# Town of Ocean Ridge
# Comprehensive Plan

As Adopted By The Town Commission

August 7, 1989

# Town of Ocean Ridge

# Comprehensive Plan

As Adopted By The Town Commission

August 7, 1989

Prepared By
Robert K. Swarthout, Incorporated

Preparation of this document was aided through financial assistance received from the State of Florida under the Local Government Comprehensive Planning Assistance Program authorized by Chapter 86-187, Laws of Florida, and administered by the Florida Department of Community Affairs.

## ADOPTION INTENT

Only the following segments of this document will be adopted by the Town Commission:

1. Goals, Objectives and Policies
2. Future Land Use map
3. Future Traffic Circulation map
4. Capital Improvement Element Implementation section
5. Monitoring, Updating and Evaluation Procedures

CONTENTS

PAGE

CONTENTS PAGE

CONTENTS PAGE

CONTENTS PAGE

**COASTAL MANAGEMENT ELEMENT (Continued)**

CONTENTS PAGE

CONTENTS PAGE

CONTENTS PAGE

CONTENTS PAGE

**TABLES**

**TABLES (Continued)**

## FIGURES

# FUTURE LAND USE ELEMENT

## INTRODUCTION

This Future Land Use Element regulates the use of public and private land in Ocean Ridge. It does so through the Future Land Use Map and related explanatory text and through goals, objectives and policies.

All goals, objectives and policies contained within the entire Comprehensive Plan are intended to be consistent with the Future Land Use Map. Apparent inconsistencies among goals, objectives and policies are resolved by the map itself. Florida law requires that all Ocean Ridge land development regulations must be consistent with the Future Land Use Map and related explanatory text and with the goals, objectives and policies of this Land Use Element.

Florida law requires that this Future Land Use Element be consistent with relevant sections of Chapter 163, Part 2, *Florida Statutes,* the "State Comprehensive Plan," and the Treasure Coast Regional Planning Council "Comprehensive Regional Policy Plan."

This Element sets forth much of the information and reasoning on which the Future Land Use Map and the Future Land Use goals, objectives and policies are based.

**Table 1-1**
**Existing Land Use Analysis**
**Ocean Ridge, 1987**

| Type Use | 1987 Acreage | 1987 Percent | 1980 Acreage | 1980 Percent | 1980-87 Change in Acreage | 1980-87 Change in Percent |
|---|---|---|---|---|---|---|
| Single Family (ave. 3 DU/A) | 163.8 | 25.8 | 111.6 | 17.6 | 52.2 | 8.2 |
| Duplex (ave. 8 DU/A) | 19.3 | 3.0 | 7.1 | 1.1 | 12.2 | 1.9 |
| Multifamily (ave. 12 DU/A) | 97.2 | 15.3 | 86.6 | 13.7 | 10.6 | 1.6 |
| Commercial * | 2.9 | 0.5 | 1.9 | 0.3 | 1.0 | 0.2 |
| Public | 1.9 | 0.3 | 1.9 | 0.3 | 0.0 | 0.0 |
| Open Space/Recreation | 16.7 | 4.2 | 13.9 | 2.2 | 2.8 | 20.1 |
| Roads/Canals | 180.5 | 28.4 | 176.5 | 27.8 | 4.0 | 0.6 |
| Conservation | 26.0 | 4.1 | 32.8 | 5.2 | -6.8 | -1.1 |
| Vacant PO | 1.2 | 0.2 | | | N/A | N/A |
| Vacant RMM | 15.2 | 2.4 | 201.8 | 31.8 | -71.8 | -11.3 |
| Vacant RSF | 26.1 | 4.1 | | 0.0 | N/A | N/A |
| Mangroves | 74.8 | 11.8 | | | | |
| Total | 635.6 | 100.0 | 634.1 | 100.0 | N/A | N/A |

* Light retail, office and motel uses; also includes one parcel of Mixed Commercial/Residential.

Vacant land is shown in the PO, RMM and RSF zoning categories (see Vacant Land Analysis). These categories correspond to the zoning designations in effect at the time of the survey. Acreages for 1980 are from the 1980 Ocean Ridge Comprehensive Plan prepared by the Palm Beach County Area Planning Board.

See Figure 1.1 for Existing Land Use Map and Figures 5.1 of the Coastal Element and 6.1 - 6.3 in the Conservation Element show wetlands, soils, floodplains and vegetation.

There are no industrial, agricultural, educational or wellfield uses; the two historic houses are shown on Figure 1.1.

## EXISTING LAND USE

### Size and Location

Ocean Ridge is a predominantly residential community located in Palm Beach County east of the City of Boynton Beach on Florida's Atlantic Coast. It is home to about 1,500 permanent residents. The Town experiences an estimated seasonal population peak total of almost 3,000 persons. Ocean Ridge is bounded on the north by unincorporated land under county jurisdiction. This land is owned and operated by the South Lake Worth Inlet District Authority. Ocean Ridge is bounded on the south by the Town of Briny Breezes, on the west by the Intracoastal Waterway and on the east by the Atlantic Ocean.

### Residential

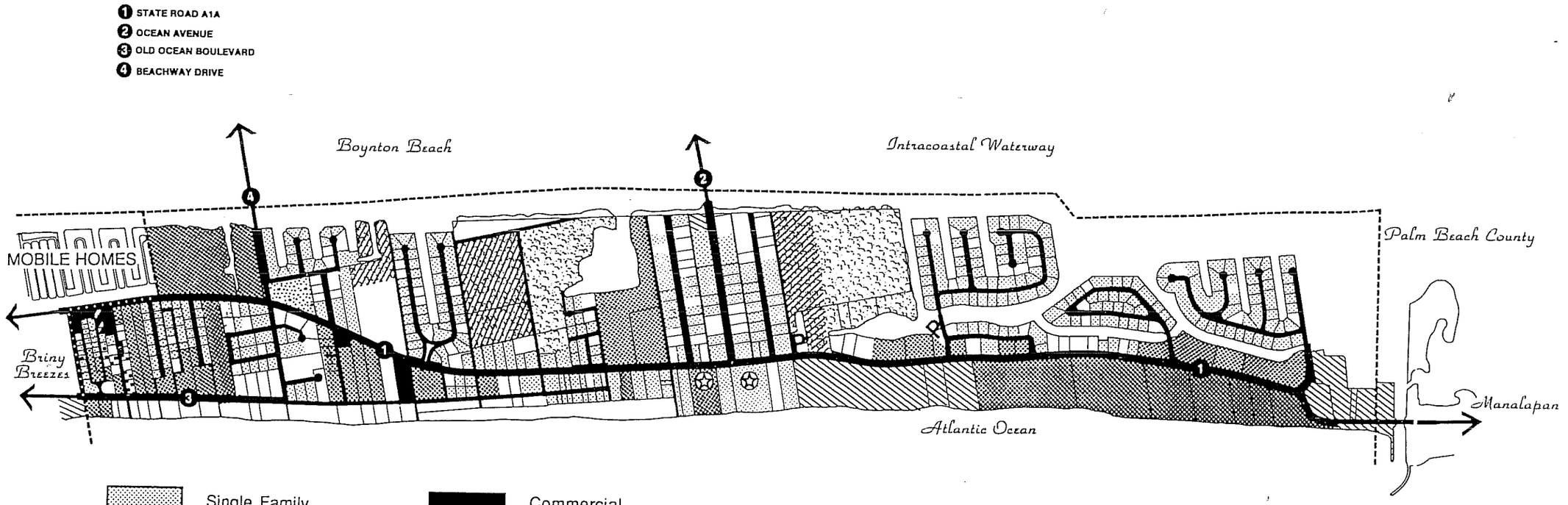
Ocean Ridge is a residential community. Single-family uses occupy 163.8 acres of land (25.8 percent of the total Town area). Duplex uses occupy 19.3 acres (3 percent of the total Town area). Multifamily uses occupy 97.2 acres (15.3 percent of the total Town area). Among residential uses, 59 percent is developed as single-family, 7 percent is developed as duplexes and 34 percent is developed as multifamily. There are 280.3 acres of residential land in Ocean Ridge. Two North Ocean Boulevard houses (6275 and 6301) are on the State file of potentially significant historic buildings.

### Commercial

Commercial land uses include office, retail and motel uses. Current zoning policy prohibits the establishment of new commercial uses, or the rebuilding of existing commercial uses which are destroyed; an amortization schedule was established in 1976 (by Ordinance #337 adopted May 1976 as amended by #345, November 1976) to ultimately eliminate all existing commercial uses. At present, there are only 2.88 acres of commercial land in Ocean Ridge. This acreage includes 8 motels, a restaurant, and 5 small retail shops.

### Vacant

Ocean Ridge has 41.3 acres of developable vacant land. Based on current zoning, 26.1 acres could be used for single-family homes and 15.2 acres could be used for multifamily or duplex structures.




Source: Robert K. Swarthout, Incorporated 1989

Figure 1.1

EXISTING LAND USE

# TOWN OF OCEAN RIDGE

PALM BEACH COUNTY

1987

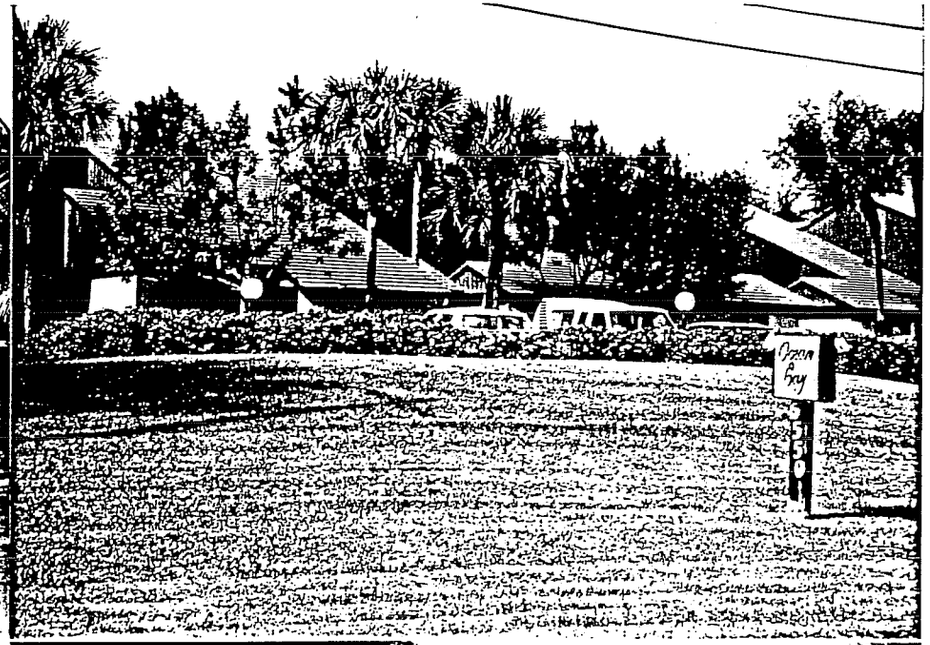
0 400 800

RKS INCORPORATED

## ANALYSIS OF KEY LAND USE RELATED ISSUES

Eight key land use related issues have been identified. These issues are:

1. Residential Community Character
2. Traffic Circulation
3. Ocean Avenue Bridge
4. South Side Residential Area
5. Beach Erosion
6. Mangroves
7. Coastal Hardwood Hammock
8. Public Beach Access


Open
by
owner

**Residential Community Character**

The Town has a unique character due to its predominantly low density residential land use, extensive water access and lush landscape. The role of the automobile is downplayed due to the convenience of pedestrian and bike circulation. The challenge of this plan is to preserve and enhance this character. The commercial services for the Town are adequately provided in Boynton Beach.

**Traffic Circulation**

Ocean Ridge has only one north-south through roadway, State Road A1A. State Road A1A is classified by the Florida Department of Transportation as a minor arterial. State Road A1A consists of discontinuous segments which run along the Florida coast from Key West to Fernandina Beach. In southern Palm Beach County, A1A is a quiet two-lane route which serves primarily trips of local origin and destination. State Road A1A has been declared a scenic roadway. The widening of A1A has been contemplated by the Florida Department of Transportation. Ocean Ridge and other Towns in the area strongly oppose widening because it will likely change the character of the neighborhoods surrounding the roadway by increasing the traffic and thus noise, disruption and aesthetic impact.

Ocean Ridge is also served by two east-west routes which provide access to the Florida mainland. Beachway Drive and Ocean Avenue cross the Intracoastal Waterway offering access to major regional routes such as U.S. 1 (Federal Highway), Interstate 95 and the Florida Turnpike.

Local streets in Ocean Ridge are in good repair. The Town maintains and repairs public roadways on an as-needed basis.

1.12

**Ocean Avenue Bridge**

The existing Ocean Avenue Bridge is a two-lane draw bridge which connects Ocean Ridge with Boynton Beach and the rest of the mainland. The Florida Department of Transportation has proposed construction of a new four-lane bridge north of the present location.

By Resolution No. 76-28 the Ocean Ridge Town Commission opposed the relocation of the Ocean Ridge Bridge. The Town opposed relocation because of all the adverse effects it would have. The resolution specifically pointed out that:

1. A 6 percent grade within 125 feet of S.R. A1A would create unsafe traffic conditions for motor vehicles approaching traffic signals.

2. The location would directly and adversely affect the safety and welfare of the residents of and visitors to the Town of Ocean Ridge.

3. The steep 6 percent bridge grade would cause a hardship for pedestrians and bicyclists in the Town, most of whom are of retirement age.

The mass, scale and design of the proposed bridge would make it an eyesore in the quiet residential context of Ocean Ridge. It would virtually destroy the character of the Coconut Lane residential area. Its appearance would be incompatible with the overall residential character of the community and with its immediate residential neighbors. Its appearance would also be inappropriate in close proximity to the existing Town Hall and to the City of Boynton Beach Public Beach; extensive concrete would abut these public spaces.

The location of the proposed bridge would adversely impact the mangrove areas.

Additionally, the traffic carrying capacity of the proposed bridge would subject the residents of Ocean Ridge to detrimental levels of induced or new extraneous traffic. Currently the two bridges in Ocean Ridge have traffic well-balanced between the two with no undue backup due to bridge raisings.

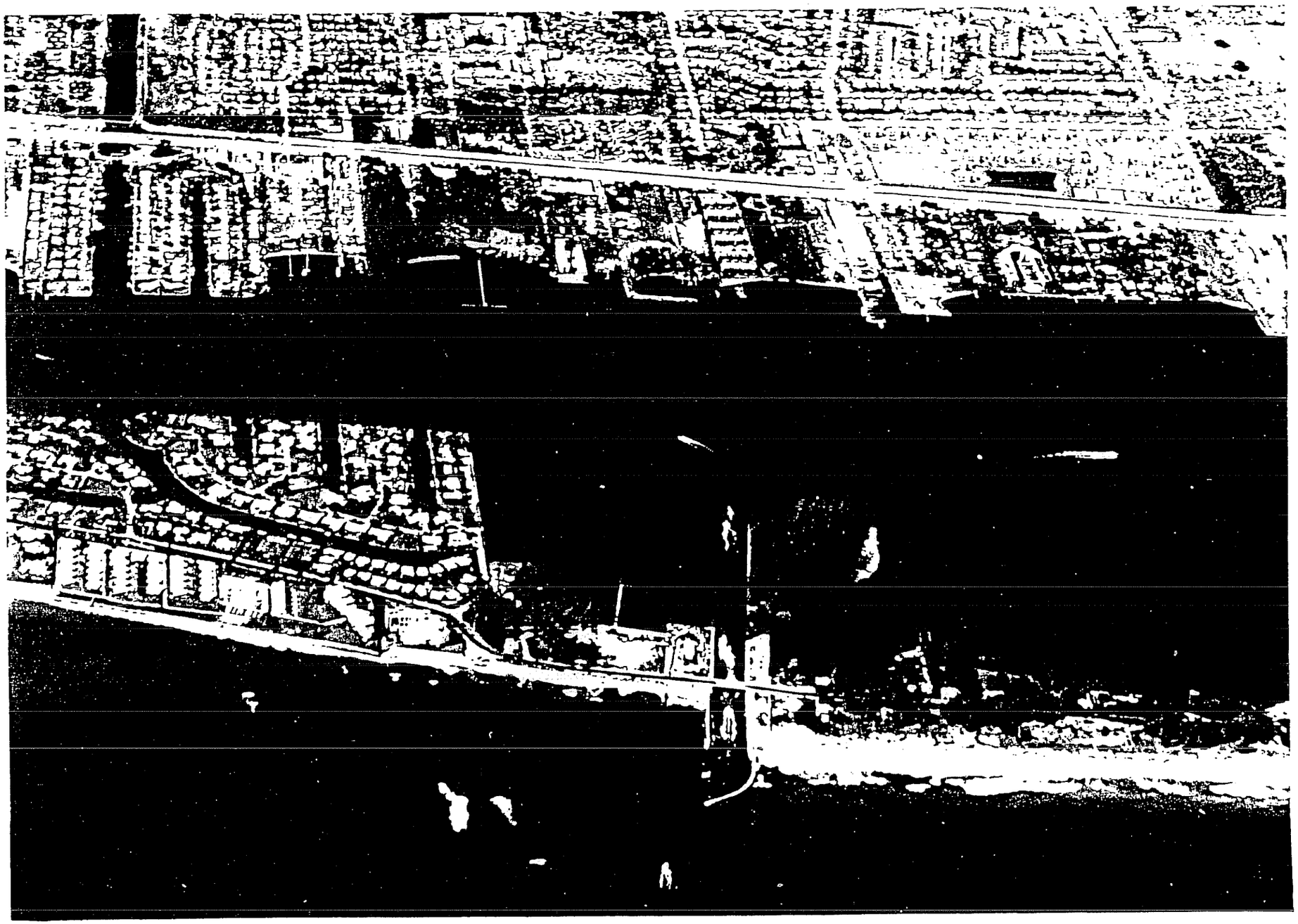

1.14

## South Side Residential Area: Redevelopment or Preservation

The area south of Beachway Drive is characterized by a mixture of housing types. Individual streets contain single-family residences, duplexes, and multifamily structures. Single-family and duplex lots predominate. Most duplex and multifamily units are occupied by renters and some become overcrowded during the peak season.

Most housing units in this area were constructed in the 1950's and 1960's and will require increasing maintenance. Thus, they are among the oldest in Ocean Ridge. There is some evidence of disrepair but most are maintained adequately. Many of the lots are substandard. In general, they sell and rent for less than units in other parts of the Town.

The south side area is currently zoned for multifamily use. This zoning was enacted to facilitate redevelopment of the area. However, a majority of the units are single-family structures. Some are occupied by owners who have lived there for years. Many owner-occupants do not support redevelopment to multifamily or duplex structures. They would prefer the preservation of their neighborhood as a predominantly single-family neighborhood.



1.16

**Beach Erosion**

Prior to 1965, the beach south of the Boynton Beach inlet was broad and relatively stable. The natural flow of water brought significant amount of sand southward, so the beach was constantly being renourished. Condominiums and private recreation clubs were constructed near the beach because of its natural beauty.

In 1965, the South Lake Worth Inlet District proposed an extension of a jetty on the north (Manalapan) side of the inlet. The District Commission claimed that the jetty extension would block the flow of silt and sand into the channel thereby improving the navigability of the channel by reducing the frequency of dredging required to maintain channel depth. The District commissioned several studies to project the environmental effects of the proposed jetty. The studies found that the jetty extension would decrease the flow of silt and sand into the channel. The studies also concluded that the jetty would block the majority of sand flowing south. This would cause a decrease in the beach area in northern Ocean Ridge because it would be deprived of sands that previously had been deposited on the shoreline.

The permit issued for the construction of the jetty extension provided that the existing sand transfer station be relocated and upgraded to pump 150,000 cubic yards of sand per year. The pumping station was located on the north side of the inlet and pipes were constructed so that sand could be pumped south to Ocean Ridge beaches. The system was intended to mitigate the damage to Ocean Ridge beaches caused by the jetty extension but the annual volumes of sand were only about one-half of the required amount.

The transfer station has never pumped the required amount of sand. The beach in northern Ocean Ridge has eroded severely due to deficient sand transfer volumes, however all beaches in Ocean Ridge have been adversely affected.

A number of options have been considered to increase the sand transfer volumes, but none have been implemented by the District.

The South Lake Worth Inlet District has requested permission to construct an extension of the south jetty for channel purposes. Ocean Ridge opposes an extension of the south jetty at this time because a comprehensive plan to address the sand transfer deficiency has not been developed. Ocean Ridge has instituted litigation to re-establish the northern Ocean Ridge beach and have it continuously maintained as if the inlet was not present. The State Department of Natural Resources has issued an order alleging District and County violation of the State-issued operating permit for the inlet because of the sand-starved beaches south of the Inlet.

1.18

**Mangroves**

Approximately 60 percent of the Town's vacant land is covered with native mangroves. Mangrove strands are especially common along the banks of the Intracoastal Waterway. Most Ocean Ridge mangrove areas are functioning in their natural manner with limited human impact.

Mangrove strands are tolerant of saltwater and perform vital ecological functions. They absorb rain and wind during large storms, reducing flooding and minimizing wind damage to properties. Healthy mangrove strands are also an essential portion of the food chain. Through the decomposition of leaves, the mangroves provide nutrient to lower aquatic species. Mangroves serve as an important habitat area for a number of birds and animals.

The Florida legislature adopted Section 403-93 et. seq., *Florida Statutes* prohibiting removal or trimming of mangroves. This law takes into account the ecological benefits of functioning mangroves by reducing the development potential of vacant land containing this type of vegetation.

The County adopted a 1988 ordinance (88-13) which established a Department of Environmental Resources Management which is responsible for the protection of mangroves through a permitting and enforcement procedure.

Mangroves have spread in Ocean Ridge during the last 10 years. Seed has been disseminated through the mosquito control ditches and other means. Today land formally devoid of vegetation contains healthy mangroves. Properties that were at one time thought to be developable may now be off limits to development due to state and federal mangrove protection policies. However, the Town's Conservation land use and zoning category is so restrictive that land can not be so designated (particularly the upland areas) until legal agreements are reached with the land owners; State and Federal mangrove policies may still apply, however.

1.20

**Coastal Hardwood Hammock**

The Ocean Ridge beach dune hammock is the last hammock of its size, complexity, and native character remaining on the southeast coast. It boasts a broad beach area, a well-vegetated dune, and a very wide variety of rare and endangered flora. The hammock has been zoned as a preservation/conservation area by the Town of Ocean Ridge.

Resolution 72-5 of the Ocean Ridge Town Commission supported purchase of the 800-foot hammock by Palm Beach County. The resolution stipulated that the Town of Ocean Ridge would support purchase of additional beach property by the county only if such property would be operated and managed by the Town. The resolution further stated that beachfronts in Ocean Ridge should be preserved in their natural state.

In March of 1973, the Ocean Ridge Town Commission recorded deed restrictions prohibiting further development of the hammock. The restrictions contained language intended to make the county liable to the federal government for violating federal regulations protecting endangered flora and endangered species.

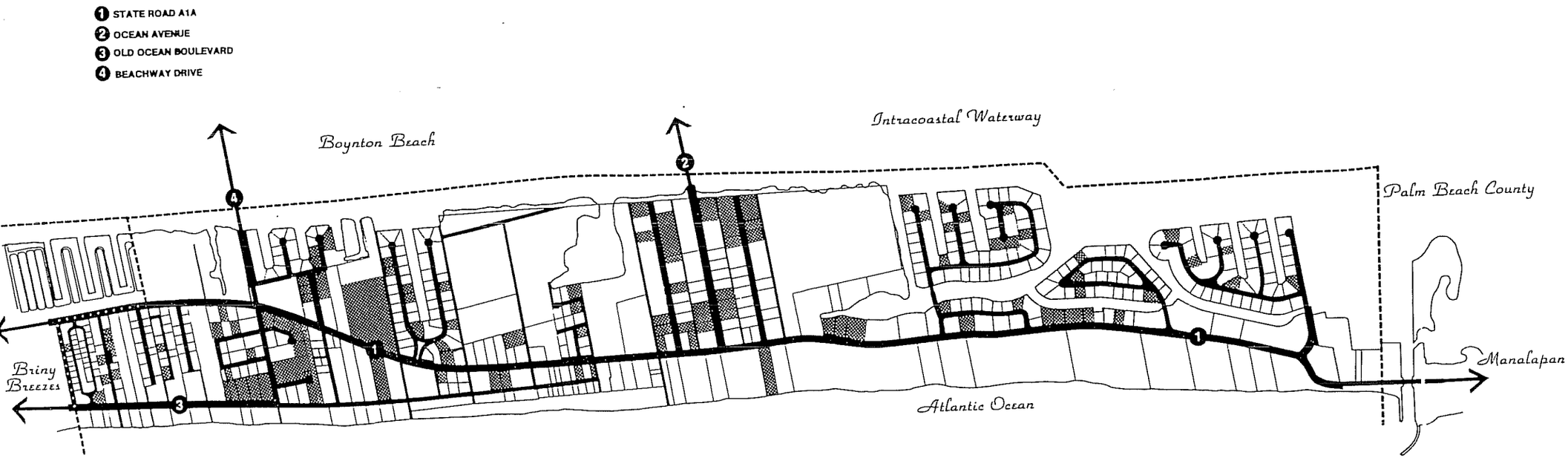
Palm Beach County proposed a beach access park and nature study center. This proposal included a major study center, public restrooms and parking, as well as a system of boardwalks leading to the beach.

The Town Commission continues to oppose any development of the hammock because environmental experts have analyzed the hammock and concluded that beach access would be detrimental to the hammock and could ultimately destroy it. The detriment would occur for reasons that go beyond the obvious damage created by excess pedestrian traffic. Construction of buildings and parking areas would produce a loss of native vegetation. Such construction would also change the temperature beneath the hammock's natural protective canopy, thus altering the hammock's ground temperature which is critical to most of the hammock's endangered flora. Walkways to the beach would allow cool coastal breezes to infiltrate the hammock from its coastal side and this would have a detrimental effect on native vegetation. The hammock would recede and eventually disappear.

The State Master Site file lists three archaeological sites that are probably in Ocean Ridge; a Glades 2 midden, a Glades 1 midden and a prehistoric Glades 1 mound. Although their location is unknown to the Town staff, if remaining in undisturbed condition, one or more are probably in the Hammock.

**Public Beach Access**

A substantial amount of public beach access is available in Ocean Ridge. Based on a field survey, there are 19 informal points of access or one for every quarter mile. Boynton City Beach offers formal beach access complete with parking for 255 cars. The Ocean Inlet Park offers beach access with parking for 80 cars. There is access to over 90 percent of the total beach area; a large amount for a Town of this size. In contrast, Gulf Stream residents have access to 40 percent of the total beach territory of their Town and Manalapan residents have access to only slightly more. Condominiums and private beach clubs occupy the remaining beach area in these neighboring Towns. Because there already is more than sufficient beach access in the Town, the Ocean Ridge Commission has opposed efforts by Palm Beach County to develop or purchase additional amounts of beach access property within the Town. Additional public beach development would bring detrimental amounts of non-local traffic into Ocean Ridge.




NOTE: Some land east of Old Ocean Blvd/A1A is public or in unity of title with housing west of the roadway.

Source: Robert K. Swarthout Incorporated, 1987

Figure 1.3
VACANT LAND

# TOWN OF OCEAN RIDGE

PALM BEACH COUNTY

1987

0 400 800'

RKS INCORPORATED

**Analysis of Vacant Land**

Ocean Ridge has a small amount of developable vacant land. A total of 141.8 acres of land are privately owned and vacant. Of the 141.8 privately owned vacant acres, 74.8 are covered by mangroves. Based on present state policy, these mangrove lands may not be developable except with extensive mitigation. However, this does not warrant placing such land in the stringent Conservation category until either local land-owner agreements or State permit requirements are in effect. 12.7 acres of hammock exist and will not be developed. The National Wildlife Association owns 26.0 acres of vacant land (PC zoning). The Association is a private land trust which holds selected parcels throughout the country for their ecological and natural resource value. The remaining 41.3 acres are potentially developable for residential use. Based on current zoning, 26.1 acres are eligible to be developed for single-family use (RSF zoning)and 15.2 acres could be developed for multifamily-family use (RMM zoning). If all land were developed at currently permitted densities, 250 additional units could be constructed.

The combination of these 250 units plus the current permanent and seasonal estimate of 1,477 units suggest a housing unit capacity of 1,727 which is rounded to 1,730.

The vacant developable land is evenly divided between the Cocoa soil category which is well drained and thus suitable for septic systems and the Arents soil group which is more poorly drained and thus caution must be used when installing septic systems. See Figures 1.3 and 6.2. These scattered vacant parcels are all level with no historic or natural resource significance (other than as noted above).

## AVAILABILITY OF FACILITIES AND SERVICES

### Adequacy of Traffic Circulation Facilities

Ocean Ridge thoroughfares and bridges are more than adequate to serve the local traffic circulation needs of the community. Development of all the developable land in the Town will add at current permitted densities only 250 dwelling units. When amortization of existing commercial uses has been accomplished, there will be no commercial land in the Town. Existing beach access facilities generate traffic volumes which can be accommodated on existing thoroughfares.

### Sanitary Sewer Facilities

Ocean Ridge is served primarily by septic systems. Single-family residences, duplexes, commercial establishments and some multifamily-family developments utilize this form of sanitary sewer facility. The soils are sandy and well drained and have proven to be satisfactory to septic system placement.

Several multifamily-family developments utilize on-site treatment plants for sanitary waste disposal. These systems serve specific developments and are incapable of serving any significant intensification of land use. The Southcentral Wastewater Treatment Authority's new facility has been completed and hookup capability is required for new construction. The Town Commission has initiated exploration of sewer line feasibility by hiring consulting engineers.

### Solid Waste

Ocean Ridge enjoys adequate solid waste services. A private hauler provides pickup service for residential and commercial properties. The Palm Beach County Solid Waste Authority provides facilities for disposal of solid waste. The Authority is developing a resource recovery facility and new landfill site. These are expected to serve for a period of 25 years.

### Drainage

All of Ocean Ridge is susceptible to flooding from a hurricane or storm of great magnitude. In other words, all of the scattered vacant lots (with 3 exceptions) are in the 100-year floodplain and therefore any development must conform with floodplain regulations. See Figures 1.3 and 6.3. Stormwater drains serve acceptably under normal circumstances. The Town maintains stormwater drainage facilities in the northern and southern sections. Short term ponding sometimes occurs.

### Potable Water

Potable water is provided to Ocean Ridge by the City of Boynton Beach. The Town maintains the distribution system. Some transmission lines are 25 years old. These facilities are adequate to handle the limited additional demand that would be generated by anticipated future development. However, in 1988 the Town authorized a major improvement program to upgrade distribution line deficiencies.

### Groundwater Aquifer Recharge

Ocean Ridge is not in a prime groundwater aquifer recharge area.

### Analysis of Land Needed to Accommodate Projected Population

The population projection utilized for planning purposes was based directly on the limited amount of vacant developable land. There is enough vacant land to accommodate the population increases cited in this plan. The Town is attempting to amortize existing commercial uses and as discussed above, most future developed areas will be built as single-family residences.

### Analysis of the Need for Redevelopment

There are no seriously blighted areas in Ocean Ridge. The south side residential area has some potential to be redeveloped. This potential is discussed earlier. Incompatible commercial uses are being phased out through amortization provisions in the zoning ordinance.

## POPULATION PROJECTIONS

High and low population projections have been prepared for Ocean Ridge. The projections are based on the following assumptions:

High Range: Total housing units will increase at a decreasing rate beginning at 2.5% annually
Multifamily units will account for 50% of all new units
Persons per household will trend down to 1.94 (from 1.98, the 1988 estimate)
Vacancy rates will average 3% for permanent units

Low Range: Total housing units will increase at a decreasing rate beginning at 2% annually
Multifamily units will account for 50% of all new units
Persons per household will trend down to 1.91 (from 1.97)
Vacancy rates will average 3% for permanent units

An average of the high and low projections for five-year increments have been calculated as the middle projection. The results of A-4 are as follows:

| **Year** | **1988** | **1994** | **1999** |
|---|---|---|---|
| High: | 3,376 | 3,457 | 3,491 |
| Low: | 3,351 | 3,413 | 3,432 |
| Middle/Average: | 3,364 | 3,435 | 3,462 |

More detailed data pertaining to past and projected population is set forth in Appendix A.

FUTURE LAND USE
GOALS, OBJECTIVES AND POLICIES

**Goal** **Protect and enhance the residential character and natural environment of Ocean Ridge.**

**Objective 1** ***Restrict future development to vacant upland parcels that have package sewer service or that have soil characteristics capable of supporting septic systems.***

*This objective is a specific, measurable end that is intended to coordinate future land uses with the appropriate topography, soil conditions and the availability of facilities and services in fulfillment of 9J-5.006(3)(b)1, Florida Administrative Code.*

**Policy 1.1** Arrange the future land use map so that all significant development occurs on upland parcels and so that wetland areas are designated for Preservation/Conservation. Significant development shall include but not be limited to buildings, parking lots and thoroughfares.

**Policy 1.2** Enact and enforce development code regulations that require the demonstration of adequate on-site sewage disposal capabilities prior to issuance of development permits. Capabilities may include: 1) soil conditions suitable for anticipated septic tank loads, and/or 2) package treatment facilities.

**Policy 1.3** Enact and enforce development code regulations that permit new development to proceed only when it can be connected to central water service.

**Policy 1.4** Enact and enforce development code regulations that require installation of easily-accessible sewer system connections for future use should public sewer facilities become available in Ocean Ridge.

**Policy 1.5** The Town shall retain those tracts designated Preservation/Conservation which are now in its ownership. This land is identified in Figure 1.4.

**Policy 1.6** Enact and enforce development code regulations that prohibit the issuance of development orders and permits which would result in a level-of-service for any public facility below the level established in this comprehensive plan.

**Policy 1.7** Consider the enactment of development code regulations allowing transfer of development rights from land designated Preservation/Conservation to land designated residential. Such regulations, if enacted, shall credit Preservation/Conservation areas with development densities not greater than 1.8 dwelling units per gross acre and shall permit transfers which increase the density otherwise permitted by this plan by not more than twenty percent.

**Objective 2** ***Achieve the rehabilitation or removal of unsound and poorly maintained structures wherever they occur in Ocean Ridge.***

*This objective is a specific, measurable end that is intended to encourage the elimination of blight in fulfillment of the requirements of 9J-5.006(b)2. Blighted areas* per se *do not exist in Ocean Ridge.*

**Policy 2.1** Enact and enforce development code regulations that require buildings and structures to be maintained in sound condition or razed.

**Policy 2.2** Adopt Town administrative policies which ensure that unsound buildings, should any exist, will be identified and then razed or rehabilitated in accordance with development code regulations enacted pursuant to Policy 2.1.

**Objective 3** ***Eliminate all existing uses which are inconsistent with the character of Ocean Ridge and prevent such uses from being established in the future.***

*This objective is a specific, measurable end that is intended to encourage the elimination of uses inconsistent with the community's character and future land uses in fulfillment of the requirements of 9J-5.006(b)3.*

**Policy 3.1** Arrange the future land use map so that agriculture, commercial and industrial uses are not permitted in Ocean Ridge. The Town Commission of Ocean Ridge has determined these uses to be incompatible with the Town's existing and desired future residential character.

**Policy 3.2** Enact and enforce development code regulations that require, after a period of amortization, the removal of all hotels, motels and other commercial uses.

**Policy 3.3** Enact and enforce development code regulations which address the location and extent of residential, public, preservation/conservation and park uses in accordance with the future land use map and the section of this land use element entitled "Future Land Use Categories."

**Policy 3.4** Enact and enforce development code regulations that prohibit agricultural, commercial and industrial land uses in accordance with the future land use map.

**Objective 4** ***Perpetually maintain or improve the current quality and extent of existing natural resources as identified in the coastal management and conservation elements of this plan.***

*This objective is a specific, measurable end that, together with Objective 5, fulfills the requirements of 9J-5.006(3)(b)4.*

**Policy 4.1** Arrange the future land use map so that flora and fauna that are endangered, threatened or of special concern are designated in the Preservation/Conservation land use category whenever such designation would constitute a reasonable property regulation and would be consistent with other policies and objectives of this plan.

**Policy 4.2** Enact and enforce development code regulations that limit development of areas designated on the future land use map as Preservation/Conservation in accordance with the section of this land use element entitled "Future Land Use Categories."

**Policy 4.3** Enact and enforce development code regulations that protect potable water wellfields and prime aquifer recharge areas, should any be established, from adverse impacts of development.

**Policy 4.4** Applications for development permits in V1 through V30 floodplains as designated by the Federal Emergency Management Agency shall be approved only if significant alteration of the functions of the floodplain will not occur and if the proposed development is consistent with performance standards regulating development.

**Policy 4.5** Enact and enforce development code regulations that require on-site runoff management facilities sufficient to ensure that post-development runoff rates, volumes and pollutant loads will not exceed pre-development conditions.

