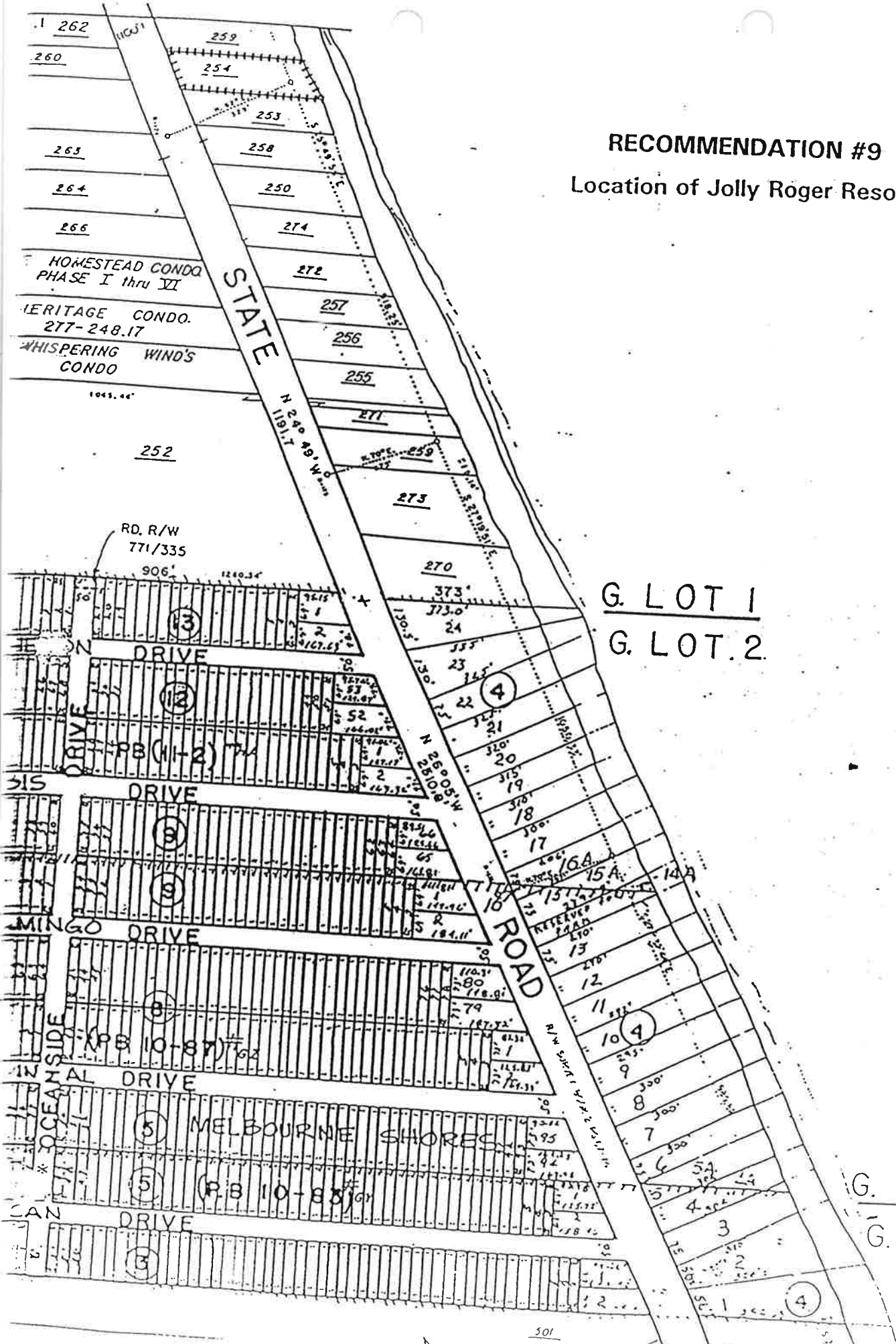
SANDOLLAR  
CONDO  
501

ATLANTIC SHORES S/D  
PB 10-34 No. 5H  
EX. N. 300' & HWY R/W

R/W SURVEY BOX 2 RE 67-74  
COASTAL CONSTRUCTION SET BACK LINE PER SURV. BOOK 24 P. 11  
S. 26°02'44"E 1128.99'  
N. 69°02'20"E 205'

OCEAN RIVER ESTATES

**RECOMMENDATION #9**  
**Location of Jolly Roger Resort**



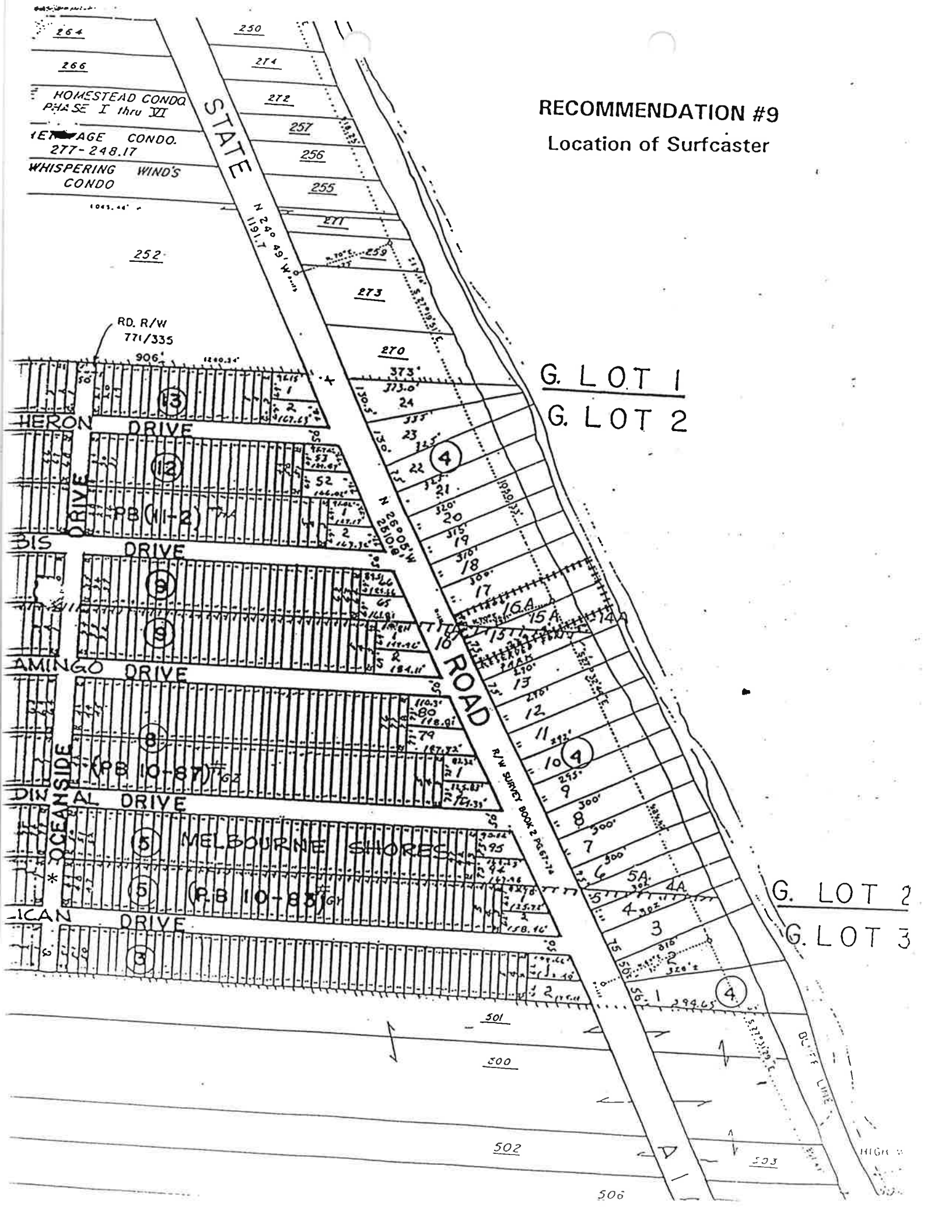
G. LOT 1  
G. LOT 2

G. LOT 2  
G. LOT 3

ATLANTA

# RECOMMENDATION #9

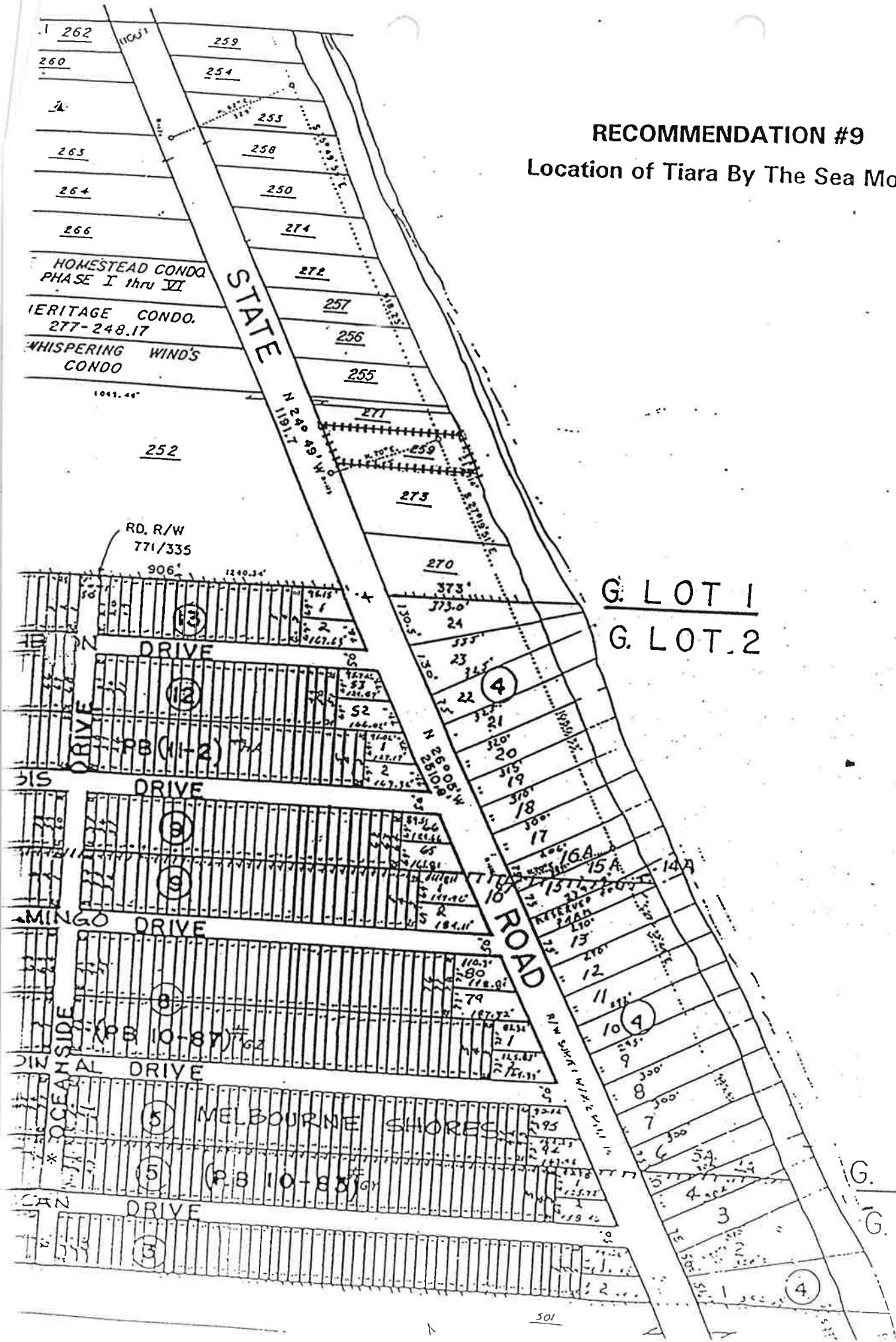
Location of Surfcaster



G. LOT 1  
G. LOT 2

G. LOT 2  
G. LOT 3

**RECOMMENDATION #9**  
**Location of Tiara By The Sea Motel**

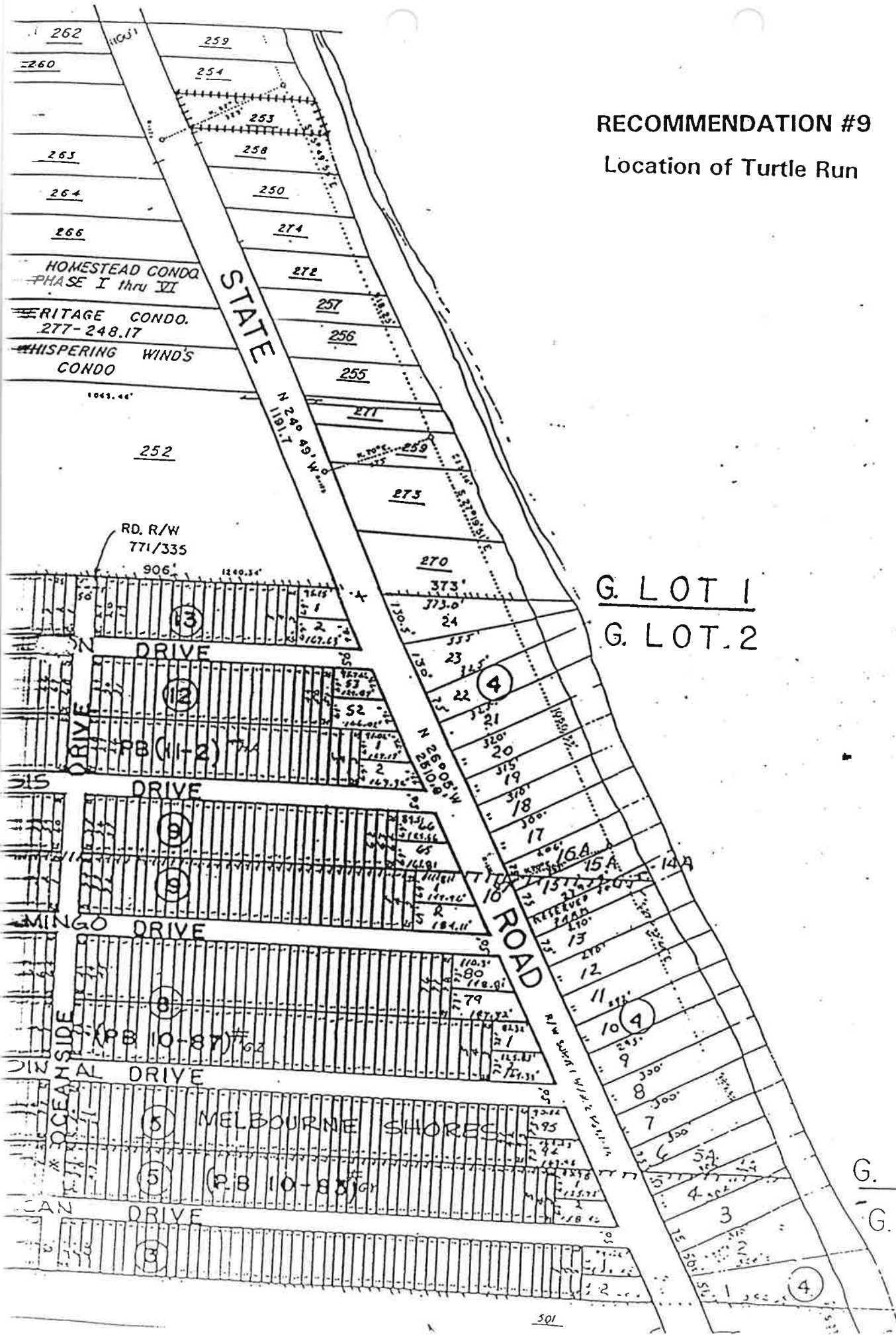


G. LOT 1  
G. LOT 2

G. LOT 2  
G. LOT 3

ATLANTA

RECOMMENDATION #9  
Location of Turtle Run



G. LOT 1  
G. LOT.2

G. LOT 2  
G. LOT 3

uses on the south beaches be treated equally, consistent with previous LPA recommendations.

This recommendation is consistent with the following provision of the Comprehensive Plan:

**Future Land Use Objective 4**

Requires Brevard County provide for adequate and appropriate lands for the location of commercial land uses, through land development regulations, to serve needs of residents and visitors.

**RECOMMENDATION #10:**

Amend the Future Land Use Element to add the following new policy which states that a mixed use district (MUD) should be considered at the location of the terminus of a South Mainland Bridge, should any such bridge to the study area be constructed.

**Future Land Use Policy 4.12**

Brevard County should review the need to establish a mixed use district on the barrier island at the terminus of a South Mainland bridge to the south beaches, if and when the location of that bridge has been established. The mixed use district should be considered to provide tourist commercial land uses, consistent with the intersection of major county throughways.

**Rationale:**

The existing MUD in Section 28, Township 28, Range 38 was established as a flexible MUD based upon the proposed location of the Malabar Bridge. Consistent with Future Land Use Policies 4.5 and 4.10, the MUD should be located at the terminus of a bridge between the mainland and the barrier island to provide tourist commercial. As discussed in the text, a recent FDOT feasibility study does not support a 4-lane toll facility at the Malabar Road/Coconut Point location. The location of the MUD is dependent upon the location of the bridge, and should be determined when the bridge location is more definite. The policy shown above directs staff to evaluate the need and location for a MUD at the terminus of a South Mainland bridge, if and when the location of that bridge has been established. This appears to be more appropriate than designating a "floating" MUD in which zoning could not occur, consistent with Future Land Use Policies 4.5 and 4.10, until the bridge location is finalized.

This recommendation is consistent with the following provision of the Comprehensive Plan:

**Future Land Use Objective 4**

Requires Brevard County provide for adequate and appropriate lands for the location of commercial land uses, through land development regulations, to serve needs of residents and visitors.

**Future Land Use Policy 4.10**

Criterion A - Tourist commercial land uses should provided convenient access to the natural amenities of the county, and adverse impacts upon the residential community and natural resources should be minimized.



**RECOMMENDATION #11:**

Amend the Coastal Management Element to require all recreational vehicle parks on the south beaches to develop a hurricane management plan. Proposed language for such a policy is shown below.

Coastal Management Policy 8.18

Brevard County shall require a hurricane management plan which reduces excessive hurricane evacuation time for recreational vehicle park development within the south beaches.

**Rationale:**

The South Beaches Citizen Resource Group generated the proposed policy during discussion of an initial staff recommendation to remove the mixed use district designation from the Outdoors Resort at Melbourne Beach (located in Sections 20 and 21, Township 28, Range 38). The initial staff recommendation, which has been deleted from this report draft, was based upon the discussion in the body of this report, describing that recreational vehicles and mobile homes are not consistent with the hurricane constraints of the barrier island.