**Policy 4.6** Enact and enforce development code regulations that prohibit extraction of natural resources.

**Policy 4.7** Consider the enactment of development code regulations allowing transfer of development rights from land designated Preservation/Conservation to land designated residential. Such regulations, if enacted, shall credit Preservation/Conservation areas with development densities not greater than 1.8 dwelling units per gross acre and shall permit transfers which increase the density otherwise permitted by this plan by not more than twenty percent.

**Policy 4.8** Enact and enforce development code regulations that require reasonable environmental protections attendant to all development adjacent to water bodies and Preservation/Conservation areas, including an environmental report requirement.

**Objective 5** ***Preserve the two historic houses, and by 1991, document the location and condition of the three archaeological sites.***

*This objective is a specific, measurable end which, together with Objective 4, fulfills the requirements of 9J-5.006(3)(b)4.*

**Policy 5.1** The 1990 land development regulations shall include provisions that assure special review of any renovation or demolition permit applications for the two North Ocean Boulevard houses on the State Master Site File.

**Policy 5.2** By 1991, the Town staff shall work with the State Division of Historical Resources and their local staff person to locate the three archaeological sites (if possible) and assess their condition.

**Objective 6** ***Restrict development to 1,730 dwelling units in the entire Town.***

*This objective is a specific, measurable end that is intended to coordinate coastal area population densities with the appropriate regional hurricane evacuation plan in fulfillment of 9J-5.006(3)(b)5.*

*The population density of the future land use map is based on the Town's goal to protect and enhance the residential character and natural environment of Ocean Ridge. This population density was evaluated to ensure coordination with the* Lower Southeast Florida Hurricane Evacuation Study *prepared in 1983. The study was prepared for the South Florida Regional Planning Council and is the main technical reference for hurricane evacuation practice for Palm Beach County. Palm Beach County was included in the scope of the study, although the county now lies within the jurisdiction of the Treasure Coast Regional Planning Council. The study was based on 1983 densities and a 1983 survey of behavior patterns. The study reports that the National Hurricane Center can usually issue an evacuation notice 12-16 hours before the landward movement of a hurricane. However, evacuation of Palm Beach County requires only 6 hours notice under most conditions. The study does not recommend population densities; instead it recommends evacuation procedures and warning times. The study divides portions of Palm Beach County requiring evacuation into 53 study areas. Study Area 13, which contains Ocean Ridge, is not particularly dense in comparison to other Palm Beach County study areas. Therefore, evacuation of Study Area 13 is expected to take less than the 6 hours generally recommended for the County. Ocean Ridge has had minimal development since 1983 and will not substantially increase in density under this plan. It is expected that other jurisdictions in Study Area 13 will also enact land use maps that result in only modest density increases. The cumulative effect of density increases in Ocean Ridge and surrounding areas probably will not increase the needed evacuation time above the 6 hours provided for in the hurricane evacuation study. In any case, some increase in evacuation time above 6 hours would be reasonable since 12-16 hours notice is within National Hurricane Center capabilities.*

**Policy 6.1** Arrange the future land use map so that the number of dwelling units (excludes hotels) in Ocean Ridge will not exceed 1,730.

**Policy 6.2** Enact and enforce development code regulations that address the location and extent of residential, public, preservation/conservation and park uses in accordance with the future land use map and the section of this land use element entitled "Future Land Use Categories."

**Policy 6.3** Enact and enforce development code regulations that prohibit agricultural, commercial and industrial land uses in accordance with the future land use map.

**Policy 6.4** Enact and enforce development code regulations that limit development in areas designated on the future land use map as single-family residential and medium density multiple family residential in accordance with the section of this land use element entitled "Future Land Use Categories."

**Objective 7** ***Not Applicable.***

*Objective 9J-5.006(3)(b)6 is not applicable since there are no known Chapter 380, FS resource planning and management plans applicable to Ocean Ridge i.e. Areas of Critical State Concern.*

**Objective 8** ***Allow without unnecessary delay the maximum amount of development consistent with the goals and other objectives of this plan. For the purposes of this objective, such development is defined as that which is permitted by the future land use map.***

*This objective is a specific measurable end that is intended to discourage the proliferation of urban sprawl in fulfillment of the requirements of 9J-5.006(3)(b)7. It will discourage the prolification of urban sprawl by facilitating development in an already urbanized area.*

**Policy 8.1** Arrange the future land use map to accommodate the maximum amount of residential development consistent with the goals and other objectives of this plan.

**Policy 8.2** Enact and enforce development code regulations that address the location and extent of residential, recreational, conservation, education and public land uses in accordance with the future land use map and the policies and descriptions of types, sizes, densities and intensities of land contained in this element.

**Policy 8.3** Enact and enforce development code regulations that prohibit agricultural, commercial and industrial land uses in accordance with the future land use map. The Town Commission of Ocean Ridge has determined these uses to be incompatible with the Town's existing and desired future residential character.

**Policy 8.4** Enact and enforce development code regulations that limit development in areas designated on the future land use map as single-family residential and medium density multiple family residential in accordance with the section of this land use element entitled "Future Land Use Categories."

**Policy 8.5** Continue policies that require the Town administrative and building officials to process all applications for development permits and orders in a timely manner, if consistent with the code. This policy is intended to facilitate development, but it shall not be interpreted to encourage or permit short cuts in the development review process or to permit or encourage any development or use of land in a manner inconsistent with this plan or the Town's Code or other applicable regulations.

**Objective 9** ***If any new streets are constructed (unlikely), use the development code to achieve adequate rights-of-way and other easements for the installation of utility lines including electric, telephone, television, water and sewer lines.***

*This objective is a specific, measurable end intended to ensure the availability of suitable land for utility facilities necessary to support development in fulfillment of the requirements of 9J-5.006(3)(b)8.*

*See Infrastructure Element for details; but sewer line installation is a future possibility as is water line replacement.*

**Policy 9.1** Enforce development code regulations which require that rights-of-way on all newly platted streets be adequate to accommodate the types of utility lines identified in Objective 9.

**Policy 9.2** Enforce development code regulations which require that easements be designated over private property when such easements are necessary to the provision of the utility lines designated in Objective 9.

**Objective 10** ***Manage future growth and development through the utilization of innovative development code regulations which implement this plan.***

*This objective is a specific, measurable end that is intended to encourage the use of innovative land development regulations including planned unit development regulations in fulfillment of 9J-5.006(3)(b)9. It also provides an objective "mantel" for the nesting of policies required pursuant to 9J-5.006(3)(c)1, 2, 3, 4, 6 and 7. The policy option afforded by 9J-5.006(3)(c)5 (the option of designating certain areas for a mixture of different land uses) is not locally desired.*

**Policy 10.1** Amend the development code to contain specific and detailed regulations that implement this *Comprehensive Plan*, and:

- Regulate the development of land in accordance with the arrangement of land use categories articulated in the future land use map;

  *Fulfills 9J-5.006(3)(c)2 since the future land use map itself is arranged to provide for the compatibility of adjacent land uses to the maximum extent feasible within the limits imposed by existing development patterns;*

- Regulate the land use categories of this plan in accordance with the section of this land use element entitled "Future Land Use Categories;"

- Regulate the subdivision of land;

- Regulate signage;

- Regulate development of areas subject to seasonal or periodic flooding and require provision of drainage and stormwater management;

- Specifically, prohibit the issuance of development orders and permits which would result in a level of service for any public facility below the level adopted in this *Comprehensive Plan*;

- Require on-site runoff management facilities sufficient to ensure that post-development runoff rates, volumes and pollutant loads will not exceed pre-development conditions;

- Require the provision of on-site open space for all development and on-site buffering where different types of development are adjacent;

- Require the provision of on-site facilities which ensure safe and convenient traffic flow and vehicle parking needs;

- Protect potable water wellfields and aquifer recharge areas, should any ever be established, from adverse impacts of development; and

- Protect environmentally sensitive land (particularly conservation areas) from the adverse impacts of development.

**Policy 10.2** Enforce development code regulations that address the location and extent of residential recreational, conservation, education and public land uses in accordance with the future land use map and the policies and descriptions of types, sizes, densities and intensities of land contained in this element.

**Objective 11** ***Achieve a future development and redevelopment pattern that is consistent with sound planning principles; the goals, objectives and policies of this plan, and the residential character desired for Ocean Ridge.***

**Policy 11.1** Arrange the future land use map so that all significant development occurs on upland parcels and so that wetland areas (as designated by the U.S. Department of Interior) are designated for Preservation/Conservation. Significant development shall include but not be limited to buildings, other structures, parking lots and roadways.

**Policy 11.2** Arrange the future land use map so that agriculture, commercial and industrial uses are not permitted in Ocean Ridge. The Town Commission of Ocean Ridge has determined these uses to be incompatible with the Town's existing and desired future residential character.

**Policy 11.3** Arrange the future land use map so that flora and fauna that are endangered, threatened or of special concern are designated in the Preservation/Conservation land use category whenever such designation would constitute a reasonable property regulation and would be consistent with other policies and objectives of this plan.

**Policy 11.4** Arrange the future land use map so that the number of dwelling units in Ocean Ridge will not exceed 1,730.

**Policy 11.5** Arrange the future land use map to accommodate the maximum amount of residential development consistent with the goals and other objectives of this plan.

**Policy 11.6** Consider the enactment of flexible development code regulations including, but not necessarily limited to, planned unit developments and cluster zoning provisions.

**Policy 11.7** Enact and enforce subdivision and other plat regulations that permit local streets and individual lots to have access to higher level streets including, but not limited to, State Road A1A. This policy is intended to protect the residential character of Ocean Ridge by inhibiting extraneous traffic flow.

**Policy 11.8** Enact and enforce development code regulations that address the location and extent of residential, public, preservation/conservation, and park uses in accordance with the future land use map and the section of this land use element entitled "Future Land Use Categories."

**Policy 11.9** Enact and enforce development code regulations which prohibit agricultural, commercial and industrial land uses in accordance with the future land use map. The Town Commission of Ocean Ridge has determined these uses to be incompatible with the Town's existing and desired future residential character.

## FUTURE LAND USE CATEGORIES

This section contains language which explains the intent of the future land use map. Zoning regulations which permit uses that are specifically permitted by this section and that also permit uses that are less intensive than those permitted by this section shall be deemed to be consistent with the comprehensive plan. Zoning regulations that are more restrictive than the provisions of this section shall also be consistent with the comprehensive plan.

Any variance to a development code regulation which implements this plan shall be deemed to be a legally granted variance to this plan and as such shall be deemed to be consistent with this plan. This variance provision, shall apply to all elements and sections of this plan. However, nothing herein is intended to supercede the requirements of Florida law regarding the provision of code variances vis a vis comprehensive plans.

### Single-Family Residential

The single-family residential category shall permit not more than 3.6 dwelling units per gross acre. This density policy will be considered to have been effectuated by any regulation which requires a minimum of 10,000 square feet of lot area per dwelling unit exclusive of rights-of-way.

The Medium Density Multiple Family Residential medium density multiple family residential category shall permit not more than 15 dwelling units per gross acre. This density policy will be effectuated by any regulation which requires a minimum of 2,500 or more square feet of lot area per dwelling unit exclusive of rights-of-way.

### Preservation/Conservation

The preservation/conservation category shall be subject to the following restrictions:

- Any building shall be permitted by Special Exception only.
- Foot paths for the observation of natural features shall be permitted provided such paths, as proposed, will not threaten the survival of the resource.
- Boating subject to the same restrictions applicable to foot paths.

- Florida Game and Fish Commission wildlife management activities shall be permitted.
- Archaeological exploration, observation and excavation by recognized authorities subject to the same restrictions applicable to foot paths.
- The clearing of trees, other than for resource enhancement shall be prohibited.
- All applications for development approval shall be subject to site plan review.

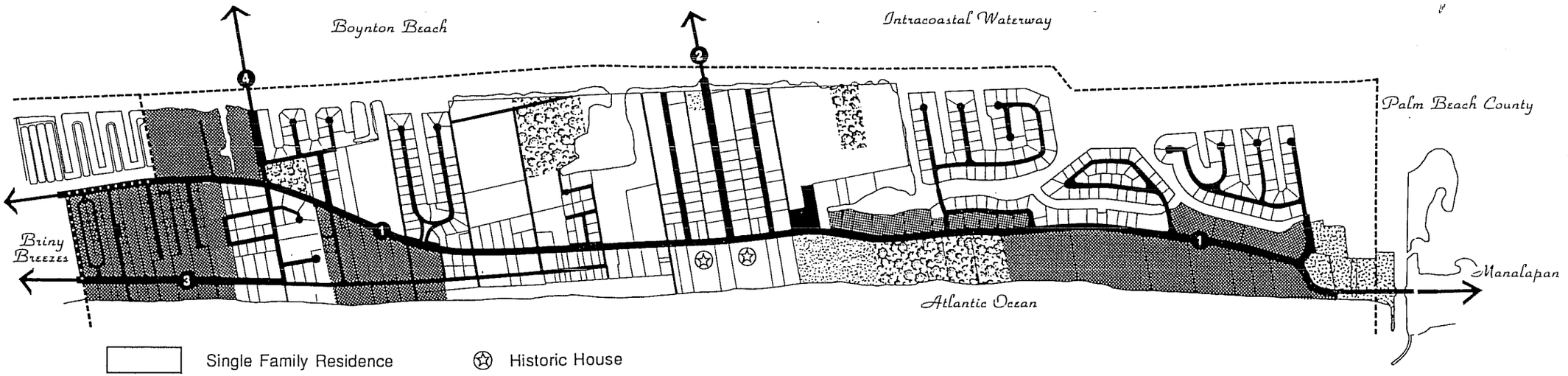
**Public**

The public land use category is intended to provide for municipal facilities only. Areas designated public should not be used for other purposes without an amendment to this plan.

**Parks**

The parks land use category is intended to provide for public parks and open space areas. Sites designated parks should not be used for other purposes without an amendment to this land use plan.

1. STATE ROAD A1A
2. OCEAN AVENUE
3. OLD OCEAN BOULEVARD
4. BEACHWAY DRIVE




Single Family Residence

Historic House

Multi-Family Residence

Public

Preservation/Conservation

Parks

There are no industrial or commercial uses planned for Ocean Ridge. There are no public waterwells, or cones of influence. There are no rivers, bays, lakes, or harbours. There are no minerals in economic quantities. Beaches and shores exist along the Atlantic Ocean. Shores exist along the Intracoastal Waterway. Soils are shown in Figure 1.3. Floodplains are shown in 1.5. Wetlands are shown in Figure 1.2. Figures 5.1, 1.2, and 1.3 are incorporated by reference as part of the future land use map series.

Source: Robert K. Swarthout, Incorporated 1989

Figure 1.4
FUTURE LAND USE

# TOWN OF OCEAN RIDGE

PALM BEACH COUNTY 1987

0 400 800

RKS INCORPORATED

# TRAFFIC CIRCULATION ELEMENT

## EXISTING TRAFFIC CIRCULATION DATA *(9J-5.007(1))*

Important transportation routes within Ocean Ridge include a through north-south State Road A1A and twin east-west roads, Beachway Drive and Ocean Avenue. Bridges on the two east-west roadways, provide access to the mainland. Most local roads are east-west roads which lead from State Road A1A. Old Ocean Boulevard also serves the southern portion of the town. See Figure 2.1.

### Functional Thoroughfare Classifications

Pursuant to the 1983 Highway Classification Act, streets and roads in Florida are functionally classified as follows:

1. PRINCIPAL ARTERIAL ROAD: Arterial roads provide relatively continuous service for relatively high traffic volumes. Average trip lengths are long and operating speeds are high. Arterials have high mobility importance. All United States numbered highways are classified as arterial roads. Principal arterials are the most important arterials. Urban principal arterials are those which serve the major activity centers of an urban area. They are the highest traffic volume carriers, they carry the longest trips, and they carry a high proportion of total urban area travel on a minimum of mileage. Urban principal arterials connect with other urban principal arterials and with major rural connections.

2. MAJOR ARTERIAL ROAD: Arterial roads provide relatively continuous service for relatively high traffic volumes. Average trip lengths are long and operating speeds are high. Arterials have high mobility importance. All United States numbered highways are classified as arterial roads. Urban major arterials are the second most important arterials.

3. MINOR ARTERIAL ROAD: Arterial roads provide relatively continuous service for relatively high traffic volumes. Average trip lengths are long and operating speeds are high. Arterials have high mobility importance. All United States numbered highways are classified as arterial roads. Minor arterials place more emphasis on land access than do major and principal arterials. Minor arterials are the least important arterials, but are still important thoroughfares. Urban minor arterials generally interconnect with and augment urban principal arterials and provide service to shorter trips at lower levels of mobility.

4. PRINCIPAL COLLECTOR ROADS: Collector roads provide service for relatively moderate traffic volumes, trip lengths and operating speeds. In addition, collectors function to collect and distribute traffic between local roads and arterial roads. Principal collectors are the most important collectors.

5. MAJOR COLLECTOR ROADS: Collector roads provide service for relatively moderate traffic volumes, trip lengths and operating speeds. In addition, collectors function to collect and distribute traffic between local roads and arterial roads. Major collectors are the second most important collectors.

6. MINOR COLLECTOR ROADS: Collector roads provide service for relatively moderate traffic volumes, trip lengths and operating speeds. In addition, collectors function to collect and distribute traffic between local roads and arterial roads. Minor collectors are the least important collectors.

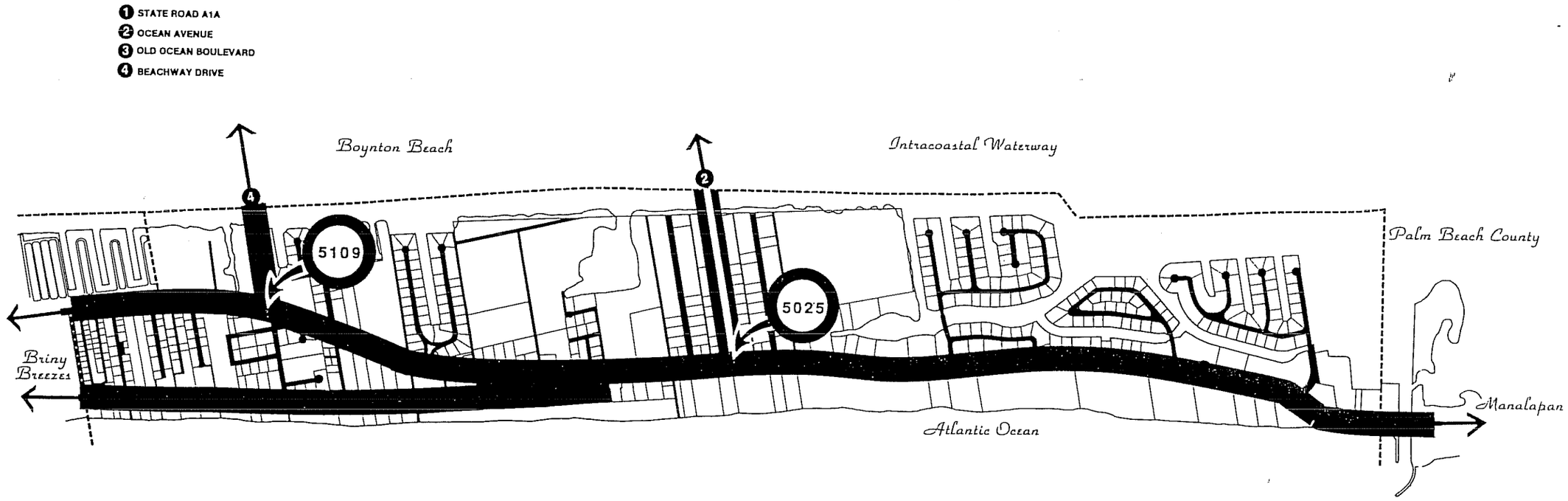
7. LOCAL ROADS: Local roads provide service to low traffic volumes for short trip lengths. Their primary function is to provide access to land. Local roads may be classified as principal, major and minor local roads.

Ocean Ridge's functional classification is shown on Figure 2.2.

**Accident Data**

A total of 52 vehicular accidents occurred in Ocean Ridge during 1988. Those locations with two or more accidents were:

| | |
|---|---|
| 7 | Beachway Drive and A1A |
| 7 | Parking lot at Oceanfront Park |
| 6 | Ocean Avenue and A1A |
| 3 | Inlet Cay Drive and A1A |
| 2 | Sable Island Drivew and A1A |
| 2 | River Drive and A1A |
| 2 | Island Drive and A1A |
| 2 | Coconut Lane and A1A |




5025 1980 Average Daily Trips

2 Lane Roadway

4 Lane Roadway

Source: The Town Of Ocean Ridge

Figure 2.1

EXISTING CONDITIONS FOR ROADWAYS

# TOWN OF OCEAN RIDGE

PALM BEACH COUNTY

1987

0 400 800

RKS INCORPORATED

## TRAFFIC CIRCULATION ANALYSIS *(9J-5.007(2))*

### Existing Levels of Service and System Needs *(9J-5.007(2)(a))*

**Most Recently Available Traffic Counts:** Traffic counts are normally taken only for county and state thoroughfares. Table 2.1 shows counts for State Road A1A increasing from 1980 to 1986 while average daily volumes counts for Ocean Avenue show a decrease.

**Table 2.1**
**Existing Traffic Conditions**

| Roadway | Facility Type | Lanes | Responsibility | Average Daily Traffic 1980 | Average Daily Traffic 1986 |
|---|---|---|---|---|---|
| SR A1A | Minor Arterial | 2 | FDOT | 5,025 | 5,109 |
| Ocean Avenue | Minor Arterial | 4 | FDOT | 5,760 | 5,028 |
| Beachway Drive | Minor Arterial | 2 | County(2) | n a | na(1) |
| Old Ocean Blvd | Collector | 2 | County | n a | na(1) |

(1) Traffic counts for Beachway Drive and Old Ocean Boulevard have not been made. Observation indicates that these roadways are operating at acceptable levels of service.

(2) Palm Beach County maintains Beachway Drive from the town line at the center of the bridge to S.R. A1A. Ocean Ridge maintains the roadway east of S.R. A1A.

SOURCE: Florida Department of Transportation, 1987.

**Level of Service Defined:** The level of service of a roadway is defined as the ability of vehicles to pass over a given section of roadway during a specified time period, while maintaining a given operating condition. The standardized definitions of service levels and operating conditions used in traffic planning are as follows:

1. **LOS A**: Highest LOS which describes primarily free-flow traffic operations at average travel speeds. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Stopped delay at intersections is minimal.

2. **LOS B**: Represents reasonably unimpeded traffic flow operations at average travel speeds. The ability to maneuver within the traffic stream is only slightly restricted and stopped delays are not bothersome. Drivers are not generally subjected to appreciable tensions.

3. **LOS C**: Represents stable traffic flow operations. However, ability to maneuver and change lanes may be more restricted than in LOS B, and longer queues and/or adverse signal coordination may contribute to lower average travel speeds. Motorists will experience an appreciable tension while driving.

4. **LOS D** Borders on a range in which small increases in traffic flow may cause substantial increases in approach delay and, hence, decreases in speed. This may be due to adverse signal progression, inappropriate signal timing, high volumes, or some combinations of these.

5. **LOS E**: This represents traffic flow characterized by significant delays and lower operating speeds. Such operations are caused by some combination or adverse progression, high signal density, extensive queuing at critical intersections, and inappropriate signal timing.

6. **LOS F**: This represents traffic flow characterized at extremely low speeds. Intersection congestion is likely at critical signalized locations, with high approach delays resulting. Adverse signal progression is frequently a contributor to this condition.

Source: Florida Department of Community Affairs "Model Traffic Circulation Element, 1987

**Existing Levels of Service on Ocean Ridge Roads:** No road segments in Ocean Ridge are currently operating at a deficient level of service (below LOS "D"). State Road A1A and Ocean Avenue are presently operating at LOS "B." The level of service calculation for those roads are shown in Table 2.2

**Existing System Needs:** Current north-south through and local traffic is more than adequately served by State Road A1A which is at level of service B.

**Projected Levels of Service and System Needs** *(9J-5.007(2)(b))*

**Projected Traffic Volumes:** Future traffic volumes on Ocean Ridge thoroughfares were projected to the year 2010 in a November 1987 study by the Palm Beach County Metropolitan Planning Organization. Two sets of projections were prepared: 1) Needs Projections and 2) Cost-Feasible Projections. The Needs Projections were based on the assumption that all thoroughfare improvements necessary to carry traffic where it wants to go would be made. The Cost-Feasible Projections were based on the assumption that only cost-feasible improvements would be made. Consequently, the cost-feasible projections gives heavier loads to existing highly improved streets. Both sets of projections were developed with the use of fairly sophisticated computer models. They both show no significant increase in traffic on Ocean Ridge thoroughfares.

**Future System Needs:** A presently unforeseeable traffic volume increase would be required to justify widening of State Road A1A. Ocean Ridge is especially sensitive to this issue as the character of State Road A1A directly affects the character of the community. State Road A1A has been declared a state scenic route. The town, along with the other communities, has reduced densities and implemented controls in order to protect and enhance the current residential character of State Road A1A. Current east-west through traffic is adequately accommodated by Beachway Drive and Ocean Avenue, the latter of which operates at level of service B. Neither of these roads nor their bridges require widening to meet current needs or to accommodate the projected future level of traffic. The Land Use Plan Element furthers this effort by reducing the intensity of land use in order to minimize traffic generation.

**Locally Adopted Level of Service Standards:** The Town is adopting a Level of Service C to assure that no widenings are recommended. Currently service is higher than C. This level exceeds the State's minimum level of service for such areas. The County (and MPO) is still in the process of updating their Comprehensive Plan.

**Improvements, Expansions and New Facilities:** The only local street facility requiring improvement or replacement during the planning period is the Inlet Cay Bridge. The only facility improvement on the five-year State Transportation plans is the Ocean Avenue Bridge which has been in litigation.

**Regional Policy Plans:** The Treasure Coast Regional Policy Plan states that roadway systems in Palm Beach County shall be planned, developed, and maintained to operate at LOS "D" or better for the peak hours.

**Table 2.2**
**Level of Service on Major Roads in Ocean Ridge**

| Roadway | Hourly Capacity | Peak Hour Volume 1986 | 1986 V/C Ratio | 1986 LOS |
|---|---|---|---|---|
| SR A1A | 1,200 | 511 | 0.43 | B |
| Ocean Avenue | 2,400 | 502 | 0.21 | B |
| Beachway Drive | 750 | na | na | na |
| Old Ocean Boulevard | 750 | na | na | na |

Source: Robert K. Swarthout, Incorporated, 1987

**Table 2.3**
**Future Trips Due to New Development**
**Ocean Ridge**

| | 1991 | 1996 | 2001 | 2006 |
|---|---|---|---|---|
| New Units | 99 | 50 | 25 | 13 |
| Trips/Unit | .8/hr | .8/hr | .8/hr | .8/hr |
| Additional Trips (Peak Hour) | 79 | 40 | 20 | 10 |

Source: Robert K. Swarthout, Incorporated, 1987

---

**Table 2.4**
**Future Levels of Service**
**Ocean Ridge**

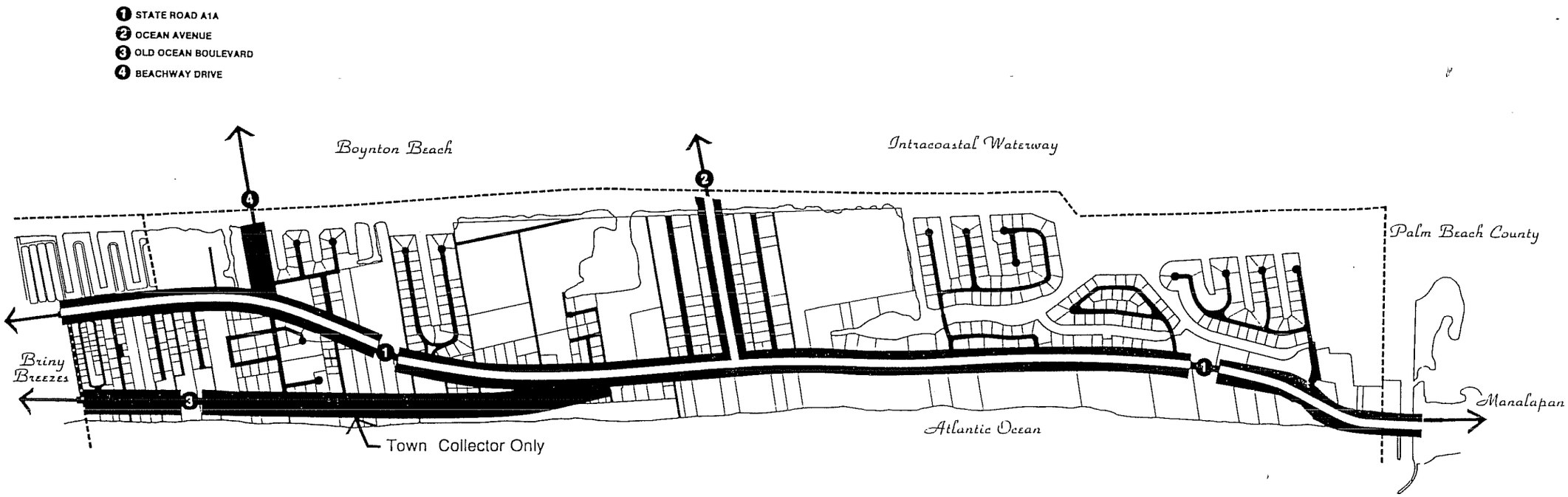
| | Peak Hour Capacity | LOS 1991 | LOS 1996 | LOS 2001 | LOS 2006 |
|---|---|---|---|---|---|
| A1A | 1,200 | B | B | B | B |
| Ocean Avenue | 2,400 | B | B | B | B |

Note: Beachway Drive and Old Ocean Boulevard can not be calculated due to lack of traffic volume data.

The following ratios were utilized for determining existing and future levels of service:

| Level of Service | | Volume/ Capacity (V/C) Ratio |
|---|---|---|
| A | less than or equal to | 0.3 |
| B | less than or equal to | 0.5 |
| C | less than or equal to | 0.75 |
| D | less than or equal to | 0.9 |
| E | less than or equal to | 1 |

Source: Florida Department of Transportation, 1987. Palm Beach County Metropolitan Planning Organization, 1987.




Minor Arterial

Collector

Source:The Town Of Ocean Ridge

Figure 2.2
FUNCTIONAL CLASSIFICATION

# TOWN OF OCEAN RIDGE

PALM BEACH COUNTY

1987

0 400 800

RKS INCORPORATED

## TRAFFIC CIRCULATION ELEMENT
## GOALS, OBJECTIVES AND POLICIES *(9J-5.007(3))*

**Goal 1** To maintain a transportation system that meets the circulation needs of Ocean Ridge in a safe and efficient manner, but does not adversely impact residential, public or preservation/conservation uses.

**Objective 1.1** *Retain without substantial modification the existing adequate circulation system; measurability shall be no new roadways or widenings.*

**Policy 1.1.1** Utilize level of service "C" as the peak hour standard for all roadways.

*Although thoroughfares in Ocean Ridge currently operate at a higher level of service, level "C" is selected because it will allow traffic volumes to increase without necessitating road widening. This plan seeks to avoid substantial volume increases, but this plan will not establish a level of service which can be used to justify road widening in the event that traffic volumes increase despite local efforts to resist.*

**Policy 1.1.2** Resist all attempts by MPO, FDOT and others to force roadway widenings and bridge relocation. See Analysis on page 1.13.

**Policy 1.1.3** Continue to use the development plan review process to control roadway access points and on-site traffic flow; amend the Town's code provisions where necessary within one year of transmitting this plan.

**Policy 1.1.4** As needed, upgrade the bicycle-pedestrian path along State Route A1A by 1993.

**Objective 1.2** By reducing land use intensities, avoid the need for any new roadways or widenings.

**Policy 1.2.1** Retain the existing circulation system, avoiding the widening of State Route A1A or the relocation of the Ocean Avenue Bridge.

**Objective 1.3** *Coordinate Town transportation planning with regional and State agencies in order to retain the current roadway system characteristics; measurability shall be no new roadways or widenings.*

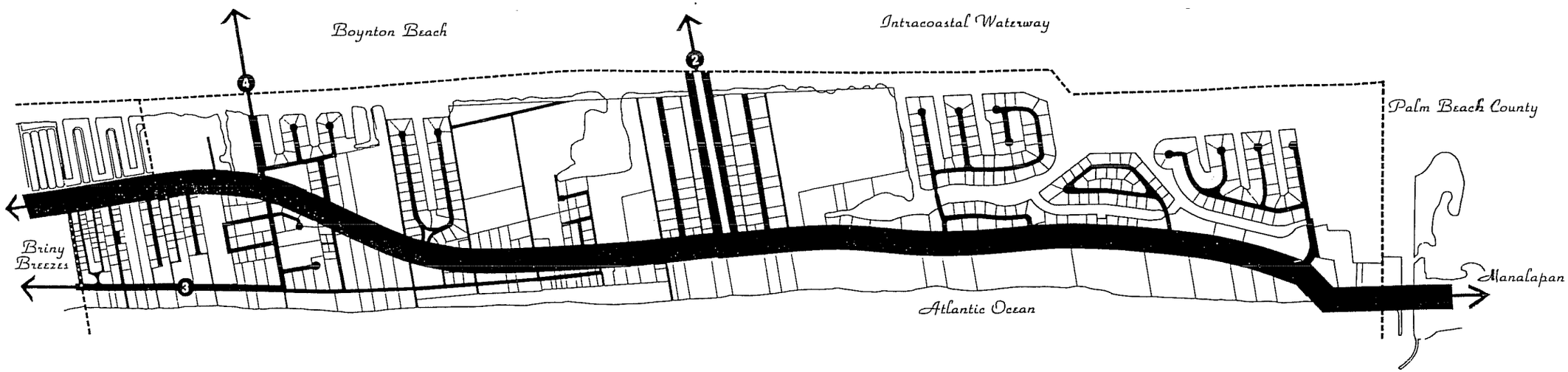
**Policy 1.3.1** The Town Commission shall continue to make written requests to the MPO, FDOT and regional transportation planning agencies asking them to seek viable alternatives to roadway widening and bridge relocation.

**Policy 1.3.2** Resist through litigation, if necessary, all attempts by MPO, FDOT and others to force roadway widening and bridge relocation.

**Objective 1.4** *Use the development code to protect existing street rights-of-way; measurability shall be no private construction therein.*

**Policy 1.4.1** Use the development review process to protect the existing major street rights-of-way. Note: No additional public rights-of-way will be needed.

1. STATE ROAD A1A
2. OCEAN AVENUE
3. OLD OCEAN BOULEVARD
4. BEACHWAY DRIVE




State Road A-1-A
Two-Lane Arterial

Ocean Avenue
Four-Lane Arterial

All Other Roads Are One
Or Two-Lane Local Roads

There are no limited access facilities in Ocean Ridge. There are no ports, airports, rail lines, high speed rail lines or related facilities in Ocean Ridge.

Source: Robert K. Swarthout Incorporated, 1988

Figure 2.3
FUTURE TRAFFIC CIRCULATION
# TOWN OF OCEAN RIDGE
PALM BEACH COUNTY 1987

0 400 800

RKS INCORPORATED

# HOUSING ELEMENT

## INTRODUCTION

Ocean Ridge is still developing, but there is only a small amount of residentially zoned undeveloped land remaining. Within the seven year period between 1980 and 1986, 56 single-family units and 123 multifamily units were constructed, an average of eight single-family units per year and 17.5 multifamily units per year.

## HOUSING ELEMENT DATA *(9J-5.010(1))*

### Housing Element Inventory *(9J-5.010(1)(a))*

An inventory of the number of Ocean Ridge dwelling units as enumerated in the 1980 Census is set forth in Tables 3.1 through 3.6b. The inventory addresses type, tenure, age, rent value, monthly cost of owner-occupied units, and rent/cost of income ratios.

**Type**: Ocean Ridge is composed of single-family duplex and multifamily dwelling units. As of 1980 only about 30 percent of all housing units are single-family units, with the remaining 70 percent being multifamily and duplex units. The multifamily percentage has remained the same since 1980. This contrasts with Palm Beach County, where 61 percent of all housing units are single-family detached houses, 5.3 percent are mobile home units and the remaining 33 percent are multifamily units.

**Tenure**: Home ownership is predominant in Ocean Ridge. Almost nine out of ten occupied housing units were occupied by owners in 1980. Most of the existing multifamily units are a mix of condominium units which are owned in fee simple and cooperative units which are owned through equity in a corporation.

**Age**: According to the U.S. Census, 800 total housing units existed in Ocean Ridge prior to 1970, and 422 units were added between 1970 and 1980. Based on records provided by the Town Of Ocean Ridge Building Department, 164 units were added between 1980 and 1986. Of these units, 56 were single-family and 108 were multifamily units.

**Rent**: As would be expected of a waterfront community, the median rent of $271 per month in 1980 was 11 percent higher than in neighboring mainland City of Boynton Beach, and almost 16 percent higher than the average Palm Beach County monthly rent.

**Value**: There was a dramatic differential between Ocean Ridge, Boynton Beach and Palm Beach County regarding the median value of specified owner-occupied housing units. In 1980, Ocean Ridge, had a median value of $144,600, which was 183.5 percent higher than Boynton Beach and 161.5 percent higher than Palm Beach County.

**Condition of the Housing Stock** *(9J-5.010(1)(c))*

**External Conditions:** There are no dwelling units in Ocean Ridge that are considered structurally "substandard." All of the single-family and multifamily units are adequately maintained. The Town demolished one substandard single-family structure in 1986. As noted on Page 1.15, there are some substandard lot sizes in the southern part of the Town.

The methodology upon which this observation is based consisted of a windshield survey of the entire Town. The survey was conducted by Robert K. Swarthout, Incorporated utilizing a Florida licensed building inspector.

For the purposes of this comprehensive plan, the term "substandard" shall be defined as follows (based upon the Town housing code definition):

> unsafe, unsanitary, unfit for human habitation, or not provided with adequate egress; or which constitute a fire hazard or are otherwise dangerous to human life, or which.....constitute a hazard.....by reason of inadequate maintenance, dilapidation, obsolescence, or abandonment.

**Internal Conditions:** The 1980 Census reported the presence of one owner-occupied housing unit that lacked complete plumbing for exclusive use and the existence of seven units that were occupied by more than one person per room. These figures indicate an improvement since the 1970 Census, where two units lacked complete plumbing for exclusive use and 15 units were indicated as being overcrowded. Seasonal units occupied by vacationing persons may account for the reported overcrowded units and therefore perhaps are not a good indicator of substandard conditions. Eight units lacked central heating, but that is not a significant measure of deterioration in South Florida.

### Monthly Cost of Owner-Occupied Units

Of the owners who had mortgages, most had costs exceeding $500 per month in 1980. Only 18% paid less than $400 per month in Ocean Ridge. The monthly costs of owner occupied units in Ocean Ridge was significantly higher than other cities in Palm Beach County. The average monthly cost of units county wide was 18% lower than monthly cost in Ocean Ridge.

### Rent/Cost-to-Income Ratio

Most of owner-occupied households and renter households spent less than 25% of their incomes for housing in 1980. Over 25% of renter households and 22% of owner occupied households paid over 35% of their income for housing but that figure is exaggerated when taken in the context of Ocean Ridges many retirement households. Although housing was valued higher in Ocean Ridge than in most other cities countywide, costs paid for housing as a percentage of income were lower.

### Subsidized Rental Housing Developments *(9J-5.010(1)(d))*

There are no reported subsidized rental housing developments in Ocean Ridge. High land prices and the scarcity of developable land preclude rental housing subsidy programs.

### Group Homes *(9J-5.010(1)(e))*

There are no reported group homes in Ocean Ridge for the same reasons that explain the lack of subsidized housing. Land prices appear to be too high for the community and/or private developers to erect group homes.

**Mobile Home Parks** *(9J-5.010(1)(f))*

There are no mobile homes in Ocean Ridge. At the present time, the Ocean Ridge Zoning Ordinance does not include a use category of this type.

**Historically Significant Housing** *(9J-5.010(1)(g))*

Houses at 6275 and 6301 North Ocean Boulevard are on the State's Master Site File of historically significant houses.

**Recent Housing Activity** *(9J-5.010(1)(h))*

Between 1975 and 1986, building permits were issued for 72 single-family dwellings and 178 multifamily dwellings. All 72 single-family dwellings have been constructed and 159 of the multifamily units have been constructed. The 1980-1986 total is 164 units. Table 3.7 details development activity that has occurred between 1975 and 1986.

## HOUSING ANALYSIS *(9J-5.010(2))*

### Projection of Households *(9J-5.010(2)(a))*

The anticipated number of permanent households expected to reside in Ocean Ridge by 2006 is 865. This projection was derived by applying anticipated future population per household figures to the middle range average population projection set forth in Appendix Table A-4. Anticipated population per household figures are set forth in Table 3.11. They reflect the expectation that average resident household size will drop, but modestly since Ocean Ridge already had a very low population per household at the time of plan preparation. Otherwise, the factors which point to a drop in population per household in Ocean Ridge are the same as those operations in the nation as a whole. They include lower birth rates, increased longevity of elderly persons, and a single-oriented, late marriage life style.

Projected distributions for households of different size and income are set forth in Tables 3.9 to 3.12.

### Projection of Housing Need *(9J-5.010(2)(b))*

The number, type, cost, rent and tenure of housing units which might be needed over the next twenty years can be estimated, but with very limited confidence since the Ocean Ridge housing market is so small. There are, in fact, an almost infinite variety of possible housing need scenarios. One such scenario is given in Table 3.12. The estimates in Table 3.12 have been fitted to the population size and income projections set forth in the preceding section. They also take reasonable vacancy and demolition assumptions into consideration.

The estimates set forth in Table 3.12 include housing for households with handicapped persons, elderly persons and female-heads of households. In Ocean Ridge, the housing needs of these households are not seen to be significantly different from the needs of other households with similar size and income, at least not in a way that has municipal public-policy importance.

The estimates set forth in Table 3.12 do not include any special provision for rural or farmworker housing. Rural areas, with or without farmworker housing needs, are not found within 6 to 8 miles of Ocean Ridge.

**Land Requirements for Estimated Housing** *(9J-5.010(2)(c))*

Future households will be accommodated in existing housing units plus new housing units. In Ocean Ridge, most future households will be accommodated in existing units. The difference between the existing housing supply and the future housing need will be accommodated on land which is presently vacant.

The amount of vacant land required to meet the additional housing need will depend on market forces working under constraint of reasonable land development regulations. Table 3.13 sets forth a possible land requirement scenario. It is based on the housing unit need estimates set forth in Table 3.12.

**Housing Need Expected to be Fulfilled by Private Sector** *(9J-5.010(2)(d))*

The private sector has created every housing unit in the Town of Ocean Ridge. The amount of housing produced by this private sector effort has varied from year to year, at least during the past decade or so. Since 1975, the smallest number of housing units produced in any one year was 5 (1982) and the greatest number was 51 (1979 and 1984). Housing units constructed since 1975 are enumerated in Table 3.7.

Of necessity, private sector efforts have concentrated on producing housing for middle or higher income households, at least in recent years. Given the high cost of land in Ocean Ridge, there is no feasible way for the private sector to produce any other kind of housing. As stated there is no known public sector housing subsidy program that would make possible the production of housing for very low, low or even moderate income households in Ocean Ridge.

The ability of the private sector to provide owner and renter housing units of a variety of structure types is in large measure governed by the existing housing stock. This is because Ocean Ridge already has most of the housing units it is ever going to have, at least given any reasonable regulation of development in the direction of protecting community character. And if there is reasonable regulation of development aimed at protecting community character, then future additions to the housing stock will not dramatically change the current mix of owner and renter units and single family, two family and multiple family units.

The number, type, cost, rent and tenure of housing units that the private sector might supply is shown in Table 3.14. Table 3.14 has Table 3.12 as its point of origin. It is also predicated on observations set forth in the preceding two paragraphs.

**Improving the Private Sector Housing Delivery Process** *(9J-5.010(2)(e))*

The private sector housing delivery process is complex. Its major participants include land-owners, developers, lenders, contractors and manufacturers. Lawyers, architects, engineers, surveyors, brokers, title and casualty insurers and and municipal planning and zoning officials also play a role. The private market normally does a very effective job of coordinating the many participants in the housing delivery process. Slowdowns in the process come from normal market cycles and other factors which are usually beyond the ability of local public policy to directly and effectively address.

There are some aspects of the private sector housing delivery process which are affected by local public policy. These include:

1. Land Availability: Local public policy cannot make more land, but it can plan and zone existing land to accommodate a greater or lesser number of housing units of each type.

2. Land Development Regulations: Local public policy controls the rigorousness of land development regulations and the speed with which the land development approval process operates.

3. Public Facilities and Services: Local public policy can take a leading role in the provision of necessary public facilities and services.

Local public policy may from time to time and from place to place attempt to facilitate housing delivery by lenient planning, zoning and other land development code policies and by aggressive provision of public facilities and services. However, such a course is not necessarily desirable. In any given situation, it may be better for local public policy to maintain and enforce consistent, and preferably high, development standards over long periods of time. Such consistency reinforces the predictability and stability of the private market and there may be nothing more beneficial to the private sector housing delivery process than predictability and stability.

**Means for Accomplishment** *(9J-5.010(2)(f))*

**Provision of Adequate Housing:** Ocean Ridge public policy can facilitate the provision of housing for the projected population by the plan designating and zoning land for residential use at densities consistent with the anticipated population. Densities must be limited to those which can be accommodated by septic systems or package treatment facilities, and other infrastructure limitations.

**Provision of Low and Moderate Income Housing**: Given Ocean Ridge land values, there is no known course of local public action that can generate housing for low income households, in an economically feasible manner. New multifamily construction could possibly be within reach of some moderate income households (category ranges up to 120 percent of median income). Courses of action considered and rejected pursuant to the preparation of this housing element include:

1. Housing trust funds for low interest financing
2. Zoning which requires developers to construct housing units for low income households
3. Zoning which provides incentives to construct housing units for low income households
4. Public land banks
5. More lenient area and bulk zoning regulations
6. More lenient building code regulations
7. Zoning authorization for mobile homes
8. Fast-track development order processing
9. Municipal financing of not-for-profit developers
10. Participation in an area-wide housing finance authority

**Elimination of Substandard Housing**: There are no documented substandard housing units in Ocean Ridge at this time, this issue is not an immediate and pressing concern. Town officials can monitor the condition of the older housing stock. Immediate action can be taken whenever any housing unit begins to evidence signs of neglect, deterioration, or inadequate maintenance. Careful monitoring of possible multiple occupancy or overcrowding is also possible. The Census data indicate some overcrowding, particularly in South Ocean Ridge where seasonal rentals can result in overcrowded conditions.

**Improvement of Housing Aesthetics:** Housing aesthetics are not an issue in Ocean Ridge except for zoning regulation of housing area and bulk. Housing aesthetics can be maintained and improved by retaining and refining area and bulk regulations. Any such need for refinement will emerge in the course of the day to day application of the existing regulations; there now is no apparent need for refinement.

**Housing Conservation and Rehabilitation:** Housing conservation and rehabilitation is expected to be a private market function in Ocean Ridge. The Town can set a minimum level for private conservation and rehabilitation efforts by enforcing the existing housing code.

**Provision for Group Homes and Related Facilities:** Group homes, foster care homes and related facilities can be accommodated in areas designated for multiple family housing.

**Historically Significant Housing**: The two houses of historic significance on North Ocean Boulevard should be the subject of special review provisions in the new land development regulations. Based upon Table 3.3, the Town should inventory the other 12 houses constructed prior to 1940 to determine if any of them are of potential significance.

**Table 3.1**
**Types of Housing Units, 1980**

| | Ocean Ridge | | Palm Beach County | |
|---|---|---|---|---|
| | Number | Percent | Number | Percent |
| Single-Family | 378 | 30.4 | 141,600 | 49.4 |
| Duplex | 57 | 4.6 | 14,388 | 5.0 |
| Multifamily | 808 | 65.0 | 116,268 | 40.4 |
| Mobile Home | 0 | 0.0 | 14,528 | 5.1 |
| Total | 1,243 | 100.0 | | |

Source: Census of Population and Housing Tape File STF-3, Table 103.

**Table 3.2**
**Housing Tenure, 1980**

| | Ocean Ridge | | Palm Beach County | |
|---|---|---|---|---|
| | Number | Percent | Number | Percent |
| Total Households | 690[1] | | 234,330 | |
| Owner-occupied | 616 | 89.3 | 171,736 | 73.3 |
| Renter-occupied | 74 | 10.7 | 62,603 | 26.7 |

[1] Note: Many Ocean Ridge "households" had returned to the north when the April U.S. Census was taken hence the higher "housing unit" count.

Source: Census of Population and Housing Tape File STF-3, Table 100.

**Table 3.3**
**Housing Age, 1980**

| Year | Ocean Ridge | | Palm Beach County | |
|---|---|---|---|---|
| | Number | Percent | Number | Percent |
| 1970-1980 | 295 | 24.8 | 153,614 | 53.6 |
| 1960-1969 | 678 | 57.0 | 66,651 | 23.2 |
| 1950-1959 | 184 | 15.5 | 37,841 | 13.2 |
| 1940-1949 | 19 | 1.5 | 13,897 | 4.8 |
| 1940 or earlier | 14 | 1.2 | 14,781 | 5.2 |
| Total | 1,190 | 100.0 | 286,784 | 100.0 |

Source: Census of Population and Housing Tape File STF-3, Table 109.

**Table 3.4**
**Monthly Rent of Renter-Occupied Housing Units, 1980**

| | Ocean Ridge | | Palm Beach County | |
|---|---|---|---|---|
| | Number | Percent | Number | Percent |
| Less than $50 | 0 | 0.0 | 110 | .2 |
| $50 - $79 | 0 | 0.0 | 925 | 1.6 |
| $80 - $99 | 0 | 0.0 | 1,019 | 1.8 |
| $100 - $119 | 0 | 0.0 | 4,325* | 7.5 |
| $120 - $149 | 2 | 3.1 | | |
| $150 - $169 | 0 | 0.0 | 7,550** | 13.0 |
| $170 - $199 | 8 | 12.5 | | |
| $200 - $249 | 7 | 10.9 | 9,313 | 16.1 |
| $250 - $299 | 18 | 28.1 | 9,736 | 16.8 |
| $300 - $349 | 1 | 1.6 | 7,783 | 13.5 |
| $350 - $399 | 6 | 9.4 | 6,156 | 10.6 |
| $400 - $499 | 5 | 7.8 | 6,024 | 10.4 |
| $500 or more | 17 | 26.6 | 4,897 | 8.5 |
| Total | 64 | 100.0 | 57,838 | 100.0 |

Source: Census of Population and Housing Tape File STF-3, Table 124.

*Units rented between $100 and $150 listed together.
**Units rented between $150 and $200 listed together.

**Table 3.5**
**Monthly Cost of Owner-Occupied Housing Units, 1980**

| | Ocean Ridge | | Palm Beach County | |
|---|---|---|---|---|
| | Number | Percent | Number | Percent |
| Units With a Mortgage | | | | |
| Less than $100 | 0 | 0.0 | 655 | 1.0 |
| $100 to $149 | 0 | 0.0 | 2,330 | 3.5 |
| $150 to $199 | 5 | 3.2 | 5,194 | 7.8 |
| $200 to $249 | 8 | 5.1 | 5,953 | 8.9 |
| $250 to $299 | 6 | 3.8 | 6,864 | 10.3 |
| $300 to $349 | 0 | 0.0 | 7,476 | 11.1 |
| $350 to $399 | 12 | 7.6 | 7,260 | 10.9 |
| $400 to $449 | 5 | 3.2 | 6,263 | 9.4 |
| $450 to $499 | 7 | 4.5 | 5,380 | 8.0 |
| $500 to $549 | 16 | 10.2 | 7,364* | 11.0 |
| $550 to $599 | 23 | 14.6 | | |
| $600 to $749 | 72 | 45.9 | 5,983 | 8.9 |
| $750 and over | 3 | 1.9 | 6,172 | 9.2 |
| Total | 157 | 100.0 | 66,894 | 100.0 |
| Units Without a Mortgage | | | | |
| Less than $50 | 3 | 3.1 | 2,225 | 7.4 |
| $50 to $99 | 14 | 14.3 | 12,389 | 41.0 |
| $100 to $149 | 17 | 17.3 | 8,539 | 28.3 |
| $150 to $199 | 14 | 14.3 | 3,304 | 11.0 |
| $200 to $249 | 21 | 21.4 | 1,575 | 5.2 |
| $250 or more | 29 | 29.6 | 2,151 | 7.1 |
| Total | 98 | 100.0 | 30,183 | 100.0 |

Source: Census of Population and Housing Tape File STF-3, Table 133.

*Units Costing between $500 and $600 were listed together.

**Table 3.6a**
**Cost-to-Income Ratios, 1980**
**Ocean Ridge**

| | Less than 20 Percent | 20 to 24 Percent | 25 to 34 Percent | 35 Percent or More | Total |
|---|---|---|---|---|---|
| Less than $5,000 | 0 | 0 | 5 | 13 | 18 |
| $5,000 to $9,999 | 7 | 0 | 0 | 8 | 15 |
| $10,000 to $14,999 | 8 | 0 | 5 | 5 | 18 |
| $15,000 to $19,999 | 17 | 5 | 0 | 9 | 31 |
| $20,000 or more | 105 | 24 | 19 | 20 | 168 |
| Total | 137 | 29 | 29 | 55 | 250 |
| Total Percent | 54.8 | 11.6 | 11.6 | 22 | |

Source: U.S. Census of Population and Housing Tape File STF-3 Table 139.

**Table 3.6b**
**Rent to Income Ratio**
**Ocean Ridge**

| | Less than 20 Percent | 20 to 24 Percent | 25 to 34 Percent | 35 Percent or More | Total |
|---|---|---|---|---|---|
| Less than $5,000 | 0 | 0 | 0 | 2 | 2 |
| $5,000 to $9,999 | 0 | 0 | 5 | 9 | 14 |
| $10,000 to $14,999 | 4 | 6 | 0 | 5 | 15 |
| $15,000 to $19,999 | 5 | 4 | 1 | 0 | 10 |
| $20,000 or more | 13 | 4 | 3 | 0 | 20 |
| Total | 22 | 14 | 0 | 17 | 61 |
| Percent | 36.1 | 22.9 | 14.7 | 26.2 | |

Source: U.S. Census of Population and Housing Tape File STF-3 Table 132.

**Table 3.7**
**Building Permit Activity**
**Ocean Ridge, 1975-1986**

| Year | Single Family | Multi-Family | Total |
|---|---|---|---|
| 1975 | 9 | 12 | 21 |
| 1976 | 11 | 0 | 11 |
| 1977 | 11 | 0 | 11 |
| 1978 | 22 | 0 | 22 |
| 1979 | 15 | 36 | 51 |
| 1980 | 7 | 0 | 7 |
| 1981 | 9 | 64 | 73 |
| 1982 | 5 | 0 | 5 |
| 1983 | 8 | 8 | 16 |
| 1984 | 7 | 44 | 51 |
| 1985 | 9 | 0 | 9 |
| 1986 | 11 | 0 | 11 |
| Total | 124 | 164 | 288 |

Source: Town of Ocean Ridge, 1987.

**Table 3.8**
**Owner Occupied Housing Classified**
**by Income Level - Ocean Ridge, 1987**

| | | |
|---|---|---|
| Very Low | less than 50% of median | 8,333 |
| Low | between 50% and 80% of median | 13,332 |
| Moderate | between 80% and 120% of median | 19,998 |
| Middle | between 120% and 150% of median | 24,998 |
| Upper Middle to High | 150% or higher | 24,999 |

Source: The United States Housing and Urban Development revised Section 8 Income limits for 1987, Circulation Letter No. 87-17.
Robert K. Swarthout, Incorporated 1987.

**Table 3.9**
**Projections of Households by Income Group**
**Ocean Ridge**

| | 1980 | 1988 | 1994 | 1999 |
|---|---|---|---|---|
| Very low | 118 | 133 | 141 | 145 |
| Low | 88 | 99 | 105 | 108 |
| Moderate | 137 | 155 | 164 | 168 |
| Middle | 54 | 61 | 65 | 66 |
| Upper Middle to High | 291 | 327 | 343 | 350 |
| Total | 688 | 775 | 818 | 838 |

Sources: The United States Housing and Urban Development revised Section 8 Income limits for 1987, Appendix Table A-4.
Robert K. Swarthout, Incorporated 1987, Table 68.

**Table 3.10**
**Increase in Number of Households by Income Group**
**Ocean Ridge**

| | 1980-1988 Estimated | 1988-1994 Projected | 1994-1999 Projected |
|---|---|---|---|
| Very low income | 15 | 8 | 4 |
| Low income | 11 | 6 | 3 |
| Moderate income | 18 | 9 | 4 |
| Middle income | 7 | 4 | 1 |
| Upper middle High | 36 | 16 | 8 |
| Total | 87 | 43 | 20 |

Source: Robert K. Swarthout, Incorporated.

**Table 3.11**
**Projections of Household Size**
**Ocean Ridge**

| | 1980 Enumerated | 1988 Estimated | 1994 Projected | 1999 Projected |
|---|---|---|---|---|
| Year round populations for households* | 1410 | 1552 | 1630 | 1650 |
| Persons per household* | 2.05 | 2.00 | 1.98 | 1.95 |
| Number of households* | 688 | 775 | 818 | 838 |
| Household size | | | | |
| 1 person | 214 | 241 | 256 | 263 |
| 2 person | 354 | 399 | 423 | 432 |
| 3 and 4 persons | 97 | 109 | 113 | 116 |
| 5 or more persons | 23 | 26 | 26 | 27 |

* The number of households slightly exceeds the number of occupied housing units (i.e. households not living in a housing unit) hence the minor differences from Table A-4.

Source: U.S. Census of Population and Housing Tape File STF-3 Table 18.
Robert K. Swarthout, Incorporated

Methodology: Population projections are the middle range average projections set forth in Table A.4 of the Appendix. Persons per household projections are based on the expectation that average household size will decrease from the 1980 census enumerated level. Household size projections are apportionment projections fitted to the projected number of households. It was assumed that future resident households will be distributed in size as were 1980 Census enumerated resident households.

## Table 3.12a
## Additional Housing Units Needed for Projected Population By Income Group, Type and Tenure for 1988-1994

| Income Group | | Owner | | | Renter | | |
|---|---|---|---|---|---|---|---|
| | | Single Family | Duplex | Multi-Family | Single Family | Duplex | Multi-Family |
| Very Low Income | | | | | | | |
| | 1 person | 2 | 0 | 1 | 0 | 0 | 0 |
| | 2 persons | 1 | 0 | 2 | 1 | 0 | 0 |
| | 3 and 4 persons | 0 | 0 | 1 | 0 | 0 | 0 |
| | 5 or more persons | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | | 3 | 0 | 4 | 1 | 0 | 0 |
| Low Income | | | | | | | |
| | 1 person | 2 | 0 | 1 | 0 | 0 | 0 |
| | 2 persons | 1 | 0 | 2 | 0 | 1 | 0 |
| | 3 and 4 persons | 0 | 0 | 0 | 0 | 0 | 0 |
| | 5 or more persons | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | | 3 | 0 | 3 | 0 | 1 | 0 |
| Moderate Income | | | | | | | |
| | 1 person | 1 | 0 | 2 | 0 | 0 | 0 |
| | 2 persons | 2 | 0 | 3 | 0 | 1 | 0 |
| | 3 and 4 persons | 0 | 0 | 1 | 0 | 0 | 0 |
| | 5 or more persons | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | | 3 | 0 | 6 | 0 | 1 | 0 |
| Middle Income | | | | | | | |
| | 1 person | 0 | 0 | 1 | 0 | 0 | 0 |
| | 2 persons | 1 | 0 | 1 | 0 | 0 | 0 |
| | 3 and 4 persons | 0 | 0 | 0 | 0 | 0 | 0 |
| | 5 or more persons | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | | 1 | 0 | 2 | 0 | 0 | 0 |
| Upper and High Income | | | | | | | |
| | 1 person | 2 | 0 | 3 | 0 | 0 | 0 |
| | 2 persons | 3 | 0 | 4 | 0 | 0 | 1 |
| | 3 and 4 persons | 1 | 0 | 1 | 0 | 0 | 0 |
| | 5 or more persons | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | | 6 | 0 | 8 | 0 | 0 | 1 |
| **Total** | | **16** | **0** | **23** | **1** | **2** | **1** |

Source: Robert K. Swarthout, Incorporated. See methodological note on page 3.20

**Table 3.12b**
**Additional Housing Units Needed for Projected Population**
**By Income Group, Type and Tenure for 1994-1999**

| Income Group | | Owner | | | Renter | | |
|---|---|---|---|---|---|---|---|
| | | Single Family | Duplex | Multi-Family | Single Family | Duplex | Multi-Family |
| Very Low Income | | | | | | | |
| | 1 person | 0 | 0 | 1 | 0 | 0 | 0 |
| | 2 persons | 1 | 0 | 1 | 0 | 0 | 0 |
| | 3 and 4 persons | 0 | 0 | 0 | 0 | 0 | 0 |
| | 5 or more persons | 0 | 0 | 1 | 0 | 0 | 0 |
| Total | | 1 | 0 | 3 | 0 | 0 | 0 |
| Low Income | | | | | | | |
| | 1 person | 0 | 0 | 0 | 0 | 0 | 0 |
| | 2 persons | 1 | 0 | 0 | 0 | 0 | 0 |
| | 3 and 4 persons | 0 | 0 | 1 | 0 | 0 | 0 |
| | 5 or more persons | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | | 1 | 0 | 1 | 0 | 0 | 0 |
| Moderate Income | | | | | | | |
| | 1 person | 0 | 0 | 1 | 0 | 0 | 0 |
| | 2 persons | 0 | 0 | 1 | 0 | 0 | 0 |
| | 3 and 4 persons | 1 | 0 | 0 | 0 | 0 | 0 |
| | 5 or more persons | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | | 1 | 0 | 2 | 0 | 0 | 0 |
| Middle Income | | | | | | | |
| | 1 person | 0 | 0 | 0 | 1 | 0 | 1 |
| | 2 persons | 0 | 0 | 0 | 0 | 0 | 0 |
| | 3 and 4 persons | 0 | 0 | 0 | 0 | 0 | 0 |
| | 5 or more persons | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | | 0 | 0 | 0 | 1 | 0 | 1 |
| Upper and High Income | | | | | | | |
| | 1 person | 1 | 0 | 2 | 0 | 0 | 0 |
| | 2 persons | 2 | 0 | 3 | 0 | 0 | 0 |
| | 3 and 4 persons | 0 | 0 | 1 | 0 | 0 | 0 |
| | 5 or more persons | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | | 3 | 0 | 6 | 0 | 0 | 0 |
| **Total** | | **6** | **0** | **12** | **1** | **0** | **1** |

Source: Robert K. Swarthout, Incorporated. See methodological note on page 3.20.

## Methodological Notes for Projecting Housing Needs

**STEP 1:** The total number of additional dwelling units necessary in Ocean Ridge from 1988 to 1999 was determined based on the projected permanent population as set forth in Appendix Table A.4. The population projection assumed that the number of persons per occupied household would decrease as explained in Appendix Table A.4.

**STEP 2:** The allocation of units to each residential housing type was based on residential construction trends observed in the Town from 1980-1988. Based on those trends, 60 percent of all new units were allocated as multifamily units and 40 percent were allocated as single-family units.

**STEP 3:** Table H-3 lists the number of owner- and renter-occupied dwelling units by housing type. The single-family and multifamily units allocated in Step 2 were further distributed into renter- and owner-tenure categories based on the distribution reported for 1980 in the Census of Housing, STF-3 Tape, Table 100.

**STEP 4:** Housing units, previously apportioned by type and tenure, were then distributed by the income of occupants. The percent of households in each income group reported by the 1980 United States Census of Population and Housing, STF-3 Tape, Table 68 was used.

**STEP 5:** The results of Step 4 were distributed by household size based on the distribution reported in the 1980 United States Census, STF-3 Tape, Table 18.

**Table 3.13**
**Additional Land Requirements for Housing**
**Ocean Ridge**

| Unit Type | 1994 Acres | 1999 Acres | Total Acres |
|---|---|---|---|
| Single family | 4.0 | 2.0 | 6.0 |
| Duplex | 0.5 | 0.5 | 1.0 |
| Multifamily | 2.8 | 2.0 | 4.8 |
| Total Acres | 6.8 | 4.0 | 10.8 |

Methodological Note: From Table 3.12a and 3.12b, the number of additional owner and renter single-family units and multifamily units needed for the periods 1988-94 and 1994-99 were totaled. The number of single-family units needed for each time period was multiplied by 4 dwelling units per acre to determine the total single-family land area needed. The number of multifamily units needed for each time period was multiplied by 10 dwelling units per acre to determine the total multifamily acreage needed.

## HOUSING ELEMENT
## GOALS, OBJECTIVES AND POLICIES

**Goal 1** To assure the availability of a mix of housing types in sound condition.

**Objective 1.1** *Assist the private sector in providing the 66 units of "in-fill" housing that Ocean Ridge can accommodate. "In-fill" housing is new housing on scattered vacant lots in neighborhoods which are largely developed.*

**Policy 1.1.1** Utilize the Future Land Use Plan and zoning map as the criteria to achieve a diversity of housing types consistent with the established character and scale of the Town of Ocean Ridge.

**Policy 1.1.2** Continue a municipal development application review process that minimizes delay yet assures quality control.

**Objective 1.2** *Continue to maintain a stock with no structurally substandard units.*

**Policy 1.2.1** The building inspector shall enforce the Town ordinance on "unsafe buildings" to prevent substandard housing; this also provides demolition program techniques and the basis for rehabilitation.

**Objective 1.3** *Achieve 41 units of quality multifamily development that is affordable to families with moderate incomes and authorize manufactured housing in the land development regulations.*

**Policy 1.3.1** The Town staff shall make a special effort to provide timely and technically helpful development reviews of plans submitted by any developer that intends to provide quality multifamily units at densities consistent with the future land use element of this plan, in order to facilitate moderate income housing. This includes any developer using public authority financing or other subsidies although given the Town's land costs, housing for low income households would require rent subsidies greater than those currently available from State or Federal agencies. For this reason, non-profit or governmental housing does not appear feasible. Low and moderate income housing is available in nearby areas.

**Policy 1.3.2** By February 1990, review the land development regulations to permit manufactured or prefabricated housing units that are compatible with the Building Code.

**Policy 1.3.3** Retain the multifamily land use designation in southern Ocean Ridge.

**Objective 1.4** *Accommodate a fair share of the County's group homes and manufactured housing; not measurable due to need for private sector initiative.*

**Policy 1.4.1** By February 1990, the development code shall be revised to a) permit group and foster care homes in all residential districts if State HRS and Town site plan review standards are met, b) to permit manufactured or prefabricated housing that meets the building code and c) multifamily zoning provisions that hopefully bring new construction within reach of moderate income households.

**Objective 1.5** *Inventory the 14 houses constructed prior to 1940 to determine their historic and architectural significance.*

**Policy 1.5.1** Using the two historic North Ocean Boulevard houses cited in the Data Section as prototypes, the other 12 houses shall be inventoried. The State's Palm Beach County historic preservation specialist shall assist the Town in developing standards to use as a basis for the Development Code provisions that shall require special review of renovation or demolition permits for significant houses.

**NOTE:** For the reasons outlined in the Analysis Section, policies relative to farmworker housing are not applicable. 9J-5.010(3)(b)b relative to relocation is not applicable since no public acquisition action is necessary or envisioned hence public relocation will not be necessary.

# INFRASTRUCTURE:
# WASTEWATER, SOLID WASTE, DRAINAGE, POTABLE WATER AND NATURAL GROUNDWATER AQUIFER RECHARGE

## INTRODUCTION

Wastewater, solid waste, drainage, potable water facilities, and natural groundwater aquifer recharge are presented in separate sub-elements. Each of the sub-elements includes an inventory of the current system, geographic service areas, facility design capacities, current and projected demand levels, and service level standards, where appropriate. Problems and needs are identified, future system requirements are examined, and the extent of facilities required for the solution of any identified problems are analyzed. The evaluation of facility needs has been based on the best available demographic and land use data and projections.

# WASTEWATER FACILITIES SUB-ELEMENT

## EXISTING CONDITIONS

The Town is served by a dual system of wastewater disposal. Single family houses, commercial uses and some multifamily developments utilize septic systems. Most multifamily developments utilize on-site wastewater treatment systems.

**Septic Systems**: Septic system requirements and standards are established by the State of Florida Health and Rehabilitative Services (HRS) and the Palm Beach County Health Department. Acceptable environmental conditions for septic system placement are sandy permeable soils. As noted on page 1.25, the soil conditions in the Town are generally adequate for septic system placement, i.e. no major environmental problems have ever been reported. However, systems in the Arents soil areas must be carefully designed; the other predominent soil type (Cocoa) has better drainage. See Figure 6.2.

**On Site Package Plants**: There are presently 11 on site sewage treatment facilities in operation. Table 4.1 lists the location of these facilities and a description of their operation. On-site sewage facilities are privately owned and operated, and are permitted and inspected by the Palm Beach County Health Department. They report that all facilities are operating satisfactorily. Since Spanish River is an arm of the Intracoastal/Lake Worth near the Boynton Inlet, the natural resource impact of this treated effluent is negligible. Data on "expected life" is not available. The existing level of service ranges from 116 to 3,800 gallons per person per day.

## WASTEWATER FACILITY NEEDS ASSESSMENT

The Town presently is not serviced by a central wastewater treatment facility nor any collection infrastructure. The Town contains only 26 acres of developable single-family zoned land. Based on current environmental regulations and soil conditions, all remaining single-family parcels will be permitted to construct septic systems. There are 15 acres of vacant multifamily land remaining. The Town requires that the waste disposal system be approved and permitted by the County Health Department. Ocean Ridge has decided not to connect to the regional wastewater facility operated by the Southcentral Wastewater Treatment Authority at this time. This decision was based on acceptable soil conditions for septic systems and the tremendous cost of constructing sewage collection lines. However, the

Commission has retained a consulting engineer to assess the feasibility of extending public sanitary sewers into the Town. The Town has made some provisions toward eventual hookup with the regional system. Single-family homes are required to have stubouts to the front for possible future hookup. Also, all multifamily developments utilizing on-site treatment must locate near SR A1A.

**Table 4.1**
**EXISTING WASTEWATER FACILITIES 1987**
**TOWN OF OCEAN RIDGE**
**EXISTING WASTEWATER TREATMENT FACILITIES**

| Facility | Location | Type of Treatment | Units | Capacity | Daily Flow | Discharges to: | Sludge Disposal |
|---|---|---|---|---|---|---|---|
| Crown Colony Club * | 5510 S Ocean Blvd | contact stabilization | 290 | 70,000 | 70,000 | Deep Well Inj. | landfill |
| Inlet Plaza | 6885 N Ocean Blvd | contact stabilization | 30 | 250,000 | 52,000 | Evap./Perc. | landfill |
| Maisonettes North | 6880 N Ocean Blvd | extended aeration | 24 | 10,000 | 2,000 | Spanish River | landfill |
| Maisonettes South | 6849 N Ocean Blvd | extended aeration | 47 | 25,000 | 4,000 | Spanish River | landfill |
| Wellington Arms | 6530 N Ocean Blvd | extended aeration with tertiary filter | 49 | 15,000 | 7,600 | Spanish River | landfill |
| Ocean House North | 6861 N Ocean Blvd | extended aeration | 24 | 7,500 | 2,000 | Intracoastal | landfill |
| 6767 N. Ocean Blvd. | 6767 N Ocean Blvd | extended aeration | 14 | 7,500 | 6,900 | Evap./Perc. | landfill |
| Villas of Ocean Ridge | 5900 Old Ocean Blvd | extended aeration | 26 | 7,500 | 2,400 | Evap./Perc. | landfill |
| Dunes of Ocean Ridge | 6711 N Ocean Blvd | extended aeration | 36 | 12,500 | 1,000 | Evap./Perc. | landfill |
| Ocean Ridge Yacht Club | 5600 N Ocean Blvd | extended aeration | 66 | 14,000 | 2,100 | Evap./Perc. | landfill |
| Coventry Place | 5101 N Ocean Blvd | extended aeration | 27 | 12,000 | 2,000 | Evap./Perc. | landfill |

Sources:

Palm Beach County Health Department.
State of Florida Department of Environmental Regulations.
Robert K. Swarthout, Incorporated.

* Also services Colonial Ridge and Ocean Manor developments.

## SOLID WASTE SUB-ELEMENT

### EXISTING CONDITIONS

The Town provides for the collection of residential solid waste through contractual arrangements with a private waste collector, County Sanitation Incorporated. Residential pickup is arranged at the curbside twice weekly and disposed at the Solid Waste Authority's Dyer Boulevard Landfill.

Collection of clippings from lawn maintenance, is provided by County Sanitation Incorporated on a weekly basis with additional collection on an as-needed basis.

Collection costs are paid by an annual billing of property owners. Commercial accounts must make their own arrangements for pick up.

The residential waste generation rate is approximately four pounds daily per capita. Commercial waste generation is estimated to be approximately 2.5 pounds daily per capita. There are no industrial land uses. Special or hazardous waste generation figures are unavailable. Special wastes include construction debris and hazardous wastes including paints and solvents, although these types of wastes do not significantly contribute to the waste stream in Ocean Ridge. The average per capita waste generation rate or level of service in Ocean Ridge is expected to remain relatively constant at approximately 6.5 pounds per day per person (residential and commercial).