Requiring development of a hurricane management plan is consistent with Coastal Management Objective 8 to reduce excessive hurricane evacuation times where they currently exist, and maintain all other evacuation times within the acceptable standard. Implementation of hurricane management plans for recreational vehicles should reduce the number of very large vehicles on the road network during evacuation events, and should further protect residents of the coastal zone.

Thus, after further study, it appears removal of the mixed use district future land use designation may not be necessary. Outdoor Resorts is the only existing recreational vehicle condominium located in a mixed use district within the study area. Destruction of greater than fifty (50) percent of Outdoor Resorts would mean destruction of the roads, water and sewer lines. Staff can foresee this occurring only during a storm event which destroys a large portion of the barrier island as well. Thus, at this time staff agrees with the CRG and would recommend the future land use designation of Outdoor Resorts remain mixed use.

During the CRG public hearing period, representatives of Outdoor Resorts worked with the Brevard County Division of Emergency Management to develop a hurricane management plan for Outdoor Resorts. This plan (Attachment A) may serve as a model should the Board of County Commissioners wish to adopt a Coastal Management Policy requiring hurricane management plans be developed by all recreational vehicle development within the coastal zone.

This recommendation is consistent with the following provision of the Comprehensive Plan:

**Coastal Management Objective 8**

Reduce excessive hurricane evacuation times where they currently exist, and maintain all other evacuation times within the acceptable standard.

**Coastal Management Policy 8.10**

Brevard County shall issue development orders for projects conditioned on the hurricane evacuation time meeting the acceptable standard.

**RECOMMENDATION #12:**

Amend the Coastal Management Element to add the following new policy which restricts mobile home and recreational vehicle development on the barrier island.

Coastal Management Policy 8.17 .

Based upon hurricane vulnerability concerns and excessive evacuation times, new mobile home or recreational vehicle development shall not be permitted on the barrier island to the extent permitted by law.

**Rationale:**

Recreational vehicles and mobile homes are of concern on the barrier island. Recreational vehicles are often utilized for significant periods of time, that is for up to six (6) months of continuous residency. During a hurricane the recreational vehicles at Outdoors Resort will be evacuated, with the possibility of significant delays caused by the difficulty of moving these large vehicles during less than optimal conditions. Mobile homes cannot be relocated prior to or during an evacuation. However, these structures typically sustain heavy damage during storm events. In addition, a percentage of recreational vehicle and mobile home residences will seek public shelter. Thus, location of this vulnerable housing on the barrier island results in establishment of inappropriate structures in a high risk area. By not permitting additional recreational vehicle and mobile home development to be located on the barrier island, the County is stopping the increase of these inappropriate housing types. Should the Board of County Commissioners not adopt such a policy, all new mobile home and recreational vehicle developments on the barrier island should be required to make an impact fee or in-lieu payment to the county for off-site shelter provision.

This recommendation is consistent with the following provisions of the Comprehensive Plan:

**Coastal Management Objective 7**

Limit densities within the coastal high hazard zone and direct development outside this area.

**Coastal Management Policy 7.1**

Requires Brevard County to continue to implement the South South Beaches Growth Management Directives which limits densities within the coastal high hazard area to no more than 6 units per acre north of Crystal Lakes.

**Coastal Management Element 7.5**

Requires development of a post-disaster redevelopment plan which limits redevelopment densities within the coastal high hazard zones.