The population of the Town increases during the winter season, but there is a seasonal variation in the amount of waste generated. Overall waste generated by the Town of Ocean Ridge is less than one percent of the operational design capacity of the Dyer Boulevard landfill facility, which serves all areas of Palm Beach County.

**Table 4.2**
**SOLID WASTE NEEDS ASSESSMENT**

| | 1987 | 1990 | 1995 | 2000 |
|---|---|---|---|---|
| Ocean Ridge Generation | 10.4 | 10.9 | 11.2 | 11.3 |
| Solid Waste Disposal Facility Capacity | 100,000 | 200,000 | 200,000 | 200,000 |
| Percent of Capacity | 0.010% | 0.005% | 0.006% | 0.006% |

All Figures Are Daily Peak Generation (Tons/Day)

## SOLID WASTE FACILITIES NEEDS

**County Plan:** Palm Beach County implemented a Solid Waste Disposal and Resource Recovery Management Plan in 1979. This plan was prepared in accordance with the Florida Resource Recovery and Management Act, Chapter 403, *Florida Statutes*. The plan examined existing conditions and set forth a Countywide system of solid waste facilities. These facilities include transfer stations,landfills and resource recovery facilities.

**Existing Land Fill:** In 1987,the Lantana landfill site (utilized by the Town since 1968) reached capacity and was closed. All garbage and trash collected in Palm Beach County will be deposited at Dyer Boulevard for the next three years. The Solid Waste Authority estimates that this facility has adequate capacity to handle the entire volume of County solid waste for a period of three years ending in 1990.

**Planned Disposal Improvements:** A bond issue was approved in 1985 expanding the capacity of the Palm Beach County solid waste disposal system. A new County landfill site is currently under construction on a 350 acre site on W. 45th Street in West Palm Beach and will include a resource recovery plant capable of processing 200,000 tons of refuse a day. The Authority forecasts that this facility will not reach capacity for at least 25 years. As Ocean Ridge contributes less than one percent of the County's annual solid waste total, (Table 14), it is reasonable to expect that there will be adequate solid waste disposal capacity during the ten year planning period.

**Transfer Station:** A transfer station, located in Lantana, was completed in 1988. This facility will allow haulers to deposit trash and garbage where it will be separated and then transported to a designated County disposal facility by the Solid Waste Authority.

**Conclusions:** In Ocean Ridge, waste collection services operate efficiently and provide Town residents with an excellent level of service that matches or exceeds industry standards for smaller communities. Palm Beach County provides adequate capacity for the disposal of solid waste generated in the Town. Expansion of the existing system is funded and plans are being implemented to assure that adequate waste disposal capacity will continue to be available through the year 2000. Ocean Ridge will not need to consider the feasibility of operating their own transfer or disposal facilities.

# POTABLE WATER FACILITY SUB-ELEMENT

## EXISTING CONDITIONS

**Potable Water Supply**: All potable water for Ocean Ridge is supplied by the Boynton Beach Water Treatment Plant located in Boynton Beach and owned and operated by the City of Boynton Beach. Boynton Beach provides water to the Town and maintains the water distribution system within the Town; the system is owned by the Town. The Florida Department of Environment Regulations has certified that the potable water supply of Boynton Beach meets all Florida drinking water standards.

The Boynton Beach water treatment plant has a design capacity of 17.5 million gallons of potable water per day (mgd) and utilizes a water softening treatment process. Average daily water demand as of February, 1987 was approximately 10 million gallons per day and served about 45,000 persons. Demand attributable to Ocean Ridge was estimated based on water usage of 100 gallons daily per resident which amounts to 319.800 gallons per day. There are no industrial uses or extensive commercial uses in the Town, therefore about 100 gallons per person per day are flowing through the lines in the Town. However, Boynton Beach (with extensive commercial and industrial development) uses a level of service of 189 gpd for planning purposes. For consistency, Ocean Ridge shall use the same level of service

**Facilities Expansion**: The Boynton Beach plant was expanded in the latter part of 1987, and was permitted by the South Florida Water Management District to increase its capacity from 12 mgd to 17.5 mgd. The City of Boynton Beach has plans to further expand its potable water capacity by constructing another treatment/distribution plant. This facility will be located in western Boynton Beach and is projected to open in 1990. The plant will initially have a maximum capacity of 5.0 mgd. and would allow expansion up to 10.0 mgd.

**Water Distribution System**: Ocean Ridge owns the water distribution facilities within the Town and finances improvements to the system. The water distribution lines are mainly 6 and 8 inches in diameter with some 2 and 3 inch lines still in service that are gradually being upgraded; these are 15 to 25 years old. Fire hydrant locations do not meet recommended standards; they are being upgraded. A 500,000 gallon storage tank will improve volume and pressure.

## POTABLE WATER FACILITY NEEDS ASSESSMENT

Ocean Ridge does not intend to provide potable water supply and treatment but is currently planning to upgrade distribution facilities and add fire hydrants and system looping to meet acceptable standards. See Capital Improvement Element. The Town has limited remaining vacant developable land. New development or redevelopment will continue to be served by the City of Boynton Beach water treatment facility and the current (but upgraded) distribution system. This system is supplying potable water at a satisfactory level of service for Ocean Ridge residents which meets health and safety requirements, except in the northern areas where volume and pressure are insufficient for adequate fire flow. A five-year program to address this has been approved by the Commission. The Boynton Beach water plant has recently expanded and has additional capacity available. Officials anticipate that the limited water demands of Ocean Ridge will continue to be met. The determination of level of service standards and identification of existing and projected distribution facility needs will remain the responsibility of the Town of Ocean Ridge. Ocean Ridge will work closely with the service provider to assure that the potable water needs of the Town continue to be met satisfactorily.

**Table 4.3**
**POTABLE WATER NEEDS ASSESSMENT**

| | 1987 | 1990 | 1995 | 2000 |
|---|---|---|---|---|
| Ocean Ridge Demand | 0.3198 | 0.3364 | 0.3435 | 0.3466 |
| Potable Water Capacity | 17.5 | 22.5 | 22.5 | 27.5 |
| Percent of Capacity | 0.018 | 0.015 | 0.015 | 0.013 |

All Figures Are Daily Peak Generation (Million Gallons/Day)

Source: Robert K. Swarthout, Inc., 1988

# DRAINAGE FACILITY SUB-ELEMENT

## EXISTING CONDITIONS

In Ocean Ridge, as in most coastal Palm Beach County municipalities, the natural drainage system has largely been replaced by ditches, canals, and storm sewers. Drainage facilities include the Intracoastal Waterway, storm transmission sewers, and storm detention facilities.

Rainfall either percolates into the ground and is drained through the shallow aquifer or is collected by the Town's storm water drainage system and then discharged into the Intracoastal Waterway or canals close thereto.

**Rainfall**: Average annual rainfall is about 60 inches per year, although this level varies substantially between 40 and 80 inches. The reported low annual rainfall is 38 inches, which occurred in 1971. The highest annual recorded rainfall is 85 inches, which occurred in 1947. More than 75 percent of the precipitation occurs between May and October, with an average of over 7.5 inches of rain in each of these months. During the dry season, rainfall averages between one and 3.5 inches per month. The one day, one in ten year frequency storm produces about nine inches of rainfall and the 25-year storm produces about 10.5 inches of rainfall. The Town systems are designed to accommodate one inch of rain per hour; i.e., level of service.

**Terrain**: Ocean Ridge,located entirely on a barrier island, is characterized by gently sloping terrain rising from near sea level at the Intracoastal Waterway and Atlantic Ocean to slightly more than 25 feet on the top of a ridge just east of State Road A1A. The coastal ridge runs parallel to State Road A1A along the entire length of the Town's eastern border. Most of the drainage swales in Ocean Ridge empty toward the west into fine sand with rapid to very rapid percolation rates to the groundwater channel.

**Drainage**: According to the Palm Beach County Comprehensive Plan, an estimated 47 percent of all rainfall is directly discharged to the Intracoastal Waterway (or Ocean) through natural or man made drainage systems. Using the Palm Beach County rainfall averages, it is possible to determine a rough estimate of rainfall drainage discharge in Ocean Ridge. Average annual daily rainfall drainage flow will be approximately 500,000 gallons daily if Ocean Ridge were to receive 60 inches of rainfall in a year.

The highly localized and seasonal characteristics of rainfall in the form of summer thunder showers in Palm Beach County prohibits more accurate estimate of average daily flows. During the wet months however when Ocean Ridge may receive over six inches of rainfall in a given month, the drainage flow can rise to over 600,000 gallons per day. Average daily volume during the dry season will be much lower.

**Drainage Facilities**: There are four public agencies which own and maintain drainage facilities in Ocean Ridge. Palm Beach County and the Florida Department of Transportation are responsible for maintaining drainage on the major roads. This amounts to about 3 percent of the total drainage system; A1A has natural runoff rather than structural drainage facilities. The Army Corps of Engineers maintains the Intracoastal Waterway. The Town of Ocean Ridge is responsible for maintaining swales along its roads plus the storm drains. The storm sewer system serves the southern and northern portions of the Town. Several outfalls are located along the shore of the Intracoastal Waterway. All of the outfalls are sized between 6 and 8 inches in diameter. Some surface water runoff drains into the Atlantic Ocean through natural processes. The majority of the drainage facilities in Ocean Ridge are of the exfiltration trench drain design. The trench drain consists of perforated pipe which is laid underground and disperses storm water runoff by allowing seepage into the groundwater table through small stones.

The Town's drainage facilities are designed to accommodate a 3-year, 24-hour rainfall which is the current level of service. With adequate maintenance, both the storm sewers and the trench drains should last beyond the 10-year planning period. The predominant trench drains have no adverse impact upon natural resources due to their filtration process into the ground water. The limited storm sewer system has minimal impact on the estuary due to the flushing effect of the nearby Boynton Inlet. However, ultimately their replacement with trench drains would be desirable, as pipe deterioration occurs.

In most areas even during severe storms, water is drained rapidly enough to prevent all but minor street flooding and does not overflow into adjacent yards and cause flooding of homes. This situation is not widespread and does not last for a long periods of time. However, the Town would be vulnerable to storm surge flooding during a 100-year Storm.

There are no major natural drainage features within the Town i.e. all systems drain into the ground, Intracoastal or (via surface runoff) ocean. The U.S. Corps of Engineers is responsible for the Intracoastal Waterway itself including its banks while the Town is responsible for zoning or land use controls along its banks.

## DRAINAGE FACILITY NEEDS ASSESSMENT

Public and private drainage facilities in Ocean Ridge have proven to be adequate in most cases to handle storm water runoff. The Town is almost fully developed, so it is evident that the existing and planned surface water drainage facilities will be adequate to serve the future drainage needs as long as the limited new development meets code requirements for drainage. Regular maintenance of the Town's drainage infrastructure and installation of replacement facilities when needed will assure that specific problems are minimized. This includes ultimate replacement of the storm sewers with trench drains.

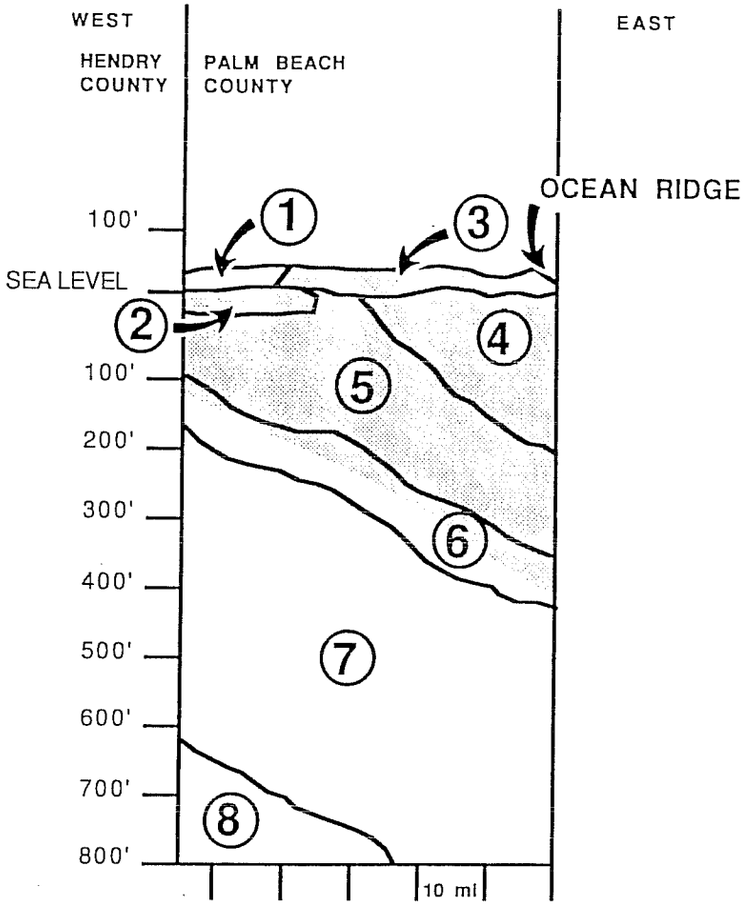
## NATURAL GROUNDWATER AQUIFER RECHARGE SUB-ELEMENT

The hydraulic unit of water bearing rocks and sand known as the shallow aquifer underlies most of the coastal area in Palm Beach County. Almost all the water supply from the County is drawn from the underground water in this aquifer. A permeable and productive aquifer, the shallow aquifer is quickly recharged by rainfall due to the high rate of rainfall penetration and surface water infiltration. The Palm Beach County Comprehensive Plan identifies groundwater and aquifer recharge conditions in the County.

### EXISTING CONDITIONS

**Groundwater**: The water table for barrier islands is only a few feet above sea level. The natural flow of surface water toward the ocean and Intracoastal results in considerable percolation to this groundwater. Variation in hydraulic conditions however makes a quantitive assessment of groundwater characteristics in the Town very difficult to determine with a significant degree of accuracy. Areas of natural groundwater recharge and discharge constantly change in relation to the intensity, distribution and duration of rainfall, the water table stage, water management, and other changes.

**Groundwater Quantity**: Figure 4.1 illustrates water movement in the shallow aquifer. Rainfall penetrates the ground and flows down through the aquifer. Downward penetration is eventually prevented by the confining beds of the Tamiami geologic formation. The groundwater then flows laterally on a slight gradient toward the coast. Withdrawal of fresh water near the coast can result in salt water intrusion. There are no water supply wells in Ocean Ridge to withdraw groundwater.




GEOLOGIC FORMATIONS

1. Organic Soils
2. Fort Thompson Formation
3. Pamlico Sand
4. Anastasia Formation
5. Caloosahatchee Marl
6. Tamiami Formation
7. Hawthorn Formation
8. Tampa Formation

SHALLOW NONARTESIAN AQUIFER SOURCE OF WATER SUPPLY

Source: USGS 1972 . APB, 1978
Robert K. Swarthout, Incorporated 1988

Figure 4.1
GENERALIZED GEOLOGIC CROSS-SECTION

# TOWN OF OCEAN RIDGE

PALM BEACH COUNTY 1987

0 400 800

RKS INCORPORATED

**Recharge**: Recharge of the superficial aquifer in Ocean Ridge occurs from surface water infiltration and storm water drainage . During the wet season, water seeps downward from natural retention areas to the water table. During the dry season, groundwater flows into the canals and is discharged into the Intracoastal Waterway. Immediate downward percolation of water from the shallow groundwater to the shallow aquifer occurs during the dry season but is not significant given the barrier island location. Recharge characteristics vary considerably from area to area in Palm Beach County. Significant recharge occurs in the western water conservation areas. Ocean Ridge is not identified as being in a prime aquifer recharge area.

## AQUIFER NEEDS ASSESSMENT

Ocean Ridge does not contain any prime aquifer recharge areas or areas that are prone to contamination or excessive ground water withdrawal. The new County wellfield protection ordinance, and regulations and programs of the South Florida Water Management District governing land use and development of prime aquifer recharge areas are adequate to protect such recharge functions to the west of Ocean Ridge. Otherwise the Town's zoning code requirements set minimum pervious open space requirements.

## WASTEWATER, SOLID WASTE, DRAINAGE, POTABLE WATER AND NATURAL GROUNDWATER AQUIFER RECHARGE ELEMENT GOALS, OBJECTIVES AND POLICIES

**Goal 1** To provide and maintain the public infrastructure in a manner that will ensure public health, safety and quality of life.

**Objective 1.1** *By 1993, correct certain deficiencies in the potable water system through a program of facility replacement; otherwise maintain the existing system and assure sound new facilities to serve new development.*

**Policy 1.1.1** Continue the program of replacing 2-inch water lines with 6- and 8-inch lines and achieve hydrant locational standards.

**Objective 1.2** *The City shall provide an adequate level of service during the planning period including new facilities (as needed) concurrent with new development; see policies for measurability.*

**Policy 1.2.1** Drainage: Drainage facilities shall accommodate a rainfall of one inch in one hour.

**Policy 1.2.2** Sewage: Septic systems shall be the level of service except in the case of package treatment plants where the level of service shall be at least 115 gallons per person per day.

**Policy 1.2.3** Potable Water: In cooperation with Boynton Beach, the Town's water distribution system shall provide 189 gallons per person per day.

**Policy 1.2.4** Solid Waste: Provide collection capacity of 6.5 pounds per person per day until all commercial uses are amortized/eliminated when it shall be 4 pounds per capita per day.

**Policy 1.2.5** Cooperate with the County in achieving the State mandated 30 percent reduction in landfill quantity by 1994; start by initiating curbside solid waste separation by 1991. Supplement with a public information effort on hazardous household waste including the County reception center.

**Objective 1.3** *As a part of the development code revision process prior to February 1990, include building code provisions relating to water conservation.*

**Policy 1.3.1** By February 1990, adopt any necessary building code plumbing provisions to achieve water conservation practices.

**Objective 1.4** *Protect the adjacent natural drainage feature (Intracoastal Waterway) and groundwater recharge by reviewing the development code provisions during 1989 and revising as necessary.*

**Policy 1.4.1** Through land development code techniques, 1) protect the natural drainage feature (Intracoastal) by supplementing the Corps of Engineers controls with setback and vegetation retention provisions and 2) assure adequate pervious or recharge areas in conjunction with new development.

**Objective 1.5** *By 1994, make a final decision on whether or not to install public sewers in any part of the Town.*

**Policy 1.5.1** Complete the sanitary sewer investigation requested by the Town Commission.

**Policy 1.5.2** During the interim, the Town shall continue to require new development to provide tie-in capability should a sanitary sewer system ultimately be installed.

**Objective 1.6** *By 1994, develop a plan for storm sewer replacement.*

**Policy 1.6.1** The Town shall determine the cost and approximate timing of a phased plan to replace storm sewer outfalls with trench drains or alternative facilities.

**Note:** Given Ocean Ridge's full development pattern, the objective relative to urban sprawl is not applicable. There are no known commercial hazardous wastes.

# COASTAL MANAGEMENT ELEMENT

## COASTAL AREA BOUNDARIES

Located entirely on a barrier island, the Town of Ocean Ridge is wholly within the Coastal Area of Palm Beach County. The Coastal Management Element addresses the following planning concerns:

1. The land uses and facilities dependent upon or related to the Lake Worth lagoon, South Lake Worth Inlet, the Intracoastal Waterway, and the Atlantic Ocean;

2. The Town's marine and estuarine wetlands, including the waters and submerged lands of the Lake Worth estuary, the Intracoastal Waterway and the Atlantic Ocean;

3. The living marine resources supported by the Town's marine and estuarine wetlands;

4. Hurricane high hazard areas, natural disaster preparedness, and post-disaster redevelopment; and

5. The functioning of the Town as a coastal barrier island, including the Atlantic beach and dune system.

## ECONOMIC BASE

The Town of Ocean Ridge is primarily a residential community and thus does not possess an economic base in the traditional sense. There is no significant base of commercial land uses within the Town; all commercial uses are located along State Road A1A and are service-oriented.

## AREAS IN NEED OF REDEVELOPMENT

The Town contains no areas in need of redevelopment.

## WATER ACCESS

The existing land uses of the Town are inventoried in the Future Land Use Element of this Comprehensive Plan. Only water-dependent uses and other shoreline uses are addressed in the Coastal Management Element.

### Water-Dependent and Water-Related Uses

The water-dependent land uses located within the Town include the three parks and the multifamily development marinas that are adjacent to the Lake Worth lagoon, the Intracoastal Waterway, or the Atlantic Ocean. There are no water-related uses providing support for or service to these water-dependent uses.

### Public Beach Access

Access to the Atlantic beaches of the Town is provided at a number of points. While the Town possesses no municipal beach of its own, it contains within its limits three major publicly-owned beachfront properties. They include the Boynton Public Beach, the Palm Beach County Dunes Hammock, and the Palm Beach County Ocean Inlet Park. Based on the results of a field survey, the Town offers 9 additional points of access or one for every quarter mile of beach. See Figure 1.2.

Of the three public parks, the Boynton Public Beach offers visitors the best and most convenient access to the Ocean. The Palm Beach County dunes hammock, a unique example of a tropical hammock, is currently undeveloped and provides no public parking or accessways from the public street to the beach. The Ocean Inlet Park (south of the South Lake Worth Inlet) provides 227 parking spaces, and access to both the beach and Intracoastal.

The City of Boynton Beach Oceanfront Park is a fully developed beachfront recreation park offering a picnic area, restrooms/bath houses, a concession stand, and 255 parking spaces. A pavilion and walkovers provide scenic beach overlooks and access to the beach at a number of points. The park incorporates a 50-foot access easement that is owned by the Town of Ocean Ridge. The availability of this public beach to Ocean Ridge residents was secured by an agreement under which the Town was deannexed from Boynton Beach in the mid-1930's.

In addition to the 50-foot wide access easement, the Town offers informal beach access at points where the right-of-way extensions of six public streets lead to the ocean from Old Ocean Boulevard and from State Road A1A. Parking spaces at the Boynton Beach Oceanfront Park are available to serve these access points. Additional on-street parking is available on Ocean Avenue in close proximity to the Park. Public beach access points within Ocean Ridge are shown on Figure 1.2.

### Private Beach Access

Private beach access in Ocean Ridge is available for certain single family, condominium, cooperative and rental apartment residents. The condominium developments located north of the Dunes Hammock and south of the McCormick Mile Beach Club have direct beach access.

### Intracoastal Public Shoreline Access

Public access to the waters of Lake Worth is provided primarily at the Palm Beach County Ocean Inlet Park. There the Palm Beach County Beach and Marina facility offers public shoreline access with public boat dockage facilities (permanent and day use boat slips), a picnic area, a concession stand, and swimming and fishing areas. The park provides 80 parking spaces for visitors. A Town park near the Ocean Avenue Bridge provides fishing access as do several dead-end streets.

### Intracoastal Private Shoreline Access

The privately owned properties located on the shoreline of Lake Worth and the Intracoastal Waterway are developed primarily for residential use and provide shoreline access to private residents.

### Conclusion

With two major public waterfront parks plus a number of other public and private waterfront access points, there is no apparent need for additional public access points. Also, there is another public oceanfront park (the County's Gulfstream Park) just south of Ocean Ridge.

### Coastal Scenic Overlooks

The Ocean Avenue Bridge and Beachway Drive Bridge connect Ocean Ridge to the mainland. Both provide a scenic view of Lake Worth and the Intracoastal Waterway and the shores of the island.

Other scenic roads include State Route A1A, which traverses the length of the Town and Old Ocean Boulevard, which lies just to the west of the dune line in the southern portion of the Town.

## CONFLICTS AMONG SHORELINE USES

Most of the Intracoastal and Ocean shoreline uses are residential or recreational and are compatible with each other in terms of land use, and density or intensity of development. The most significant potential shoreline land use conflict concerns discussions about the park facilities in the County-owned Dunes Hammock, a tropical hammock ecosystem.

Two plans for development of the hammock have been considered by the County. The plan for development of the hammock as a public beach access park with parking spaces for 47 cars, and a trail through the hammock to provide beach access. An alternative plan calls for development of the hammock as a nature center with 13 parking spaces, a study center and public restrooms, but no beach access trails.

The Town opposes the proposed plan for development of the hammock as a beach access point, based on the need to preserve this unique coastal resource intact. The value of the hammock as a natural resource is discussed under the heading of "Natural Resources."

## HISTORIC RESOURCES

### Sites On The Barrier Island

No historic sites or resources within Ocean Ridge have been listed on the National Register of Historic Places. Although, the Florida Master Site File lists three archaeological sites for this township, range and section area, none are in Ocean Ridge.

### Offshore Historical/Archaeological Resources

Magnometer surveys in offshore areas of Ocean Ridge have identified magnetic anomalies that indicate historical and archaeological resources may be present. Such sites have not been investigated further, but should be afforded protection from dredging or other activities associated with planned beach nourishment or renourishment projects. The renourishment projects proposed by the Corps of Engineers for Palm Beach County include provisions for marking these sites for their protection during dredging in offshore borrow areas.

### Impact of Future Land Uses on Historic Resources

Because no significant development or redevelopment is projected to take place within Ocean Ridge during the planning period, no adverse impact on historic resources is expected. However, every reasonable effort will be made to preserve the integrity of the two historic houses listed on the Florida Master Site File and, once the Town administration learns their precise location, the three archaeological sites.

## INFRASTRUCTURE

### Potable Water Supply Facilities

The water distribution facilities within the Town of Ocean Ridge are owned by the Town. The water distribution lines are mainly six and eight inches in diameter. Some two and three inch lines 15 to 25 years old are still in use, but are being upgraded gradually. Improvements to the system are planned and approved by both Boynton Beach and Ocean Ridge. The Town finances improvements. More detailed information on the existing facilities and on capacity and demand is presented in the Infrastructure Element of this Comprehensive Plan.

### Wastewater Disposal Facilities

The Town is served by a dual wastewater disposal system. Single-family uses, commercial uses and some multiple-family developments utilize individual sewage disposal systems, mostly septic tanks. Most multiple-family developments utilize on-site wastewater treatment systems. These facilities are inventoried and analyzed in the Infrastructure Element.

### Storm Drainage Facilities

Man-made storm drainage facilities in the Town have largely replaced natural drainage functions. Rainfall collected by the Town's storm drainage system is discharged into the Intracoastal Waterway. These facilities are inventoried and analyzed further in the Infrastructure Element.

### Traffic Circulation System

The major transportation routes within the Town include State Route A1A, a north-south route, and the two east-west roads, Beachway Drive and Ocean Avenue. Bridges on the two east-west roads provide access to the mainland. The roadways and bridges of the Town are inventoried and analyzed in the Traffic Circulation Element.

## NATURAL RESOURCES

### Vegetative Cover

Much of the Town's acreage is developed for residential use, but substantial areas of natural vegetative cover remain. The main vegetative resources are the mangrove areas, (See Figure 1.1) dune vegetation (see Figure 6.1) and the tropical hammock. (See Figure 1.2)

### Mangrove Areas

Extensive areas of mangroves exist within the Town along the shores of Lake Worth and the Intracoastal Waterway. Mangrove strands cover approximately 60 percent of all vacant land in the Town. These areas remain relatively undisturbed and serve their natural ecological functions of absorbing wind during storms, thereby minimizing flooding and wind damage. Healthy mangrove strands also play a critical role in the food chain by providing nutrients to aquatic species. Mangroves are protected from removal or trimming by State law. Since mangroves have spread through seeding onto previously unvegetated lands, some areas once considered developable for residential use may now be subject to State and Federal permit restrictions. The Town urges a reasonable development permitting policy by the Corps and DER to recognize this unique situation. The spread of these mangroves was aided by the digging of mosquito ditches.

**Dune Vegetation**

The dune systems in the southern portion of Ocean Ridge are in generally healthy condition. For the most part, they are adjacent to undeveloped beach front properties. However, they are bordered by beaches that have experienced critical erosion problems. The most severe beach and dune erosion is to the north. See Page 1.17 for more details on the subject of beach erosion.

Natural dune vegetation consists of low growing grasses, vines and herbaceous plants with few trees or large shrubs. The natural forces of wind, salt and blowing sand make establishment of plant species on foredunes difficult. The plants that do exist on foredunes are adapted to the harsh conditions of a high energy beach and are pioneer species. Natural dune vegetation may include the species listed in Table 5.2.

**Table 5.2**
**Natural Dune Vegetative Species**

| | Common Name | Scientific Name |
|---|---|---|
| Trees | Australian pine | Casuarine equisetifolia |
| | Cabbage palm | Sabal palmetto |
| | Coconut palm | Cocos nucifera |
| | Sand live oak | Quercus virginiana, var. maritima |
| Shrubs | Bay ceder | Suriana maritima |
| | Coco plum | Chrysobalanus icaco |
| | Inkberry | Scaevola plumieri |
| | Marshelder | Iva imbricata |
| | Sawpalmetto | Serenoa repens |
| | Silverleaf croton | Croton punctatus |
| | Spanish bayonet | Yucca aloifolia |
| | Sea grape | Coccoloba uvifera |
| Herbaceous Plants and Vines | Bay bean | Canavalia maritima |
| | Beach morningglory | Impomoea pes-caprae |
| | Cucumberleaf sunflower | Helianthus debilis |
| | Sea purslane | Sesuvium portulacastrum |
| | Greenbriars | Smilax spp. |
| | Wild grape | Vitis spp. |
| Grasses and Grasslike Plants | Bitter panicum | Panicum amarum |
| | Marshhay cordgrass | Spartina patens |
| | Sandbur | Cenchrus spp. |
| | Sea oats | Uniola paniculata |
| | Seashore paspalum | Paspalum vaginatum |
| | Seashore saltgrass | Distichlis spicata |
| | Low panicum | Panicum spp. |

Source: Twenty-six Ecological Communities of Florida, U.S. Department of Agriculture, Soil Conservation Service, 1986.

## Tropical Hammock

The Ocean Ridge Dunes Hammock is approximately 800 feet long and is located on the beachfront. Now owned by Palm Beach County, the hammock is a unique example of one of the last remaining tropical hammocks still existing in this region of the Florida Atlantic coastline.

The tropical hammock is characterized by a heavy canopy closure, causing deep interior shade, which in turn serves to moderate temperatures and conserve moisture. Generally, trees of a tropical hammock have dense, heavy, strong wood and shallow spreading root systems that help adapt them to a harsh environment of wind, periodic droughts and salt spray.

Typically tropical hammocks have a high plant diversity, with most of the vegetation being of West Indies origin. Characteristic tree and shrub species include Bahama lysiloma, Jamaica dogwood, Poisontree, Strangler fig, Live oak, Sabal palm, Marlberry, Snowberry, and Wild coffee. Characteristic herbaceous plants and grasses include Golden serpent fern, Resurrection fern, Stiff-leaved wild pine, Low panicum and Sour paspalum.

According to environmental experts, tropical hammock communities are probably the most endangered ecological type in Florida.

This ecosystem has always been extremely rare north of the Florida Keys and thus represents an invaluable coastal resource for the entire region, the State and even the country. A local field study of this hammock has found that this particular hammock is even more significant because it retains its natural connections to the neighboring coastal strand and beach ecosystem.

Those tropical hammocks that remain are not widespread and have suffered considerable pressure from development. The Soil Conservation Service recommends that the remaining examples of this community be incorporated into an overall land use plan to insure their continued use for hurricane protection, landscape and greenbelt areas, parks, and wildlife habitat.

## COASTAL WETLANDS

The wetlands of Ocean Ridge include primarily the marine wetlands of the Atlantic Ocean and shoreline and the estuarine wetlands of the Lake Worth lagoon, the Intracoastal Waterway and their shorelines.

The riverine wetlands of the South Florida Water Management canal drainage system do not occur on the barrier island, but are discussed here because of their impact on Lake Worth and the Intracoastal Waterway. The wetlands of the Town are shown on Figure 5.1.

### Marine Wetlands

The marine wetlands of Ocean Ridge occur along the Atlantic shoreline of the barrier island and include the beaches, which are intertidal wetlands with unconsolidated bottom that are regularly or irregularly flooded or exposed. Along a major portion of the Atlantic shore there are also subtidal wetlands containing rooted vascular aquatic beds.

### Estuarine Wetlands

The estuarine wetlands of Ocean Ridge occur along the Town's western shorelines, which are bordered by the waters of the southernmost part of the Lake Worth lagoon, where it narrows into the southern Intracoastal Waterway. These estuarine wetlands include subtidal wetlands with unconsolidated bottom that have been excavated, such as the man-made canals along the shore that have been constructed for the purpose of waterfront residential development. Within the lagoon and the Intracoastal Waterway, there are also intertidal wetlands with unconsolidated bottom that are flooded irregularly.

### Riverine Wetlands and Water Management System

The main riverine wetlands affecting the Lake Worth lagoon and the Intracoastal Waterway are the West Palm Beach Canal (C-51), the Boynton Beach Canal, and other associated drainage canals. While the canals are not located within the Town of Ocean Ridge, they are the primary source of the freshwater that, along with the saltwater from the ocean, create the coastal estuarine wetlands.

## SOUTH FLORIDA MAJOR CANAL SYSTEM

The four major canals of the South Florida Water Management District's Lower East Coast Area water management system are the West Palm Beach, Hillsboro, North New River, and Miami Canals. These larger canals and the smaller associated drainage canals, such as the Boynton Beach Canal, serve three major functions.

First, the canals are primary drainage outlets for excess water from the Everglades Agricultural Area and the Water Conservation Areas and serve as secondary outlets for excess water from Lake Okeechobee. Releases from the canals are made periodically throughout the year in conformance with agricultural irrigation and drainage practices and to maintain Lake Okeechobee and the Water Conservation Areas within their appropriate regulation schedules.

Second, the coastal canals provide primary drainage for the highly developed urban and agricultural areas of the southeast coast. Various stages in the canals are maintained at set levels depending on the season. During the wet season, they are maintained at a low level to provide additional storage capacity for runoff waters. During the dry season, they are maintained at higher levels to provide additional groundwater recharge and prevent saltwater intrusion. Releases of water from the canals into coastal waters are made whenever canal levels are raised above maintenance levels by local rainfall. Releases may also be made in anticipation of major storm events.

Third, these canals allow transfer of water from the Everglades Water Conservation Areas to coastal communities in times of drought. The transferred water helps recharge major wellfields located near the canals and provides additional water to self-supplied water systems in the Coastal Area by raising groundwater levels.

## ESTUARINE ENVIRONMENTAL QUALITY: GENERAL CONSIDERATIONS

The Lake Worth lagoon and the Intracoastal Waterway are important elements of the extensive estuarine system of coastal lagoons, bays and inter-connecting canals that separate the barrier islands of Palm Beach County from the mainland.

## Lake Worth Lagoon

Prior to the fall in sea levels during the Great Ice Age, the Lake Worth basin was a saltwater lagoon. As sea levels declined, the basin was elevated above sea level and became a freshwater lake. The creation and maintenance of the inlets connecting the lagoon to the Atlantic Ocean have now changed the lake to a semi-enclosed estuary that contains a mixture of salt and fresh water. It is connected to the Atlantic Ocean by means of the Lake Worth Inlet, located between Singer Island and northern Palm Beach Island, and the South Lake Worth Inlet, between southern Palm Beach Island and the barrier island on which the Town of Ocean Ridge is located.

Today Lake Worth receives fresh water primarily from the canals of the South Florida Water Management and Lake Worth Districts. Because of the volume of fresh water it receives, it is a low salinity estuary, with a salt concentration of about 0.5 to 5 parts per thousand. The lagoon is maintained by the U.S. Army Corps of Engineers as part of the Intracoastal Waterway.

## Intracoastal Waterway

The Intracoastal Waterway is an important element of the extensive system of coastal lagoons, bays and interconnecting canals that separate the barrier islands of Palm Beach County from the mainland. The Intracoastal Waterway adjacent to Ocean Ridge is classified as an estuary because it contains a mixture of saltwater and freshwater. It receives freshwater primarily from the coastal drainage canals and groundwater sources and saltwater from the South Lake Worth Inlet and the waters of the Lake Worth lagoon. It is classified as a mild salinity estuary.

The Intracoastal Waterway was dredged for the purpose of navigation and connects the coastal basins or lakes of Palm Beach County, including Little Lake Worth, Lake Worth, Lake Boca Raton and Lake Wyman. The intracoastal waterway system was authorized by Congress in 1939 as a navigable channel between the barrier islands of the east coast of Florida and the mainland. In 1942, the U.S. Army Corps of Engineers began dredging a deep channel that is now maintained at a depth of 42 feet.

### Surface Water Classification System

The Intracoastal Waterway is classified as Class III waters according to the State's surface water classification system (Chapter 17-3, Florida Administrative Code). Class III waters, which include all of the Atlantic coastal waters, are intended to be used for swimming, fishing, boating and other recreational uses. Their water quality should be maintained at a level that is suitable for recreation and the propagation of fish and wildlife.

### Water Quality Rating System

The Florida Department of Environmental Regulation monitors Class III water quality according to the following system: A water quality rating of "Good" indicates that waters can fully support the uses for which they are classified; a rating of "Fair" indicates that waters can only partially support the uses for which they are classified; and a rating of "Poor" indicates that waters cannot support the uses for which they are classified.

### Past Trends in Estuarine Water Quality

Until the 1970's, the water quality of the Intracoastal Waterways of Palm Beach County were in a state of decline due to sewage discharge and runoff from surrounding communities. During the 1970's clean-up campaign, all sewage was required to have secondary treatment prior to discharge. Since then, the water quality of coastal lagoons and the Intracoastal Waterway has generally improved. However, a lack of historical data may preclude definition of a trend in water quality for specific locations in the intracoastal system.

## WATER QUALITY ASSESSMENTS

### 1970 Environmental Protection Agency Study

In 1969-1970, an Environmental Protection Agency-funded study of the water quality of Lake Worth was undertaken. The results of the study showed that at that time, a major source of pollutant loadings was the West Palm Beach Canal (C-51), the largest contribution of freshwater. The major sources of carbon, BOD (Biological Oxygen Demand), nitrogen and turbidity were the Earman Canal (C-14), Canal (C-17) and the West Palm Beach canals and the West Palm Beach and Boynton Beach sewage treatment plants. The major source of phosphorus was identified as the waters from canal C-17.

### 1985 Estuarine Water Quality Assessment

In 1985, the Department of Environmental Regulation presented the results of a detailed water quality assessment of the Lake Worth Basin. The survey area included Little Lake Worth, Lake Worth, Lakes Boca Raton and Wyman, the Intracoastal Waterway connecting them to each other, and the inlets connecting them to the Atlantic Ocean. As part of the study, four water samplings were done under two types of climatological conditions. Two were taken for the dry season and two for the wet season. Samplings were taken at 25 stations located throughout the study area.

- **Water Quality Parameters**

  The field-tested water quality parameters or characteristics sampled in the study included temperature, specific conductance, ph, dissolved oxygen, and Secchi depth. The laboratory-tested parameters were turbidity, color, fecal coliform bacteria, and nutrients, including nitrite, nitrate, Kjeldahl nitrogen, and phosphorus. The units of measure and significance of each of these water quality parameters are outlined in Table 5.3.

**Table 5.3**
**Water Quality Parameters**

| Parameter | Unit of Measure | Significance |
|---|---|---|
| Temperature | Degrees Centigrade | A factor in chemical reactions and gas solubility; can contribute to stratification which can promote water quality degradation. |
| Specific Conductance | Umhos | A measure of water's ability to conduct electrical current due to dissolved ionic chemicals; used as a substitute for salinity. |
| ph chemical | Standard Unit | A measure of acid-base equilibrium of various dissolved materials; can influence forms of elements present in water. |
| Dissolved Oxygen | Milligrams per Liter (mg/l0) | The most important dissolved gas; prerequisite for most aquatic life and decomposition through oxidation. Often used as single parameter to indicate health of water. State minimum standard for saltwater is 4.0 mg/l at any one time. A higher measurement reflects better water quality. |
| Turbidity | NTU (Nephalometric Units) | A measure of suspended material in water that causes "muddiness," inhibiting light penetration; affects photosynthetic activity that releases oxygen to water. |
| Color | Pt-Co Units (Platinum-Cobalt Units) | Caused by dissolved substances such as minerals, metals and/or organic materials. Inhibits light penetration; affects photosynthetic activity that releases oxygen to water. |
| Secchi Depth | Meters (m) | A measure of light attenuation by color, turbidity and other factors. (The depth in meters as which a Secchi disc becomes barely visible.) |
| Fecal Coliform Bacteria | Number per 100 milliliters (#/100 ml) | Indicators of fecal contamination by warm blooded animals; indicate a potential health hazard when present in high numbers. State maximum standard for Class III waters is 800/100 ml at any one time. A lower measurement reflects better water quality. |
| Nitrite Plus Nitrate N | Milligrams per Liter (mg/l) | Important forms of nitrogen that are readily assimilated by plants with little or no conversion; nitrogen is a major nutrient for plant maintenance and growth. |
| Total Kjeldahl Nitrogen | Milligrams per Liter (mg/l) | A measure of dissolved and particulate organic nitrogen that must be converted prior to assimilation by plants; represents a reservoir of nitrogen. |

**Table 5.3 (Continued)**
**Water Quality Parameters**

| Parameter | Unit of Measure | Significance |
|---|---|---|
| Total Phosphorus | Milligrams per Liter (mg/l) | Sum of both organic and inorganic forms of phosphorus; a major nutrient for plant maintenance and growth, but excessive amounts reflect a poorer water quality. |

Source Lake Worth Basin Water Quality Assessment, Terry L. Davis, Florida Department of Environmental Regulation, 1985.

- **Canal and Recipient Water Quality Results**

  The results of the study were presented in a summary that compared the average findings at the four stations located in major drainage canals with the average findings at the four stations within the recipient waters nearest the mouths of the canals. These average findings are presented in the following table.

**Table 5.4**
**Canal and Recipient Water Quality Results**

| Parameter | Average Measurements: Canals | Recipient Waters |
|---|---|---|
| Temperature | 27.0 Degrees C | 27.2 Degrees C |
| Specific Conductance | 40929 Umhos | 44091 Umhos |
| ph | 7.75 Std. Units | 7.71 Std. Units |
| Dissolved Oxygen | 5.71 mg/l | 6.29 mg/l |
| Turbidity | 3.1 NTU | 3.1 NTU |
| Color | 9.8 Pt-Co Units | 9.6 Pt-Co Units |
| Secchi Depth | 1.26 m | 1.26 m |
| Fecal Coliform Bacteria | 47.3/100 ml | 20.2/100 ml |
| Nitrite Plus Nitrate N | 0.0328 mg/l | 0.0153 mg/l |
| Total Kjeldahl Nitrogen | 0.521 mg/l | 0.383 mg/l |
| Total Phosphorus | 0.107 mg/l | 0.098 mg/l |

Source: Lake Worth Basin Water Quality Assessment, Terry L. Davis, Florida Department of Environmental Regulation, 1985.

- **Ocean Avenue Bridge and Boynton Canal Station Findings**

  The two stations closest to Ocean Ridge were Station Number 787, a site in the Intracoastal Waterway at the Ocean Avenue Bridge, and Station Number 786, a site just east of the Boynton Beach Canal outfall structure. The water depth at the bridge site was approximately 12 feet; the depth at the canal site was approximately 17 feet. Because of the proximity of these stations to the Town, their water quality measurements are most indicative of the water quality of the waters adjacent to the Town. For the purpose of comparison with the average study findings, the average measurements for these stations are set forth in the following table.

**Table 5.5**
**Ocean Avenue Bridge and Boynton Canal Station Findings**

| Parameter | Average Measurements: Ocean Avenue Bridge | Boynton Canal |
|---|---|---|
| Temperature | 27.2 Degrees C | 27.1 Degrees C |
| Specific Conductance | 46375 Umhos | 45633 Umhos |
| pH | 7.76 Std. Units | 7.87 Std. Units |
| Dissolved Oxygen | 5.82 mg/l | 5.91 mg/l |
| Turbidity | 4.1 NTU | 1.4 NTU |
| Color | 9.5 Pt-Co Units | 4.4 Pt-Co Units |
| Secchi Depth | 1.15 m | 1.68 m |
| Fecal Coliform Bacteria | 85.0/100 ml | 35.0/100 ml |
| Nitrite Plus Nitrate N | 0.0120 mg/l | 0.0170 mg/l |
| Total Kjeldahl Nitrogen | 0.354 mg/l | 0.454 mg/l |
| Total Phosphorus | 0.082 mg/l | 0.106 mg/l |

Source: Lake Worth Basin Water Quality Assessment, Terry L. Davis, Florida Department of Environmental Regulation, 1985.

- **General Conclusion of 1985 Study**

  The general conclusion of the 1985 study was that, as might be expected, water quality decreased with increased distance from the inlets. Generally, dissolved oxygen concentrations and Secchi depth decreased while color, fecal coliform bacteria and nutrient levels increased with increased distance from the inlets.

  The State's dissolved oxygen standard of a minimum of 4.0 mg/l for saltwater was violated six times at four stations, which were either in the mouth of a drainage canal or at some distance from an inlet. Review of the total data base for dissolved oxygen for four sites revealed that the Blue Heron Bridge site showed a lower level of decrease in the late spring, summer and early fall than more southerly sites, indicating that the northern portion of the lake coped fairly well with the pollution loading it receives.

- **1986 Florida Water Quality Assessment**

  In 1986, the Department of Environmental Regulation listed water quality problems, trends, pollution sources and cleanup actions in the coastal basin. Lake Worth (Reach 42.00) was determined to only partially support its designated use as Class III waters. The Lake-Estuary TSI rating was "Fair." The main problems identified were in nutrients and Secchi depth. The sources of these pollution problems were identified as non-point sources.

  The Intracoastal Waterway between Lake Worth and Boca Raton was rated as "Fair." Due to non-point sources of pollution, such as runoff from surrounding communities, this reach (Reach 4.00) had a slight nutrient and Secchi depth problem. The Boynton Canal (Reach 25.00) was also given a "Fair" rating, indicating only partial support of the designated uses. The minor problems identified in dissolved oxygen levels and nutrients were attributed to non-point sources of pollution.

## CURRENT POLLUTION PROBLEMS

### Accumulation of Contaminants in Sediments

The sediments of the lagoon and inland waters consist of sand, silty-sand and mud. Generally, coarser sediments occur near the inlets and in the area north of the Palm Beach Canal. Sediments at the southern end of the lagoon were higher in carbon, nitrogen and phosphorus concentrations than those at the northern end.

### Known Point Sources of Pollution

The main point sources of pollution within the Town of Ocean Ridge are the drainage outfalls of the Town's storm drainage facilities. The outfalls range between 6 and 12 inches in diameter with one as large as 36. Based on Palm Beach County rainfall, it is estimated that the average daily drainage flow from the Town is from 500,000 to 600,000 gallons. Approximately 47 percent of this volume drains into the Intracoastal Waterway.

The major known point sources of pollution of the coastal estuary from outside of the Town are the discharges of sewage treatment plants.

### Canal Discharges

The West Palm Beach Canal (C-51) and C-16 Canal have been identified as the largest single source of pollution of the Lake Worth lagoon. These canals are one of the major features of the SFWMD canal system, which generally drain eastward to the Atlantic Ocean.

The discharge of the West Palm Beach Canal has been determined to contribute approximately 50 percent of the freshwater input to the lake. Backpumping of canal waters into the Water Conservation Areas was considered (but rejected) in the 1970's as a means of reducing freshwater input. Maximum backpumping was projected to lead to a 76 percent reduction in the canal's discharge, with a resultant increase in the salinity of the lagoon.

### Boynton Beach Study

A 1988 study by the City determined that three principal sources of pollution into the Intracoastal Waterway are 1) the C-16 Canal, 2) runoff from major highways and 3) septic tank effluent.

### Known Non-Point Sources of Pollution

The major known non-point sources which affect the coastal estuary are canal discharges, septic tank seepage and unchanneled storm runoff waters from surrounding communities that drain into the Lake Worth lagoon and Intracoastal Waterway as a result of natural or altered topography. Non-point sources have been identified by the Department of Environmental Regulation as a major cause of current pollution problems in Lake Worth, the Boynton Canal, and the Intracoastal Waterway.

The principal implications of this analysis are 1) the long range need for Ocean Ridge to adjust its storm sewers so that some form of filtration is achieved rather than the direct outfall into the Intracoastal and 2) the need to continue the feasibility study of extending public sewer lines into the Town.

### Circulation Patterns

Circulation patterns within the Intracoastal Waterway lagoon are highly complex and depend upon a variety of factors, including ocean tides. Studies of the circulation patterns of Lake Worth have determined that approximately 75 percent of the water discharge from the West Palm Beach Canal flows northward in the lake, with 25 percent flowing southward.

## WETLANDS PROTECTION PROGRAMS

The environmental quality of wetlands and estuaries is protected by a number of existing and proposed regulatory programs. The following federal, state, regional and local programs seek to protect wetlands and estuaries through permitting procedures regulating land uses and activities that could adversely impact environmental quality.

### U.S. Army Corps of Engineers (USCOE)

The USCOE has regulatory authority and jurisdiction over dredge, fill and construction activities that occur within all inland (non-tidal) waterways used for transport of interstate commerce (currently, in the past or potentially in the future). The Corps' jurisdiction extends to all navigable waters of the United States, and any adjacent wetlands and tributaries that have surface water or hydrologic connection to any navigable waters.

Review of applications for permits that would allow alterations, degradation or destruction of wetland habitats is based on evaluation and balancing of the probable short-term and cumulative impacts of the proposed activity and its intended use on the public interest. Generally, permits that would result in destruction of wetlands are not granted unless the benefits of the proposed activity are deemed to outweigh the damage to the wetland resource. Although mitigation of damage is not required as a matter of policy, it is often necessary where wetland loss is involved in order to shift the balance of the impact evaluation in a more favorable direction.

### Florida Department of Environmental Regulation (DER)

The DER has regulatory authority and jurisdiction over dredge, fill and construction activities and activities affecting water quality that occur within wetlands defined to be waters of the state pursuant to Chapters 17.3 and 17.4 of the Florida Administrative Code. The DER may deny or limit permission for activities within navigable waters that would negatively impact water quality or habitat value. Within tributaries or wetlands connected to navigable waters, the DER's authority is limited to activities affecting water quality.

Review of applications for permits that would allow alteration, degradation or destruction of wetlands is based on water quality and habitat impacts, including cumulative impacts on the environment. Permits are not generally granted for activities that would destroy wetlands, but wetland loss can occur due to jurisdictional limitations, public interest considerations and mitigation. Mitigation of habitat loss or degradation of water quality is often required by the DER on a case-by-case basis.

**Florida Department of Natural Resources (DNR)**

The DNR has regulatory authority and jurisdiction over coastal construction and use of lands owned by the State, including submerged lands. Most of these lands are also within the jurisdiction of the USCOE and DER.

Review of proposed activities is based on conformance to the guidelines and policies of the State's land management plans. Activities that would have significant negative impact on habitat value, the natural environment or recreational use are generally not permitted. Mitigation is not considered by the DNR as a basis for allowing activities that would destroy habitats and is not required as a matter of policy.

**South Florida Water Management District (SFWMD)**

The SFWMD has jurisdiction over Palm Beach, Martin and St. Lucie counties. The District has regulatory authority over the following activities that could impact wetlands:

1. Construction of surface water management systems;

2. Construction of stormwater management systems;

3. Certain activities affecting water quality (as delegated by DER); and

4. Withdrawal of ground water.

The SFWMD has only a limited ability to prevent clearing or removal of vegetation from wetland areas. Generally the District only restricts such activities when they would alter or degrade habitats in hydrologically sensitive areas or areas deemed to be of significant value.

Issuance of permits that would directly or indirectly allow alteration, degradation or destruction of wetland habitats is based on evaluation and balancing of probable impacts. Permits that would result in unmitigated destruction of regionally significant and valuable wetlands are not generally granted. Mitigation of significant losses is considered as a basis for allowing certain activities and is required as a matter of policy.

**Treasure Coast Regional Planning Council (TCRPC)**

The Wetland and Deepwater Habitat Policy of the TCRPC seeks to go beyond existing federal, state, and regional programs in protection of the region's valuable wetland habitat resources through the Development of Regional Impact Review process and through advisory comments to agencies, entities or persons with implementing capability. The policy outlines the regulatory proposals relative to each existing regulatory program as follows:

**U.S. Army Corps of Engineers (USCOE)**

1. To address wetland areas not within the jurisdiction of the USCOE; and

2. To require mitigation in all cases where protected habitats are altered, degraded or destroyed, and where functions and values of regional significance are lost.

**Florida Department of Environmental Regulation (DER)**

1. To address wetland areas not within the jurisdiction of the DER; and

2. To determine the extent to which mitigation would be required for lost wetland functions and values.

**Water Management Districts (WMD)**

1. To prohibit removal of vegetation or clearing of habitats unless approved by exception;

2. To consider all wetland habitats as regionally important until proven otherwise; and

3. To prohibit consideration of mitigation as a basis for allowing an activity within regionally important habitats.

### Palm Beach County

Palm Beach County, has broad authority to regulate development and use of land, including wetlands, through local ordinances, building codes and the County's Comprehensive Plan.

Section 501.21 of the Palm Beach County Land Development Manual (planned unit developments) requires that any significant natural area be maintained in an undisturbed state and adequately protected or incorporated into the design of a planned unit development. Regarding dredge and fill permits issued by the USCOE, the County's recommendation is that no such activities be allowed within estuarine marsh areas.

Under the current Palm Beach County Comprehensive Plan, marine grass beds, mangrove areas, and the Intracoastal Waterway have been identified as specific natural resource areas requiring careful management and conservation. The policies of the County's current Conservation and Coastal Zone Element include recognition of the significance of coastal zone resources and provide for their protection, enhancement, restoration and management.

A 1988 County ordinance provides County-wide authority to protect and permit mangroves.

## WILDLIFE HABITATS AND LIVING MARINE RESOURCES

The Town of Ocean Ridge contains a number of wildlife habitats that support mammals, reptiles and a variety of shore and wading birds. The main habitats are the marine and estuarine habitats of the Atlantic Ocean and beaches and the estuarine habitats of Lake Worth and the Intracoastal Waterway. The most important living marine resources of the Coastal Area are the endangered and threatened species whose habitats along the Southeast Florida Coast are central to their habitat range in the State or in the United States.

### Beach Fauna

The Atlantic beaches along the Palm Beach County coast are typical of other sandy beaches. While the diversity of beach fauna on such beaches is low, the populations of individual species may often be very great. These species include specialized types, such as coquina clams, ghost shrimp, annelid worms, and mole crabs that are adapted to the harsh environment of a beach subject to the full force of ocean waves. Because these populations contain small, short-lived organisms, they recover quickly from most environmental disturbances.

### Nearshore Reefs

Low profile nearshore rock reefs occur at various locations along Palm Beach County's coast. These rock reefs were formed during the Anastasia period. Commonly known as coquina rock, this rock formation consists of a conglomeration of sand and shell fragments. Characterized by numerous crevices and providing varying degrees of relief, these reefs provide a habitat for diverse flora and fauna. The reefs provide nursery grounds, feeding locations and protective niches for juveniles or smaller fishes. The sabellarid worm (Phragmatopoma lapidosa), which requires hard substrate for attachment, construct honey-combed, wave-resistant colonies commonly called worm-rock reef.

In addition to being utilized by at least 84 species of tropical and commercially valuable fish, nearshore reefs also provide habitats for the species listed in the following Table 5.6.

**Table 5.6**
NEARSHORE REEF SPECIES

**Commercially Valuable Shellfish:**

| Common Name | Scientific Name |
|---|---|
| Stone crab | Menippe mercenaria |
| Blue Crab | Callinectes sapidus |
| Spanish Lobster | Scyllarides aequinoctialis |
| Spiny Lobster | Panularis argus |

**Hard Corals:**

| Common Name | Scientific Name |
|---|---|
| Star Corals | Siderastrea radians |
| | Siderastrea siderea |
| | Favia fragum |
| Brain Coral | Diploria strigosa |

**Other Invertebrates:**

| Common Name | Scientific Name |
|---|---|
| Wine-Glass Hydroid | Campanularia sp. |
| Fire Coral | Millepora alcicornis |
| Boring Sponge | Cliona celata |
| Gorgonian | (Various species) |
| Sponge | (Various species) |

Source: Atlantic Coast Ecological Survey, U.S. Fish and Wildlife Service, West Palm Beach, 1980.

### Offshore Reefs

Several offshore reef ridges occur along the County's Atlantic shoreline beginning north of Lake Worth Inlet. They are found in water depths ranging from 35 to 40 feet out to a depth of 100 feet. These deep reefs support a diversity of benthic fauna, including hard corals, seawhips, seafans, and sponges. In addition, the reefs offer a wide range of habitats for almost all known Caribbean tropical fish and shellfish types, including the species that also utilize nearshore reefs. Fish species include a variety of sport and commercial fish, such as grouper, snapper, mackerel, bluefish, dolphin, kingfish and jack.

Offshore reefs also provide shelter and food sources for three species of sea turtles that are endangered or threatened, the Green (Chelonia mydas), Loggerhead (Caretta caretta) and Leatherback (Dermochelys coriacea).

### Lake Worth Estuary

The Lake Worth lagoon is a semi-enclosed estuary that contains a mixture of saltwater from the ocean and freshwater from the coastal drainage canals. The lagoon is characterized as a low salinity estuarine and tidal freshwater habitat.

**Benthic Communities:** According to studies made in the 1970's, Lake Worth supports stable benthic communities in most areas of the lagoon. In 1975, J.K. Reed documented the presence of 171 taxa of benthic invertebrates in the lake. They included polychaetes, crustaceans and mollusks. A comparison of species diversity in Lake Worth at that time with other moderately polluted estuaries in other parts of the country indicated a similar diversity value for the lake.

**Fishes:** An Environmental Protection Agency (EPA) investigation in 1970 reported that the Lake Worth lagoon supported a moderately diverse fish fauna consisting primarily of marine and estuarine species. The EPA study identified 19 species. Other studies have found from 40 to 56 species. Based on these reports, a composite species list has been compiled. The list includes 79 species and identifies the salinity range for each species. The most common species include sheepshead, croakers, sea catfish, majorra, snook, jack, and lookdown fishes. One species, mullet, is known to be common, but was not often captured by the sampling techniques used in the studies.

**Decapod Crustaceans**: In 1976, data collected in the lagoon indicated that distribution of the most abundant species of shrimp and crabs in Lake Worth was related to the distribution of vegetative communities, especially one marine grass, Halophila baillonis, found at certain collection stations.

**Phytoplankton**: The productivity of phytoplankton is the basis of the estuarine food chain. Its maintenance is essential to populations of fish and crustacean larvae. Samples taken for the EPA in 1971, though sparse, indicated that concentrations of phytoplankton could exceed 150,000 cells per milliliter. Although phytoplankton are essential components of the food chain, phytoplankton blooms occurring in the past may have been responsible for periodic fish kills. One documented case of this occurred in November, 1972, when Gymnodinium breve, known as the "red tide" organism, became established in the lake and produced massive mortalities among fish and shellfish (this event was explained in an article in *Limnology and Oceanography* 29 (3): 481-486 by Murphy, et. at.).

**Marine Vegetation**: Forty-three species of macroalgae have been documented in Lake Worth. Of these, only one marine grass, Halophila baillonis, was collected during a mid-1970 investigation. This grass formed small beds at collection stations near the center of the lake and more extensive beds near the inlet, where salinities were the highest.

A 1983 DNR report identified only one substantial seagrass bed within Lake Worth. This was adjacent to the McArthur State Recreation Area, north of Lake Worth Inlet, and consisted primarily of Halodule and Thalassia. It was reported that during ground truth efforts, the Thalassia was determined to be highly reproductive, a fact deemed important for future restoration efforts.

Sources: Assessment of Fisheries Habitat: Charlotte Harbor and Lake Worth, Florida, Barbara A. Harris, et. al., Florida Department of Natural Resources, Bureau of Marine Research, St. Petersburg, Florida; November 1983.

**Intracoastal Waterway**

The Intracoastal Waterway is characterized as a mid-salinity estuarine habitat. The aquatic organisms found in this habitat are listed in the following Table 5.7.

**Table 5.7**
**AQUATIC ORGANISMS OF THE INTRACOASTAL WATERWAY**

| | Spawning Ground | Nursery | Commercial Harvesting | Adult Concentration | Sport Fishing |
|---|---|---|---|---|---|
| **Invertebrates** | | | | | |
| Blue Crab | | X | X | X | X |
| White Shrimp | | X | | | |
| Brown Shrimp | | X | | | |
| Pink Shrimp | | X | | | |
| **Fish** | | | | | |
| Tarpon | | X | | | X |
| Sea Catfish | | X | | X | |
| Sheepshead | | | | | X |
| Spotted Seatrout | | X | X | X | X |
| Weakfish | | X | X | X | X |
| Spot | | X | X | X | X |
| Atlantic Croaker | | X | X | X | X |
| Southern Kingfish | | X | X | X | X |
| Northern Kingfish | | X | X | X | X |
| Gulf Kingfish | | X | X | X | X |
| Red Drum | | X | X | X | X |
| Star Drum | | X | X | X | X |
| Black Drum | X | X | X | X | X |
| Bluefish | | X | | | |
| Mullet | X | X | X | X | X |
| Pinfish | | X | | | X |
| Pigfish | | X | | | X |
| White Grunt | | X | | X | X |
| Ladyfish | | X | | | X |
| Snook | | | | | X |
| Jack | | | | | X |
| Snapper | | X | | | |
| Grouper | | X | | | |

Source: Atlantic Coast Ecological Survey, U.S. Fish and Wildlife Service, West Palm Beach, 1980.

## ENDANGERED AND THREATENED SPECIES AND SPECIES OF SPECIAL CONCERN

Endangered and threatened species and species of special concern that occur along the shorelines, in nearshore and offshore areas, and within Lake Worth and the Intracoastal Waterway, have been identified by the U.S. Fish and Wildlife Service (FWS), National Marine Fisheries Service (NMFS) and the Florida Game and Freshwater Fish Commission (FWFC).

These species are identified in the following table by species, designated status as Endangered (E), Threatened (T) or Species of Special Concern (SSC), and agency of jurisdiction.

Table 5.8
ENDANGERED AND THREATENED SPECIES
AND SPECIES OF SPECIAL CONCERN

| Species | Status | Agency |
|---|---|---|
| **Atlantic Marine Turtles** | | |
| Loggerhead (Caretta caretta) | T | FWS, NMFS |
| Green (Chelonia mydas) | E | FWS, NMFS |
| Leatherback (Dermodhelys coriacea) | E | FWS, NMFS |
| Hawksbill (Eretmochelys imbricata) | E | FWS, NMFS |
| Kemp's ridley (Lepidochelys kempii) | E | FWS, NMFS |
| **Atlantic/Intracoastal Marine Mammals** | | |
| Florida Manatee (Trichecus manatus) | E | FWS |
| Finback whale (Balaenoptera physalus) | E | NMFS |
| Humpback whale (Megaptera novaengliae) | E | NMFS |
| Right whale (Eubalaena glacialis) | E | NMFS |
| Sea whale (Balaenoptera borealis) | E | NMFS |
| Sperm whale (Physeter catadon) | E | NMFS |
| **Coastal Wading and Shore Birds** | | |
| Peregrine falcon (Falco peregrinus) | E | FWFC |
| Least tern (Sterna albifrons) | T | FWFC |
| Brown pelican (pelecanus occidentalis) | T | FWFC |
| American oystercatcher (Haematopus palliatus) | T | FWFC |
| Osprey (Pandion haliaetus) | T | FWFC |
| Great white heron (Ardea herodias occidentalis) | SSC | FWFC |
| Royal tern (Sterna maxima) | SSC | FWFC |
| Great (common) egret (Casmerodius albus) | SSC | FWFC |
| Black skimmer (Rynchops niger) | SSC | FWFC |

**E = Endangered:** A species, subspecies, or isolated population so limited or depleted in number, or so restricted in range or habitat due to any man-made or natural factors, that it is in imminent danger of extinction or extirpation from the state, or may attain such a status within the immediate future.

**T = Threatened:** A species, subspecies, or isolated population that is so acutely vulnerable to environmental alteration, or declining in number at a rapid rate, or whose range or habitat is declining in area at a rapid rate, that as a consequence it is destined or very likely to become an endangered species within the foreseeable future.

**SSC = Species of Special Concern:** A species, subspecies, or isolated population that: warrants special protection, recognition, or consideration because it has an inherent significant vulnerability to habitat modification, environmental alteration, human disturbance, or substantial human exploitation that may, in the foreseeable future, result in its becoming a threatened species; may already meet certain criteria for designation as a threatened species but for which conclusive data are limited or lacking; may occupy such an unusually vital and essential ecological niche that should it decline significantly in numbers or distribution other species would be adversely affected to a significant degree; or has not sufficiently recovered from past population depletion.

Sources: Official List of Endangered and Potentially Endangered Fauna and Flora in Florida, Florida Game and Freshwater Fish Commission, July 1987.

U.S. Fish and Wildlife Service, Marine Fisheries Service, cited in U.S. Army Corps of Engineers.

General Design Memorandum and Environmental Impact Statement, Erosion Control Projects for Palm Beach County, U.S. Army Corps of Engineers, April 1987.

Florida Natural Areas Inventory, Florida Department of Natural Resources and the Nature Conservancy. 1981.

## SPECIAL HABITATS OF ENDANGERED AND THREATENED SPECIES

### Marine Turtle Nesting Areas

The Palm Beach County ocean shoreline is a major nesting area for sea turtles. The county ranked third in the state, with 298 nests per survey area and fifth in the state with an average of 6.53 turtles per mile of beach. The sea turtle nesting season is from late April through September. The Town, cooperating with Boynton Beach locates sea turtle nests and moves endangered nests if necessary.

### West Indian (Florida) Manatee Critical Habitat

A portion of the Lake Worth basin was designated by the State in 1978 as a West Indian (Florida) Manatee Sanctuary. The manatee inhabits shallow coastal waters, bays, lagoons, estuaries, rivers and lakes throughout its range. The sanctuary included the adjacent waters and waters one to one and one-half miles from the Riviera Beach Florida Power and Electric Plant discharge area. Collisions of boats and barges with manatees has historically been one of the major causes of manatee injury and death. Within the manatee sanctuary, boating speed limits are posted in order to protect the manatee population from injury.

The entirety of the Lake Worth lagoon has now been designated a critical habitat of the West Indian (Florida) Manatee. Although original population levels of manatees in Florida are unknown, studies indicate that peninsular Florida has been the center of the manatee's range in the continental United States. The total number of manatees in the United States has been estimated at 1,000 animals. An aerial survey of Florida habitats in the winter of 1976 indicated a maximum count of 800 animals, a significantly large proportion of the total number estimated to exist in this country.

## IMPACT OF FUTURE LAND USES ON NATURAL RESOURCES

Because no significant development or redevelopment is projected to occur within Ocean Ridge during the planning period, no additional adverse impact on natural resources is expected.

## REGIONAL HURRICANE HAZARDS

The lower southeast Florida region has been identified by the National Oceanic and Atmospheric Administration as one of the most hurricane-vulnerable areas of the country. Hurricane-strength storms have impacted this region about once every three years since 1900. The hurricane season lasts from June to November, with most events occurring during the months of September and October. Based on the historical record, it has been determined that Category 2 and 3 intensity storms are the most likely to strike the lower southeast Florida coast. Of the two, Category 3 storms are the most damaging. The intensity of storms is commonly measured according to the Saffir/Simpson Hurricane Scale.

## SAFFIR/SIMPSON HURRICANE SCALE

The Saffir/Simpson Hurricane scale is utilized by the National Weather Service to provide an initial and continuing assessment of potential wind and storm-surge damage from a hurricane in progress. The scale numbers are first made available when a hurricane is within 72 hours of landfall and are revised regularly based on new observations. The categories of the scale are based on maximum sustained winds in miles per hour as follows:

| | |
|---|---|
| Category 1 | 74 to 95 mph |
| Category 2 | 96 to 110 mph |
| Category 3 | 111 to 130 mph |
| Category 4 | 131 to 155 mph |
| Category 5 | above 155 mph |

### Category 3 Intensity Storms

According to the Saffir/Simpson Scale, Category 3 storms are characterized by winds of 111 to 130 miles per hour. Potential damage to be expected from high winds and flooding during a Category 3 storm includes:

Foliage torn from trees; large trees blown down;
Poorly constructed signs blown down;
Damage to roofing materials; window and door damage;
Structural damage to small buildings;
Mobile homes destroyed;
Serious flooding at coast;
Smaller structures near coast destroyed; larger structures near coast damaged by waves and floating debris; and
Low-lying escape routes blocked by rising water three to five hours prior to landfall.

## OFFICIAL HURRICANE WARNING SYSTEM

The official warning process for an approaching hurricane begins with issuance of a hurricane watch by the National Hurricane Center. A hurricane watch alerts residents of a specified area to the potential of a hurricane and advises them to monitor hurricane advisories, which are issued every six hours.

The second step in the warning process is issuance of a hurricane warning for a large geographical area. A hurricane warning is issued when a hurricane is expected to make landfall within 24 hours with sustained winds of 74 miles per hour or more and/or dangerously high water or a combination of high water and high waves.

### Hurricane Evacuation Order

The legal authority for ordering and coordinating evacuations in the State of Florida resides with the Governor. The Governor has delegated this authority to local governments. However, an order issued by a higher level of government takes precedence.

## LOCAL VULNERABILITY ZONE

Located on a coastal barrier island, the entire Town of Ocean Ridge is in a "hurricane vulnerability zone" as identified as requiring evacuation in a or 100-year storm (1983 Southeast Florida Hurricane Evacuation Study).

## LOCAL HURRICANE EVACUATION PLANS

### Palm Beach County Evacuation Plan

The Palm Beach County Evacuation Plan is part of the County's Peacetime Emergency Plan, administered by the Division of Emergency Management. Under the current Hurricane Evacuation Plan, an Emergency Operations Center is activated upon issuance of a hurricane warning by the National Hurricane Center.

### Ocean Ridge Hurricane Evacuation Plan

The Town's preparedness in the event of a hurricane or other natural or civil disaster is maintained at a high level, as set forth in the Town of Ocean Ridge Civil Defense Emergency Operations Plan. The plan sets forth emergency procedures to be commenced upon issuance of a hurricane warning. The Town is provided with support services through established agreements between various agencies such as the Red Cross, Civil Air Patrol, Palm Beach County Public Schools, and the Palm Beach County Division of Emergency Management.

## Hurricane Evacuation Zones

The Town of Ocean Ridge falls within two evacuation zones. These zones and their locations are shown in the following table:

Table 5.9
TRAFFIC EVACUATION ZONES

| Zone | Location |
|---|---|
| 12 | South of South Lake Worth Inlet, east of U.S. 1, north of Ocean Avenue, west of Atlantic Ocean |
| 13 | South of Ocean Avenue, east of U.S. 1, north of Gulf Stream Golf Course, west of Atlantic Ocean |

Sources: Lower Southeast Florida Hurricane Evacuation Study, Post, Buckley, Schuh and Jernigan, Inc., and U.S. Army Corps of Engineers, Jacksonville District, June 1983.

Palm Beach County Peacetime Emergency Plan, Palm Beach County Division of Emergency Management, 1985.

## Number of Persons Requiring Evacuation

In the event of landfall of a hurricane, much of the Palm Beach County coastal area would be required to evacuate. It has been determined that in the event of landfall of a storm of Category 1 through 3 , some 111,300 persons in the County could be required to evacuate. Total County evacuees in a storm of Category 4 or 5 could total 120,900 persons.

For each evacuation zone within the Town of Ocean Ridge, the total number of persons requiring evacuation in the event of an evacuation order, and the total number of dwelling units in each zone are outlined in the following table:

Table 5.10
TRAFFIC EVACUATION ZONAL DATA

| Zone | Population* | Dwelling Units | Mobile Homes |
|---|---|---|---|
| 12 | 1,490 | 908 | 113 |
| 13 | 6,180 | 3,776 | 644 |

*Ocean Ridge is the dividing line between these two zones which extend north and south of the Town's borders; all 1,506 people in Ocean Ridge (1986) are in the evacuation area.

Sources: Lower Southeast Florida Hurricane Evacuation Study, Post, Buckley, Schuh and Jernigan, Inc., and U.S. Army Corps of Engineers, Jacksonville District, June 1983.

Palm Beach County Peacetime Emergency Plan, Palm Beach County Division of Emergency Management, 1985.

### Number of Persons Requiring Public Hurricane Shelter

The number of persons requiring public hurricane shelter varies depending upon the preferences of evacuees and their opportunities to reach their desired destinations. In a study of the behavioral patterns of populations at risk, reported in the Corps of Engineers' Technical Data Report, it was found that approximately 20 to 25 percent of the respondents who said they would evacuate in a hurricane emergency stated that they would seek public Red Cross Shelter. This means about 750 people from Ocean Ridge. Other respondents said they would seek shelter with friends or in a hotel or motel, or would not evacuate.

### Number of Red Cross Hurricane Shelter Spaces Available

Red Cross hurricane shelters Number 16, 23, and 25 are assigned to the evacuation zones of Ocean Ridge. There are no shelters located within Evacuation Zones numbered 1 to 23, which are Surge Vulnerable Zones. The locations of shelters assigned to the Town are indicated on Figure 5.2. Their addresses and capacities are shown in the following table:

**Table 5.11**
**RED CROSS SHELTERS**

| Zone | Shelter | Capacity | Other Zones Served |
|---|---|---|---|
| 12 | #16 Poinciana Elementary School 140 NW 1st Street Boynton Beach | 200 | None |
| 13 | #23 Atlantic High School 2501 Seacrest Boulevard Delray Beach | 405 | None |
| 13 | #25 Pompey Park Recreation Center 240 NW 10th Avenue Delray Beach | 220 | 14 |

Note: Red Cross public shelter assignments are subject to change. Changes are announced by the Red Cross when appropriate.