**Coastal Management Objective 8**

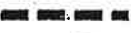

Reduce excessive hurricane evacuation times where they currently exist, and maintain all other evacuation times within the acceptable standard.

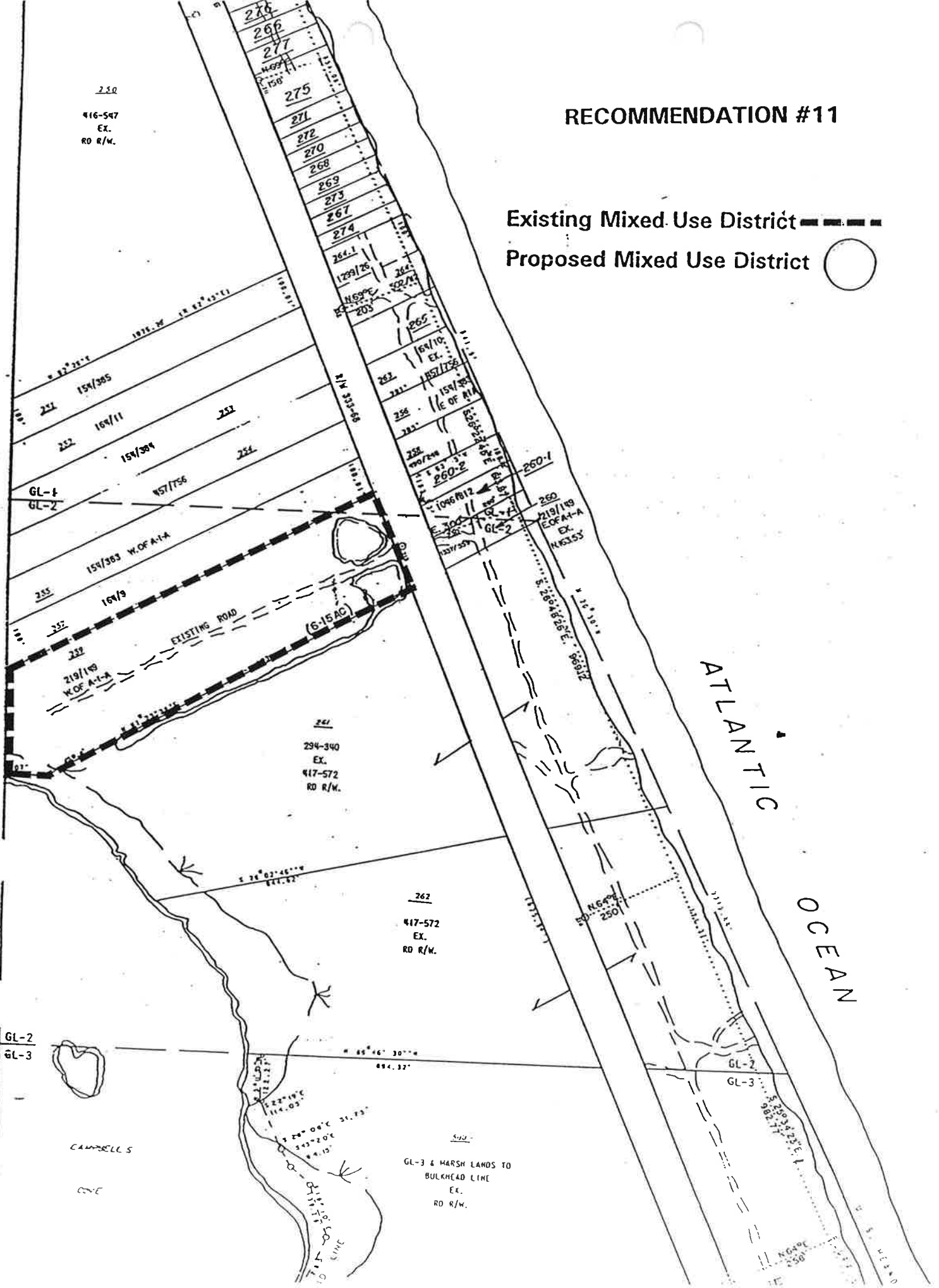
**RESIDENTIAL DENSITY**

Based upon the analysis, described in the text, specifically the traffic analysis, programmed densities in the study area cannot be supported by the existing transportation network. The staff has proposed three (3) alternatives which may address this situation: reduce densities, improve the roadway network, and purchase additional lands in the study area so that remaining development can be supported by the existing

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# RECOMMENDATION #11

Existing Mixed Use District   
Proposed Mixed Use District 



GL-2  
GL-3

CAMPBELL'S  
CREEK

GL-3 & MARSH LANDS TO  
BULKHEAD LINE  
EX.  
RD R/W.

ATLANTIC  
OCEAN

infrastructure. Staff has not made a specific recommendation for residential densities within the study area, as the alternatives discussed below require policy direction as to whether infrastructure improvements or reduction in development will be utilized to achieve the goal of growth commensurate with infrastructure and environmental constraints. Each of the alternatives are discussed in detail below.

Alternative 1: Improve the transportation network

The transportation network on the barrier island is relatively simple. Through the study area, SR A1A is the only north-south corridor. Thus, improvements to the network within the study area can include four-laning SR A1A and building a new bridge (often referred to as the Malabar Bridge) to the mainland. However, the transportation network north of the study area also affects the densities within the study area. At Spessard Holland Park, SR A1A bifurcates into Atlantic Avenue and Oak Street; and through Indialantic, SR A1A and Riverside Drive provide access to SR 192 (Melbourne Causeway). North of the study area, improvements within the study area can include Oak Street, Atlantic Avenue, Riverside Drive and SR 192. Although the network components are few, substantial improvements to the network may be problematic based upon a number of factors, as discussed in the Traffic Analysis section of this report.

The feasibility study of a toll facility at Malabar Road and Coconut Point was discussed previously in this report. Aside from the cost and environmental impacts, there are also growth management implications of a new bridge. Many people fear that a new bridge will result in additional development in the south beaches. An increase in residential densities based upon any improvement to the transportation network would be inconsistent with Coastal Management Policy 6.8, which states:

Brevard County shall not increase residential densities within the coastal high hazard and high risk vulnerability zones above those programmed due to the addition of infrastructure, including specifically any new bridge or improvements to existing causeways over the Indian River Lagoon, needed to meet existing deficiencies.

Criteria

A. For the South South Beaches area, programmed densities shall be those consistent with the 1984 South South Beaches Growth Management Directives.

B. For other portions of the coastal high hazard and high risk vulnerability zones, programmed densities shall be those shown by the Future Land Use element, until such time as Strategic Area Plans are completed for each area.

Thus, it is clear, Brevard County cannot increase densities on the barrier island above those programmed (contained within the South South Beaches Growth Management Directives) if a new bridge is constructed. Lack of a new bridge or other roadway improvements, could, however, require a reduction in permitted densities.