Sources: Lower Southeast Florida Hurricane Evacuation Study, Post, Buckley, Schuh and Jernigan, Inc., and U.S. Army Corps of Engineers, Jacksonville District, June 1983.

Palm Beach County Peacetime Emergency Plan, Palm Beach County Division of Emergency Management, 1985.

It should be noted that shelter #25 serves more than one evacuation zone. However, based on a capacity formula of 40 square feet per evacuee, it has been determined that none of these shelters would experience a deficit in the event of the evacuation of the high hazard area.

## Evacuation Routes

Egress from the island is via either the Ocean Avenue Bridge or the Beachway Drive (S.E. 15th Avenue). The evacuation routes assigned to Zones 12 and 13 are identified in the following table:

Table 5.12
TRAFFIC EVACUATION ROUTES

| Zone | Evacuation Route |
|---|---|
| 12 | Ocean Avenue west to Seacrest Boulevard; north to Shelter Number 16, Poinciana Elementary School, at 1400 N.W. 1st Street, Boynton Beach |
| 13 | Beachway Drive/S.E. 15th Avenue west to Seacrest Boulevard; south to Shelter Number 23, Atlantic High School, at 2501 Seacrest Boulevard, Delray Beach |
| 13 | Beachway Drive/S.E. 15th Avenue west to Interstate 95; south to Atlantic Avenue; east to N.W. 10th Avenue; north to Shelter Number 25, Pompey Park Recreation Center, at 240 N.W. 10th Avenue, Delray Beach |

Sources: Lower Southeast Florida Hurricane Evacuation Study, Post, Buckley, Schuh and Jernigan, Inc., and U.S. Army Corps of Engineers, Jacksonville District, June 1983.

Palm Beach County Peacetime Emergency Plan, Palm Beach County Division of Emergency Management, 1985.

### Hazard Constraints on Evacuation Routes

Those segments of regional evacuation routes that may be expected to experience gale force winds or surge inundation prior to landfall have been identified. While only one roadway point in the Palm Beach County evacuation network has been identified as likely to experience surge inundation prior to landfall, many points are expected to experience gale force winds at some time prior to landfall for storm events of all categories. These include Ocean Boulevard at Ocean Ridge, which is expected to experience gale force winds several hours prior to eye landfall during storm events. In the event of a Category 1 to 3 storm, gale force winds could occur at Ocean Boulevard 6.5 to 9.5 hours prior to landfall. In the event of a Category 4 to 5 storm, gale force winds could occur 10.5 to 11.5 hours prior to landfall.

### Transportation Constraints on Evacuation Routes

Roadway segments of the regional evacuation network that would be most critical during a hurricane evacuation in terms of having the greatest travel demand relative to their ability to handle a certain volume of traffic per hour have been identified. The evacuation routes for Ocean Ridge zones have not been determined to be critical links in the regional evacuation network.

However, both Beachway Drive and Ocean Avenue cross the Intracoastal Waterway by means of drawbridges. During evacuation special arrangements are made for raising and lowering of the bridges to facilitate the flow of boat traffic and to accommodate evacuation from the island. When winds reach a certain velocity, the drawbridges are locked in a down position.

### Evacuation Clearance Time

Clearance time, is the time required to clear from the roadways all vehicles evacuating in response to a hurricane situation; it can be calculated as the sum of the following:

Mobilization time, the time necessary for evacuees to secure their homes and prepare to leave;

Travel time, the time spent by evacuees traveling along the road network; and

Queuing delay time, delay time due to traffic congestion during evacuation.

## Evacuation Order Time

Evacuation order time is the time in hours prior to hurricane eye landfall by which an evacuation order must be issued in order to allow all evacuees to reach their chosen destinations. In the case of Ocean Ridge, this time is 13.5 to 21.0 hours, depending on the severity of the storm. Determining the appropriate time to issue an evacuation order involves not only calculation of total evacuation time, or clearance time, but also consideration of the following:

Pre-evacuation order time, the time prior to an evacuation order during which some evacuees have already entered the road network; and

Pre-landfall hazards time, the time immediately prior to landfall when evacuation is dangerous because of gale force winds.

The Palm Beach County Hurricane Evacuation Plan provides a mechanical "Evacuation Order Time Calculator" and an Implementation Guide by which the appropriate evacuation order time for a given storm scenario can be determined. The first step in calculating the evacuation order time is evaluation of the storm's path, wind velocity, forward speed and maximum wind radius. Then the time concepts described above are calculated, with modifications as necessary. The calculator also provides "Action Guides" to aid public officials in the appropriate timing of actions that must be taken prior to issuance of an evacuation order.

## Special Needs of the Elderly and Handicapped

The large elderly and disabled population residing in this region presents special problems in that these residents do not always receive preparedness instructions because of hearing or other disabilities. Furthermore, they may be unable because of physical limitations to effect evacuation within the required amount of time.

Local disaster preparedness agencies are required by Section 252.355, Florida Statutes, to provide for voluntary registration of disabled citizens who require special assistance for evacuation. Accordingly, the Town of Ocean Ridge cooperates with and assists the Palm Beach County program for early evacuation of the disabled.

### Local Measures to Maintain or Reduce Evacuation Times

The Treasure Coast Regional Planning Council and the Palm Beach County Division of Emergency Management recommend early evacuation of the low-lying barrier islands such as Ocean Ridge in the event of a storm event. The Town's policy is to urge evacuation of island residents upon issuance of a hurricane warning for the area by the National Weather Service. By evacuating at-risk populations (elderly and handicapped) early, the Town of Ocean Ridge can most effectively reduce its local evacuation times and contribute to the successful evacuation of those who are at risk. However, there are no nursing homes or hospitals.

There are no physical constraints on vehicular evacuation so the only practical way to minimize evacuation time is to avoid significant housing unit increases in the Town.

### Projected Impact of Future Population Density

The projected impact of the future population density of the Town is minimal, since the Town's projected population growth is relatively low. The additional persons who will be at risk and required to evacuate in the future should not add significantly to evacuation times.

## POST-DISASTER REDEVELOPMENT

### Measures to Reduce Exposure to Hazards

The Treasure Coast Regional Planning Council sets forth, in its Hurricane Planning Contingency Study, a Hurricane Hazard Mitigation Policy Plan for the Prevention of Future Loss due to hurricane damage.

The recommended actions applicable to Ocean Ridge include relocation of damaged housing in the V8 flood zone on Figure 6.3 i.e. the area most vulnerable to storm surge.

### Structures with History of Repeated Storm Damage

There are no private or public structures with a history of repeated storm damage within the Town of Ocean Ridge. This conclusion is based on the absence of Town records relating to federal public assistance to property owners due to hurricane storm damage. However, there are a few houses in coastal high hazard area.

### Infrastructure in Coastal High Hazard Areas

Except for a very small area adjacent to the County park, no infrastructure is located within the storm surge or high hazard area.

### Growth Management and Hazard Mitigation Techniques

The Treasure Coast Regional Planning Council recommends a number of applicable growth management tools that may be utilized by local governments to promote hazard mitigation. These are mostly applicable to developing communities rather than Ocean Ridge.

## ATLANTIC BEACH AND DUNE SYSTEMS

The Atlantic beach and dune systems of Ocean Ridge extend for approximately 13,600 feet from a point about 200 feet south of the South Lake Worth Inlet.

### Condition of Beaches

The beaches in the northern portions of Ocean Ridge are experiencing severe erosion problems. These areas are characterized by several of the primary indicators of beach erosion, including long-term shoreline or bluffline recession, erosion of coastal sediments, exposure of nearshore rock formations and steepening of the offshore slope. The erection of a large number of shoreline protection structures along the northern beaches in an effort to protect upland structures from damage during storms also reflects the severity of erosion problems.

### Condition of Dunes

The dune systems adjacent to the most eroded beaches of Ocean Ridge have been adversely impacted by the erection of seawalls and bulkheads, which largely replace dunes and dune vegetation both physically and functionally. Undisturbed dune systems serve as a buffer for upland properties. In areas where bulkheads and seawalls have been constructed, native dune vegetation is disturbed and in some cases destroyed. Another effect of this disturbance is to open the dunes to invasion by exotic species, such as Australian pines, which spread rapidly and discourage revegetation by native species.

The dune systems in the southern portion of the Town were severely disturbed by a 1985 storm and the vegetation is just beginning to return and stabilize. These dunes are adjacent to undeveloped beachfront properties.

### Historic Shoreline Changes in Palm Beach County

The major forces in the shaping of the Palm Beach County coastline are the combined effects of the wind, waves, tides and sea level rise. During storm conditions, these forces increase and pose a threat to structures and property bordering beaches of insufficient width and slope to provide natural protection. In addition, coastal currents and inlet dynamics exacerbate the erosion problem.

Comparison of Palm Beach County beach and offshore surveys between the years 1929 and 1977 show substantial recession and advance of the shoreline, with advance occurring primarily as a result of impoundment north of the County's four inlets and as a result of local beach nourishment projects.

### Effect of Inlet Dynamics and Inlet Protection Structures

Trends in accretion and erosion of the Palm Beach County shoreline have been profoundly affected by inlet dynamics and the structures erected to stabilize inlet locations. Each of the County's four inlets have been stabilized and improved in order to support navigation and circulation. The structures erected in this effort have had a major impact on adjacent shorelines both to the north and south of the inlets because of their interruption of the natural littoral drift of sands. Inlet protection structures generally increase accretion of beaches on the north side and erosion of beaches on the south side of the inlets. The State estimates that 80 to 85 percent of the erosion problems are directly due to the inlet.

Jetties and other structures erected to stabilize inlets act as a barrier to the natural littoral drift of sand, which is normally distributed evenly along the coast by means of a sandbar. In Palm Beach County, the dominate littoral drift is to the south. The effect of inlet protection structures is the impoundment of sand on the north side of the inlet and a corresponding loss of sand on the south side. An inlet sandbar system creates an ebb-tide "shadow" effect around the inlet, creating littoral drift towards the inlet on both north and south sides.

The impoundment of sand on the north side of an inlet deprives the south side of the inlet of its normal share. The critical problem area is the reach directly downdrift of the inlet, which may extend 3,000 feet or more to the south. The limit of this "shadow" zone is often determined by the location where the inlet sand bar reconnects to the shore. The zone is characterized by a nodal point from which the direction of net littoral drift is outward, creating an area of beach that continuously loses sand. Thus, downdrift beaches are always in a state of sediment deficit.

## TRENDS IN EROSION AND ACCRETION OF OCEAN RIDGE BEACHES

The Ocean Ridge beach area immediately south of the South Lake Worth Inlet was critically eroded in 1929 due to construction of the inlet, in addition to the effects of the severe storms of August and September 1928. Studies of beach profiles show that there has been some accretion of this area since that time, but comparisons of 1955 and 1979 profiles show evidence of erosion. In addition, 1974 and 1979 comparisons indicate beach erosion during that period.

The erosion of 1979 is less severe than that of 1929, but greater development of the shoreline has brought an increased need to protect upland properties through beach erosion control. A storm impact analysis of the segment of beach between the South Lake Worth Inlet and the Boca Raton Inlet indicated that 5.4 miles of this reach would be affected by a ten-year storm.

### South Lake Worth Inlet

The South Lake Worth Inlet, commonly known as the "Boynton Inlet", is a man-made inlet that was dredged through the barrier island in 1927. While the inlet now serves recreational boaters desiring access to the ocean from Lake Worth, it's original purpose was to increase the circulation of the southern end of the lagoon and thereby reduce stagnation and pollution problems. In order to stabilize the location of the inlet, two jetties of concrete-capped steel pile revetment were constructed on the north and south sides of the inlet. Originally each jetty was 1,200 feet long and extended 400 feet into the ocean.

As in the case of all the County's inlets, the South Lake Worth Inlet jetties interrupted the natural drift of sand to the south and the beach there experienced significant erosion. In 1936, the jetties' elevations were increased. The south jetty was increased from five feet to nine feet above mean low water. The north jetty was increased from five feet to 12 feet above mean low water. Thus its capacity for sand impoundment was increased and the erosion problem to the south was aggravated. The jetty was extended in 1965, increasing the erosion. See also problem analysis in Future Land Use Element.

### South Lake Worth Inlet Sand Transfer Operation

In order to mitigate the effects of the inlet on littoral drift, a fixed suction dredging plant was installed on the north jetty to transfer sand to the south side. This operation reduced the impoundment of sand on the north side of the inlet and helped reduce erosion to the south. However, the plant was not in operation from 1942 to 1946 because of wartime fuel shortages. In 1948, the plant's capacity was enlarged and in 1966-1967 the plant was relocated when construction additions were made to the jetties.

From 1937 to 1976, the sand pumping plant transferred minimal amounts of sand to the eroded beach on the south side of the inlet. In addition, material obtained during inlet maintenance dredging operations has been placed on the eroded areas. However, these renourishment efforts have not been effective in preventing erosion or replicating nature. One reason is the location of the outfall of the transfer plant; much of the material does not move into the downdrift littoral cell. Also, flood tidal shoal dredging was stopped in 1972. The area immediately south of the inlet remains severely eroded.

### Ocean Ridge Shore Protection Structures

Along the Ocean Ridge beach from about 300 feet south of the South Lake Worth Inlet to Corrine Street, 36 seawalls or bulkheads and eight groins have been erected in the effort to protect coastal properties and shorelines. The estimated value of these structures, which have a total length of 11,980 feet, is $2,820,000. This estimate assumes replacement value as of 1986.

The following table indicates the number, type and length of the Ocean Ridge shore protection structures.

**Table 5.13**
**OCEAN RIDGE SHORE PROTECTION STRUCTURES**

| Number | Type | Linear Feet |
|---|---|---|
| **Seawalls and Bulkheads** | | |
| 5 | Concrete block | 625 |
| 1 | Concrete block, capped | 500 |
| 16 | Concrete sheet pile, capped | 5,275 |
| 4 | Revetment (riprap stone) | 1,125 |
| 5 | Steel sheet pile, capped | 2,545 |
| 5 | Wood or timber wall | 1,025 |
| **Groins** | | |
| 8 | Concrete | 885 |

Source: U.S. Army Corps of Engineers General Design Memorandum for Beach Erosion Control Projects for Palm Beach County, April 1987.

## BEACH EROSION CONTROL PROJECTS

### Palm Beach County Authorized Plans

The Palm Beach County Beach Erosion Board has recommended adoption of two erosion control projects for Palm Beach County. In 1958, the County authorized restoration and preservation of beaches between Lake Worth Inlet and South Lake Worth Inlet. In 1962, a project for the remainder of the County's shorelines was authorized, including operation of the sand-transfer plant at South Lake Worth Inlet. The general aim of the authorized plans was restoration of a protective beach to a general width of 100 feet with a berm elevation of 10 feet above mean low water.

In 1974, Palm Beach County issued a "Concept Development Report" that cited the two authorized plans as a basis and authorization to proceed with construction of beach erosion control projects, with subsequent reimbursement of the Federal share of the costs. Through a contract with the Federal government dated January 23, 1977, the County agreed to the items of local cooperation in executing proposed erosion control plans. Under the terms of the agreement, the Board of County Commissioners is the local sponsor. In October, 1985, the County reaffirmed its commitment to stopping erosion.

### Corps of Engineers' Post-Authorization Studies for Palm Beach County Erosion Control Projects

In order to update and reformulate the County's erosion control projects on the basis of current shoreline conditions and current Federal and State views and standards, post-authorization studies were undertaken by the Corps of Engineers. In March of 1985, the Corps issued a draft General Design Memorandum (GDM) with Environmental Impact Statement (EIS) for Palm Beach County beach erosion control projects. The GDM proposed a number of changes from the County's plans, including cost sharing provisions and sources of borrow material for renourishment. The document was distributed widely to Federal, State and local governments and agencies for comment. In April 1987, a final General Design Memorandum and Environmental Impact Statement were issued, along with copies of the comments received.

### Federal Cost Sharing in Beach Restoration Projects

Changes in the laws of the State have made possible increased Federal participation in beach erosion control projects for the extensive reaches of privately owned shoreline in Florida. There is no authority for Federal participation in beach erosion control projects of privately owned shoreline unless there is significant public benefit. In 1970, in recognition of the difficulties posed by this restriction, the State Legislature made possible the conversion of private shorefront to public beach in order to qualify for maximum Federal cost-sharing.

### 1970 Erosion Control Line Law

The Erosion Control Line law of 1970 provides for the boundary lines of the state bordering on the Atlantic Ocean and Gulf of Mexico and the bays, lagoons and other tidal reaches of the oceans and the adjacent upland property to be determined and fixed pursuant to beach restoration projects. Usually the Erosion Control Line is at the existing mean high water line or along the bulkhead line of severely eroded beaches. Under the law, design beach fill placed seaward of the Erosion Control Line remains state-owned and, with adequate public access, can qualify as a public shoreline. Riparian rights of upland owners are reserved under the law, except that proportions of private property no longer increase or decrease based on natural or artificial erosion or accretion.

### Increases in Federal Cost Sharing

Under the Corps' recommended GDM, the percentage of Federal responsibilities increased significantly from the original authorized plans. The original authorized plans of 1958 and 1962 proposed a Federal share of 4.35 percent of total costs. The present estimate is that the Federal share of total initial cost of all of the recommended projects would be $24,562,000 or 42.3 percent, based on present shorefront ownership, access and parking. The Federal government would also provide 42.3 percent of the cost of periodic beach nourishment.

## CORPS OF ENGINEERS PROPOSED BEACH EROSION CONTROL PROJECT FOR PALM BEACH COUNTY

### Considered Erosion Control Alternatives

A variety of structural and nonstructural beach erosion control measures were considered by the Corps of Engineers study. Structural alternatives considered included installation of revetments, offshore breakwaters, groins, artificial rock outcroppings, seawalls, dune vegetation, sand transfer plants, and beach renourishment.

### Selected Alternative: Beach Renourishment

Based on benefit/cost ratios and environmental considerations, the Corps selected beach nourishment and periodic renourishment as the basis of its recommended project for Palm Beach County. Of 12 considered reaches, comprising 23.67 miles of the Palm Beach County shoreline, nine reaches were determined to require initial restoration, with the other three requiring periodic renourishment. The Corps has identified sand sources located 1,000 to 3,000 feet offshore of each proposed reach for the proposed nourishment projects.

### Renourishment Project Design Criteria

The Corps' renourishment project is intended to serve the primary purpose of protecting upland real estate and structures from normal and to some extent from low frequency storm events. In order to meet this purpose, design criteria for berm elevations, beach width, and beach slope were adopted.

The projects as proposed are designed to provide a berm elevation of ten feet above mean low water, or nine feet above Mean Sea Level (MSL), and a beach width of 100 feet seaward of the mean high water line. Since fill material would be comparable to existing beach material, the plan assumes that waves would shape the slope of the beach fill for each reach approximately parallel to the face of the existing beach.

### Ocean Ridge Beach Erosion Control Projects

Three beach erosion control projects have been proposed for Ocean Ridge by Palm Beach County and the Corps of Engineers. The most recent plan proposed is set forth in the 1987 Corps of Engineers Final GDM for Palm Beach County.

The 1985 Corps of Engineers proposed project for Ocean Ridge, presented in the 1985 Draft GDM for Palm Beach County, differed significantly from the Palm Beach County authorized plan. The differences between the County and Corps plans are shown in Table 5.14. In a letter of September 11, 1985, the Town of Ocean Ridge endorsed the 1985 Corps plan.

**Table 5.14**
**Comparison of Palm Beach County and 1985 Corps of Engineers Plans for Ocean Ridge Erosion Control**

| | County Plan | Corps Plan |
|---|---|---|
| Project Length | 1.7 miles | 1.6 miles |
| Additional Beach Width | 50 feet | 25 feet |
| Volume | 743,200 cubic yards | 580,000 cubic yards |
| Erosion Control Structure | 3,000 foot breakwater | None |
| Vegetation | Remove Exotics | Recommends Local Native Plants and Overwalks |
| Environmental Mitigation | Breakwater | None<br>Artificial Reef |

Source: Coastal Planning and Engineering, Inc., in Letter dated August 15, 1985 from H. D. Kahlert, P.E., Palm Beach County Engineer to Palm Beach County Board of Commissioners.

### 1987 Corps of Engineers Project for Ocean Ridge Reach

The Ocean Ridge Reach, Reach 8 of the 12 segments included in the 1987 Corps projects, extends south from a point about 200 feet south of the South Lake Worth Inlet south jetty for about 1.6 miles to Corrine Street. Beach profile comparisons indicated severe erosion in the "shadow" zone immediately south of the South Lake Worth Inlet. As in the case of all Palm Beach County projects, beach nourishment was the selected alternative. The design criteria for the Ocean Ridge project is the same as for other county projects.

### Ocean Ridge Beach Nourishment Volumes

The estimated volume of material required for initial restoration of the Ocean Ridge Reach (Reach 8) was determined to be 770,000 cubic yards, including initial fill of 253,000 cubic yards advance nourishment and overfill. The average annual replenishment requirement, based on average annual loss of material, was estimated at 62,000 cubic yards, including overfill. The eight-year supply of nourishment would total 501,000 cubic yards. Fill material would be obtained from an identified off-shore borrow area.

### Changes from 1985 Corps of Engineers Plan

The 1987 Corps of Engineers project for Ocean Ridge Reach proposed two changes from the 1985 plan outlined in Table 5.14. While the project length remained the same, the additional beach width was increased from 25 feet to the a 50-foot width proposed in the County plan. Accordingly, the volume of beach fill was increased from 580,000 cubic yards to 770,000 cubic yards, somewhat more than the proposed County Plan.

### Local Erosion Control Efforts

The most successful beach erosion control project for the eroded beaches of Ocean Ridge would include local erosion control projects, including upgrading of the South Lake Worth Inlet Sand Transfer Plant and dune revegetation, in addition to the beach nourishment alternative of the Corps of Engineers' plan.

### Upgrading of Sand Transfer Plant

According to the Corps of Engineers' findings, upgrading of the South Lake Worth Sand Transfer Plant could help mitigate the erosion of the beach south of the inlet. Increasing plant capacity and extending the outfall pipeline beyond the shadow influence of the inlet could help restore littoral drift past the inlet and would be viable from an engineering standpoint.

Modifications of the sand transfer plant would be the responsibility of the South Lake Worth Inlet District and the County. Upgrading of the plant was therefore not considered as part of the Corps' proposed project for Ocean Ridge. The Corps GDM did point out that upgrading of the plant would have to be considered in addition to the beach nourishment alternative.

Source: U. S. Army Corps of Engineers General Design Memorandum for Beach Erosion Control Projects for Palm Beach County, April, 1987.

### Dune Revegetation

Removal of exotics, planting of native dune vegetation, and construction of dune walk-overs could supplement beach nourishment and upgrading of the sand transfer plant. Revegetation of dunes can restore the natural function of dunes in preventing beach erosion and protecting uplands from wind and waves. This alternative was not addressed in the Corps of Engineers GDM, since it is being considered by State and local agencies.

Dune revegetation has been successful at other beaches in Palm Beach County. Species of native dune vegetation that can be used in such projects are shown in Table 5.15. Restored dunes can best be maintained by construction of walk-overs to protect vegetation at beach access points.

Table 5.15
Native Dune Vegetative Species

**Baybean (Canavalia Maritima):** This vine is characterized by its deep root system and unique seed pods.

**Beach Star (Remia Maritima):** This perennial herb is commonly found in the dune systems of eastern Florida and in the Florida Keys.

**Beach Sunflower (Hseliantus Debilis):** This ground cover plant is found on sandy shores on both the eastern and western coasts of the Florida peninsula. It spreads rapidly by means of underground runners and produces bright yellow flowers. Because of its rapid spread and self-seeding characteristics, it is an excellent ground cover for flat exposed beaches.

**Coconut Palm (Cocos Nucifera):** This tree is a naturalized palm which is commonly found in south Florida. It is characterized by a slender sweeping trunk enlarged at the base.

**Puncher Vine (Tribulus Cistoides):** This vine is commonly found in coastal south Florida and produces flowers year-round. It produces sharp, hard seed pods.

**Rattle Box (Crotalaria Pumila):** This herb or partially woody annual is found throughout south Florida on coastal dunes, hammocks and pinelands. It is characterized by its seed pods, which rattle when mature, thus giving the plant its common name.

**Sandspur (Cencrus Spp.):** This low growing grass is characterized by spiny spurs.

**Sea Grape (Coccoloba Unifera):** This species is characterized by its round, glossy leaves. It ranges in size from a shrub to a small tree, depending on locality. On coastal dunes, it grows as a small shrub. As a natural vegetative cover important to the prevention of beach and dune erosion, this species is protected by Chapter 370.41, F.S.

**Sea Oats (Uniola Paniculate):** This perennial plant roots easily and is important to the prevention of beach and dune erosion. Like the Sea Grape, it is protected by State law.

**Sea Pursland (Sesuvium Portulacastrum):** This flowering succulent is commonly found on the coastal dunes of south Florida.

**Seashore Paspalum (Paspalum Vaginatum):** This low growing perennial grass provides a thick cover and is highly salt tolerant.

Source: Palm Beach Shores Draft Comprehensive Plan, 1987.

## MONITORING OF BEACH EROSION CONTROL PROJECT IMPACTS

The Palm Beach County Environmental Resource Management Department is the responsible agency in surveying the condition of the County's beaches and shores and monitoring the impacts of proposed beach erosion control projects. The Department will review each proposed project and make recommendations to the Palm Beach County Board of Commissioners on implementation.

### Potential Biological Impacts of Beach Renourishment

Recommendation for approval and construction of erosion control projects will be based not only upon the amount of erosion evidenced in a given reach of the study area, but also the potential biological impacts of beach renourishment measures.

Potential short-term and long-term impacts associated with beach nourishment proposals include alteration of specific areas, including nearshore and borrowing sites within each proposed renourishment project reach, as a result of dredging activities. Drastic alterations in these areas could create adverse environmental impacts resulting in reduction in fisheries populations and damage or destruction of soft and hard coral reef communities.

The resuspension of silts and clays winnowing from dredged material could continue to produce turbidities after construction. Such turbidities could cause the degradation of water quality and possibly smother or stress organisms such as corals, sponges and polycheates. Turbidities could also reduce the amount of sunlight available to photosynthetic plants that are essential to the functioning of the community food chain.

Proposed beach renourishment projects will be closely monitored and possibly modified, if necessary, in order to address the following specific potential impacts:

1. Burial of nearshore reef systems;

2. Short-term and long-term water quality impacts;

3. Sea turtle nesting impacts;

4. Mechanical damage to patch reefs and deep reefs; and

5. Elimination of infaunal communities in borrow sites.

Sources: Letter, James J. Barry III, Environmental Administrator, Water Pollution Control Division, Palm Beach County Department of Health and Rehabilitative Services, to A.J. Salem, Chief, Planning Division, U.S. Army Corps of Engineers, Jacksonville District, dated July 14, 1987.

Personal contact, Robert Clinger, Palm Beach County Department of Environmental Resource Management, January 1988.

## COASTAL MANAGEMENT ELEMENT
## GOALS, OBJECTIVES AND POLICIES

**Goal 1** **To conserve, manage and sensitively use the environmental assets of Ocean Ridge's coastal zone location.**

**Objective 1.1** *Retain the most of the mangroves, and all of the hardwood hammock and beach dunes resulting in no net loss of public open space vegetative cover and an enhancement of marine resources.*

**Policy 1.1.1** Continue to review development applications to assure adequate on-site drainage retention and vegetative cover preservation (particularly mangroves).

**Policy 1.1.2** Maintain pressure on County officials to protect the coastal hardwood hammock from park or other facility intrusion.

**Policy 1.1.3** Preserve the publicly owned mangrove and hammock areas in a manor that enhances their wildlife habitat and marine nursery functions. However, selective clearance of some new mangrove expansion onto building lots should be authorized with accompanying mitigation and opportunity for transfer of development rights.

**Policy 1.1.4** Monitor and preserve the public beach dune vegetation in southern Ocean Ridge by plantings as necessary.

**Objective 1.2** *Maintain the current estuarine protection policies by permitting no new direct drainage outfalls into the Intracoastal; in the long run, improve the water quality by outfall elimination and possibly public sewer line extension.*

**Policy 1.2.1** Since the entire Intracoastal Waterway frontage is either residentially developed or under a public natural resource protection policy, continue to enforce development code provisions that protect vegetation, control run-off and marina sewage practices.

**Policy 1.2.2** Cooperate with County and State agencies in their efforts to address the water quality of the Intracoastal Waterway by monitoring the private development permit requirements of their agencies.

**Policy 1.2.3** The Town shall continue its investigation of public sewer line feasibility and by 1994, complete a plan for long-term storm sewer outfall alteration.

**Objective 1.3** *Continue the current pattern of shore-line uses, all of which are water-related or dependent or otherwise utilize their waterfront location. With no change in this pattern expected, the criteria requirement is not applicable.*

**Policy 1.3.1** Maintain the zoning and conservation policies whereby all shoreline use is in mangroves (or other environmentally important vegetation), beach, park or residential with boat dock capability.

**Policy 1.3.2** Use the mechanisms outlined in the Intergovernmental Element to coordinate Intracoastal estuary policies with Boynton Beach, the County and Manalapan.

**Objective 1.4** *Achieve more adequate renourishment of beaches to the south of the South Lake Worth Inlet (not measurable because the Town is not responsible although it has used all means possible to push the responsible agencies); otherwise continue to protect the beach and dune system by development code setback requirements.*

**Policy 1.4.1** Continue to urge County State and Inlet District officials to implement the Corps of Engineers plan for increased sand pumping capability at the sand transfer pumping station.

**Policy 1.4.2** Continue to use land use controls to prevent construction that impacts the dune and its vegetation system.

**Objective 1.5** *Preserve both resident and general public access to the beach; it has proved adequate. Measurability shall be no reduction in the pattern of one access point per quarter mile.*

**Policy 1.5.1** Work with City of Boynton Beach and the County to maintain general public parking and access via the two parks.

**Policy 1.5.2** Maintain access points at the end of the street rights-of-way for local pedestrian and bicycle access.

**Goal 2** **To minimize hurricane hazards to humans and property.**

**Objective 2.1** *Continue the current Town policy of avoiding an increase (this is measurable) in infrastructure capacity unless public safety so requires (as in the case of water lines and fire hydrants) in order to direct future population concentrations away from "vulnerability" and in particular, "high-hazard" areas, and thus maintain hurricane evacuation times.*

**Policy 2.1.1** The Town shall not program any infrastructure capacity increase that would induce and subsidize development. This shall not preclude the Town from 1) upgrading its waterlines, 2) installing sanitary sewers if deemed necessary for sanitary/environmental reasons and 3) replacing direct storm sewer outfalls with filtration structures.

**Policy 2.1.2** Maintain the current basic density controls so that the Town will experience only minor new residential development and thereby not jeopardize hurricane evacuation times.

**Policy 2.1.3** As a part of the 1989-1990 development code review process, the Town shall assess its building code, floodplain controls and coastal setback regulations to assure maximum protection of new development from hurricane damage; this shall be done in coordination with similar efforts by the County and the hazard mitigation annex of the County Peacetime Emergency Plan.

**Policy 2.1.4** The Town shall work with the multifamily complex managers to identify those elderly or infirm individuals that may need special assistance early in the hurricane evacuation process in order to facilitate evacuation time.

**Objective 2.2** *By 1992 (the County's target date), the Town shall achieve a post-disaster redevelopment plan.*

**Policy 2.2.1** The Town shall prepare a post-disaster redevelopment plan in concert with the County indicating procedures to prevent rebuilding of structures with damage of 50 percent or greater, a policy for interim repairs prior to a permit, a program of development rights transfer or other mechanisms to prevent reconstruction close to the dune areas, etc.; it shall be based upon Annex XV of the County hurricane plan

**Objective 2.3** *Preserve the two historic houses in their present form.*

**Policy 2.3.1** Using the two historic North Ocean Boulevard houses cited in the Data Section as prototypes, the other 12 houses shall be inventoried. The State's Palm Beach County historic preservation specialist shall assist the Town in developing standards to use as a basis for the Development Code provisions that shall require special review of renovation or demolition permits for significant houses.

**Objective 2.4** *Maintain a future Level of Service Standards (through a concurrency management system to be adopted by February 1990) that is commensurate with what is specified in each element for the Town as a whole.*

**Policy 2.4.1** Achieve the level of service standards as contained in the Traffic Circulation and Infrastructure Elements relative to roadways, sewage, water and stormwater runoff, respectively through a concurrency management system to be included in the 1990 development code.

Note: 9J-5.012(3)(c)6 relating to redevelopment of inappropriate (from a hurricane standpoint) or unsafe uses is not applicable.

**Appendix**

Sources:


Letter, Grace B. Iverson, Ph.D., Biologist, to Robert K. Swarthout, Incorporated, dated January 1988.

Twenty-six Ecological Communities of Florida, U.S. Department of Agriculture, Soil Conservation Service, 1986.

National Wetlands Inventory, U.S. Department of the Interior Fish and Wildlife Service.

Water Resources Data and Related Technical Information to Assist Local Government Planning in Palm Beach County, South Florida Water Management District, July 1987.

Lake Worth Basin Water Quality Assessment, Terry L. Davis, Florida Department of Environmental Regulation, 1985.

1986 Florida Water Quality Assessment, Joe Hand et al., Florida Department of Environmental Regulation, Bureau of Water Quality Management 305 (b) Technical Report, June 1986.

Freshwater Inflow and Its Effects on the Salinity and Biota of Shallow Lagoons, J. Van de Kreeke, et al., Rosenstiel School of Marine and Atmospheric Science, University of Miami, September 1976.

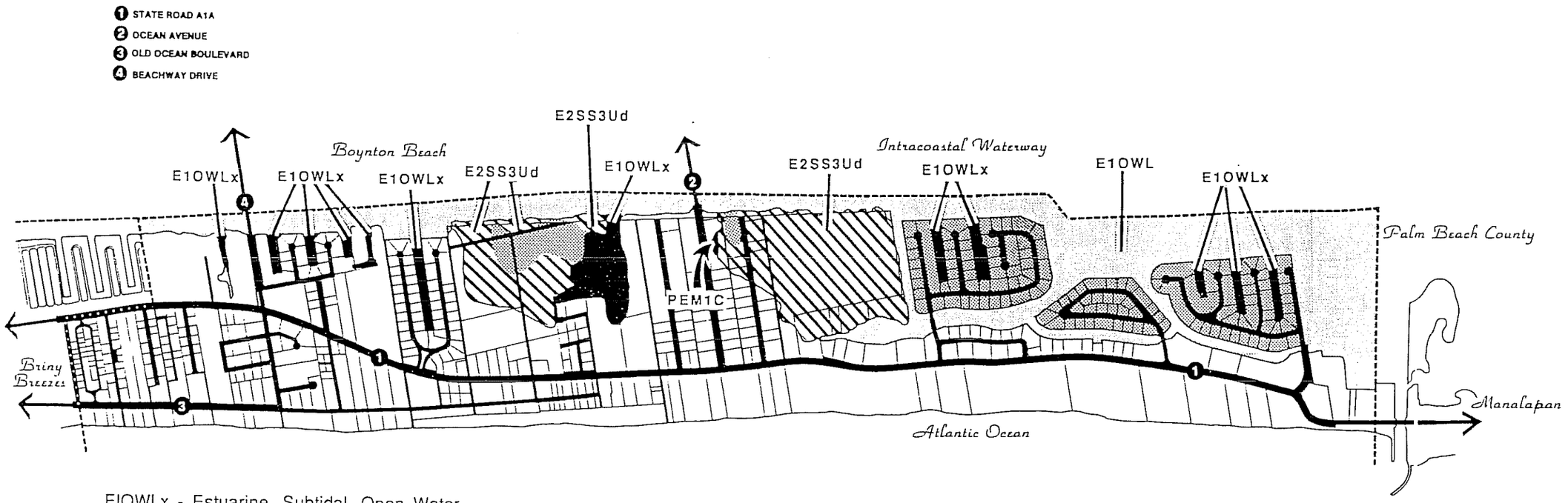
Wetland and Deepwater Habitat Policy, Treasure Coast Regional Planning, May 1984.

Palm Beach County Comprehensive Plan, 1985.

Planning-Aid Report to U.S. Army Corps of Engineers, U.S. Department of Interior, Fish and Wildlife Service, May 15, 1984.

U.S. Army Corps of Engineers General Design Memorandum and Beach Erosion Control Projects for Palm Beach County, April 1987.

West Indian Manatee Recovery Plan, U.S. Fish and Wildlife Service, 1980.




E1OWLx - Estuarine, Subtidal, Open Water, /Unknown Bottom, Subtidal, Excavated

E2SS3Ud - Estuarine, Interdial, Scrub/Shrub Broad-leaved Evergreen, Partially Drained/ Ditched

PEMIC - Palustrine, Emergent, Persistent, Seasonally Flooded.

Primarily represents Upland areas, located on fill

Source: USGS, National Wetlands Inventory Map, 1984

Figure 5.1
WETLANDS

# TOWN OF OCEAN RIDGE

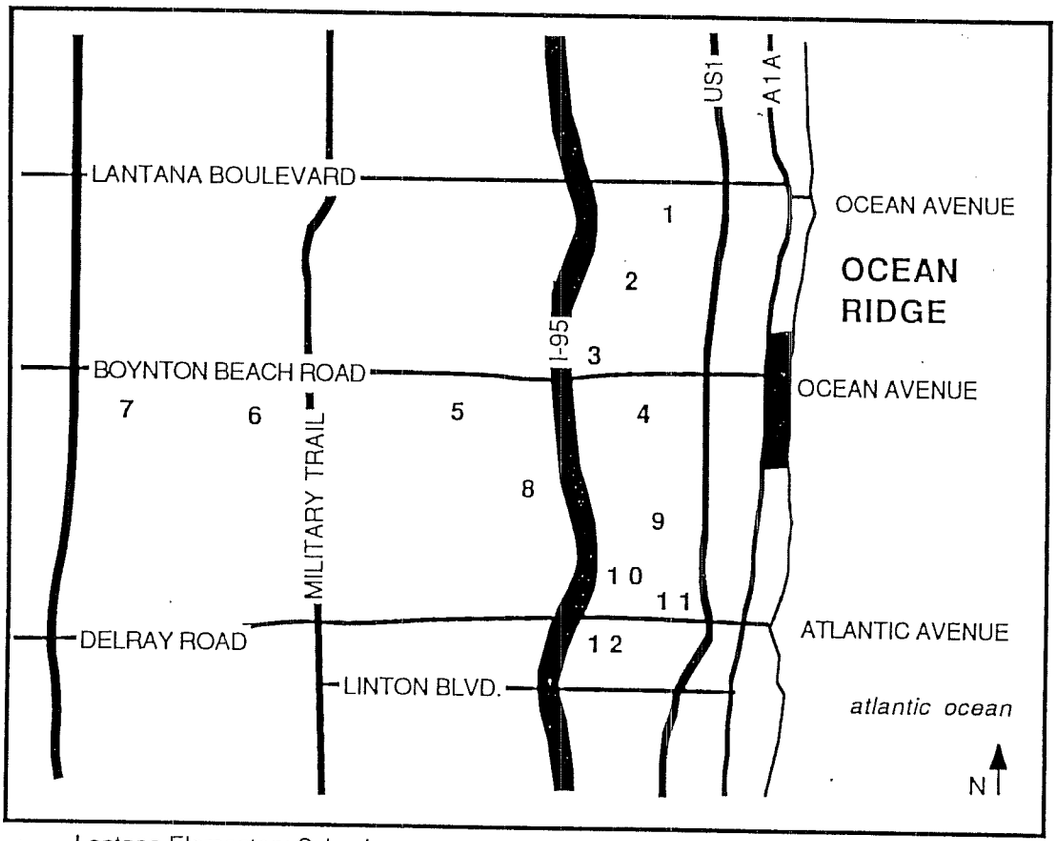
PALM BEACH COUNTY 1987

0 400 800

RKS INCORPORATED

Figure 5.2

## PALM BEACH COUNTY RED CROSS SHELTERS




1 Lantana Elementary School
710 Ocean Avenue, Lantana

2 Rolling Green Elementary School
550 Miner Road, Boynton Beach

3 Poinciana Elementary School
1400 NW 1st Street, Boynton Beach

4 Boynton Beach Civic Center
128 East Ocean Avenue, Boynton Beach

5 Congress Community School
101 South Congress, Boynton Beach

6 St. Vincent De Paul Seminary
South Military Trail (1/2 mile south ) of Boynton Beach

7 Hagen Road School
10439 Hagen Road, Boynton Beach

8 South Tech Training Center
1300 SW 30th Avenue, Boynton Beach

9 Atlantic High School
2501 Seacrest Boulevard, Delray Beach

10 Pompepy Park Recreation Center
240 NW 10th Avenue, Delray Beach

11 Delray Beach Civic Center
NW 1st Avenue, Delray Beach

12 Carver Middle School
301 SW 14th Avenue, Delray Beach

# CONSERVATION ELEMENT

## INTRODUCTION

Prior to urban development, the southern Palm Beach County barrier islands were a highly dynamic ecosystem with large stands of mangroves, sand pines, palmettos, and coastal dune formations. Urbanization has extensively altered the natural environment. Liberal dredge and fill laws and lax building codes promoted destruction of the barrier island natural environment. During the 1970's, the attitudes of many Florida communities began to change and conservation of remaining natural areas gained impetus.

Ocean Ridge is a 642-acre municipal jurisdiction located in southern Palm Beach County on the southern Palm Beach County barrier islands. The town is almost fully developed, but significant natural areas remain along the Atlantic Ocean beach immediately east of State Road A1A and along the Intracoastal Waterway.

The Conservation Element of the Ocean Ridge Comprehensive Plan identifies the existing natural resources, resource uses, and pollution problems and evaluates the potential for conserving, utilizing, and protecting the identified resources.

## RELATIONSHIP TO COASTAL MANAGEMENT ELEMENT

The Conservation Element for Ocean Ridge is closely related to the Coastal Management Element because the Town is wholly located within the coastal area as defined pursuant to Florida statutes and administrative regulations.

Both elements address the natural resources of the Town. Some of these resources are important coastal resources. Those resources and conservation issues that are not considered central to coastal management are addressed in the Conservation Element. These include air and air quality, soils, minerals, floodplains, hazardous wastes, and potable water needs and sources.

Those natural resources that are important coastal resources are discussed briefly in the Conservation Element, but are given more detailed treatment in the Coastal Management Element. These include coastal wetlands, areas subject to coastal flooding, coastal vegetative communities, fisheries and marine and estuarine wildlife habitats, and estuarine environmental conditions including pollution; the recreational, commercial and conservation use is also analyzed in the Coastal Element.

## ENVIRONMENTAL SETTING

The environmental setting of Ocean Ridge is characterized as a sub-tropical marine climate. The summer season is relatively long with warm temperatures and frequent rainfall and the winters are distinguished by mild temperatures and infrequent precipitation. Conditions are favorable for plant growth all year. The topography of the coastal ridge provides some relief with maximum elevations reaching 25 feet above sea level just east of State Road A1A in the north and just west in the south before falling to 2.0 feet in central Ocean Ridge.

## WATER BODY RESOURCES

### Atlantic Ocean

Although the ocean is not within the physical boundaries of the Town, it is the dominant factor affecting life in the town. It provides scenic beauty and recreational opportunity to persons living near it. However, it can also play a destructive role. The threat of storm surge during hurricanes and storms from the northeast affects residents, plants, and animals. Vegetation, especially mangrove strands, and tropical hammocks and coastal dunes fronting the ocean, are critical in moderating the effects of intense storms.

### Intracoastal Waterway

The Army Corps of Engineers has authority over the Intracoastal Waterway as part of its comprehensive system of navigable waters. In 1939, an act of Congress authorized the Corps to dredge and maintain a navigable channel between the Florida mainland and the outer Florida barrier islands. In 1942, the Army Corps of Engineers began dredging and maintaining a deep channel as part of the eastern Intracoastal Waterway. By the late 1940's a significant amount of benthic vegetation had been established along large areas of the shallow banks of the Intracoastal. Dredge and fill activities during the 1950's further changed the configuration of the shoreline, water depths, and shore bottom. A channel is now maintained at a depth of 12 feet. Boating and fishing are the principal uses.

### Excavated Canals

The Town contains several excavated canals along the Intracoastal Waterway. These canals were dredged during the 1950's and the fill from them was used to elevate the banks of the Intracoastal Waterway so that development could occur. There are no rivers. bays or lakes in Ocean Ridge. The Drainage Sub-element of the Wastewater, Solid Waste, Drainage, Potable Water and Natural Groundwater Aquifer Recharge Element provides specific details on the functioning of the canals and their relationships to the surface-water drainage pattern and water quality patterns of the Intracoastal Waterway. Boating and fishing are the principal uses.

The coastal wetlands, fisheries, wildlife habitats, and living marine resources associated with these water bodies are further analyzed in the Coastal Management Element.

## WILDLIFE HABITAT AND VEGETATIVE COMMUNITIES

Barrier islands are sandy coastal uplands that are separated from the mainland on their landward sides. These ridges were formed mainly through deposits of sand blown by the wind. Other deposits were left from large storms and wave action. The specific geology is characterized by Pliestocene sand and holocene sand deposits. The typical beach dune is composed of quartz and calcareous sands with a high Ph. Ancient interior dunes and topsoil are composed of highly leached quartz sands with a low Ph.

### Tropical Hammock

The Town contains a native tropical hammock, located directly west of the secondary dune system in central Ocean Ridge. The hammock is unique in that it is the last functioning beach-dune-hammock system of its size, complexity, and native character remaining on the southeast coast of Florida. The condition of Ocean Ridge dune systems is further analyzed in the Coastal Management Element. A wide variety of tropical flora exists in and comprises the hammock. The vegetation has been described as hearty and thick in appearance and especially unique in that it joins together with coastal dune vegetation in a manner that is extremely rare. The value of the tropical hammock as a natural/ecological system and its role as a wildlife habitat are future analyzed in the Coastal Management Element.

### Coastal Ridge Vegetation

In their native form, coastal ridges contain sand pines, woody scrubs, palmettos, and sea-oats on dune formations. They provide shelter to scrub-jays, songbirds, gophers, tortoises, rodents, and reptiles. Dunes can be subject to invasion and dominance by Australian pines. This invasion of exotics is accelerated when dune vegetation is destroyed.

The Intracoastal Waterway shore of Ocean Ridge abounds with mangrove strands. Mangroves are protected from destruction by development because they absorb wind and rain during storms, and are vital components of the coastal food chain. Mangroves have increased in area and density over the past few years. Lands previously without vegetation now have thriving strands (due to the digging of mosquito ditches) which may spread even further. Mangrove wetlands are further analyzed in the Coastal Management Element.

## AIR AND AIR QUALITY

### Palm Beach County Pollution Standards Index

The Air Pollution Section of the Palm Beach County Health Department reports a Pollution Standards Index (PSI) for the County. The index is a standards indicator that reports four pollutants: total suspended particulate matter, carbon monoxide, sulfur dioxide, and photochemical oxidants (ozone).

The level of each pollutant is assigned a health rating based upon National Ambient Air Quality Standards. Analysis of the 1983 Pollutant Standard Index for Palm Beach County showed that the early morning levels of pollutants were rated "good" 97 percent of the time, and "moderate" rating three percent of the time. The afternoon levels of pollutants registered "good" 95 percent of the time and "moderate" five percent of the time.

However, Palm Beach County is a part of the three-county air shed which has been declared an ozone non-attainment area due to Dade County ozone conditions.

### Sources of Air Pollution

The 1983 Air Quality Report indicated that transportation activities produced 63 percent of the total pollutants in the County. The next highest polluting source was emissions from sugar cane field burning, which accounted for 33 percent of the total pollutants. The remaining 3.2 percent was attributed to the following sources: fuel combustion, 0.4 percent; mineral products (concrete batching), 0.01 percent; solid waste disposal, 0.82 percent; and volatile organic emissions 2.0 percent.

Attainment of higher ambient air quality in the Palm Beach County area can be achieved through utilization of better air pollution control devices, updating enforcement and surveillance techniques, and through the cooperation of all people in the area.

### Ocean Ridge Air Quality

Air quality in Ocean Ridge is generally excellent. The lack of commercial and industrial land uses, and the generally low level of automotive emissions combine with Gulfstream breezes to maintain excellent air quality.

## SOILS AND SOIL EROSION

The soils located within the Town of Ocean Ridge are primarily sandy soils that have been altered for the purpose of urban development. There are large areas of Urban land complexes. However, there are also significant areas of organic soils, especially along the Intracoastal Waterway. The main classifications of soil present within the Town are described below and shown on Figure 6.2.

### Ur-Urban Land

Urban land consists of areas that are from 60 percent to more than 75 percent covered with pavement or structures. Less highly developed areas, such as lawns, parks, and vacant lots, are nevertheless altered to such an extent that the former soils cannot be recognized or occur in such small amounts that they cannot be readily mapped.

**Bn-Beaches**

Beaches consist of narrow strips of tide-washed sand along the Atlantic coast line that range in width from less than 100 feet to more than 500 feet. Most beaches are less than 200 feet wide. As much as half of the beach may be covered by water during daily high tide, and during storm periods all of the beach may be covered by water. Most beach areas have no vegetation, but the inland edge may be sparsely covered by salt tolerant plants. Beaches generally consist of pale brown to light gray sand grains of uncoated quartz, mixed to a varying degree with multicolored shell fragments ranging from sand size to one-half inch.

**AU-Arents-Urban Land Complex**

This complex consists of nearly level, somewhat poorly drained, sandy soils and Urban land. The soils formed in thick layers of sandy fill material that were placed over low, wet mineral soils to make the areas suitable for urban use. The complex contains about 60 to 75 percent Arents and 25 to 40 percent Urban land. Arents consists of lawns, vacant lots, undeveloped areas and other open land. Urban land consists of areas covered by streets, sidewalks, parking lots, buildings and other structures. In some areas near the Intracoastal Waterway and Lake Worth are soils mapped in this complex that have a layer of marl or organic material below a depth of 20 inches.

**PhB-Pomello Fine Sand**

Pomello fine sand is a nearly level to gently sloping, moderately well drained deep sandy soil. It has a dark, weakly cemented layer below a 30 inch depth. In some soils included with this soil in mapping, the dark, weakly cemented layer is below a 50 inch depth. Pomello fine sand is found on low knolls and ridges with slopes ranging from 0 to five percent. Under natural conditions, the water table is within 24 to 40 inches during wet periods and below 40 inches during the remainder of the year. The natural vegetation is slash pine, sand pine, scrub oak, sawpalmetto, inkberry sand plum, fetterbush, pineland three-awn, and other native grasses.

**CuB-Cocoa-Urban Land Complex**

This complex consists of Cocoa sand that has 0 to 8 percent slopes and Urban land. About 40 to 50 percent of this complex is open land, such as lawns or vacant lots. These areas are made up of nearly level or sloping, well drained Cocoa soils that have been modified in many places by grading to create level building sites. In a few places, road beds have been cut several feet into the coquina limestone that underlies the soils. About 25 to 40 percent of this complete is Urban land.

### AX-Arents-Urban Land Complex, Organic Substratum

This complex consists of nearly level, somewhat poorly drained, sandy soils and Urban land overlying organic soils. The areas were formerly organic marshes and swamps that were filled for urban use. This complex is primarily in the vicinity of Lake Mangonia but occurs also in a few places along the Intracoastal Waterway. It consists of about 50 to 75 percent Arents and 25 to 50 percent Urban land. Permeability is rapid. The available water capacity is low to very low in the sand layers and very high in the organic layers. The underlying organic material has a low bearing strength and on-site investigation to determine the depth and thickness of this layer should be made prior to any construction.

### Tc-Terra Ceia Muck

Terra Ceia muck is a nearly level, very poorly drained, deep, organic soil occurring in freshwater marsh areas. It formed in thick deposits of hydrophytic plant remains. Under natural conditions, the soil is covered by water, or the water table is within 10 inches of the surface for 6 to 12 months in most years, except during extended dry periods. The natural vegetation is sawgrass, willow, elderberry, scattered sweet bay and cypress trees, and undergrowth of fern, pickerelwee, sedges, and water-tolerant grasses.

### Cc-Canaveral-Urban Land Complex

This complex consists of Canaveral sand and Urban land. From about 25 to 40 percent of this soil is covered by paving and structures. About 40 to 60 percent is covered by undeveloped areas. These open areas are made up of nearly level, somewhat poorly drained to moderately drained Canaveral soils that have been modified in places by spreading about 12 inches of mixed shell and sand fill material over the original surface layer.

### QAB-Quartzipsamments, Shaped

This mapping unit consists of nearly level to gently sloping, well drained, deep, sandy soils in areas where natural soils have been altered by cutting down ridges and spreading the soil material over adjacent lower soils, by filling low areas above natural ground level, and by filling and shipping soil material. The sandy material may be brought in from distant sources, but is generally obtained at the site by dredging nearby water areas or excavating to create water areas. The water table is below a depth of 60 inches.

### TO-Tidal Swamp, Organic

This soil is nearly level, very poorly drained, organic material that supports a dense growth of mangrove trees. It occurs near the coast along the Intracoastal Waterway. It consists of thick layers of well-decomposed plant remains. In most places, there is a layer of marl at a depth of 8 to 20 inches. It is flooded by salt or brackish water during daily high tides. Permeability is rapid in the organic layers and moderately rapid in the marl layer. The available water capacity is very high.

### Areas Experiencing Soil Erosion

No upland areas within Ocean Ridge have been identified by the local Soil and Water Conservation District as experiencing soil erosion. It has been determined that the only significant erosion in the Town would be due to water flow, but there is no data available on the amount of erosion experienced. Since man-made drainage has largely replaced natural runoff, it is likely erosion due to runoff is not significant. As new construction is at a minimum in Ocean Ridge, there is little erosion due to wind. Beach areas experiencing erosion are identified and analyzed in the Coastal Management Element.

## FLOODPLAINS

Floodplains include areas inundated during a 100-year flood event, including areas subject to the 100-year flood are identified by the National Flood Insurance Program on Flood Insurance Rate Maps and Flood Hazard Boundary Maps as A zones. Areas subject to high hazard coastal coastal flooding are identified as V zones.

The floodplains of Ocean Ridge are shown on Figure 6.3. They include the A7 and A5 zones west of State Road A1A and west of Old Ocean Boulevard. Zone A7 has a base flood elevation of eight feet. Zone A5 has a base flood elevation of seven feet.

The area along the Atlantic shoreline that is subject to the 100-year coastal flood is identified as a V8 zone. The base flood elevation of this zone ranges from 10 to 11 feet.

The entirety of the Town of Ocean Ridge is subject to storm surge during hurricanes. The storm surge vulnerable areas of the coastline are discussed and mapped in the Coastal Management Element.

## MINERALS

There are no known deposits of commercially valuable minerals in the Town of Ocean Ridge. A geologic cross-section of the formations underlying the Town is shown on Figure 4.1.

## HAZARDOUS WASTE

Hazardous waste is one of the primary threats to the natural environment. Hazardous waste is defined by Florida's administrative regulations as "solid waste....which, because of its quantity, concentration, or infectious characteristics, may cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible or incapacitating reversible illness or may pose a substantial present or potential hazard to human health or the environment when improperly transported, disposed of, stored, treated, or otherwise managed."

### Hazardous Waste Generators

Hazardous waste generators have been classified by the Department of Environmental Regulation as large quantity and small quantity generators. Large quantity generators produce over 1000 kilograms or 2200 pounds (one ton) of hazardous waste per month. Small quantity generators produce between 100 kilograms or 220 pounds to less than 1000 kilograms or 2200 pounds (one ton) of hazardous waste per month.

Typical businesses identified as either large or small quantity waste generators include auto painting and body shops, truck or automobile repair shops, furniture refinishing shops, and dry cleaning shops.

In the Town of Ocean Ridge, no land uses have been identified by the Department of Environmental Regulation as large or small quantity generators of hazardous waste. This means only household hazardous waste is an issue.

## POTABLE WATER NEEDS AND SOURCES

Specific information detailing water uses is contained in the Infrastructure Element of the Comprehensive Plan. Boynton Beach is responsible for providing potable water in Ocean Ridge and the South Florida Water Management District (SFWMD) regulates water drainage into the Intracoastal Waterway. Boynton Beach anticipates no problem with water service for the Town. Ocean Ridge currently has no water conservation policies other than the emergency water conservation ordinance based upon the SFWMD model; the water supply source is not in Ocean Ridge.

## CONSERVATION ISSUES

### Preservation of Tropical Hammock and Dune Vegetation

There has been some controversy regarding the development of the Ocean Ridge Hammock. Palm Beach County purchased the hammock property from a private party with the Town supporting the sale based on an understanding that the site would remain undeveloped and that the native character would be retained. Accordingly, Ocean Ridge zoned the tract for open space preservation with County consent.

Beach access and parking would, with all their aspects considered, alter the natural ecosystem of the hammock. Walkways to the beach would allow cool breezes to infiltrate the hammock from its ocean side. Increased beach activity would damage the delicate "transitional" zone vegetation which exists currently in harmony with the tidal changes on the hammock's seaward side. These improvements would lead in a receding of the hammock's boundaries and eventually to its disappearance. A nature study site without beach access would still be a valuable attraction and ensure the preservation of this rare natural resource.

Every effort should be made to retain native dune vegetation. This vegetation moderates storm impact and repels the dominance of exotic plants. Ocean Ridge is developed and does not anticipate any significant changes in the amount of native vegetation.

See also detailed analysis of these subjects in the Coastal Management Element.

### Preservation of Mangrove Wetlands

Existing programs for preservation of mangrove wetlands are set forth in the Coastal Management Element.

## CONSERVATION ELEMENT
## GOALS, OBJECTIVES AND POLICIES

**Goal 1** **To preserve and enhance the significant natural features in Ocean Ridge.**

**Objective 1.1** *Maintain the "good" air quality rating 97 percent of the time, based on County Pollution Standards Index.*

**Policy 1.1.1** Continue to require landscaping as a part of new private development, adding single family residential to the code requirements, and to landscape public areas.

**Policy 1.1.2** If deemed necessary by the County, by 1994 the Town shall install a device to reduce Stage II volatile organic compound emissions at its gas pump.

**Objective 1.2** *By 1990, review and revise as needed, the development code to assure drainage practices and programs that minimize ground and surface water pollution.*

**Policy 1.2.1** Continue to review development plans in order to require on-site detention of stormwater runoff, particularly near the Intracoastal Waterway.

**Policy 1.2.2** Review the existing emergency water conservation program based upon the South Florida Water Management District model.

**Policy 1.2.3** Review and revise as needed, the floodplain provisions.

**Policy 1.2.4** Supplement the code provisions with an in-depth look at both sanitary sewer installation and storm sewer direct outfall elimination.

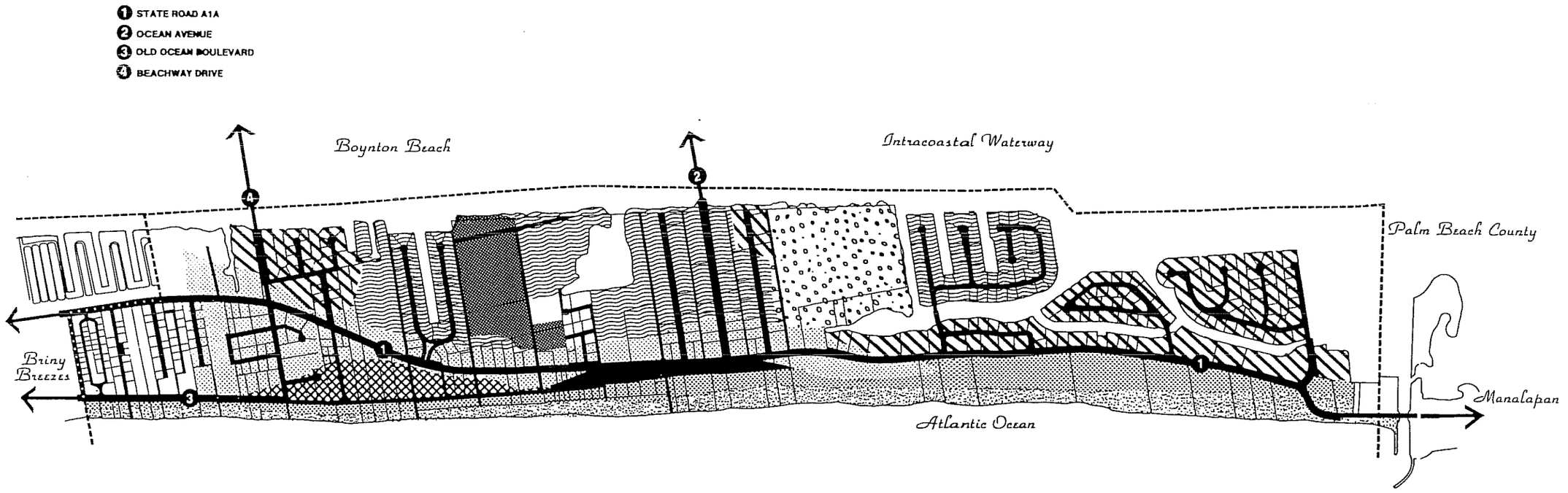
**Objective 1.3** *Continue to protect existing vegetative and wildlife communities, experiencing no net loss in public open space vegetation.*

**Policy 1.3.1** Continue to review all development applications in the context of the pervious cover and landscaping provisions of the development code; be particularly diligent in a) the review (in tandem with DNR) of any development in the vicinity of mangrove areas where some selective clearance is considered appropriate (with mitigation) but in general, is to be avoided and b) the removal of exotic vegetation.

**Policy 1.3.2** Work with County officials to 1) assure that any public open space improvements are sensitive to the hardwood hammock and other vegetative/wildlife/marine habitats, and 2) through the Town police, inform County marine patrols of boat speed violations that may threaten manatees.

**Policy 1.3.3** Preserve the hardwood hammock, mangroves and dune vegetation now under public (Town and County) regulation in order to help preserve many of the threatened and endangered species listed in Table 5.8; supplement with a sea turtle preservation program on the beach by 1991.

Note: Commercial minerals, fisheries, hazardous wastes, wellfields, and soil erosion are not applicable issues in Ocean Ridge. There are no unique vegetative communities that cross municipal lines i.e. 9J-5.013(2)(c)8 is not applicable.




Ur - Urban Land

Bn - Beaches

AU - Arents-Urban land complex*

PhB - Pomello fine sand

CuB - Cocoa-Urban land complex

AX - Arents - Urban land complex,organic substratum

TC - Terra Ceia muck

Cc - Canaveral -Urban land complex

QAB - Quartzipsaments,shaped*

TO - Tidal Swamp, organic

* The composition of these units is apt to be more variable than the other units in the survey area. Mapping has been controlled well enough, however to be interpreted.

Source: Palm Beach County Soil & Water Conservation District, Soil Survey 1978

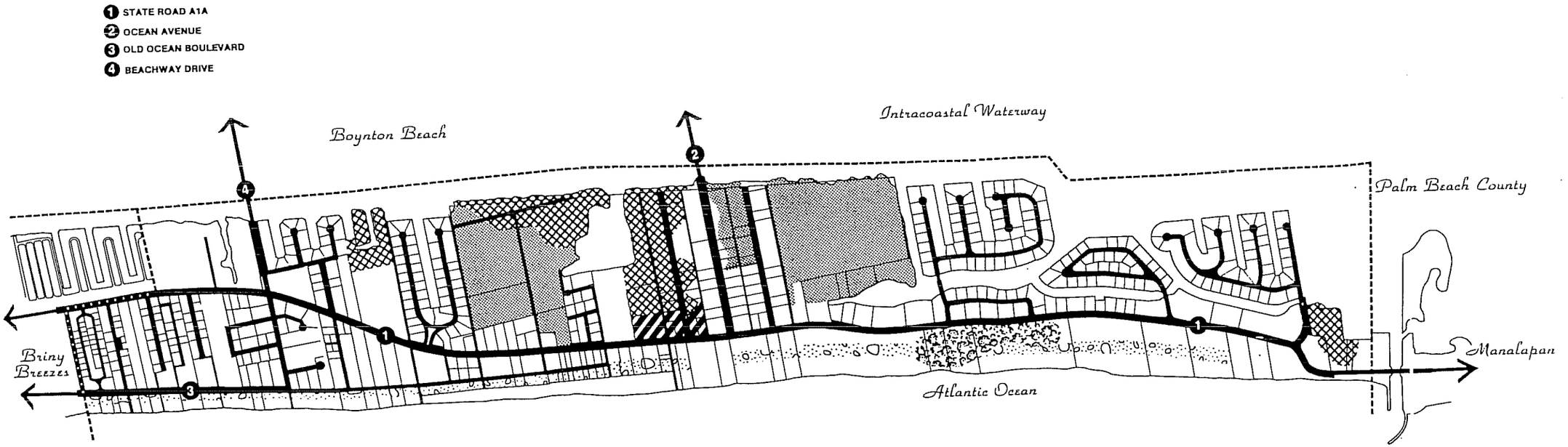
Figure 6.2
SOILS

# TOWN OF OCEAN RIDGE

**PALM BEACH COUNTY** **1987**

0 400 800

RKS INCORPORATED




Exotics

Mixed

Tropical

Mangrove

Dune Vegetation

0 400 800

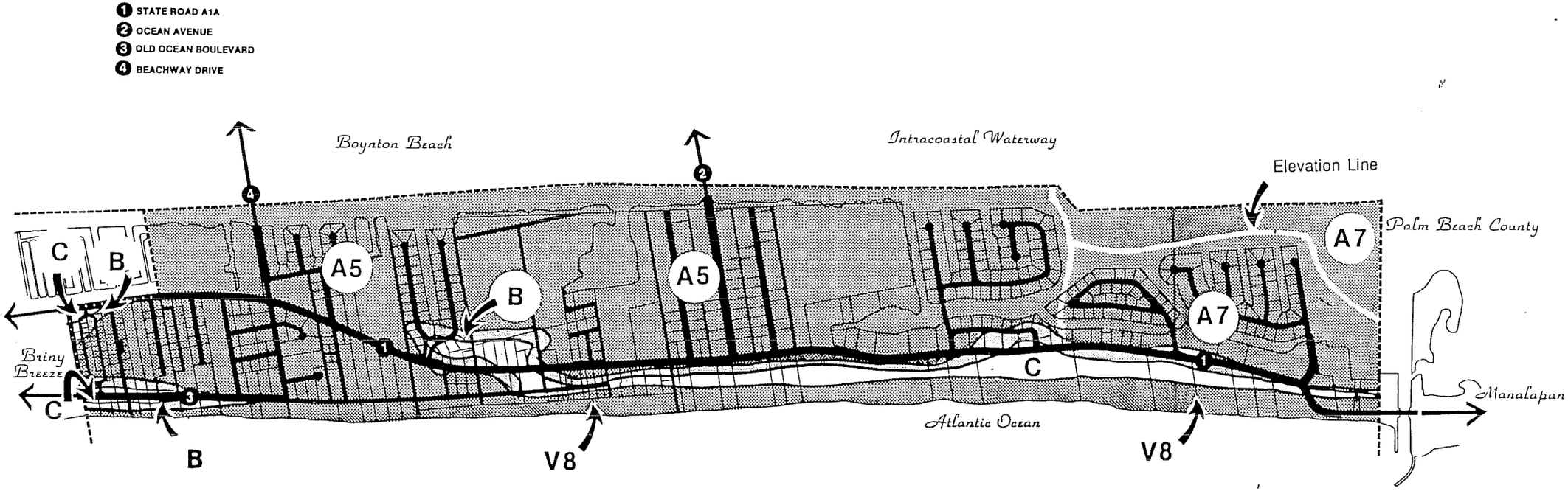
Figure 6.1
VEGETATION

# TOWN OF OCEAN RIDGE

PALM BEACH COUNTY 1987

RKS INCORPORATED

Source: Robert K. Swarthout Incorporated, 1988




| | |
|---|---|
| Zone A1-A30 | Areas of 100 year flood; base flood elevations and flood hazard factors determined. |
| Zone B | Areas between limits of the 100-year flood, and 500-year flood, or certain areas subject to 100-year flooding with average depths less than one foot or where the contirbuting drainage area is less than one square mile, or areas protected by levees from the base flood. |
| Zone C | Areas of minimal flooding |
| ZoneV1-V8 | Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined. |

Source: Federal Emergency Management Agency, 1984

Figure 6.3
FLOODPLAINS

# TOWN OF OCEAN RIDGE

PALM BEACH COUNTY 1987

0 400 800

RKS INCORPORATED

# RECREATION AND OPEN SPACE ELEMENT

## INTRODUCTION

This element identifies existing public and private recreation and open facilities within the Town and surrounding area. Many of the residents use readily available private recreational facilities.

Living on a barrier island, with Ocean beaches on one side and a major waterway on the other, offers special recreational advantages. This element does not assess needs in the traditional method of determining minimum acreages and facilities for each type of recreational facility. The element instead concentrates on the facilities and open space characteristics desired by the residents.

## EXISTING CONDITIONS

### Regional Facilities in Ocean Ridge

Three regional facilities are located in Ocean Ridge. Boynton Beach Oceanfront Park is located near the center of town on SR A1A. It has an associated picnic area, restroom/bath houses, a concession stand, playground, and parking for 255 vehicles. It is open to the public without charge. Parking is provided at a nominal charge. The availability of the Boynton public beach to Ocean Ridge residents is secured by the agreement under which the Town was deannexed from Boynton Beach in the mid 1930's. It is activity-based although also has a resource orientation.

A Palm Beach County Ocean Inlet Park beach and marina facility is located at the north end of Ocean Ridge. The facility includes beach access, permanent and day use boat slips, picnic facilities, walking trails, an observation tower, restrooms, a concession stand, playground and 227 parking spaces. Sheriff marine patrol officers are stationed at the park. The County beach and marina facility is available to Ocean Ridge residents under the same fees and conditions that apply to other County residents. It is activity-based but also has a resource orientation.

The County-owned hardwood hammock, a 13 acre resource-based open space preserve, is located along the ocean.

## Neighborhood Facilities

**Kennedy Park**: A parcel of land under Town ownership is designated as a neighborhood park. The one acre parcel abuts the Intracoastal Waterway and is in its natural state. There are no plans to place facilities on this park as residents wish to retain the passive, scenic characteristic; resource-based.

**Beach Access**: The Town of Ocean Ridge contains nine public beach access points. These include access points associated with the two regional parks and access points located at the end of public streets terminating at the beach. Public beach access of the latter variety is especially concentrated in the southern portion of town. Specific public beach access points are as follows:

1) Boynton Beach Oceanfront Park
2) Ocean Inlet Park
3) Anna Street
4) Beachway Drive
5) Corrine Street
6) Edith Street
7) Porter Street
8) Thompson Street
9) Tropical Drive

## Private Recreational Facilities

There are two private recreation clubs which provide substantial recreational opportunities for their members. The Ocean Club contains tennis courts and a swimming pool. The club also provides private beach access. Ocean Ridge residency is not required for membership.

The McCormick Mile Beach Club contains a club house and a private beach. Membership is composed of Ocean Ridge resident homeowners.

### Private Atlantic Beach Access

In addition to the two clubs, private Atlantic Beach access is also available also for most condominium and apartment residents. The condominium developments located north of the Palm Beach County dune hammock and south of the McCormick Mile Beach Club have direct beach access.

### Public Pedestrian Trails

The Town of Ocean Ridge has constructed a pedestrian trail along State Road A1A. Funding was provided by the Town, Palm Beach County and some resident donations. The trail provides an opportunity for pedestrian and bicycle exercise and recreation, and facilitates access to the beach.

### Private Open Space

The National Wildlife Association, a private non-profit land trust, owns 26 acres of natural open space in Ocean Ridge. Another 74.8 acres is covered by mangroves and although privately owned, can not be developed under State law.

### Recreational Areas and Facilities within a Reasonable Distance of the Town

Palm Beach County is noted for its golf courses and water oriented recreational activities. Some 15 public and private golf courses, as well as numerous marinas and boat ramps are located within a five mile drive. County parks within a 10 mile radius of the Town include: John Prince Memorial Park (a 65 acre regional park), Kreusler Beach Park, South Lake Worth Inlet Park, Lake Ida Park and Gulfstream Park.

### Nuisance and Public Safety Problems

County parks have historically required security personnel to protect users from disruptive behavior and criminal activity. Curfews and other police measures have been adopted to restrict alcohol use and curb vandalism. There are no policing approaches which are totally successful in controlling such problems at and around parks. Because of this the Town of Ocean Ridge has been and remains concerned about the County park at the South Lake Worth Inlet.

## ANALYSIS

Ocean Ridge has almost one acre (.8) of Town-owned public park and open space to serve its 3,200 permanent plus seasonal i.e. in excess of one acre per 5,000 population. However, with full access to 31 additional acres of public park and open space plus three lineal miles of beach and an array of private facilities, this existing inventory adequately meets the current recreation needs of the Town's residents. Beach and waterway public access is also adequate. With no significant projected population increase, these facilities will continue to prove adequate for the five and ten year planning periods.

Due to the Town's unique character, private facilities and demographics, the only increase in recreation or open space land would be if it is perceived necessary for scenic or ecological reasons.