The Intergovernmental Coordination Element of the Town of Indialantic's Comprehensive Plan identifies a proposed new bridge from the barrier island to the mainland south of US 192 as an issue. The Town supports the construction of such a bridge to relieve some of the heavy traffic passing through the town on US 192 which bisects the town from east to west. Commuter and tourist traffic from the south mainland must come across the Melbourne Causeway and through the Town to reach the south beaches and

Sebastian Inlet via SR A1A. Indialantic's comprehensive plan states that the new bridge is needed to improve levels of service on US 192 and reduce the heavy traffic volumes which are out of proportion to the population of the Town, and which are "detrimental to the desire of the residents to preserve a normal residential community appropriate to its size and nature." (Town of Indialantic Comprehensive Plan, September, 1988)

An obvious improvement to the network would be to 4-lane SR A1A south of Oak Street to provide sufficient capacity for buildout at programmed densities. However, SR A1A must be 4-laned north to US 192 for additional capacity to be realized. The Town of Indialantic Traffic Circulation Policy 4.3 states that Riverside Drive north and south of US 192 should be maintained as 2-lane collector streets in order to preserve the residential character of the Town. Indialantic's comprehensive plan does not contain a policy about improvements of SR A1A through the Town. Instead the text of the Traffic Circulation Element reiterates that the Town has passed a resolution asking that improvements to Riverside Drive north of the Melbourne Causeway and SR A1A south of US 192 not be made, as these would "detract from the residential character of the Town." The comprehensive plan of the Town of Melbourne Beach refers to the maintaining the residential character of the Town. However, the Traffic Circulation Element acknowledges that SR A1A is under state jurisdiction, and the Town has no direct control of scheduled improvements. Further, right-of-way acquisition may be cost prohibitive as the area is largely developed north of Oak Street. Based upon the policies of Indialantic and right-of-way acquisition costs, improvements to Riverside or SR A1A may not be feasible.

Expansion of SR A1A may also be difficult due to the proximity of the road to the Coastal Construction Control Line (CCCL). The CCCL was established as the demarcation of the area which will incur significant erosion during a 100-year storm event. Thus, even if DNR would permit widening of SR A1A seaward (east) of the CCCL, it may not be prudent to invest public infrastructure dollars where there is a great likelihood of failure due to erosion.

Although roadway improvements south of US 192 may be difficult, as outlined above, such improvements will help to alleviate some of the existing congestion through the Towns of Indialantic and Melbourne Beach. As shown in the Traffic Analysis section, programmed densities will still put SR A1A over its adopted LOS (Option II-1-A), if it is 4-laned to Melbourne Shores as planned. In addition, if lower densities are established which bring the roadway network to the minimum acceptable LOS, buildout will eventually result in congested conditions, as defined by LOS "E". However, the 4-laning of SR A1A will permit greater densities in the south beaches than would could be contemplated without such improvements (Option 3-A, Table 11), shown on Map 12.

#### **RECOMMENDATION #15:**

Recommend transportation improvements for SR A1A continue to be considered, except for the four-laning of SR A1A. Also petition Florida Department of Transportation for lower level of service standards on SR A1A.

#### **Rationale:**

Roadway improvements by definition can include changes in signage or signalization, as well as an increase in the number or width of lanes. The Board's policy, as shown in this recommendation, is that improvements, with the exception of the four-laning of SR A1A continue to be considered. This recommendation is made with the understanding that Brevard County participates on the Metropolitan Planning Organization and thus is party to recommendations for the improvement of SR A1A, but not solely responsible for the decisions made for this roadway. In addition, the Board of County Commissioners

has directed staff to petition the Florida Department of Transportation for lower levels of service on SR A1A based on the constraints to improvement of the roadway discussed in this report.

Alternative 2: Reduce residential densities

The concurrency requirements of Chapter 163, Florida Statutes, require that facilities and services are available at the time of impact of new development. Staff has concluded that, based upon the analysis outlined within the text, the services of sanitary sewer, potable water, drainage, parks and recreation, and solid waste are not the limiting factors to growth within the south beaches. Roadway capacity appears to be the concurrency facility which will ultimately limit development within the area.

As discussed above, current residential development within the south beaches is presently impacting the traffic flows through the Towns of Indialantic and Melbourne Beach. However, it should be noted that reductions in residential densities within the study area will not alleviate the existing congestion. This congestion can only be relieved through some improvements to the network. Reductions in densities will, however, limit future impacts to these municipalities and the roadway network.

If it is assumed that improvements to SR A1A, Oak Street and Riverside Drive are limited by policy or the expense of right-of-way acquisition, as described in alternative 1, then programmed densities cannot be supported by the existing transportation network (Option I-1-A).

Reduction of residential densities will reduce the infrastructure necessary to support buildout of the south beaches, as well as protecting the fragile environmental system, and reduce the population and development within the high risk vulnerability area. Based upon environmental and hurricane concerns, reducing residential densities may be desirable regardless of anticipated roadway improvements.

If then, lower residential densities are contemplated, what densities should be considered. Table 11, Summary of Land Use/Traffic Analysis Options, depicts that with proposed FDOT LOS standards, densities as low as one (1) unit per acre south of Coconut Point cannot be supported by a 2-lane road. Based upon current FDOT LOS standards, two (2) residential density scenarios can be supported by 2-lane SR A1A. Land use option I-5-A (Table 10) is shown on Map 13, with compatible densities being those which are compatible with existing density of developed properties (that is ranging from four (4) units per acre to two (2) units per acre in most of the area north of Coconut Point). Map 14 depicts land use option I-6 (two (2) units per acre north of Coconut Point and one (1) unit per acre south of Coconut Point) which could be sustained by a 2-lane SR A1A.

The buildout population of the south beaches, assuming current densities, is estimated as 26,766. This is a conservative estimate and does not include the approved units with the PUDs within the study area. This estimate compares with the current population of 10,741, and the estimate of 19,627 assuming two (2) units north of and one (1) unit south of Coconut Point.

As requested by the South Beaches CRG, staff completed additional traffic analysis, taking into account existing platted lots, to more accurately estimated the impact of reducing densities in the study area. The analysis described in the body of this study utilized the total acreage of vacant residential land with the assumption that platted lots would be aggregated to meet the proposed lot size. Based upon Brevard County's non-

conforming lot provisions, aggregation of platted lots to meet the one-half acre or acre minimum lot size would not be required.

The comparison with the findings shown in Table 16 (below) shows that the proposed downzonings will not reduce roadway impacts as much as originally estimated. This conclusion is not surprising, as it is consistent with the non-conforming lot philosophy. However, the analysis does highlight that scenarios I-5-A and I-6-A are not significantly different as to their impacts on roadway capacity at buildout.

**Table 16**  
**Estimated Available Southbound Peak Hour Capacity South of Oak Street at Buildout (vph)**

<u>Land Use Option</u>	<u>W/Platted Lots</u>	<u>W/out Platted Lots</u>
I-1-A. Current South South Beaches Growth Management Directives	-2743	-2783
I-2-A. Current density north of and 2 du/ac south of Crystal Lakes	-2278	-1949
I-3-A. Current density north of and 2 du/ac south of Coconut Point	-2021	-1587
I-4-A. 4 du/ac north of and 2 du/ac south of Crystal Lakes	-1918	-1363
I-5-A. Compatible density north of and 1 du/ac south of Coconut Point	-1394	-589
I-6-A. 2 du/ac north of and 1 du/ac south of Coconut Point	-1402	-398

Source: Comprehensive Planning Division, 1992

The staff recommendation, as presented to the CRG, was to adopt scenario I-5-A, compatible density north of and 1 du/ac south of Coconut Point. Compatible density is recommended based upon the character of the area north of Coconut Point, which in some cases includes existing development as high as ten (10) units per acre. Compatible density, as recommended by staff differ from the South Beaches Citizen Resource Group in the following areas:

Section 17, Township 28, Range 38  
No amendments

Sections 20 and 21, Township 28, Range 38  
Property lying between Outdoor Resorts and Versailles Sur La Mer  
Condominium - 8 units/acre to 6 units/acre  
Dewie Acres - 8 units per acre (No amendment)  
Property lying between Dewie Acres and Majorca South - 8 units/acre to 6 units per acre

Beachfront property east of La Costa Beach Club and Richards Road - 6 units/acre to 4 units/acre  
Property south of Ocean Edge Colony (Rita Boulevard) - 8 units/acre to 2 units per acre

**RECOMMENDATION #16:**

Amend the Future Land Use Density Area Designations Map to reduce residential densities to two (2) units per acre north of Crystal Lakes, and one (1) unit per acre south of Crystal Lakes, with the exceptions shown below:

Section 17, Township 28, Range 38  
No amendments

Sections 20 and 21, Township 28, Range 38

Property lying between Outdoor Resorts and Versailles Sur La Mer Condominium - 8 units/acre to 6 units/acre

Dewie Acres - 8 units per acre (No amendment)

Property lying between Dewie Acres and Majorca South - 8 units/acre to 6 units per acre

Beachfront property east of La Costa Beach Club and Richards Road - 6 units/acre to 4 units/acre

Property south of Ocean Edge Colony (Rita Boulevard) - 8 units/acre to 2 units per acre

**Rationale:**

The Board of County Commissioners made this recommendation based upon the factors discussed in this study, most specifically the environmental constraints of the area, character of the area, hurricane evacuation concerns and infrastructure constraints.

Alternative 3: Additional lands in public ownership

A decrease in the number of residential units, and subsequently the traffic levels on the road network, can be accomplished by putting additional lands into public ownership. Brevard County has been aggressively acquiring oceanfront properties in the south beaches since 1986. To date, Brevard County has acquired twenty-one (21) tracts of land for a total of 122.799 acres, comprising seven (7) park sites and three (3) beach access sites. The County also has an interest in acquiring acquire nine (9) more beach access sites within the study area.

In addition, plans for the Archie Carr National Wildlife Refuge include the acquisition of approximately 500 acres of undeveloped land within the area. The Final Environmental Assessment for the Proposed Archie Carr National Wildlife Refuge, completed in August 1990 by the U.S. Fish and Wildlife Service does not include a cost estimate for the land proposed for acquisition within Brevard County. However, based upon the beach and riverfront acquisitions the County has made over the last several years, an average cost per acre is approximately \$92,000. Based on this average, the cost of this 500 acres would be \$46 million plus the costs associated with appraisals, surveys, title work, etc.

Table 11, Summary of Land Use Analysis Options:--Proposed FDOT LOS Standards, shows that even with acquisition of NWR high and low priority lands, 2-lane SR A1A will be put over its adopted LOS. However, land use options I-5-C and I-6-C show that acquisition of NWR high and low priority lands will result in less than 200 trips over the



adopted LOS. Thus, public acquisition of these lands could result in less density reduction being required with a 2-lane SR A1A.

If a policy decision were made to 4-lane SR A1A, then acquisition of the NWR lands could permit the current South South Beaches Growth Management Directives density limitations to remain in place. It should be noted this alternative is very expensive, as it includes the cost of acquiring the NWR and the cost of roadway expansion. And in all cases additional public acquisition of land removes lands from the tax rolls, which is only partially offset by the reduction in the cost of services to these properties.

**RECOMMENDATION #17:**

Support the County's current efforts in land acquisition, with the stipulation that acquisition should be particularly concerned about preservation, but not for the sole purpose of reducing residential density.

## CITIZEN REQUESTS TO THE SOUTH BEACHES CITIZEN RESOURCE GROUP

### Citizen Request #1

David Wildman, Esquire, Attorney of record for Outdoor Resorts at Melbourne Beach requested the CRG consider amending the Zoning Ordinance to permit increase density within Recreational Vehicle Park (RVP) to fifteen (15) units per acre. The basis for this request (Exhibit A) is to permit Outdoor Resorts at Melbourne Beach to be consistent with the zoning regulations, as the current density is approximately fifteen units per acre (calculated as 14.4 units per acre).

As discussed above the Comprehensive Planning Division Director's interpretation of Coastal Management Policy 6.7 limits density within a mixed use district to that of the underlying residential density area designation. Thus, at present the Outdoor Resort is non-conforming to the existing future land use density of eight (8) units per acre. If the MUD designation is removed from the area, the park would continue to be non-conforming. In this way, this use could be amortized and would eventually be removed from the very vulnerable barrier island.

Outdoor Resort was zoned Travel Trailer Park (TTP) in 1980, with a permitted maximum density of fifteen (15) units per acre. The TTP zoning category was changed to Recreational Vehicle Park (RVP) with a maximum density of ten (10) units per acre. This density is relatively consistent with surrounding multi-family and mobile home park development in the area.

### South Beaches Citizen Resource Group Recommendation:

Amend the Zoning Code to permit Outdoor Resorts to exist with the actual density (14.4 units per acre), with the intent to protect the current property owner (5:1). (For: Scott Steele, Pat Richardson, Bill Vernon, Sheldon Bender and Nancy Higgs; Against: Steve Tatoul) The rationale for this recommendation is that Outdoor Resorts at Melbourne Beach is a unique situation in the south beaches, and should be protected. This amendment is recommended by the CRG in concert with their recommendation of no new recreational vehicle or mobile home development in the south beaches, as well as the development and approval of the hurricane management plan completed by Outdoor Resorts.

### Staff Response:

If the CRG recommendation is accepted, staff proposes the density be rounded to fifteen (15) units per acre rather than 14.4 for consistency with the previous density permitted in the TTP zoning category. Amendments to the Future Land Use Map Series, Future Land Use Element and Zoning Code must be adopted to accomplish the CRG recommendation. These amendments are described below.

1) Amend the Future Land Use Map to designate the residential density area for Outdoor Resorts as Urban, with a cap of 14.4 units per acre.

2) Amend the Future Land Use Element, Policy 4.11, Criterion C to read as follows:

#### Future Land Use Policy 4.11

Appropriate locations for recreational vehicle parks, which serve the needs of tourists and seasonal visitors in Brevard County, shall be located within mixed-use districts based upon the following minimum criteria:



Criteria:

C. Recreational vehicle parks which serve the temporary or seasonal visitor with stays not exceeding six months shall have densities not exceeding 14.4 ~~ten (10)~~ units per acre. Subdivision platting of these parks should be permitted and should include provisions for common open space to the temporary or seasonal visitors.

Local Planning Agency Recommendation: Approve request, and limit 15 units/acre in RVP zoning in south beaches area (9:1). (For: Sharkey, Rayn, Springfield, Patterson, Ott, Wille, Pence, Carroll, Featherhoff; Against: Gougelman).

BOARD OF COUNTY COMMISSIONERS: HANDLE WITH ESTABLISHED USE CRITERIA.

**Citizen Request #2**

Giedre Snipas, Sea View Resort Motel, presented a request (attached as Exhibit B) an amendment to the Future Land Use Map to Urban Density Area with a cap of fifteen (15) units per acre. The basis for this is to make her existing use consistent, and allow a three (3) unit expansion. The Sea View Resort Motel was established in 1952 and was zoned for thirty (30) units per acre at that time. It was subsequently rezoned to RU-2-15, and in 1985 to RU-2-6. The motel has approximately 8 units on .76 acres with a density of 10.52 units per acre.