**Table 7.1**
**EXISTING PUBLIC PARK AND OPEN SPACE LAND**
**TOWN OF OCEAN RIDGE**

| Name | Ownership | Acreage | Beach Frontage in Feet | Type |
|---|---|---|---|---|
| John F. Kennedy Park | Ocean Ridge | 0.8 | 100* | Resource-Based |
| Boynton Beach Oceanfront Park | Boynton Beach | 10.0 | 1000 | Activity-Based (Resource Component) |
| Ocean Inlet Park | Palm Beach County | 8.0 | 600 | Activity-Based (Resource Component) |
| Hardwood Hammock | Palm Beach County | 13.0 | 800 | Resource-Based |
| Total | | 31.8 | 2,500 | |

* Intracoastal frontage

**Table 7.2**
**PRIVATE RECREATION AND OPEN FACILITIES**
**TOWN OF OCEAN RIDGE**

| Name | Acreage | Beach Frontage | Development Type |
|---|---|---|---|
| Ocean Club of Florida | 1.4 | 200 | Active |
| McCormick Beach Club | 0.3 | 150 | Active |
| National Wildlife Association | 26.0 | n/a | Passive |
| Mangroves | 74.8 | n/a | Passive |
| Total | 102.5 | 350 | |

## Table 7.3
## RECREATION FACILITIES NEAR THE TOWN OF OCEAN RIDGE

| Golf Courses | Jurisdictional Location |
|---|---|
| 1. Atlantis Country Club (S) | Atlantis |
| 2. Atlantis Golf Club (PR) | Atlantis |
| 3. Boynton Beach Golf Course (PU) | Boynton Beach |
| 4. Country Club of Florida (PR) | Village of Golf |
| 5. Cypress Creek (S) | County |
| 6. Delray Beach Country Club (S) | Delray Beach |
| 7. Delray Dunes Golf & Country Club (PR) | County |
| 8. Gulf Stream Country Club (PR) | Gulfstream |
| 9. Hamlet Country Club (PR) | County |
| 10. Hunters Run Golf & Racquet (PR) | Boynton Beach |
| 11. Indian Springs Country Club (PR) | County |
| 12. Lake Worth Country Club (PU) | Lake Worth |
| 13. Military Trail Golf & Country Club (PR) | County |
| 14. Palm Beach Par 3 (PU) | Palm Beach |
| 15. Pine Tree Golf Course (PR) | County |
| 16. Quail Ridge Golf & Tennis (PR) | County |
| 17. Sherwood Park Golf Club (S) | Delray Beach |
| 18. The Little Club (PR) | Gulfstream |
| 19. Villa Del Ray Golf Club (PR) | County |

Note: PU = Public; PR = Private; S = Semi-Private

| Marinas/Boat Ramps | |
|---|---|
| 20. Bryant Park Boat Ramp | Lake Worth |
| 21. Lantana Boat Ramps | Lantana |
| 22. Boynton Recreation Area Boat Ramp | Boynton Beach |
| 23. Gundlach's Marina | Lantana |
| 24. Murelle Marina | Lantana |
| 25. Lantana Boatyard | Lantana |
| 26. Hypoluxo Marina | Hypoluxo |
| 27. Gulf Stream Marina | Boynton Beach |
| 28. Sea Mist Marina | Boynton Beach |
| 29. Lake Side Marina | Hypoluxo |

| Other County Parks | |
|---|---|
| 30. John Prince Memorial Park (Regional) | County |
| 31. Kreusler Beach Park | Palm Beach |
| 32. Lake Ida Park | Delray Beach |
| 33. Gulfstream | Gulfstream |

## RECREATION AND OPEN SPACE ELEMENT
## GOAL, OBJECTIVES AND POLICIES

**Goal 1** To provide recreation and open space facilities which are responsive to the leisure-time and ecological desires of community residents.

**Objectives 1.1** *Preserve existing access to the Intracoastal Waterway (including Lake Worth) and the ocean i.e. no reduction in the 2,500 lineal feet of public access.*

**Policy 1.1.1** Work with the County and Boynton Beach to assure retention of their two park areas as a means of preserving shoreline access for the public.

**Policy 1.1.2** Preserve the Town park on the Intracoastal Waterway.

**Policy 1.1.3** Preserve the seven public beach access points at the end of the streets.

**Objective 1.2** *Continue the current mix of private facilities that supplement the public inventory as evidenced by an annual inventory.*

**Policy 1.2.1** The Town Council shall annually monitor private recreational facilities and programs to make certain that they continue to meet a major portion of resident needs.

**Objective 1.3** *Retain the existing recreation facilities, experiencing no net loss of the 19 public acres.*

**Policy 1.3.1** Retain the existing municipal and County public recreation and open space facilities thereby providing a Level of Service standard of at least 1 acres per 5,000 population.

**Policy 1.3.2** The Town shall work with Boynton Beach and the County to minimize adverse impacts from their regional parks. Otherwise, there are no "deficiencies."

**Objective 1.4** *Ensure the preservation of public and of private open space, experiencing no net loss of the 114 prime acres.*

**Policy 1.4.1** The Town shall review its land development regulations by 1990 to assure adequate private open space requirements, definitions and standards.

**Policy 1.4.2** The Town shall continue to monitor the County to assure preservation of the hardwood hammock in its natural state.

**Policy 1.4.3** The Town shall work in tandem with the State to preserve the 75 acres of prime mangrove and with the National Wildlife Association to preserve its 26 acre tract.

# INTERGOVERNMENTAL COORDINATION

## INTRODUCTION

This Element outlines and analyzes those issues that require intergovernmental cooperation to achieve plan implementation.

Table 8-1 provides a matrix showing all agencies with which Ocean Ridge is coordinating or likely to in the future. This matrix is followed by an analysis of the key intergovernmental issues raised in each element but categorized by the type of agency as per 9J-5 requirements (unlike the Model Element). These State regulations call for two kinds of entities to be inventoried.

1) those with which the Town coordinates and

2) those that have some regulatory responsibility but (in most cases) no direct contact with Town officials.

**Table 8.1**
**INTERGOVERNMENTAL COORDINATION MATRIX**

| Plan Element | Briny Breezes | Boynton Beach | Palm Beach County | South Lake Worth Inlet District | County-wide Planning Council |
|---|---|---|---|---|---|
| Land Use | •Annexation<br>•Land Use Disputes<br>•Compatibility of Border Zoning | | •Consistency with Comp Plan (all elements) | | •Reviews Land Use Plans |
| Housing | | | | | |
| Traffic | •Police protection by Ocean Ridge | | •Beachway Drive bridge to mainland | | |
| Recreation | | •City Park and Beach | •County Park and Beach | | |
| Infrastructure | | •Water Supply | •Regulates Septic Systems | | |
| Coastal | •Hurricane Evacuation: Police Role | | •Evacuation Shelters<br>•Maintains Hurricane Evacuation Route | | |
| Conservation | | | •Beach Hammock Preservation<br>•Beach Renourishment | •Beach Renourishment Including Sand Transfer | |

Table 8.1 (Continued)
INTERGOVERNMENTAL COORDINATION MATRIX

| Plan Element | County MPO | State Division of Historical Resources | State DER | State DOT | State DCA | State DNR |
|---|---|---|---|---|---|---|
| Land Use | | | | | •9J-5 Comprehensive Plan Compliance | •Coastal Construction |
| Housing | | •Technical assist. on historic housing | | | | |
| Traffic | •Traffic Plan Level of Service<br>•Capital Improvement Plan | | | •SR A1A/Ocean Ave<br>•Ocean Avenue Bridge to Mainland | | |
| Recreation | | | | | | •Beach Access |
| Infrastructure | | | •Regulates Water Quality<br>•Regulates Wastewater | | | |
| Coastal | | | | | | •Coastal Construction<br>•Beach Renourishment |
| Conservation | | | •Mangrove Protection | | | •Mangrove Protection |

**Table 8.1 (Continued)**
**INTERGOVERNMENTAL COORDINATION MATRIX**

| Plan Element | Federal Flood Agency | Corps of Engineers | PBC Solid Waste Authority | Treasure Coast RPC | South Florida Water Management District | Utilities |
|---|---|---|---|---|---|---|
| Land Use | •Regulations Construction in Flood Prone Areas | | | •Consistency with Regional Goals and Objectives (all Elements) | | |
| Housing | •Regulations Regarding Reconstruction of Non-Conforming Homes Damaged by Storm | | | | | |
| Traffic | | | | •Level of Service on Regional Roadways | | |
| Recreation | | | | | | |
| Infrastructure | | •Drainage Into the Intracoastal | •Solid Waste Disposal in PBC | | •Consumptive Water Use Permit<br>•Drainage Requirements | •FPL: Electric Service<br>•Southern Bell: Telephone Service<br>•Leadership: Cable TV |
| Coastal | •Flood Insurance<br>•Rebuilding After Hurricane | •Dredging & Filling Permits<br>•Beach Renourishment<br>•Intracoastal Waterway<br>•Wetlands | | | | |

1. **Briny Breezes:**

   a. **Description:** The two towns share a common boundary with potential land use issue conflicts. Annexation seems unlikely. The two must cooperate on hurricane evacuation.

   b. **Coordination Mechanisms:** The Town Manager of Ocean Ridge maintains liaison with the Town Clerk of Briny Breezes. Briny Breezes land use has not and (in all likelihood) will not change in the future. The Ocean Ridge Public Safety Department provides hurricane evacuation police services to Briny Breezes as a part of its contract to provide police and fire services.

   c. **Effectiveness:** Satisfactory; no change is recommended.

2. **Boynton Beach**

   a. **Description:** A City park within the Town provides a public beach for Ocean Ridge residents. Boynton Beach provides the Town's drinking water and fire/paramedic services.

   b. **Coordination Mechanisms:** The park does not require a formal coordination mechanism due to an easement and agreement executed at the time of de-annexation. Water supply was the subject of an inter-local agreement or contract at the time Ocean Ridge incorporated out of Boynton Beach. The Town Manager and City Director of Water coordinate on day-to-day service delivery and facility coordination. The Managers of each municipality meet as needed to discuss coordination issues.

   c. **Effectiveness:** Satisfactory. No need for change at this time. If future problems should arise over the distribution lines, a contract amendment would be the solution. Both the fire/paramedic and water service agreements are due for renewal.

3. **Palm Beach County**

   a. **Description:** Key responsibilities include Beachway Drive (the southern access to the mainland), County Ocean Inlet Park, ownership of the beach hammock, hurricane evacuation and the County comprehensive plan. The County's role in beach renourishment is only monitoring and they approve, private sewage disposal directly for property owners.

   b. **Coordination Mechanisms:**
   Beachway Drive: none
   County Park: none
   Beach hammock: discussions between Town Manager and County Park Department relative to preservation based upon a) Town Resolution 72-5, b) 1973 deed restrictions c) purchase agreement between County and former owner, and d) the special zoning that governs this conservation area.
   Hurricane Evacuation: Town Public Safety Department working with County Division of Emergency Management in accordance with Town's adopted Civil Defense Emergency Operations Plan
   County Comprehensive Plan: Town Manager (or designee) reviewing plan when draft becomes available.
   Sand Transfer Plant: Town Manager discusses issues with County staff.

   c. **Effectiveness:** Most mechanisms are satisfactory. The exception is the slowness of the county comprehensive planning process which has made substantive coordination difficult. The 1980 Town plan was certified. As outlined in detail in the Coastal Management Element, in the past the County-owned hammock has been the source of policy differences but the four mechanisms noted above have proved effective. The sand transfer volumes are significantly deficient resulting in litigation to resolve the issue (Coastal Element).

4. **County Metropolitan Planning Organization:**

   a. **Description:** Responsible for the County-wide roadway improvement plan.

   b. **Coordination Mechanism:** Informal. The Town has no representation on MPO Board.

c. **Effectiveness:** Partially satisfactory in that there are no current plans for Route A1A widening. However, the MPO endorsed the Ocean Avenue Bridge relocation over the Town's objections. Again, the slowness of the MPO County planning process has made coordination difficult.

5. **South Lake Worth Inlet District Board**

a. **Description:** Responsible for beach renourishment and sand transfer project at the Inlet.

b. **Coordination Mechanisms:** The Town has no formal role in this project; the State, County and Federal governments monitor/coordinate with the District Board. Numerous attempts by the Town Commission and Manager to resolve sand transfer deficiencies have been unsuccessful.

c. **Effectiveness:** Not satisfactory. The Town has been unable to prod the District into pumping enough sand across the Inlet; therefore, legal action has been initiated against the District (Coastal Element).

6. **State Agencies:**

a. **Description:** The only issues requiring direct coordination are the Ocean Avenue Bridge (FDOT) and the comprehensive planning process (DCA). The Town issues permits and variances for coastal construction only when DNR and Town Code requirements have been met. In the future the Town may need DER cooperation in selective mangrove removal (Coastal and Conservation Elements) and Historic Resources assistance on the historic sites (Future Land Use Element).

b. **Coordination Mechanisms:** The Town's coordination mechanism on the Ocean Avenue Bridge has been Town officials (based upon Resolution 76-28) directly voicing opposition to the bridge in a variety of communications with a variety of FDOT officials including use of a mediator. Boynton Beach has also been involved on the side of FDOT. When the FDOT disregarded the mediator's recommendation, the Town initiated legal action against FDOT (Future Land Use Element).

The coordination with DCA on the comprehensive plan has been via written correspondence and contracts. The mangrove removal will be a permitting process with DER.

c. **Effectiveness:** With FDOT on the Ocean Avenue Bridge, unsatisfactory for the reasons outlined above. With DCA and DNR, satisfactory. With DER, mixed.

7. **Federal Agencies:**

   a. **Description:** There normally is no direct contact with either the Federal Emergency Management (FEMA) Agency or the U.S. Corps of Engineers. The Corps involvement on beach nourishment is with the County. FEMA monitors the Town's Flood Damage Protection code enforcement.

   b. **Coordination Mechanism:** FEMA contacts the Town as needed.

   c. **Effectiveness:** Satisfactory.

8. **Palm Beach County Solid Waste Authority:**

   a. **Description:** The relationship here is indirect since the Town contracts with a private collection firm which in turn handles disposal with the Authority; in the near future, the Authority will also be involved in collection.

   b. **Coordination Mechanism:** Not applicable.

   c. **Effectiveness:** Satisfactory.

9. **Treasure Coast Regional Planning Council:**

   a. **Description:** Review Town comprehensive plan for compatibility with regional plan; Town bases plan upon regional plan. In the future, they may have to play a role on street level-of-service standards (pending the County plan) but the Town plan conforms to RPC.

   b. **Coordination Mechanism:** Telephone and written communication.

c. **Effectiveness:** Satisfactory.

Note: The two principal unresolved issues (the bridge and beach renourishment) are already in court so the RPC conflict resolution here is not feasible at this time.

10. **South Florida Water Management District**

a. **Description:** Little direct or indirect contact since the scale of development in Ocean Ridge seldom requires property owner to get SFWMD drainage or water use permits.

b. **Coordination Mechanism:** Not applicable.

c. **Effectiveness:** Satisfactory.

11. **Other Entities**

a. **Description:** There are no public schools in Ocean Ridge. No major telephone or electric service extensions are required by the utilities.

b. **Coordination Mechanisms:** Not applicable.

c. **Effectiveness:** Satisfactory.

### Treasure Coast Regional Comprehensive Policy Plan

Coastal and Marine Resources; Natural Systems

- The Town's plan is responsive to the TCRPC goals and policies relative to beach preservation, public access (with parking), turtle nesting, estuary access, and, native vegetation (particularly mangroves and the beach hammock). Also, no major infrastructure extensions are planned on this barrier island. See RPC policies 9.1.1.1, 9.1.1.2, 9.1.1.3, 9.3.1.1 and Goal 10 Natural Systems and Recreational Lands.

Land Use

- The overall State-prompted goal of using in-place infrastructure to accommodate land use in an environmentally sensitive manner is met.

- The Town is attempting to eliminate incompatible commercial uses (16.1.2.6) and prevent new commercial uses (16.1.2.3) through its Zoning Code.

Transportation

- Ocean Ridge fulfills the RPC goal (19.1.1) by providing for bicycle or pedestrian travel; the opposition to widening Route A1A and the Ocean Avenue Bridge relocation (and their environmental impact) are examples of avoiding environmental damage from roadway improvements.

It should be noted that much of the Policy Plan is oriented toward larger municipalities undergoing growth rather than a small Town which is almost fully developed.

### Adjacent Municipal Plans

As noted earlier, the draft land use and traffic plans of Briny Breezes and Ocean Ridge are compatible.

## INTERGOVERNMENTAL COORDINATION ELEMENT
## GOALS, OBJECTIVES AND POLICIES

**Goal 1** **To maintain or establish processes to assure coordination with other governmental entities where necessary to implement this plan.**

**Objective 1.1** *Achieve formal coordination mechanisms with regional, municipal, County and State agencies that assure implementation of this plan by resolving one of the two major outstanding intergovernmental problems during 1990-1994.*

**Policy 1.1.1** The Manager shall oversee the implementation of the recommendations outlined in the prior section of this element including the provision of information to other public entities as necessary, with special attention to the Ocean Avenue Bridge and sand transfer issues.

**Policy 1.1.2** The Manager shall particularly devote efforts to work through the MPO to achieve coordination of such planning issues as the Town's opposition to the Ocean Avenue Bridge relocation.

**Policy 1.1.3** The Town shall use the Treasure Coast Regional Planning Council mediation process should any conflicts arise such as street widenings.

**Objective 1.2** *Coordinate the impact of the Town's comprehensive plan and development applications upon adjacent areas by maintaining direct liaison with adjacent municipal managers/planners as well as participation in the Palm Beach County-wide Planning Council process; measurability shall be Town attendance at two Planning Council meetings per year.*

**Policy 1.2.1** Town officials shall maintain liaison with the adjacent municipalities relative to any land use or major development impacts along the common boundaries (recognizing that the Town is surrounded on three sides by water); the County-wide Planning Council is also critical to this task.

**Policy 1.2.2** The Manager or his designee shall review the comprehensive plans (and plan amendments) of Boynton Beach and Briny Breezes to assure mutual compatibility, particularly in the areas of land use and streets.

**Policy 1.2.3** The Town shall work with Boynton Beach, the County and the Corps of Engineers on joint policies relative to the beach renourishment project, the mangrove hammocks and other estuarine/marine issues.

**Objective 1.3** *Assure level of service standards coordination with other governmental entities by formal agreements with the County and the City of Boynton Beach; to be achieved by 1991.*

**Policy 1.3.1** In particular, Town officials shall work with County MPO officials to agree upon acceptable roadway level of service standards, and the County and City of Boynton Beach relative to parks, the City of Boynton Beach relative to water and the County Solid Waste Authority for solid waste.

# CAPITAL IMPROVEMENT ELEMENT

## INTRODUCTION

The purpose of this element is to determine the cost of any Town public facility improvements recommended for implementation during the five years following plan adoption (fiscal 1990-1994), and demonstrate the ability to fund those improvements.

For this plan, a capital improvement is considered to be a single non-annual public facility project in excess of $20,000.

## INVENTORY

### Needs from Other Elements

The following capital project needs have evolved from the prior elements:

*Traffic:*

- Any major street improvements would be County or State responsibilities; but the Town opposes street widenings.
- The Inlet Cay Bridge needs replacement. A "need" with the cost estimate of $180,000 based upon the consulting engineer's estimate.
- The Town undertakes municipal street repaving and beautification on a systematic six-year cycle from the Operating Budget.

*Infrastructure:*

- Sewage disposal is handled on-site while trash and garbage pickup is done by a private contractor.
- Some water distribution lines owned by the Town are undersized and the hydrant spacing and storage capacity (and thus volume) are substandard. $500,000 in improvements are needed. This is high priority and is a "deficiency." Cost estimates are based upon a water master plan prepared in 1987 by Jacob Cooper Engineers.

- There are minor drainage deficiencies; six small scale improvement projects are needed to correct ponding; estimated cost of less than $5,000 each, based upon Town Manager consultation with contractor.

**Other Capital Project Considerations**

| | |
|---|---|
| *Recreation:* | • No park improvements are recommended. |
| *Town Hall:* | • Complete renovation is ultimately needed to provide additional space; estimated cost is $100,000 based upon preliminary Town staff estimates–a "need." |
| *Vehicles:* | • Police cruisers are replaced on regular cycle of two per year from the operating budget; a fire truck replacement sinking fund should be considered. |
| *Equipment:* | • Several major equipment items must be replaced including the dispatch radio ($80,000); a "need" based upon provider estimates. |
| *Public Education and Health:* | • The Town does not provide services in either area. There is no public school or health facility in Ocean Ridge. |

**Financial Resources**

The following is an outline of revenue sources:

*Property or Ad Valorem Taxes:* This is the source for about 60 percent of the Town's General Fund revenues and has been experiencing modest steady increases of about three percent per year.

*Franchise Taxes:* Electricity franchise and utility taxes constitute about six percent of the Town's revenues. These sources showed an irregular pattern in recent years. Some of these funds are earmarked for debt retirement.

*Licenses and Permits:* This revenue source tends to be variable since building permit fees are dependent on the number and scale of improvements in any given year. Typically, this source provides about seven percent of the revenues.

*Waste Disposal Fee:* This self-explanatory category provides nine percent of the revenues.

*Charges for Services:* These miscellaneous services (e.g. alarm monitoring) amount to about ten percent of the budget.

*Miscellaneous General Fund Revenues:* Fines, interest and State revenues (gas and sales tax and revenue sharing) constitute the remaining eight percent of the budget.

*Borrowing:* The Town has used bonds; see later section.

*Federal Funding:* The only recent direct Federal grant has been General Revenue Sharing and this has now been phased out.

## ANALYSIS

### Town Policies and Practices

Since Ocean Ridge is fully developed with many facilities provided by the County, the policies relative to municipal improvements are largely geared to maintenance and replacement more than major new facilities, locational issues or a need for additional capacity. Timing is a balancing act between the severity of need and ability to pay; the priority of water line replacement ahead of the sanitary sewer issue is a prime example.

The Town Manager coordinates budget preparation working directly with the Town Commission.

### Fiscal Implications of Deficiencies and Cost Estimates

Based upon the Land Use Plan goals, any future project planning will give first priority to those projects that enhance the residential neighborhoods. This primarily takes the form of infrastructure upgrading. The principal fiscal implication is that given the size and tax base of Ocean Ridge, bonding will be required to supplement the General Fund operating budget. This is particularly true of such potential long term needs as storm sewer outfall elimination and sanitary sewer extension into the Town.

### Public Education and Health Care Facility Implications

No public school construction is planned and none exist now.

No health care facilities are planned in Ocean Ridge.

### Land Use Plan Implications

The entire thrust of the Future Land Use Plan is to preserve the character of the Town's fully developed residential neighborhoods rather than encourage major new development. Therefore, there are no land use plan timing or location implications. Instead, the primary future capital project impacts will be facilities that enhance these neighborhoods, mostly infrastructure upgrading.

The principal State plan has been the Ocean Avenue bridge project which the Town has opposed as disruptive to this residential character.

### Revenue and Expenditure Projections

Table 9.1 shows that General Fund revenues are expected to continue to increase at the rate of about ten percent per year. It also projects the key components of the revenue stream for the fiscal 1990-1994 period. It shows the projected ad valorem tax revenues predicated upon the tax base projections found in Table 9.2 and assumes a continuation of the current 3.6374 millage rate. In other words, tax revenues will increase at about three percent per year.

Ocean Ridge currently receives no Federal funds and has no impact fees.

The other large revenue stream is the charge for services; about half of which is the solid waste fee. Based on recent experience, these are projected to increase about 15 percent per year.

The "other revenue" category will have to also increase at about 15 percent to keep these budgets balanced. This category includes State revenues, licenses and permits, franchise taxes and miscellaneous sources.

Expenditures are projected to continue to increase at the recent three percent rate, tracking the tax base/ad valorem increase. None of the proposed capital projects have operating cost implications.

**Table 9.1**
**Revenue and Expenditure Projections, 1988-1994**
**Town of Ocean Ridge**

| Fiscal Year | Ad Valorem Taxes | Charges for Services Including Solid Waste Collection | Other Revenues | Total Revenues | Total Expenditures |
|---|---|---|---|---|---|
| 1988 | $646,523 | $290,300 | $688,926 | $1,625,749 | $1,625,749 |
| 1989 | 665,919 | 333,845 | 788,560 | 1,788,324 | 1,788,324 |
| 1990 | 685,896 | 383,922 | 897,338 | 1,967,156 | 1,967,156 |
| 1991 | 706,473 | 441,510 | 1,015,889 | 2,163,872 | 2,163,872 |
| 1992 | 727,667 | 507,737 | 1,144,855 | 2,380,259 | 2,380,259 |
| 1993 | 749,497 | 583,897 | 1,284,891 | 2,618,285 | 2,618,285 |
| 1994 | 771,982 | 671,482 | 1,436,650 | 2,880,114 | 2,880,114 |

Source: Robert K. Swarthout, Incorporated, 1988.

**Table 9.2**
**Assessed Valuation Projections, 1988-1994**
**Town of Ocean Ridge**

| Year | Assessed Valuation |
|---|---|
| 1988 | $197,782,158 |
| 1989 | 203,715,623 |
| 1990 | 209,827,091 |
| 1991 | 216,121,904 |
| 1992 | 222,605,561 |
| 1993 | 229,283,728 |
| 1994 | 236,162,240 |

Source: Robert K. Swarthout, Incorporated, 1988.

### Tax Base Projection

Table 9.2 projects the Town's assessed valuation. It is assumed that the assessment ratio will remain the same. The three percent per year average increase is predicated upon 1) recent experience and 2) the Future Land Use Plan. Any given year's increase will depend upon actual construction completion experience.

### Debt Capacity

The Town has no charter or similar legal constraints on its ability to sell bonds. The practical constraint is the bond market and ability to repay.

### Debt Retirement

Tables 9.3 and 9.4 show the retirement schedules for the Town's two outstanding bonds. Both will be retired by the middle of 1994, which will free up General Fund money (particularly the franchise tax) to retire new bonds, if determined to be necessary.

### Implications of This Fiscal Analysis

1. The Town's tax base should increase at a rate of less than three percent per year. This prime ad valorem tax source can not readily be supplemented by any other source.

2. This suggests that only limited scale capital improvement projects can be adequately funded out of operating budget revenues, even with judicious planning.

3. Therefore, if a tax increase is to be avoided, the Town will have to borrow or bond for any significant capital projects as is planned for the water distribution system improvements.

**Table 9.3**
**Debt Retirement Schedule**
**Refunding of 1963 Bonds**
**Town of Ocean Ridge**

| Year | Interest Rate | Principal April 1 | Interest April 1 | Interest October 1 | Total Requirements |
|---|---|---|---|---|---|
| 1987 | 4.10 | | | 3,505.50 | 3,505.50 |
| 1988 | 4.10 | 20,000.00 | 3,505.50 | 3,095.50 | 26,601.00 |
| 1989 | 4.10 | 25,000.00 | 3,095.50 | 2,583.00 | 30,678,50 |
| 1990 | 4.10 | 25,000.00 | 2,583.00 | 2,070.50 | 29,653.50 |
| 1991 | 4.10 | 25,000.00 | 2,070.50 | 1,558.00 | 28,628.50 |
| 1992 | 4.10 | 30,000.00 | 1,558.00 | 943.00 | 32,501.00 |
| 1993 | 4.10 | 30,000.00 | 943.00 | 328.00 | 31,271.00 |
| 1994 | 4.10 | 16,000.00 | 328.00 | | 16,328.00 |
| Total | | $171,000.00 | $14,083.50 | $14,083.50 | $199,167.00 |

Source: Ocean Ridge Financial Report, 1987.

**Table 9.4**
**Debt Retirement Schedule**
**Franchise Tax, 1977 Revenue Bonds for Buildings and Vehicles**
**Town of Ocean Ridge**

| Year | Interest Rate | Principal July 1 | Interest January 1 | Interest July 1 | Total |
|---|---|---|---|---|---|
| 1988 | 6 | 7,500 | 1,200 | 1,200 | 9,900 |
| 1989 | 6 | 7,500 | 975 | 975 | 9,450 |
| 1990 | 6 | 7,500 | 750 | 750 | 9,000 |
| 1991 | 6 | 7,500 | 525 | 525 | 8,500 |
| 1992 | 6 | 10,000 | 300 | 300 | 10,600 |
| Total | | $40,000 | $3,750 | $3,750 | $47,500 |

Source: Ocean Ridge Financial Report, 1987.

## CAPITAL IMPROVEMENT ELEMENT
## GOALS, OBJECTIVES AND POLICIES

**Goal 1** **To undertake capital improvements when necessary to keep its present public facilities in good condition and to accommodate any major new development, within sound fiscal practices.**

**Objective 1.1** *Achieve correction of public facility deficiencies through use of the capital improvement programing and budgeting mechanism beginning in 1989.*

**Policy 1.1.1** The operating budget shall continue to fund annual systematic replacements such as street overlaying each street every six years and replacing two police cars each year.

**Policy 1.1.2** Staff and engineering studies shall form the basis for the annual preparation of a five year capital improvement program, including one year capital budget beginning in 1989-1990. Systematic renovation/replacement criteria shall be used in this process.

**Policy 1.1.3** Overall priority for fiscal planning shall be those projects that enhance residential neighborhoods, upgrade infrastructure and minimize traffic volumes, as per other plan elements.

**Policy 1.1.4** In setting priorities, the following kinds of criteria will be used:

- Public safety implications: a project to address a threat to public safety will receive first priority.
- Level of service or capacity problems: next in priority would be projects needed to maintain the stated Level of Service.
- Ability to finance: A third criteria is the budgetary impact; will it exceed budget projections?
- State and regional plans: The Town will devote resources to support those projects with which it agrees (e.g. sand transfer) but not those harmful to the Town (e.g. Ocean Avenue Bridge).
- Quality of life projects: lowest priority would be those projects not in categories 1 or 2 but that would enhance the quality of life.

**Policy 1.1.5** Continue to pursue a prudent policy in terms of borrowing for major capital improvements; in no case borrow more than one percent of the total assessed value in any one bond issue.

**Policy 1.1.6** The Town shall create a Capital Improvements Fund (by amending the Town Charter) to facilitate capital expenditures by using this fund to carry over funds from one fiscal year to another.

**Objective 1.2** *Use both the Future Land Use Plan and financial analyses of the kind contained herein as a basis for reviewing development applications, in order to maintain an adequate facility level of service; the policies provide measurability.*

**Policy 1.2.1** The potable water Level of Service Standard shall be 189 gallons per person per day in cooperation with the City of Boynton Beach.

**Policy 1.2.2** The sewage disposal level of service shall be septic systems except in the case of package treatment plants where the level of service shall be at least 115 gallons per person per day.

**Policy 1.2.3** The drainage Level of Service Standard shall be to adequately detain runoff from one inch of rain in one hour.

**Policy 1.2.4** The municipal recreation and open space Level of Service Standard in the Recreation Element (1 acre per 5,000 population) shall form the basis for assessing park improvement needs keeping in mind the role of the Boynton Beach and County parks plus public access beach all within Ocean Ridge.

**Policy 1.2.5** The streets Level of Service Standards of C shall be used in reviewing land use proposals.

**Policy 1.2.6** The solid waste Level of Service shall be the ability to collect 6.5 pounds per capita per day until all commercial uses are amortized, then 4 pounds per capita per day.

**Objective 1.3** *By 1990, adopt development code provisions that provide mechanisms to assure that major future development projects pay their fair share of the public improvement needs they generate.*

**Policy 1.3.1** The building permit review process shall continue to require on-site detention and drainage structures acceptable to regional environmental agencies.

**Policy 1.3.2** The development code review shall include the consideration of impact fees for new housing construction.

**Objective 1.4** By 1990, adopt development code provisions that *achieve mechanisms whereby public facility requirements generated by new development are adequately funded in a timely manner, including a concurrency management system to assure compliance.*

**Policy 1.4.1** The development code shall be amended to specify that no development permit shall be issued unless assurance is given that the public facilities necessitated by the project (in order to meet level of service standards) will be in place concurrent with the impacts of the development.

**Objective 1.5** *Avoid any new public infrastructure construction that would induce any new development in the high hazard area.*

**Policy 1.5.1** Plan all water, sewer and street improvements with capacities to serve existing development intensities (including vacant lots) but not development intensity increases or new development in the FEMA flood map V8 zone (Figure 6.3).

Note: No prior development orders have unmet public facility conditions thus 9J-5.016(c)5 is not applicable.

## IMPLEMENTATION

### Five-Year Schedule of Capital Improvements

Table 9.5 shows the major projects planned for implementation during the 1990-1994 period together with estimated costs and revenue sources.

### Programs

For purposes of monitoring and evaluation, the principal programs needed to implement this Element are as follows; all are outlined in more detail in the Element:

1. Initiate a more formal annual capital programming and budgeting process including project selection criteria.

2. Engineering or other studies to pinpoint the cost and timing of the other potential deficiencies (by 1994).

3. Amendments to the development code to a) assure conformance to the "concurrency" requirements relative to development orders, levels of service and public facility timing, and b) explore selected impact fees e.g. for park and residential street improvements.

**Table 9.5**
**Five-Year Schedule of Improvements, 1990-1994**
**Ocean Ridge**

| Project Description | Year | Cost | Sources |
|---|---|---|---|
| Traffic | | | |
| 1. Street repaving | 1990-1994 | $25,000 per year | General Fund and State Gas Tax |
| 2. Replace Inlet Cay Bridge | 1993 | 180,000 | Bond Issue and Special Assessment |
| Infrastructure | | | |
| 1. Upgrade water distribution and hydrant system | 1989-1993 | 500,000 | General Fund |
| Other | | | |
| 1. Radio dispatch equipment | 1992 | 80,000 | General Fund |
| 2. Police cars (2 per year) | 1990-1994 | 20,000 per year | General Fund |

Note: This table includes projects costing $20,000 per year or more. The Town's capital improvement program includes some projects costing less than this amount but none are deficiency corrections. All would be funded out of the General Fund operating budget.

STATE OF FLORIDA
DEPARTMENT OF COMMUNITY AFFAIRS
NOTICE OF INTENT TO FIND
TOWN OF OCEAN RIDGE
COMPREHENSIVE PLAN AMENDMENT
IN COMPLIANCE
DOCKET NO. 10-1ER-NOI-5027-(A)-(I)

The Department gives notice of its intent to find the Amendment to the Comprehensive Plan for the Town of Ocean Ridge, adopted by Ordinance No. 587 on April 5, 2010, IN COMPLIANCE, pursuant to Sections 163.3184, 163.3187 and 163.3189, F.S.

The adopted Town of Ocean Ridge Comprehensive Plan Amendment and the Department's Objections, Recommendations and Comments Report (if any) are available for public inspection Monday through Friday, except for legal holidays, during normal business hours, at the Town of Ocean Ridge, Town Hall, 6450 North Ocean Boulevard, Ocean Ridge, Florida 33435.

Any affected person, as defined in Section 163.3184, F.S., has a right to petition for an administrative hearing to challenge the proposed agency determination that the Amendment to the Town of Ocean Ridge Comprehensive Plan is In Compliance, as defined in Subsection 163.3184(1), F.S. The petition must be filed within twenty-one (21) days after publication of this notice, and must include all of the information and contents described in Uniform Rule 28-106.201, F.A.C. The petition must be filed with the Agency Clerk, Department of Community Affairs, 2555 Shumard Oak Boulevard, Tallahassee, Florida 32399-2100, and a copy mailed or delivered to the local government. Failure to timely file a petition shall constitute a waiver of any right to request an administrative proceeding as a petitioner under Sections 120.569 and 120.57, F.S. If a petition is filed, the purpose of the administrative hearing will be to present evidence and testimony and forward a recommended order to the Department. If no petition is filed, this Notice of Intent shall become final agency action.

If a petition is filed, other affected persons may petition for leave to intervene in the proceeding. A petition for intervention must be filed at least twenty (20) days before the final hearing and must include all of the information and contents described in Uniform Rule 28-106.205, F.A.C. A petition for leave to intervene shall be filed at the Division of Administrative Hearings, Department of Management Services, 1230 Apalachee Parkway, Tallahassee, Florida 32399-3060. Failure to petition to intervene within the allowed time frame constitutes a waiver of any right such a person has to request a hearing under Sections 120.569 and 120.57, F.S., or to participate in the administrative hearing.

After an administrative hearing petition is timely filed, mediation is available pursuant to Subsection 163.3189(3)(a), F.S., to any affected person who is made a party to the proceeding by filing that request with the administrative law judge assigned by the Division of Administrative Hearings. The choice of mediation shall not affect a party's right to an administrative hearing.

Mike McDaniel, Chief
Office of Comprehensive Planning
Division of Community Planning
Department of Community Affairs
2555 Shumard Oak Boulevard
Tallahassee, Florida 32399-2100