**South Beaches Citizen Resource Group Recommendation:**

Recommend a change to the Future Land Use Map to designate the property Urbanizing with a cap of ten (10) units per acre to make the existing Sea View Resort Motel consistent (6:1). (For: Pat Richardson, Scott Steele, Bill Vernon, Sheldon Bender, Steve Tatoul and Nancy Higgs)

Please note the South Beaches Tourist Use designation was recommended to include the Sea View Resort Motel, and will address Mrs. Snipas' request.

Local Planning Agency Recommendation: Amend the Future Land Use Map to designate the property Urbanizing with a cap of eleven (11) units per acre (7:3). (For: Ryan, Carroll, Sharkey, Ott, Patterson, Ruehle, Springfield; Against: Pence, Wille, Gougelman)

BOARD OF COUNTY COMMISSIONERS: HANDLE WITH ESTABLISHED USE CRITERIA.

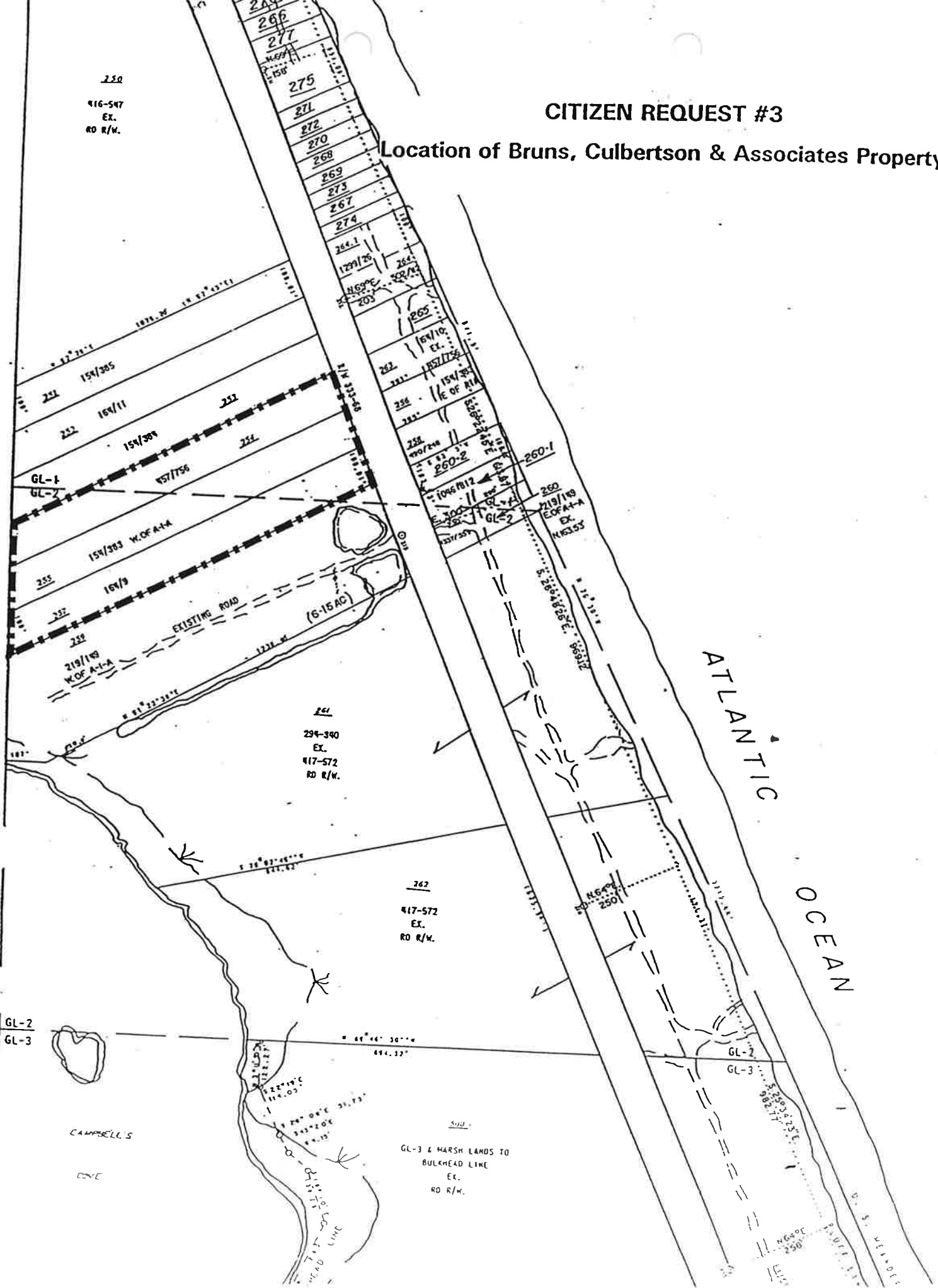
**Citizen Request #3**

39 Carol Culbertson, Secretary of Bruns, Culbertson and Associates, Inc. presented a written request (attached as Exhibit C) to Parcels 254, 257 and 255, Township 29, Range 30, Section 17 designated as a mixed use district. The property, located directly north of South Beaches Marina, is designated as residential on the Future Land Use Map and was administratively rezoned to from RU-2-10 to RU-2-4 in 1985, consistent with the South-South Beaches Growth Management Directives. The applicant stated the owners purchased the property with the hope of developing it commercial when the market could support additional commercial in this area. 30

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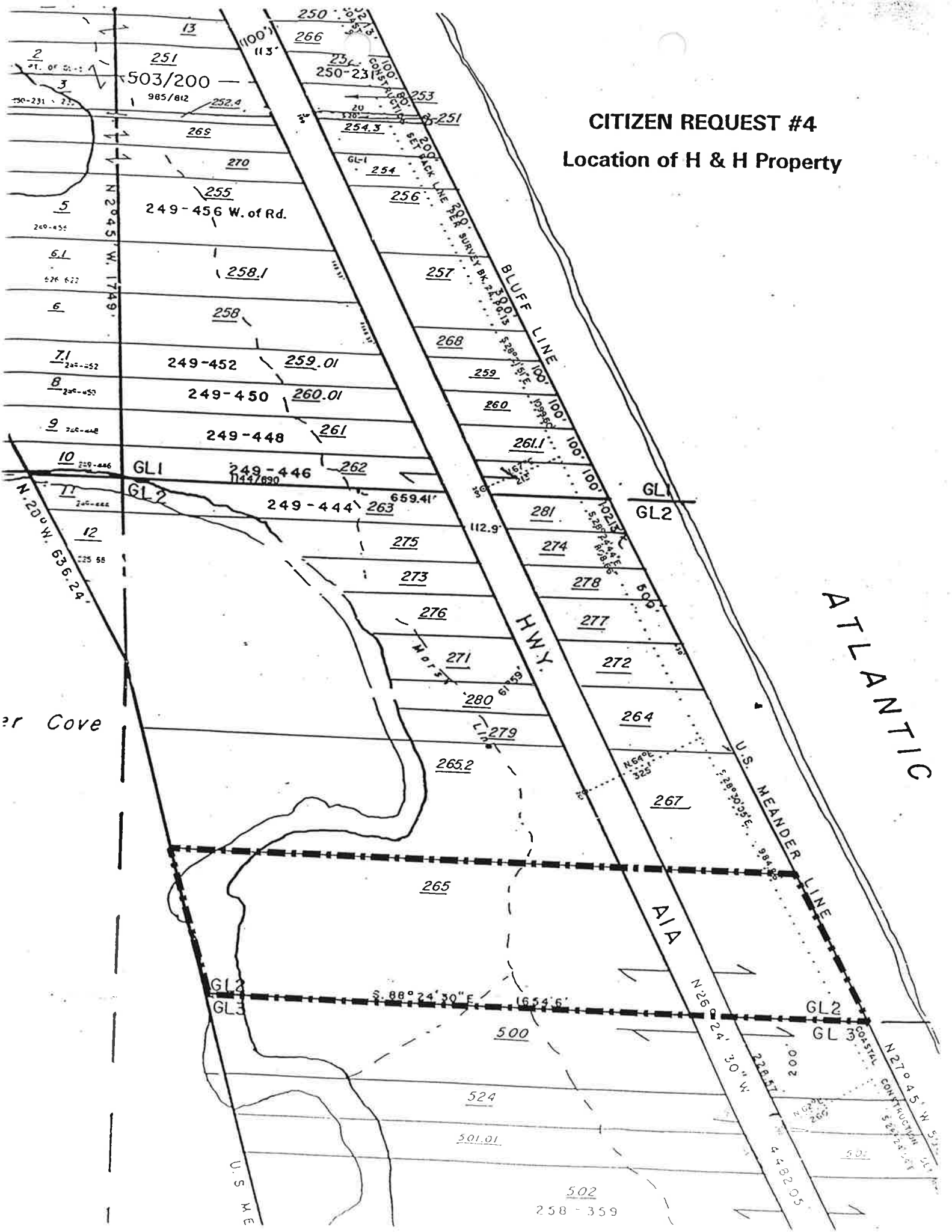
# CITIZEN REQUEST #3

## Location of Bruns, Culbertson & Associates Property



# CITIZEN REQUEST #4

## Location of H & H Property



er Cove

502  
258-359

**South Beaches Citizen Resource Group Recommendation:**

Denial of the request for mixed use district designation (6:0). (For denial: Nancy Higgs, Pat Richardson, Steve Tatoul, Scott Steele, Bill Vernon and Sheldon Bender)

**Local Planning Agency Recommendation:** Denial of the request for mixed use designation (10:0). (For denial: Wille, Ryan, Sharkey, Pence, Springfield, Carroll, Gogleman, Ruehle, Patterson, Ott)

**BOARD OF COUNTY COMMISSIONERS: DENIAL OF THE REQUEST, CONSISTENT WITH CITIZEN RESOURCE GROUP AND LOCAL PLANNING AGENCY RECOMMENDATION.**

**Citizen Request #4**

Dr. Robert Hodory, H&H Properties, presented his request for an amendment to the Future Land Use Map for property located south of Chuck's Steak House, east and west of SR A1A, from residential to mixed use district. Dr. Hodory presented information (attached) explaining the history of this property, which was downzoned from TU-1 to RU-2-4 in 1985, consistent with the South South Beaches Growth Management Directives.

**South Beaches Citizens Resource Group Recommendation:**

Denial of the request based upon increased traffic which would be generated by the request, as well as the character of the area as low density residential and concerns about environmental impacts (4:2). (For denial: Pat Richardson, Sheldon Bender, Steve Tatoul and Nancy Higgs; Against denial: Bill Vernon and Scott Steele) Also attached is letter of support for the request by Wendy Murray, who was unable to attend the CRG meeting where the vote was taken.

**Local Planning Agency Recommendation:** Denial of the request (9:0). (For denial: Ryan, Sharkey, Springfield, Pence, Carroll, White, Ruehle, Patterson, Ott; Abstaining: Gogleman)

**BOARD OF COUNTY COMMISSIONERS: DENIAL OF THE REQUEST, CONSISTENT WITH CITIZEN RESOURCE GROUP AND LOCAL PLANNING AGENCY RECOMMENDATION.**

**Citizen Request #5**

Brigadier General Slater W. Hollis, U.S. Army (Retired), representing BIPPA, requested the CRG review and recommend favorably language for two (2) ordinances. The first ordinance is entitled "Green Screen/Landscaping and Vegetation Ordinance", and is an ordinance requiring specific landscaping requirements for the south beaches (Attached as Exhibit 1). The second ordinance, entitled "Sea Storm Survival Act. Barrier Island Land Use: Beach Dune Restoration", relates to maintenance of natural dune systems throughout the barrier island. A copy of this ordinance is attached as Exhibit 2.

**South Beaches Citizen Resource Group Recommendation:**

Forward to Local Planning Agency and Board of County Commissioners for their consideration (8:0) (For: Sheldon Bender, Steve Tatoul, Resa Marks, Pat Richardson, Wendy Murray, Nancy Higgs, Scott Steele and Bill Vernon)

Local Planning Agency Recommendation: Applaud BIPPA's efforts and forward to the Board of County Commissioners for appropriate action (9:0). (For: Pence, Wille, Ott, Patterson, Carroll, Ruehle, Gougelman, Springfield, Ryan)

BOARD OF COUNTY COMMISSIONERS: FORWARD GREEN SCREEN ORDINANCE TO REBA FLOYD AND OTHER APPROPRIATE STAFF FOR REVIEW AND COMMENT. FORWARD SEA STORM SURVIVAL ACT TO BEACH MANAGEMENT PROGRAM CONSULTANTS FOR REVIEW AND COMMENT.

**Citizen Request #6**

Brigadier General Slater W. Hollis, U.S. Army (Retired), representing BIPPA, requested the CRG review and recommend favorably that existing multi-family structures be made conforming as to density.

South Beaches Citizen Resource Group Recommendation:  
Forward to Local Planning Agency and Board of County Commissioners for their consideration (8:0) (For: Resa Marks, Wendy Murray, Sheldon Bender, Steve Tatoul, Pat Richardson, Nancy Higgs, Scott Steele and Bill Vernon)

Local Planning Agency Recommendation: Approval of request (7:1). (For: Pence, Patterson, Ryan, Springfield, Carroll, Ott, Ruehle; Against: Wille)

BOARD OF COUNTY COMMISSIONERS: HANDLE WITH ESTABLISHED USE CRITERIA.

**Citizen Request #7**

Brigadier General Slater W. Hollis, U.S. Army (Retired), representing BIPPA, requested the CRG review and recommend favorably that mandatory "shall" be substituted for non-mandatory "should" within Future Land Use Policies 4.3 and 4.4.

South Beaches Citizen Resource Group Recommendation:  
Forward to Local Planning Agency and Board of County Commissioners for their consideration (8:0) (For: Pat Richardson, Steve Tatoul, Sheldon Bender, Resa Marks, Wendy Murray, Nancy Higgs, Scott Steele and Bill Vernon)

Local Planning Agency Recommendation: Denial of the request (6:2). (For denial: Ryan, Springfield, Carroll, Pence, Wille, Ruehle; Against: Ott, Patterson)

BOARD OF COUNTY COMMISSIONERS: DENIAL OF THE REQUEST, CONSISTENT WITH LOCAL PLANNING AGENCY RECOMMENDATION.



## Bibliography

Brevard County Comprehensive Plan, September 1988.

DeChiara, Joseph and Koppelman, Lee. Urban Planning and Design Criteria. New York: Van Nostrand Reinhold Company, 1982

Final Environmental Assessment for the Proposed Archie Carr National Wildlife Refuge, U.S. Department of the Interior, Fish and Wildlife Service, Atlanta, Georgia, August 1990.

Town of Indian River Comprehensive Plan, September 1988.

Town of Melbourne Beach Comprehensive Plan, September 1988.